Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria.

Peter Adebo Ochepo

A thesis submitted to the University of Bedfordshire, in fulfilment of the requirement for the degree of Doctor of Philosophy

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Author's declaration

I, Peter Adebo Ochepo, declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research.

I confirm that:

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2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have cited the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always clearly given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
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Name of candidate: Peter Adebo Ochepo

Signature: 

Date: 09 August 2022

Abstract

Background

Global research on health-seeking behaviours for malaria treatment suggests that exploring community perceptions and attitudes to health-seeking is essential in formulating responsive treatment policies and comprehensive strategies that promote appropriate health-seeking behaviours and overall well-being for different populations. Existing evidence conducted in Nigeria has highlighted some of the barriers that contribute to delay in treatment-seeking for malaria. However, this evidence is predominantly quantitative and is carried out in different regions of Nigeria, with essentially limited evidence in Makurdi, located in the North-Central region. Furthermore, there is very little evidence in the North-Central region of Nigeria that has explored perceptions and attitudes to health-seeking delay for malaria treatment. Therefore, this study aimed to take a qualitative approach to explore the perceptions and attitudes contributing to delay in health-seeking behaviour for malaria treatment in Makurdi, Nigeria.

The Health Belief Model (HBM) was adopted as the model used to conceptually frame this research which assists with understanding the perceptions and attitudes contributing to the delay in health-seeking behaviour for malaria treatment in Makurdi, Nigeria. The HBM provided a structure to compare the findings with previous studies that have used the HBM in the field.

Method

A qualitative research design with an interpretive philosophical stance was adopted to answer the research question and meet the objectives of the study. A total of 39 semi-structured interviews were conducted among adult Nigerians (n=18), traditional healers (n=7), healthcare professionals (n=10), and Ministry of Health policymakers (n=4) to ascertain their views using a semi-structured interview guide. Data were analysed using the framework analysis approach.

Findings

The review of literature on the care pathways for malaria treatment reported a dearth of literature available in the public domain. However, based on the available evidence the following pathways for malaria treatment in Nigeria were identified: consultations with traditional healing services, purchase of herbal concoctions (locally called ‘Agbo’) from hawkers of herbal drugs, visiting spiritualists for cleansing and ritual sacrifices, faith-based healing, consultations with drug vendors for remedies, home management with traditional medicines/self-medication and hospital/health centre visitation.

The semi-structured interviews with respondents revealed some key findings. These are presented in relation to the key construct of the Health Belief Model. Such as, perceived efficacy included: effectiveness and safety, lack of trust and confidence in medical treatment, fear of drug resistance and potential side effects, family views and treatment pattern, and preservation of cultural values/heritages.

Perceived severity included: commonalization of malaria, easy-to-treat, and comparison of malaria with other diseases. Perceived susceptibility included: susceptibility associated with exposure to hot sunlight and susceptibility related to evil spirits and stress. Perceived benefit included: no unique benefit in medical treatment when compared to traditional medicines. Perceived barriers included: perceived high cost of biomedical treatment from health facilities, fear of being diagnosed with a different ailment, and health workers' behaviour towards patients.

Conclusion and Recommendation

The findings from this research suggest the need for extensive health education, involving communities and families, aimed at promoting prompt and effective treatment-seeking for malaria, and making it a top priority of the Ministry of Health through the combined efforts of the electronic media system and introduction of person-to-person centred campaign approach. Also, the need to expand the coverage of the national health insurance scheme is key to accommodate other categories of the general population without occupational and socio-economic restrictions as it presently is, this will reduce the economic burden of accessing healthcare facilities for malaria treatment, thus, encourage effective and prompt health-seeking behaviours in Nigeria.

Dedication

This thesis is dedicated to my late sister; Patricia Ochepo whose death as a result of malaria-related complications became an inspiration for this study to become a reality.

To my lovely mother (Mrs Mary Ochepo), I sincerely thank you for your understanding, sacrifice, prayers, and support. I remain indebted. Your words throughout the journey were encouraging, thank you for sacrificing your time to always call and check on me.

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My family support system was great. I would like to thank my parents for teaching me the value of hard work, commitment and resilience. These words were always spoken to me each time they call to encourage me. Thank you for your care, love and corrections when I am wrong; it made me a better man every day. To my brother John Ochepo, you are a very special man also, and I say thank you.

The final version of this thesis was copy-edited for conventions of grammar by Grammarly. However, the ultimate decision on whether the grammar was correct was determined by the author. I have used Grammarly in compliance with academic integrity policy for 2022/2023.

List of Abbreviations

Term	Definition
ACTs	Artemisinin Combination Therapies
CAM	Complementary and Alternative Medicine
CDC	Centre for Disease prevention and Control
CIA	Central Intelligence Agency
CKD	Chronic Kidney Disease
FA	Framework Analysis
FGDs	Focus Group Discussions
FMOH	Federal Ministry of Health
GDPs	Gross domestic profits
HBM	Health Belief Model
HBR	Health Behaviour Research
HBTs	Health Behaviour Theories
HCS	Health Care Service
HSBs	Health Seeking Behaviours
IPT	Intermittent Preventive Treatment
LGA	Local Government Area
MDGs	Millennium Development Goals
MHD	Mental Health Disorder
NAFDAC	National Agency for Food, Drugs Administration and Control
NCH	National Council on Health
NHIS	National Health Insurance Scheme
PBC	Perceived Behaviour Control
PHCs	Primary Healthcare Centres
PPMVs	Private Patent Medicine Vendors
RBM	Roll Back Malaria
SCT	Social Cognitive Theory
SDGs	Sustainable Development Goals

SEM	Socio-Ecological Model
SSA	Sub-Saharan Africa
TBAs	Traditional Birth Attendants
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
T&CM	Traditional and Complementary Medicine
TMP	Traditional Medicine Practice

Chapter one: Introduction

1.1 Background

The Centre for Disease Control (CDC) and the World Health Organisation (WHO) declared malaria as the most febrile, deleterious parasitic disease of humans, with an estimated 3.3 – 3.4 billion of the world population at risk among over 91 countries on 5 continents (CDC, 2021; WHO, 2021a). The World Malaria Report published in November 2020 by the WHO further revealed an increase in the global malaria cases from 228 million in 2018 to 229 million in 2019 and reported high estimated deaths of 411,000 in 2018 and 409,000 in 2019 (WHO, 2021a). For several decades, malaria has remained a major global public health problem and predominantly stands as a major public health challenge in the tropical and sub-tropical regions of the world (Oladepo et al., 2019; Rosenthal, John and Rabinovich, 2019). These regions combined, bear the heaviest global infection burdens, representing 90% morbidity and 91% mortality rates, and according to the WHO, these figures are disturbing particularly because it is preventable and treatable, yet the millennium development goals (MDGs) could not achieve its sustained goal of halving the global infection burden (Dasgupta, 2018; Oladele et al., 2018). Presently also, malaria prevalence continually remains high posing a threat to the sustainable development goals (SDGs) in achieving a malaria-free world by 2030 (WHO, 2018a).

The Western Sub-Saharan region in Africa where Nigeria is situated, accounts for 63% of morbidity cases, while the Southern and Eastern regions combined bear 39% (Adeola and Okwilagwe, 2015). Nigeria contributes an estimated 27% and 55% of the total mortality and morbidity burden in Sub-Saharan Africa (SSA) and this represents over a quarter of the approximate global rates (Dave-Agboola and Raji, 2018; Oboh et al., 2018; Uzochukwu et al., 2018; Oladepo et al., 2019), and explanation for this revealed principally that everybody is at risk (Shittu et al., 2018), as over 90% of the Nigerian population live in areas of stable malaria (Onwujekwe *et al.*, 2013; Rumun and Terungwa, 2015). Within the country, a recent study by Oladepo et al. (2019) confirmed that at least 50% of the Nigerian adult population experience at least one incident of malaria infection yearly compared to 2 – 4 episodes among children under-five years. Also, annually, more than 300,000 malaria-related deaths predominantly among pregnant women and children under five years are reported in Nigeria (Wogu and Nduka, 2018).

Several previous studies have confirmed that the consistent high cases of morbidity and mortality resulting from malaria infection are principally attributed to delays in effective health-seeking behaviours[1] for malaria treatment (Okeke and Okafor, 2008; Onwujekwe et al., 2008; Chukwuocha et al., 2014; 2015; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018). Delay

[1] See chapter 3 (in section 3.4) for definitions of health-seeking behaviour, and other key terms used in health behaviour research (HBR), as applied also in this study.

to health-seeking is defined as "the period from recognition of the first symptom by the patient to initial medical consultation, usually spanning more than three months" (Agbokey et al., 2019, p.2).

The World Health Organisation (WHO) therefore proposes prompt access to effective malaria treatment[2] as the cornerstone for managing the risk of severe complications and controlling onward transmission of malaria (Dave-Agboola and Raji, 2018; WHO, 2018a; Otuu et al., 2019). This is however sub-optimal in the Nigeria setting (Hetzel et al., 2008; Uche et al., 2009; Adedini *et al.*, 2014; Oladimeji *et al.*, 2018) as well as in other developing and middle-income countries. In other words, from the onset of symptoms suggestive of malaria, diagnosis and treatment should occur within 24 hours (Getahun, Deribe and Deribew, 2010; Otuu *et al.*, 2019), this is because the outcome of malaria in patients largely depends on their health-seeking behaviours (Oladimeji et al., 2018).

A large proportion of Nigerians, particularly adults, delay in seeking appropriate treatment for malaria, with many often treated presumptively with alternative ineffective sources with medicines sourced from private sectors such as from unqualified private patent medicine vendors (PPMVs), traditional healers as well as spiritual routes (Bello and Rehal, 2014; Chukwuocha et al., 2014, 2015; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018).

Furthermore, in Nigeria, the majority of the population that treats malaria using allopathic medicines usually purchase over-the-counter (OTC) medicines (also known as non-prescribed drugs) or prescribed medicines (obtained from a trained medical professional) (Oshikoya et al., 2007; Okeke and Uzochukwu, 2009; Oshikoya, 2008; Okolo and Nwankwo, 2019; Udujih et al., 2020).

Prescribed medicines are medications supplied to consumers that have acquired original/authentic prescriptions from a qualified medical doctor or other trained healthcare personnel, and these prescribed medicines are usually given specifically to individuals that have undergone medical diagnosis or after medically assessing the patient's needs (Ezenduka et al., 2014; Fadare et al., 2020). In contrast, over-the-counter (OTC) medicines are drugs purchased directly by consumers without necessarily obtaining or presenting a prescription from a healthcare professional (Beargie et al., 2019). In Nigeria, a significant proportion of the population utilises over-the-counter medicines as their first point of care (Prach et al., 2015). Generally, over-the-counter medicines are essentially used in treating health conditions requiring no direct medical professional's supervision (such as a doctor) and are proven to be safe and well-tolerated (Iheanacho and Adam, 2020). In Nigeria, however, some of the problems associated with purchasing over-the-counter medicines relate to the fact that the majority of the medicine vendors, such as chemists, lack the requisite knowledge as they are not medically trained professionals and so they administer inappropriate doses of medicines to patients (Yusuff and Omarusehe, 2011; Esan et al., 2018). Furthermore, many of the medicines sold over-the-counter in Nigeria are fake and adulterated, hence, patients stand a higher risk of utilising and ingesting harmful

[2] Effective treatment refers to prompt and timely diagnosis and treatment which must be administered by trained healthcare professionals (Getahun, Deribe and Deribew, 2010).

substances, contributing to the proliferating problem of organ failure and other complications (Esan et al., 2018; Beargie et al., 2019).

Furthermore, in the United Kingdom, for example, the type of drugs that are available over the counter are legally limited, primarily by their potential for abuse or for safety reasons (Clark, Layton and Shakir, 2001). In Nigeria, however, all forms and categories of medicines can be purchased from OTC, even without submitting valid prescriptions from healthcare professionals, further contributing to the increasing rate of drug abuse (Uneke et al., 2021).

Despite a cross-section of previous evidence base conducted across different geo-political regions and states of Nigeria, highlighting a range of factors responsible to influence the health-seeking behaviours, decisions, and choices of people, such evidence is essentially lacking in the North-Central regions of Nigeria, and specifically in Makurdi setting. This is particularly troubling as the transmission intensity of malaria in Makurdi is high (Jombo et al., 2010a and 2010b). Although, there is currently no available data in the public domain that highlights the prevalence rate of malaria in Makurdi. Moreover, despite the limited evidence base available in the North-Central region of Nigeria, particularly in Makurdi, the existing studies in Nigeria are predominantly quantitative, hence the need to adopt a qualitative research design for this present study to specifically explore the perceptions and attitudes contributing to delay in health-seeking for malaria treatment in Makurdi, from a triangulated perspective of adult Nigerians, healthcare professionals, key policymakers from the Ministry of Health and traditional healers.

Malaria services in Nigeria are provided at primary, secondary, and tertiary levels of care (Federal Ministry of Health, 2016; Olatubi et al., 2018). The primary levels of healthcare which forms the bedrock of Nigeria's health policy provide preventive and curative services for malaria treatment on a user-fee basis, while the secondary levels of care are responsible for handling referral malaria cases at public health facilities and the tertiary levels of care are concerned with treating more advanced complicated malaria conditions (Ahmad et al., 2019; Oluseye et al., 2019). The Federal Government of Nigeria has adopted the recommended three-pronged approaches proposed by the WHO for the control and management of malaria in the country, and the use of intermittent preventive treatment (IPT) is one of the approaches currently in use (Akinleye, Falade and Ajayi, 2009). However, despite this effective treatment strategy available in Nigeria, prompt access to effective malaria treatment remains a serious issue as the attitude of utilising inappropriate treatment measures still proliferates in the country, hence overall contributing to the problem of delay in effective treatment-seeking and in turn increase the morbidity and mortality rates (Chukwuocha et al., 2014, 2015; Chinweuba et al., 2017).

Previous studies show that several interventions have been employed to improve prompt access and utilisation to effective diagnosis and treatment-seeking behaviour for malaria in Nigeria, including national guidelines such as the 1987 Bamako Initiative programme which was endorsed by the Nigeria Government and sought to improve and strengthen the quality of care rendered by the primary healthcare centres (PHCs) through out-of-pocket payment and promote access to licensed private patent medicine vendors and public providers, ban of production and sale of counterfeited antimalarial drugs,

health promotional campaign and training of public healthcare professionals (Uzochukwu and Onwujekwe, 2004). However, another obvious critical factor that influences the health-seeking behaviours of people is perceptions and attitudes about the treatment which in turn contributes to influencing their decisions to a timely and prompt effective treatment-seeking. Evidence supports that delay in health-seeking is a complex issue that is better understood by exploring the perceptions and attitudes contributing to influencing the health behaviour of a particular disease/health issue (Chipwaza et al., 2014; Nejati et al., 2018). However, there is essentially limited evidence conducted in the North-central region of Nigeria, where Makurdi is located that examined the perceptions and attitudes to delay in effective health-seeking behaviours for malaria treatment.

Perceptions and attitudes relating to causation, transmission, prevention, and treatment are key factors influencing malaria prevention and control (Iwueze et al., 2013; Laar, Laar and Dalinjong, 2013). These factors are important in designing and improving malaria control activities to help establish epidemiological and behavioural baselines to identify indicators for monitoring malaria elimination programmes (Laar, Laar and Dalinjong, 2013; Mwaka et al., 2018). Globally, current international research on health-seeking behaviours for malaria control, treatment, and prevention focuses on community-based strategies (Nejati et al., 2018), and in doing so, (Hussain et al., 2019; Li et al., 2019; Sturrock et al., 2019) confirms that studies on attitudes and perceptions are valuable in formulating responsive treatment policies and comprehensive strategies that promote health-seeking choices and overall well-being for different populations.

1.2 Rationale

Malaria is a debilitating, febrile, and life-threatening parasitic disease that is caused by *Plasmodium* parasites that are transmitted to humans through the bite of infected species of mosquito known as the female *Anopheles* mosquitoes, which are the vectors of transmission (Dawaki et al., 2016; WHO, 2018a). The 2018 World Malaria Report highlights that Nigeria accounts for approximately 55% and 26 – 29% of the total malaria-related morbidity and mortality burden in sub-Saharan Africa (WHO, 2018c; 2019). This represents more than a quarter of the total global malaria morbidity and mortality rate (Dave-Agboola and Raji, 2018; Oboh et al., 2018; Uzochukwu et al., 2018). A range of interventions that have been put into place by the Ministry of Health as part of the National Malaria Control Programme (Federal Ministry of Health, 2014), and have focused on reducing the prevalence of malaria by improving the availability of insecticide-treated nets (which are provided free of charge to pregnant women) and medication or health education intended to raise awareness of the signs and symptoms of malaria and the importance of seeking timely help (Federal Ministry of Health, 2016). Overall, the prevalence of malaria in Nigeria has consequently gone down but the rate of mortality due to malaria cases continues to rise (Oboh et al., 2018; Uzochukwu et al., 2018). Figures estimate that there are approximately 100 million cases of malaria annually and 300,000 malaria deaths in Nigeria

(Wogu and Nduka, 2018), for an estimated population of 200 million (United States Embassy in Nigeria, 2018).

The continued rise in the rate of malaria morbidity and mortality has been attributed to delays in health-seeking for effective malaria treatment (Chukwuocha et al., 2014; 2015; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018). Health-seeking behaviour can be defined as "any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill to find an appropriate remedy" (Latunji and Akinyemi, 2018, p.52).

Previous evidence in Nigeria, much of these are quantitative highlights the characteristics contributing to delays in health-seeking behaviours (Okeke and Okafor, 2008; Bello and Rehal, 2014; Chukwuocha et al., 2014, 2015; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018). The available works of literature have discussed a range of factors that influences health-seeking behaviours for malaria treatment such as; accessibility to healthcare, availability of health providers, age, inequality, educational status, socioeconomic status of families, quality of health service rendered, cost of transportation and marital status/type of marriage (Okeke and Okafor, 2008; Onwujekwe et al., 2008; Chukwuocha et al., 2014, 2015; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018). However, despite the existing evidence base conducted in different geopolitical regions of Nigeria, such evidence is essentially limited in the North-Central region and specifically in Makurdi setting, and this is particularly troubling as the transmission intensity of malaria in Makurdi is high (Jombo et al., 2010a and 2010b), although, there is currently no available data in Makurdi which highlights the prevalence rate of malaria. Moreover, but not limited to these factors, other obvious critical factors that influence the health-seeking behaviour of people are perceptions and attitudes about the treatment which in turn contribute to influencing their decisions to timely treatment-seeking. Hence, evidence suggests that delay in health-seeking is a complex issue that is better understood by exploring and understanding the perceptions and attitudes contributing to influencing the health behaviour of a particular disease/health issue (Chipwaza et al., 2014; Nejati et al., 2018). This study, therefore, explored perceptions and attitudes to health-seeking delays for malaria treatment from a triangulated perspective of adult Nigerians, healthcare professionals, Ministry of Health policy makers, and traditional healers within the Makurdi setting.

As discussed above previous studies were not conducted uniformly across Nigeria and collectively represent some empirical work carried out in the North-Eastern region (Kwabe et al., 2013; Millar et al., 2014), South-Eastern Region (Okeke and Okafor, 2008; Onwujekwe et al., 2008; Chukwuocha et al., 2014; 2015; Chinweuba et al., 2017), South-Western Region (Bello and Rehal, 2014; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018) and the North-Western Region (Eseigbe et al., 2012), whereas in the North Central Region, there are essentially limited evidence available. Specifically, there is very limited evidence carried out to investigate delays in health-seeking for malaria treatment, and this is

particularly troubling because the North Central Region (where Makurdi is located) has one of the highest prevalence rates of malaria in Nigeria (Jombo et al., 2010a and 2010b; United State Embassy in Nigeria, 2011).

Malaria services in Nigeria are provided across three levels of care, and these include primary, secondary, and tertiary (Federal Ministry of Health, 2016; Olatubi et al., 2018). The Federal Ministry of Health (FMOH) has developed a formal pathway for malaria treatment (FMOH, 2010). Traditional medicine is an informal source of treatment not integrated into the Nigerian national health system, although recent studies show that nearly 86% of Nigerians utilize this care pathway in Nigeria for the treatment of various illnesses (Adekannbi, 2018; Wada et al., 2019). Over 200,000 unregistered traditional health practitioners practising in Nigeria with no means of official identification (Egharevba et al., 2015). Despite this, there is no comprehensive information on the informal care pathways for malaria treatment in Nigeria. Therefore, mapping the formal and informal care pathways for malaria treatment is essential for understanding the malarial treatment landscape in Nigeria from the point of view of the general population and healthcare providers (healthcare professionals, ministry of health policymakers, and traditional healers). The attitudes and perceptions of the general population through the malaria care pathway are essential to exploring the reasons for delays in health-seeking for malaria treatment (Laar, Laar and Dalinjong, 2013; Mwaka et al., 2018; Nejati et al., 2018; Uzochukwu et al., 2018). Much of the research on delays in health-seeking for malaria treatment has been written from the perspective of the general population but research on the views of healthcare stakeholders: healthcare providers (doctors and nurses) and policymakers (Ministry of Health policymakers) who are responsible for the delivery of services along the formal care pathway for malaria treatment, community education and treatment (Oladepo et al., 2007; Adesoro et al., 2016) and service planning and delivery respectively (Tesfazghi et al., 2015; CDC, 2016a; WHO, 2016c; Hlongwana and Tsoka-Gwegweni, 2017) is essentially limited. As discussed above the existing evidence highlights an informal care pathway for malaria in Nigeria therefore it is essential to ascertain the views of traditional health practitioners (traditional healers and complementary and alternative medicine (CAM) therapists) (Egharevba et al., 2015; Adekannbi, 2018; Ghazali, Bello and Kola-Mustapha, 2019 and Wada et al., 2019).

The WHO (2018a) recommends that to reduce the risk of severe complications and onward transmission, prompt access to effective malaria treatment remains the mainstream malaria control strategy. The findings from this study provide in-depth contextualised and triangulated findings on the perceptions and attitudes that contribute to delay in effective health-seeking for malaria treatment in Makurdi which could be useful to policymakers to direct interventions and develop services to promote early health-seeking and reduce rates of malaria morbidity and mortality in Makurdi.

1.3 Research question, aim and objectives

Research question:

How do perceptions and attitudes contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria?

Aim:

To explore how perceptions and attitudes contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

Objectives:

1. To map the care pathways (formal and informal sector provision) for accessing malaria treatment in Nigeria.
2. To explore how the perceptions and attitudes of adults contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.
3. To ascertain healthcare professionals' (doctors and nurses) and key health stakeholders' (Ministry of Health policymakers) and traditional health practitioners (traditional healers and CAM therapists) views on the perceptions and attitudes of adults that contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

Explanations for the objectives and how they will be addressed

Objective one: This will be addressed in two stages - stage 1 and stage 2.

Stage 1: This stage will involve the review of the literature (grey and academic/published) that is available in the public domain on the care pathways for malaria treatment in Nigeria. The purpose of this stage is to capture the various pathways that are accessed and utilised in Nigeria (both formal and informal sectors) for malaria treatment.

Stage 2: This stage will be addressed as a consequence of answering objectives two and three respectively. It will involve exploring the views of the research participants (adult Nigerians, traditional healers, Ministry of Health (MoH) policymakers, and healthcare professionals) during the semi-structured interviews. Participants will be questioned on the various treatment pathways for malaria known to them, in order to ascertain if there are pathways that are not presented and discussed in the literature reviewed during stage 1.

The method of conducting a mapping study in two stages has been adopted by some qualitative research. For example, qualitative research by Saurman et al. (2019) conducted a mapping study to guide the palliative approach to care in far west New South Wales (NSW) Australia. In the first stage of their

study, the authors conducted a review of relevant literature and documents related to palliative care, and in the second stage, fifteen semi-structured interviews were conducted.

This objective will guide and inform part of the interview questions that will be formulated into exploring participants' perspectives about the different care services/pathways that are available to them. Hence, this will provide a deeper understanding into knowing how their perceptions about the various services (formal and informal sector provision) influence their health-seeking decisions and choices. Moreover, the review of the care pathways for malaria treatment will help to identify all the relevant care providers and stakeholders that are directly involved in the provision of care for malaria, hence, enabling the recruitment of purposively sampled individuals that are information-rich to take part in the study. Consequently, this purpose aligns with the reason provided by the National Institute for Health and Care Excellence (NICE, 2015) for mapping care pathways in health research.

Objective two: This will be addressed by recruiting eligible adult Nigerians (lay participants). Using a semi-structured interview guide, participants' perspectives will be explored to understand how perceptions and attitudes contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

Objective three: This will be addressed by recruiting traditional healers, healthcare professionals, and Ministry of Health policymakers that are involved in the formulation of treatment policies for malaria in Nigeria. Traditional healers are known to provide informal treatment for malaria, while healthcare professionals (doctors and nurses) provide formal treatment for malaria. The Ministry of Health policymakers recruited are directly involved in the formulation of treatment policies for malaria in Nigeria, and they will be recruited from the National Malaria Control Programme (NMCP), Nigeria Centre for Disease Control and Prevention (NCDC), Traditional, Complementary and Alternative Medicine (TCAM), and Primary Healthcare and Tropical Disease. In this objective, participants will be interviewed using the semi-structured interview guides to ascertain their views on perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. The findings of objectives 2 and 3 will be triangulated and discussed to ensure the rigour and quality of the study.

1.4 Structure of the thesis

This thesis is comprised of seven chapters. Presented above is chapter one. Therefore, the summary of the other chapters is presented below.

Chapter two:

This chapter presented the literature review and provides the study background by centring on the existing evidence base related to delay in health-seeking for malaria treatment. It critically examined and evaluated existing literature from global contexts and local contexts, and aligns the present research

with the extant knowledge base. Moreover, this chapter addresses the objective one of the study by discussing the context and details of the care pathways for malaria treatment in Nigeria; and the intention for presenting it early in the structure of this thesis (as opposed to presenting it after the methodology which is the traditional approach) is because it provides important contextual background for the study.

Chapter three:

This chapter discusses the conceptual framework of the research. It looks at some of the prominent healthcare behavioural and social science models/theories used for the understanding delay in health-seeking behaviours for malaria treatment. This chapter discusses also the strengths and limitations of the aforementioned theories and models. It presents also the debate for adopting the Health Belief Model (HBM) as the model to conceptually frame this study, and the chapter ends with the presentation of key terms used in health behaviour research.

Chapter four:

This chapter presented the methodology of this study (which is a qualitative methodology with an interpretive philosophical stance) and the methods used for achieving the research objectives. Objective 1 maps the care pathways for malaria treatment in Nigeria by reviewing the literature. Objectives 2 involved semi-structured interviews with adult Nigerians. Objective 3 involved semi-structured interviews with health professionals, key health stakeholders (Ministry of Health (MOH) policymakers), and traditional healers. This chapter discusses the alternative data collection approach adopted for this study. Also presented in this chapter are the sampling, a detailed recruitment procedure, data analysis adopted for objectives two and three, and some key data collection experiences and challenges faced were outlined.

Chapter five:

This chapter presented the findings of the qualitative data analysis for objectives two and three. The findings for objective two detailed the views of the adult Nigerians on perceptions and attitudes contributing to the delay in effective health-seeking behaviours for malaria treatment in Makurdi, Nigeria. A total of 18 semi-structured interviews were conducted among the adult Nigerians and were audio-recorded, transcribed and analysed using the Framework Analysis (FA) method. The findings for objective three detailed the views of traditional healers (n=7), key health stakeholders (MOH policymakers) (n=4), and healthcare professionals (n=10) on the perceptions and attitudes of adult Nigerians that contribute to the delay in effective health-seeking behaviours for malaria treatment in Makurdi, Nigeria. All interviews were also audio-recorded, transcribed, and analysed using the Framework Analysis (FA) method.

Chapter six:

This chapter presented a triangulated discussion of the findings of this qualitative research in relation to the key constructs of the Health Belief Model and was also done in relation to the existing literature in the field while discussing the similarities and differences in their findings. This chapter concluded by highlighting some lessons learned from applying the HBM to the context of malaria treatment-seeking behaviour and in the Makurdi setting.

Chapter seven:

As the final chapter, it presented a broad discussion of the entire research, detailing my reflection throughout the PhD journey, limitations of the research, and the contributions of the research to the field, and these are considered from three angles: empirical, theoretical, and policy-related contributions. Recommendations, suggestions for future research, and conclusion were discussed lastly in this chapter.

Chapter two: Literature review

2.1 Introduction

This chapter presents the literature review. Section 2.1 present the literature review methodology and the sections that follow present the main themes emerging from the literature. The purpose of this literature review was to provide valuable context for the study as well as inform the research question, aim and objectives of the study, conceptual framework and methodology used for the study. The findings from the study have been discussed with reference to the existing evidence with presented literature review.

The presentation of the discussion in this chapter is in three sections. First, is Nigeria's healthcare system: organisation and delivery. Secondly, is the finding for objective one of this research which reviewed the literature on the care pathways (formal and informal) for malaria treatment in Nigeria, as it provided contextual details and background for the study design. The third section of this review chapter discussed factors influencing delay in health-seeking behaviours for malaria treatment that have been highlighted, and this was done in relaton to both global and local contexts.

Markedly, literature reviews are presented either in the form of systematic or narrative/traditional reviews. A key feature of the former is its application of a strict protocol which involves rigorous methods of identifying, critically evaluating and synthesising important studies to answer a narrow and specific question in-depth, while narrative or traditional review, on the other hand, deals with a broader scope of the issue (Collins and Fauser, 2005; Dijkers, 2009). Although, some research experts have criticised the narrative form of review to be prone to bias in using unsystematic methods which are not rigorous as the systematic review (Bryne, 2016; Ham-Baloyi and Jordan, 2016). Despite this limitation, narrative reviews remain frequent within the literature and very crucial for explaining, describing and understanding the context of a problem, as they offer a breadth of literature coverage and flexibility (Collins and Fauser, 2005; Bryne, 2016).

The literature review for this study is discussed from a contextual perspective, which explains the aim of adopting the form of narrative review. Moreover, the heterogeneity of studies, including studies conducted globally; studies with different methodologies (qualitative, quantitative and/or mixed methods) and studies among different groups, of participants, considered it more suitable for narrative review to have a deeper understanding of the context investigated. The suggestion of Ferrari (2015) was followed, by borrowing from the systematic review protocol, which includes; declaring the inclusion and exclusion criteria, databases searched and the keywords searched using the Boolean operators.

Accordingly, the review considered works of literature specifically related to health-seeking behaviours for malaria treatment, and so studies outside this scope were excluded.

To conduct the literature review for this study, a mixed search strategy was adopted, this involves the use of both electronic databases and snowballing techniques (Brereton et al., 2008; Bettany-Saltikov, 2012; Aveyard, 2014). Using the electronic database, the literature search was conducted on the University of Bedfordshire DISCOVER search engine, PubMed, Medline, AMED (Allied and Complementary Medicine), PsycINFO, Nursing Index, CINAHL, Global Health, Science Direct, SocIndex, PsycARTICLES and Cochrane Library. The second search strategy which is the snowballing technique is a manual search strategy that involves searching, identifying and assessing the references in every key paper (Greenhalgh and Peacock, 2005). Multiple databases were searched to reduce selection bias in article selection (McDonagh et al., 2013). Literature was searched using the keywords presented in appendix 24. The titles and abstracts of all relevant articles selected were screened in the course of the search.

2.2 Nigeria and the healthcare system

2.2.1 Nigeria: demographic description

Nigeria is a federal republic located in the western region of Africa, which is bordered by Cameroon, 1,975 km in the east, Chad, 85 km in the northeast, Niger, 1,608 km in the north, and Benin, 809 km in the west (Central Intelligence Agency (CIA), 2022) (see figure 1). Its coast in the south is located on the Gulf of Guinea in the Atlantic Ocean. There are 37 states in Nigeria including the Federal Capital Territory which is the capital located in Abuja (United States Embassy in Nigeria, 2018), and these states are grouped into six geopolitical zones, namely: South-East (comprising of five states), South-West (comprising of six states), South-South (comprising of six states), North-East (six states), North-West (seven states) and North-Central (seven states) (Olatomiwa, Mekhilef and Ohunakin, 2016) (see Figure 2). The classification of states in Nigeria into geopolitical zones was established principally based on social, cultural and ethnic similarities. Nigeria's latitude and longitude are 10° 00' N and 8° 00' E respectively, covering an area of 923, 768 square km of which land occupies 910,768 sq km and water 13,000 sq km; making it the 32nd largest country in the world (Central Intelligence Agency, 2022). Furthermore, the climatic conditions in Nigeria differ, for instance, in the South the climate is equatorial, and in the North arid, while the central region is tropical (CIA, 2022).

Based on 2022 United Nations estimates, the population of Nigeria stands at over 225 million (CIA, 2022), and it is distributed at 48.3% urban and 51.7% rural, and a population density of 167.5 people/sq km; thus, considering it the 7th most populous nations of the world and the most populated in the entire Africa continent (accounting for 47% of the West Africa population) (Falola and Heaton, 2008). By 2100, the population of Nigeria is estimated to reach 505 million to 1.03 billion people (United States Embassy in Nigeria, 2018), with a current population growth rate of 2.53% based on 2022 estimate (CIA, 2022). However, the high population growth rate in Nigeria will be continually sustained for the foreseeable future due to its high birth rate and its population momentum (Central Intelligence Agency,

2022). More so, the dependency ration of Nigeria's population is 86%, with the youth having a ration of 80.9% and the elderly at 5.1% (CIA, 2022).

In terms of ethnicity, although the official language spoken in the country is English, it has over 250 ethnic groups and over 500 indigenous languages with a wide variety of cultures identifying each; the Hausa (30%), Igbo (15.2%) and Yoruba (15.5%) ethnic groups are the largest ethnic groups, with others such as Ijaw/Izon (1.8%), Fulani (6%), Ibibio (1.8%), Tiv (2.4%), Kanuri/Beriberi (2.4%) (Central Intelligence Agency, 2022). Moreover, in terms of religion, there are diverse religions in Nigeria comprising Christian (35.3%) including Roman Catholic (10.6%), Muslim (53.5%) and Traditional African Beliefs (0.6%) (CIA, 2022). The northern regions of the country are predominantly Muslim, while the eastern regions are mostly the Christian populace. (Kombe et al., 2008).

Nigeria is considered the regional power on the African continent and a middle power in international affairs according to World Bank; with an emerging market, it is the 20th largest economy in the world which is worth over $1 trillion and approximately $500 billion in terms of Purchasing Power Parity and nominal GDP respectively (Maku and Adetowubo, 2018; United States Embassy in Nigeria, 2018). Furthermore, Nigeria has recently been identified as an emerging global power (Wright and Okolo, 2018). The economy of Nigeria is largely based on oil and natural gas reserves; which makes it the 8th largest exporter and 12th largest producer of petroleum in the world and its reserve is the 10th largest proven in the world (Wright and Okolo, 2018). The petroleum sector generates approximately 80% of the government earnings and 40% of the country's GDP (Maku and Adetowubo, 2018). However, a recent record revealed that due to COVID-19, there has been drastic depletion in the oil price which has resulted in the current high inflation in Nigeria, increased unemployment rate, and slow economic growth (CIA, 2022).

In addition to the abundant petroleum and natural gas resources in Nigeria, the country is also endowed with natural resources such as limestone, zinc, niobium, coal, lead, columbite, tin, hides/skins, wood, iron ore, rubber products, and abundant arable land (Central Intelligence Agency, 2022). In the agricultural sector, Nigeria is rich in products such as yams, groundnuts, sweet potatoes, cassava, cocoa beans, rice, fruit, sorghum, maize, and oil palm nuts (CIA, 2022).

Nigeria's educational sector has continued to remain a challenging area with a 62.2% national literacy level (male = 71.3% and female = 52.7%) in 2018, although indicating a 10.94% increase from 2008 (CIA, 2022). There are significant variations across the states and regions of Nigeria in terms of literacy level. For example, comparing a North-eastern state called Borno with a South-western state called Lagos, their literacy levels are 14.2% and 92% respectively. (UNESCO, 2021).

Furthermore, as evidenced by the high rates of morbidity and mortality combined with the low life expectancy (age 54 years for both males and females), Nigeria's healthcare system also has continued to remain greatly challenged (Centre for Disease Control and Prevention, 2019). Malaria together with

other diseases such as Tuberculosis (TB), Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) are the major contributors to the disease burden in the country (Okoroiwu, Uchendu and Essien, 2020).

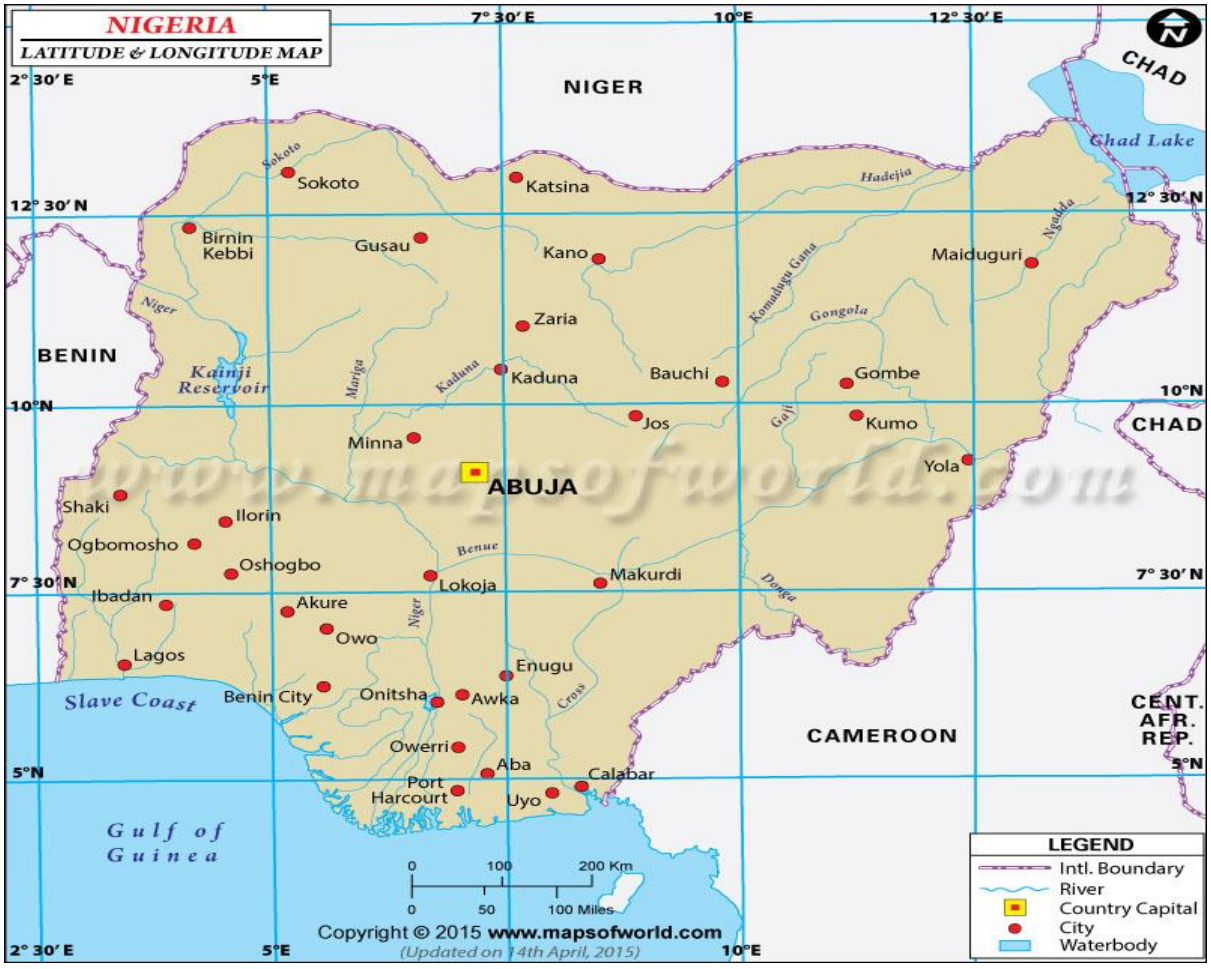


Figure 1**:** The map of Nigeria showing the federation states and the bordered countries.

Source: https://www.mapsofworld.com/nigeria/

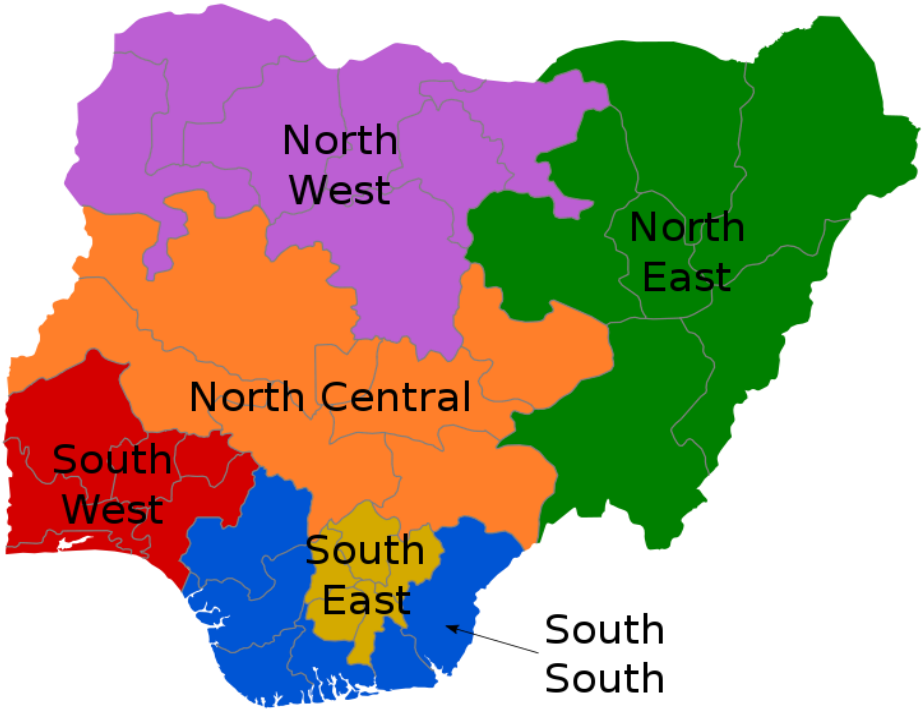


Figure 2: Map of Nigeria representing the six geopolitical regions
Sourced from: Olatomiwa, Mekhilef and Ohunakin (2016)

2.2.2 Nigeria's healthcare system: organisation and service delivery

Nigeria's healthcare system has undergone several transformations, dating back from the pre-colonial era which was the traditional health care delivery system that existed in the different ethnic communities to the post-independent era which is the present-day orthodox health care system (a system where nurses, medical doctors, and other healthcare personnel provide treatment to patients using pharmaceuticals or surgery) (Egharevba et al., 2015). However, this transformative experience in the health care system in Nigeria did not eliminate inappropriate healthcare behaviours rather there is an increase in the use of western medicine from a non-existent standpoint (Adepoju, Opafunso and Ajayi, 2018; Oseni, Robinson and Fong, 2018). During the colonial era, the development of health care services was basically on two fronts, and these were: firstly, the establishment of healthcare facilities and secondly, the training and development of human resources (Egharevba et al., 2015). These led to the establishment of the Ministry of Health (MOH) in 1946; which is saddled with the responsibility of organizing health care services and the advancement of the health sector throughout the geopolitical regions of the country (Anthony, 2018; Benson and Egbwole, 2018; Onyima, 2018).

Bowling (2014) argued that there is no specific definition for a health care system. However, the definition of a health care varies within the country's context as it depends on the structures that are

used to deliver the health services within the country (Bowling, 2014). Therefore, Egharevba et al. (2015) defined the health care system as a framework that is organized for the distribution of health care services and needs within a given community.

Similar to the structural arrangements of the healthcare service delivery system in other countries which is placed into a hierarchy of primary, secondary and tertiary levels of healthcare (World Bank, 2018), the health service in Nigeria is delivered in primary, secondary and tertiary levels of providers and it is the constitutional responsibilities of the government to provide health services (Federal Ministry of Health, 2016; Olatubi et al., 2018). There is a staid gap in the Nigerian health system as there is an uneven distribution of facilities and health providers; these are operated within an unclear policy framework (Egharevba et al., 2015). This gap in the distribution of health facilities and providers also contributes to influencing the community's perceptions and attitudes towards health-seeking or orthodox medicine, hence relying almost exclusively on inappropriate treatment measures such as traditional medicine (Ajala et al., 2019). Thus, to broaden the scope of understanding in this field, this study explored the perceptions and attitudes that contribute to the delay in seeking effective treatment for malaria in Makurdi from a triangulated perspective of adult Nigerians, and healthcare professionals, MOH policymakers and traditional healers. However, the National Council on Health (NCH) which are the highest policy-making body on health was established to check this anomaly and to ensure a reasonable distribution of intra- and inter-sectional cohesion in the different sectors (Eneanya, 2019).
With an estimated population of over 200 million people in Nigeria, there are currently fifty-nine (59) tertiary health facilities which comprise the Federal Medical Centres (FMCs) and University Teaching Hospitals (UTHs); 3,303 secondary health facilities comprising General Hospitals and complementary healthcare centres; and 20,275 Primary Health Centres (PHCs); comprising of dispensaries, clinics, health centres and posts (Egharevba et al., 2015; Federal Ministry of Health Nigeria, 2019). The above-mentioned are the government/public health sectors in Nigeria. (Figure 3 and 4 below represents the levels of healthcare delivery and organisational chart in Nigeria).

The PHCs in Nigeria are evenly distributed across the 774 Local Government Areas (LGAs) with the target to provide basic health services to outpatient and to promote access to health care services for all Nigerians (Ahmad et al., 2019; Oluseye et al., 2019). In addition, other basic responsibilities of the PHC include public health promotional campaigns about prevalent health problems and the preventive, treatment and management methods, carrying out pre-referrals, environmental health and the collation of statistical data on health and health-related events, campaign for proper nutrition and promotion of food supply, maternal and child care, including immunization against the major infectious diseases and family planning, provision of vital drugs and supplies and prevention and management of locally prevalent diseases (David, 2019). PHCs were established based on the equity in both the urban and rural areas of the country. The rural residents, however, tend to underuse this health facility, hence, providing

service to only nearly 20% of potential patients in the area compared to their counterparts in the urban areas who are better served (Ahmad et al., 2019).

Notably, Nigeria's PHCs are staffed by physicians (doctors), junior and senior community health officers, midwives, nurses, health technicians and community health extension workers, and it is the sole responsibility of the local government to manage its affairs (FMOH, 2004; Oyeyemi, Gberevbie and Ibietan, 2019) (Figure 5 presents a breakdown of the management capabilities of the various levels of healthcare in Nigeria). Though, recent studies highlight that presently most PHC facilities in Nigeria are in various states of disrepair, with non-existent or outmoded equipment and infrastructure and a non-functional referral system (Ahmad et al., 2019).

The Secondary health facilities, on the other hand, provide diagnostic, surgical emergency and laboratory services and are supervised by state governments. They provide different forms of services in a specialised approach, and such services include diagnostic, referrals, curative care, emergency medical service (surgical included) and radiological services (Federal Ministry of health, 2019).

The tertiary health facilities which are regarded as the specialised level of care, are generally equipped with a specialised workforce and higher technology (Federal Ministry of Health, 2019). This level of healthcare service is primarily supposed to focus mainly on conducting research, teaching and providing curative care (FMOH, 2019). In addition, they are saddled with the responsibility of referring patients to secondary and primary health facilities.

However, despite these effective healthcare services available at different care levels, evidence shows that people disregard them and often delay to seeking the appropriate healthcare services in Nigeria, as majority prefer the alternative treatment options by patronising various informal health sectors (Chukwuocha et al, 2014; 2015; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018). Consequently, this study presents the context and details of the care pathways (formal and informal sector provisions) for accessing malaria treatment in Nigeria and explores the traditional healer's perspectives to identify the various routes accessed by Nigerians in Makurdi for malaria treatment, which provides important background for this study.

Health services in Nigeria are utilized from either the public health institutions or private healthcare sectors (Federal Ministry of Health, 2016; Asakitikpi, 2019; Liu et al., 2019). The private health sector is diverse and large consisting of medical practitioners working in privately manned clinics, traditional healers and both herbal/orthodox medicine hawkers, churches, spiritual homes and private patent medicine vendors (PPMVs). In Nigeria, drug vendors, approved/licensed pharmacists, and unlicensed/unqualified chemist shop owners constitute the private patent medicine vendors. Several previous studies have revealed that in Nigeria, the PPMVs are the first patronised sources of treatment and self-care for malaria treatment and other general health problems (Janssens, 2017; Asakitikpi, 2019; Raji et al., 2019). Conversely, in public health institution the three tiers of government (federal, state

and local) have concomitant and concurrent constitutional responsibilities to provide health care services (Cleenewerck, Bhalla and Gulma, 2019). These sectors of health are run at subsidized rates by the government of Nigeria on user charges, however, they are faced with numerous challenges including inadequate structures and health facilities (shortage of drugs, poor maintenance of medical equipment and buildings) and underfunding (below the 15% WHO acceptable standard of the total government budget) (Afolabi, De Beer and Haafkens, 2020). Other problems that are facing the public health institutions in Nigeria include inadequate incentives, a lack of manpower/trained health personnel due to brain drain and overworking of the available health workers (Obansa and Orimisan, 2013; Omoleke and Taleat, 2017), long waiting hours for patients and many avoidable fatalities resulting from the fact that Nigeria is far below the WHO recommended doctor/patient ratio of 20 per 100,000 and the ratio for nurses and midwives also remains below 21 per 100,000 (Omoleke and Taleat, 2017).

In addition, Aregbesola and Khan (2018) emphasised that one of the challenges facing the public health sector is: that due to the dilapidated state of the primary care centres which provide basic medical services to the Nigerian populace, patients prefer to seek care from the secondary and tertiary care systems. Other challenges include the high cost of out-of-pocket charges which patients have to pay to receive services from these facilities'. Hence, the desire to encourage and promote access to affordable and effective healthcare for Nigerians birthed the National Health Insurance Scheme (NHIS) by the Federal Ministry of Health in June 2005 (Philips et al., 2019; Asakitikpi, 2019), as highlighted in the subsequent section.

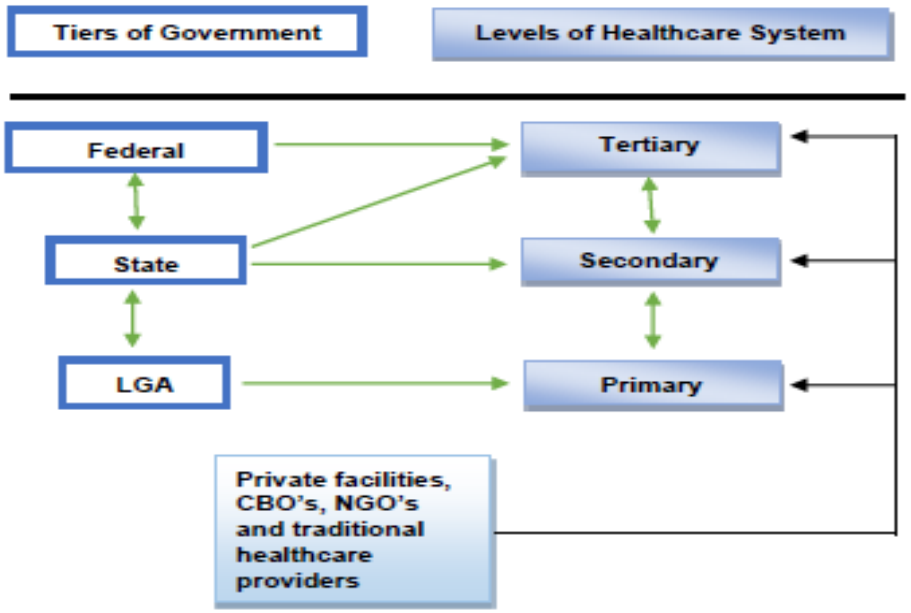


Figure 3: Levels of healthcare delivery system in Nigeria

Source: Federal Ministry of Health (2014): National Malaria Strategic Plan 2014-2020

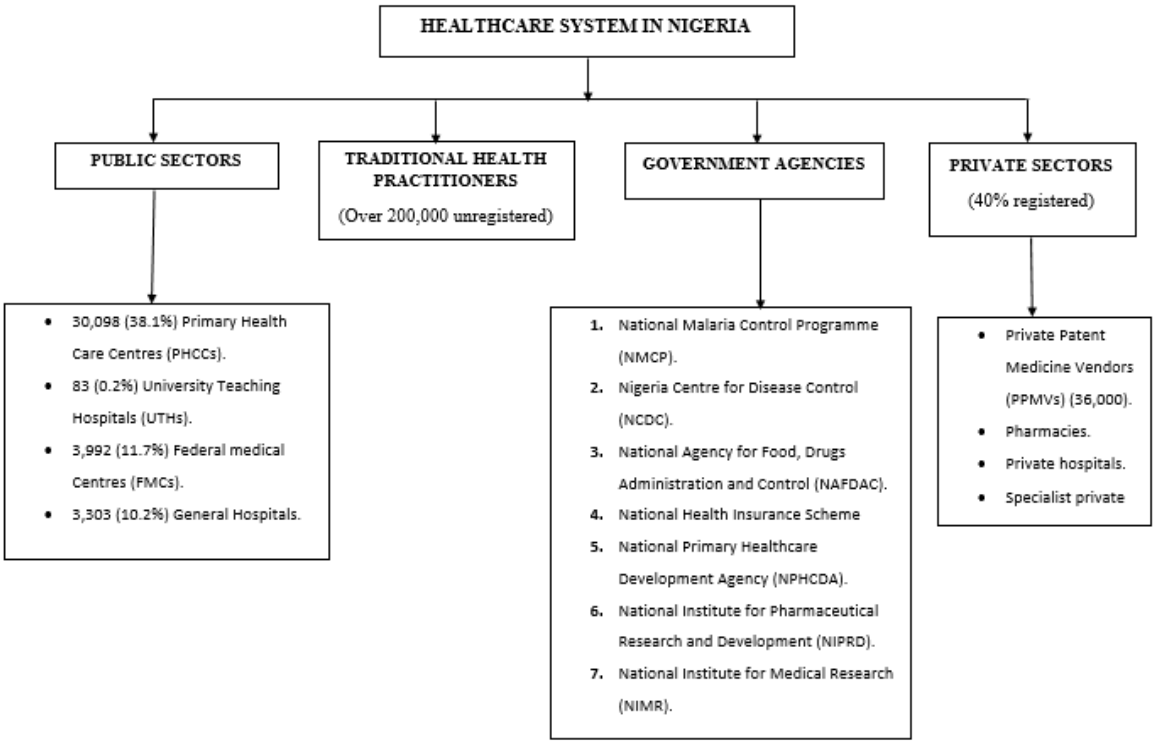


Figure 4: Organizational chart of the healthcare system in Nigeria

Source: Federal Ministry of Health (2014): National Malaria Strategic Plan 2014-2020

Health care level	Cadre of staff	Expected management capabilities
Level III		
Teaching Hospitals, Specialist Hospitals, FMCs and some Private Hospitals	Specialist Physician or Highly skilled Senior Physician	Intensive care for severe disease
Level II		
General Hospitals, Comprehensive Health Centres, Cottage Hospital and Private Hospitals	Medical officers, General Practitioners, Nurses and Community Health Officers	In-patient care Basic laboratory support for confirming diagnosis and monitoring. Assessing complications
Level I		
Health Centre with or without laboratory facility. Dispensaries, Health posts and community based providers.	Community Health Extension Workers, Village Health Workers, Patent Medicine Vendors	Syndromic approach focusing on disease identification, initiation of appropriate treatment and urgent referral of severe malaria

Figure 5: Healthcare levels in Nigeria and their management capabilities of malaria

Source: Malaria treatment services in Nigeria: A review (Uzochukwu et al., 2010).

The National Health Insurance Scheme (NHIS) in Nigeria

The shortfalls associated with Nigeria's healthcare sector led to the introduction and official flagging off of the National Health Insurance Scheme (NHIS) on the 5th of May 2005 by the Federal government of Nigeria under decree 35 (Oyibo, 2011). Its establishment aimed to provide universal coverage and an affordable healthcare delivery system for Nigerians via various prepayment strategies (Innocent, 2019; Raji et al., 2019). In other words, introducing this health programme into the Nigerian healthcare system was to guarantee affordable and good healthcare services to Nigerians who are ready and willing to take part in the scheme towards the improvement of all health-related aspects of the lives of Nigerians ranging from maternal mortality to other precarious health conditions (Daramola, Adesina and Akande, 2019).

The NHIS is operational through the following categories of stakeholders – the government at all levels, the private sector and other government and international donor agencies (Innocent, 2019). A summary of these stakeholders includes government at all levels; private and public sector employers; Rural Community Health Insurance Programme agency; self-employed; health maintenance organizations; NGOs; health providers; board of trustees; commercial banks; media and the community leaders (Innocent, 2019). The role of the government under the scheme is to provide not only guidelines and standards but also to ensure the implementation and monitoring of policies and evaluate the programmes and services for the effectiveness of the scheme (Awojobi, 2019).

Through the process of capitation, the NHIS enables enrollees/participants to have access to medical care; thus eliminating the socio-economic obstacles to accessing quality and effective healthcare services (Daramola et al., 2019b; Raheem et al., 2019). Enrollees, his/her spouse and four under 18 years' siblings are provided with care under this scheme either as an out-patient or in-patient (Raji et al., 2019). In Nigeria, however, despite the target of achieving health coverage through the introduction of the NHIS, many recent studies show that only 3% of the country's population have access to health insurance, hence contributing to the challenges experienced in delays to health-seeking for a health condition within the country (Koce, Randhawa and Ochieng, 2019; Raji et al., 2019). Earlier reviews by Aregbeshola (2016) and Onoka et al. (2013) highlighted that in the formal sectors, less than 5% of Nigerians are registered and can utilise the NHIS, while in the informal sectors only 3% of the people are covered by voluntary private health insurance. Therefore, leaving the majority (about 90%) of the Nigerian population who are uninsured patients at the mercy of a non-performing health system (Aregbeshola, 2016). Health indicators in Nigeria have not changed substantially due to the non-responsiveness of the health system to the needs and expectations of the population

Presently in Nigeria, the major means of healthcare payment is the user fee/charges or out-of-pocket (Koce, Randhawa and Ochieng, 2019). The NHIS was established on a structure that will cover both the informal and formal sectors of the nation's economy (Daramola et al., 2019a). The scheme was

established to provide options for health financing that would help to reduce the negative impacts of out-of-pocket charges and to reduce the high health expenses among Nigerian citizens (Raji et al., 2019), however, much success has not been recorded since its establishment, this is because the larger population of the country who are mostly the unemployed have not benefitted from it and are still left at the mercy of seeking improper and ineffective sources of treatment (Aregbeshola, 2016). Consequently, the service of the NHIS should be expanded in such a manner that it captures the entire Nigerian population, this could contribute to encouraging prompt access to effective treatment for all diseases (Oyibo, 2011).

2.2.3 Key providers in Nigeria's healthcare service

In Nigeria, the healthcare sector is managed by the Federal Ministry of Health (FMOH) and the National Council on Health (NCH) which represents the highest policy-making body on health (Eneanya, 2019). The structure of Nigeria's healthcare sector is targeted at providing a basic platform of healthcare service (HCS) to all, with high-quality treatment offered at some public and private facilities (Okolo et al., 2019). In other words, healthcare provisions in Nigeria are delivered from either public or private facilities. The latter increasingly participate in healthcare services and specifically operate in form of registered and unregistered patent and proprietary medicine vendors (PPMVs), private clinics and pharmacies (Oladepo et al., 2019). The private health sector in Nigeria provides 60% of the health care services for the Nigerian populace (Oladepo et al., 2019). For instance, 90% of all anti-malarial drugs distributed in the country are from the private health sector and 46% of Nigerians first seek treatment from the chemist shops/PPMVs (Oladepo et al., 2019). The Federal Government of Nigeria recognizes this sector's contributions to malaria treatment as it is approved under the 2011 National Policy on Malaria Diagnosis and Treatment (Oladepo et al., 2019).

Private Patent Medicine vendors (PPMVs)

The private sector contributes to play a crucial role in the delivery of healthcare services in many resource-poor countries of the world, including Nigeria, providing health care services to a large proportion of the population (Oyeyemi et al., 2020). The drug shop owners, also known as PPMVs are among the notable private sector players in Nigeria, and they are "persons without formal pharmacy training selling orthodox pharmaceutical products on a retail basis for profit", and their practice is principally controlled by the Pharmacists Council of Nigeria (PCN) (Brieger et al., 2004; Oladepo et al., 2019). They are the first point of care for a significant proportion of the Nigerian population (Prach et al., 2015). In 2005, studies show that about 200,000 PPMVs exist in the country, and this was estimated to be roughly almost four times the number of medical doctors, and more than 100 the number of registered pharmacies (Oyeyemi et al., 2020). This Complementary and Alternative Medicine (CAM) is a particularly important source of care in the rural and lower-income communities of Nigeria specifically for the treatment of prevalent diseases such as malaria (Welle et al., 2019). However, monitoring and regulating their practices to ensure they deliver quality services is a serious challenge

(Sieverding, Liu and Beyeler, 2015). Recent studies show that most PPMVs have poor knowledge of malaria treatment and do not provide appropriate malaria treatment (Oladepo et al., 2019), thus access to such health providers constitutes a delay in effective health-seeking for malaria treatment, as Latunji and Akinyemi (2018) argued that an important aspect of HSB is the choice of healthcare provider made by people when responding to illness episodes. A key result from a descriptive cross-sectional study conducted in a Southwestern state of Nigeria by Latunji and Akinyemi (2018) which aimed to determine the key factors influencing health-seeking behaviours among civil servants in Ibadan reported that members of the community with low socioeconomic status are six times more likely to seek the treatment from various inappropriate sources including sourcing for treatment from private medicine vendors (PMVs) than people from the richer quartile of the community. As reported, some of the perceived reasons for accessing and utilising treatment from the PPMVs include 20.4% perceiving that their treatments are more affordable and 7.1%, 8.8% and 23.9% reported that it is because PPMVs are readily available, their services are prompt and quick and finally because they are near to reach.

In addition, previous studies highlight that some qualities of the PPMVs in Nigeria that appeals to members of the community include hospitality, long opening hours and they are always available to provide services than public facilities that often experience service interruptions (Basu et al., 2012; Morgan, Ensor and Waters, 2016).

Traditional Medicine Practitioners in Nigeria

Traditional medicine (TM) is not formally integrated into Nigeria's national health system, yet recent studies show that nearly 86% of Nigerians use this form of practice for primary health care (Adekannbi, 2018; Wada et al., 2019). Though it is not a registered and acceptable source of treatment, over 200,000 traditional practitioners exist in Nigeria with no means of official identification (Egharevba et al., 2015). Recently, studies have shown that there are increasing campaigns in Nigeria (Wada et al., 2019) and Uganda (Mwaka et al., 2018), and in some other countries of the world for the recognition and inclusion of traditional medicine practice (TMP) into the educational and the national health systems as seen in other countries of the world such as China, Japan, Republic of Korea, Australia and New Zealand which have well-established integration healthcare strategies (Park and Canaway, 2019), this is to foster a positive attitude of the younger generation towards the acquisition of traditional medical knowledge (Adekannbi, 2018). A few more potential significance of integrating TMP into the national health system include its contribution to improving the quality of healthcare services through the regulation of traditional and complementary medicine (T&CM) products, services and practitioners used by communities; managing non-communicable diseases and meeting population needs in ageing population; managing outbreaks of infectious diseases and disasters by strengthening sustainability and resilience through maximizing the potentials of T&CM and improving equitable access to care through health insurance coverage of traditional and complementary medicine (Park and Canaway, 2019). However, in Nigeria, there are several ethical issues surrounding the traditional form of health

practice, such as the unstandardized and widely varied mode and nature of the practice; secrecy of the procedures and practice; poor or lack of documentation of activities and procedures; and involvement of esoteric or metaphysical procedures, these are some of the documented reasons highlighted by the Federal Ministry of Health (FMOH) for not officially integrating this traditional practice into the national health system (Egharevba et al., 2015; Adekannbi, 2018). Moreover, Nigeria's traditional medicine practitioners lack the requisite knowledge about a disease and its treatment measures, and a large percentage of the procedures involved in their treatment practices are occultic and obscure (Wada et al., 2019).

A recent study explained that the majority of Nigerians who patronize traditional health practitioners do so based on certain factors including their socio-cultural beliefs, religious background, perceptions that it is safe and efficacious and the growing misperceptions and attitudes toward orthodox medicine and practices, socioeconomic factors, availability and accessibility challenges associated with orthodox practice and their lack of adequate knowledge on the right choice of treatment, hence, contributing to delays experienced in health-seeking for effective treatment service (Wada et al., 2019). The practise of traditional medicine in Nigeria exists in different forms such as herbal medicine who are referred to as the herbalist; bone setters who repair fractures and other orthopaedic injuries; traditional psychiatrists who treat mental disorder; traditional birth attendants (TBAs) who assist during delivery; traditional surgeon and practitioners of therapeutic occultism (Ghazali, Bello and Kola-Mustapha, 2019).

2.3 Care pathways (formal and informal sectors) for accessing malaria treatment in Nigeria

The sections presented above discussed the details of Nigeria's healthcare system: organisation and service delivery. However, it does not specifically detail how these treatment routes are rendered by the various health care providers for malaria treatment. Moreover, the above sections on Nigeria's healthcare system do not provide detailed explanations of the patterns which patients follow in seeking malaria treatment.

However, a rapid literature search suggests that there is very little evidence on the care pathways for malaria treatment conducted in Nigeria, hence, the following sections provide the context and details, and explains how the various treatment routes/services are rendered by different health providers, particularly for malaria treatment. This section, therefore, answers objective one of this study.

2.3.1 How objective 1 connects to objectives 2 and 3

This section explains how objective one of this study links with both objectives two and three in other to meet the study objectives and answer the research question.

An understanding of the review on the care pathways for malaria treatment in Nigeria (Objective one) guided and informed part of the interview questions formulated for this study into exploring

participants' perspectives about the different care services that are available to them, hence, this provided me with the opportunity for deeper understanding into knowing how their perceptions about the various services (formal and informal sector provision) influence their attitudes[3] towards seeking an effective treatment service for malaria and how it impacts on their choice of treatment. In addition, the review of the care pathways for malaria treatment helped in the identification of the relevant health providers and stakeholders that are directly involved in the provision of care for malaria, hence, enabling the recruitment of purposively sampled individuals that are information-rich to take part in the study. This, therefore, is related to the reasons provided by NICE (2015), which confirmed that mapping the care pathways in health research is essential method which provides the opportunity to capture each part of patients' journey in detail and to understand from the perspectives of the patients' the reasons for accessing a particular service. In addition, mapping the care pathways for malaria treatment in Nigeria helped me to identify the various key care providers and understand the relationship/connections that exist between one care provider and another (Atwal and Caldwell, 2002). Consequently, purposively exploring their perspectives on the topic investigated is very vital to obtaining in-depth and holistic understanding targeted towards providing policy-related contributions to the field and extending knowledge in the field.

There is also existing qualitative research that has adopted a similar approach. An example of a qualitative study which used a similar approach and conducted a mapping study was carried out by Saurman et al. (2019) to guide the palliative approach to care in far west New South Wales (NSW), Australia. Saurman and her colleagues conducted a review of relevant literature and documents related to palliatives care. They went ahead to conduct fifteen semi-structured interviews (which was audio-recorded and transcribed) over a period of seven months among generalist, healthcare providers (palliative care nurses and physicians) within the Far West Local Health District (FWLHD) and members of the specialist palliative care service.

Saurman et al. (2019) used a social network methodology and network analysis in mapping the palliative care services. The interview transcripts were analysed using content analysis and network analysis. The content analysis was used to identify: firstly, who the care providers of palliative care are; secondly, how these various providers connect; thirdly to describe the various care provided and lastly, to identify the challenges faced in the provision of palliative care service. The network analysis on the other hand was used to identify unidirectional connections as well as to map the services. The interview findings from their study were grouped into three according to the aim of the mapping study. The outcome of their mapping study revealed those involved in the provision of a palliative approach to care; the kinds of care provided and the challenges encountered in palliative care provision.

[3] Attitude as used in this current research meant patients'/individuals' response to a disease or a health condition (Ingabire et al., 2016).

2.3.2 Understanding the context of care pathways

Care pathways map the journey a patient can expect to take during treatment (Allen, Gillen and Rixson, 2009). It sets out the multi-professional care team providing specific services that a patient can expect to seek/access (Centre for Policy on Aging (CPA), 2014). Another study defines a care pathway as "a complex intervention for the mutual decision-making and organisation of care processes for a well-defined group of patients during a well-defined period" (Schrijvers, van Hoorn and Huiskes, 2012, p1). A similar definition was presented by Vanhaecht (2007) in his study on the impact of clinical pathways on the organization of care processes.

At the service level, care pathways set out a benchmark for best-practice and service organisation, and its overall aim is to improve the quality of care across the continuum by increasing patient satisfaction, promoting the safety of patients, optimizing risk-adjusted patient outcomes, improving the use of resources and increase patient satisfaction (Atwal and Caldwell, 2002; Schrijvers, van Hoorn and Huiskes, 2012). Furthermore, the National Institute for Health and Care Excellence (NICE, 2015) advocate that care pathways in health research are important as it provides the opportunity to capture each part of patients' journey/pathway in detail and to understand from the perspectives of the patients' the reasons for accessing a particular service, this is an essentially well-established method that provides opportunities for improvements in the existing pathways. Importantly also, mapping the care pathways according to a review conducted on the effectiveness of care pathways in health and social care by the Centre for Policy on Ageing (CPA, 2014), provides researchers with the opportunity to identify a range of key providers of the care services in which the local people access, with the overall aim to meet the local health needs of the people, thus making available health services more effective and better. In addition, by identifying the various care providers through mapping, one of the potential benefits of care pathways is to improve communication amongst the various health professionals (inter-professionalism) which tends towards improving health outcomes (Atwal and Caldwell, 2002). A similar finding was presented in a systematic review conducted by Allen, Gillen and Rixson (2009). Findings from several systematic reviews have revealed that understanding the care pathways in health promotes services to effective treatment through the establishment of effective communication between the various providers and understanding the local health needs of the people (Hunter and Segrott, 2008; Mad et al., 2008; Allen, Gillen and Rixson, 2009; Vanhaecht et al., 2009; Rotter et al., 2010; Philips, Halcomb and Davidson, 2011; Costantini, Alquati and Di Leo, 2014; Chan and Webster, 2016). The CPA (2014) therefore, reported that the development and use of care pathways pervade many areas of health and social care.

2.3.3 A review of care pathways for malaria treatment in Nigeria (objective one)

There are parallel perceptions between the biomedical and local treatments for malaria among people across the widely diverse geographical regions of Nigeria, as in many other malaria-endemic societies

of sub-Saharan Africa (Ajala and Wilson, 2013). Even though this accounts for the increased morbidity and mortality rates associated with the disease by continually discouraging the optimum effects of the available interventions and control of the disease among the people, previous studies conducted in Nigeria have widely focused on other aspects of malaria, and there is scarce evidence on the care pathways (formal and informal sector provision) for accessing malaria treatment in Nigeria.

However, some of the few key research articles which discussed the care pathways for malaria treatment in Nigeria include; (Uzochukwu et al., 2010[4]; Ajala and Wilson, 2013; Ngwum, 2016). For example, Ajala and Wilson (2013) carried out a qualitative study in south-coastal Nigeria amongst the Ibibo tribe. Three objectives were achieved by their study. However, the third objective of their study examined how the local meaning of the attitudes of Ibibo indigenes towards malaria, set the pathway of care in the treatment and management of malaria, in Akwa Ibom State, South-southern region of Nigeria. Primary data was collected by conducting twenty-one Key Informant Interviews (KII) and eight sessions of Focus Group Discussion (FGD) amongst; adults aged eighteen years and above, health providers (including medical and traditional healers) and children aged between ten and seventeen who can narrate previous experiences of malaria. The secondary data used by Ajala and Wilson (2013) were sourced from textbooks; academic journals; magazines and government /organizational publications.

In addressing the third objective of their study, Ajala and Wilson further explained how the local perceptions of malaria determined the choice of malaria treatment pathways accessed by the people. Ajala and Wilson (2013) reported that the diagnosis of malaria amongst members of the Ibibo community was predominantly based on the physical signs and symptoms of the patients such as the yellowish or discolouration of the eyes as well as urine; high body temperature; headache; fever; loss of appetite; body pains and itching; constipation; insomnia, and nightmares among others, and this informed their general idea of health and illness as well as the community's attitude on relying more on local remedies in treating malaria. The findings from their study asserted that among the indigenes of the Ibibo community, the measurement of illness due to malaria is through the eyeball, and this means that when the eyeball appears pale and yellowish, followed by fatigue and yellowish urine, it then means that the patient is suffering from malaria. Furthermore, in the Ibibo region, the result of the research conducted posited that the cultural interpretation of the cause of malaria opens up the choice of care pathway a patient accesses and utilises. Ajala and Wilson (2013) mentioned the four possible care pathways for malaria treatment in the community amongst the Ibibo indigenes, and these are; Home management with the use of traditional remedies, as the first stage; the second stage involves self-medication/approaching drug sellers; the third stage involves consulting faith-based healing/traditional

[4] This review presented a discussion on the following sections: clinical disease and epidemiology; the burden of malaria in Nigeria; objectives of treatment; antimalarial treatment policy; malaria diagnosis, and treatment strategies/National responses, it also discusses the various treatment sources for malaria treatment: which highlights the area of interest for objective one of this research.

healers/herbalists and the fourth stage then involves consulting hospitals (either public or private)/health centres. A diagrammatic representation of the care pathways for malaria treatment in the Ibibo community is presented in Figure 6.

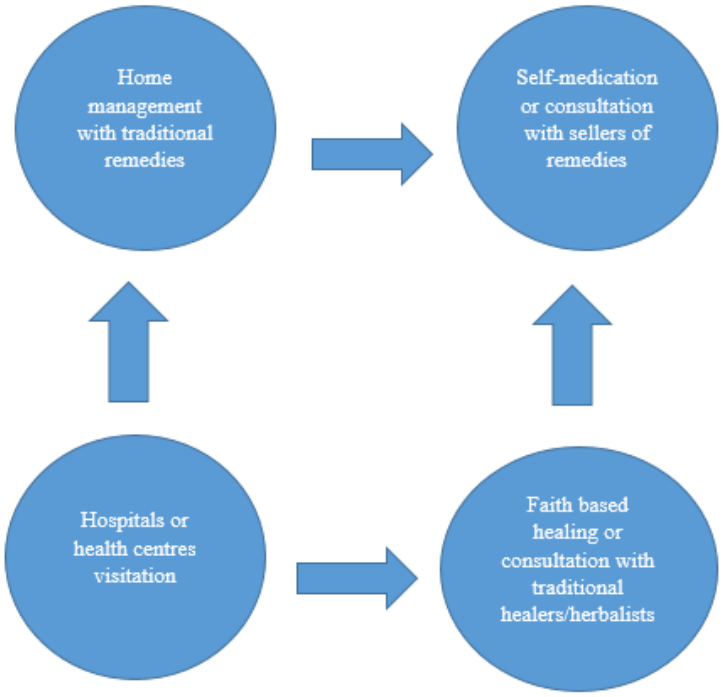


Figure 6: Visual representation of the care pathways for malaria treatment in Ibibo community Care pathways for malaria treatment in Ibibo community of Akwa-Ibom State, Nigeria.

Adapted from: Ajala and Wilson (2013)

Findings by Ajala and Wilson (2013) further highlighted that the various stages in the care pathways for malaria treatment accessed and utilised by the people of the Ibobo community as shown in Figure 6 are not strictly always followed serially nor are they mutually exclusive, and this is because there are occasions when patients combine both the traditional herbal medicine as well as the allopathic /orthodox drugs simultaneously for the treatment of a malaria attack. Also, Ajala and Wilson (2013), reported that there were occasions when malaria patients combines traditional healing with consultation from faith-based healers. Another report from their study explained that others go through all of these stages one after the other, while others engage in two or more of the stages concurrently. The dominant pattern of care pathway for malaria treatment among the Ibibo indigene of Akwa Ibom State, South-South Nigeria is concluded to involve the creative combination of the traditional/herbal elements and the orthodox medicines, and it is based on the demands of a particular situation (Ajala and Wilson, 2013). Furthermore, according to this research, the people's contrasting (opposite to the scientific biomedical knowledge) perceptions of the cause of malaria determined their health-seeking decision to utilise traditional ways in which malaria is managed. According to this study, based on the interviews

conducted, their perceptions of the causes of malaria are associated with different factors which include; witchcraft attacks and exposure to sunlight, ingesting contaminated food and water and consuming excessive oily foods. They have great confidence in the use of traditional remedies for malaria, hence hospital visits for malaria were reported low (which mostly are in advanced stage and usually complications have set in), especially in the rural region of the community, this was linked to low confidence level which the people have towards hospital treatment for malaria. Overall, the findings of the qualitative study by Ajala and Wilson (2013) reported that the people of the Ibibo tribe view orthodox medicine as culturally unfamiliar and abstract because they perceived that the processes of manufacturing orthodox medicines are not regionally and culturally known and familiar to them, unlike traditional treatments. Hence, given this, 67 (55.8%) of their respondents believed that local remedies are more effective treatment options against malaria, and 30 (25.1%) perceived that orthodox medicine is more effective, while 23 (19.8%) perceived that effective treatment for malaria requires the combination and utilization of both the traditional and western medicines.

In the event of malaria attacks in Ibobo land, the people usually have the attitude of trying the different approaches of remedies until they finally discover the one that would work for them, this attitude, therefore, delays prompt health-seeking behaviour to effective treatment services for malaria. More so, it promotes the attitude of self-medication and drug misuse/abuse, which is prevalent in Nigeria's practice for the treatment and management of malaria (Ajala and Wilson, 2013).

Another key article that was reviewed by this study which comprehensively discussed the care pathways for malaria treatment was by (Ngwum, 2016). The review by Ngwum (2016) presented a discussion on the care pathways for malaria treatment in four different regions/countries - Nigeria, Uganda, Malaysia and the UK was conducted by (Ngwum, 2016). In this evidence base, Ngwum (2016) presented discussion on the care pathways for malaria treatment in these countries by grouping them based on the outstanding similarities in their care pathways for the treatment of malaria. For example, Nigeria and Uganda (in Africa) were merged as one considering the great simialrities they share in their pathways for malaria treatment. The UK and Malaysia were grouped into another category also for the same reason of having a similar pattern of care pathways for malaria treatment. Ngwum (2016) emphasised that although the care pathways for malaria treatment in these countries were categorised and grouped, areas of little differences in the systems (if any) were highlighted accordingly in the course of discussion. My research, however, turns its satellite only on the section which discuses the care pathways for malaria treatment in Nigeria. My study, therefore, inferred that the care pathways for malaria treatment discussed by Ajala and Wilson (2013) as presented in this study above, significantly concord with the report of the review carried out by Ngwum (2016). However, Ngwum (2016) further provided in-depth and insightful details into understanding how traditional (herbal) home concoctions are prepared and administered and at what point a traditional healer's service is sought. In addition, Ngwum (2016) provided a detailed discussion of how the non-traditional approaches are accessed and

offered. In conclusion, this review therefore strongly agrees with the findings of the qualitative study conducted by Ajala and Wilson (2013), but it has further provided broader details in the context. Below is a succinct discussion of the traditional and non-traditional care pathways for malaria treatment in Nigeria as presented by Ngwum (2016).

Nigerian Traditional (Herbalist) Approach

The review by Ngwum (2016) described the traditional/herbalist care pathway as one with no scientific discovery or aid but originating from a region which is inspired by supernatural powers. This treatment approach stems from a result of the discovery of nature and it is predominantly practised in rural regions. He argued that the endemic nature of malaria disease in Africa called for the discovery of some natural herbs which are useful medicinal products for tackling malaria disease, just like other illnesses. The pathway for treating malaria using the traditional approach is discussed as:

When a child experience signs suggestive of ill-health, the mother would attempt to drain out oil by crushing palm kernels, and she then would source some medicinal plants and cook them to boiling point. This boiled herbal concoction is then turned into a container and then a blanket is used to cover the child around the bucket in an airtight closure. The main aim of doing this is to ensure that vapour steaming from this boiled medicinal herbs is sufficiently inhaled by the child. After about 30 minutes of steaming the child, the same herbal medicine is filtered and some portion is given to the child to drink. It is perceived that this herb contains active ingredients which perform the healing. Finally, this child is dried under the sun and the oil extracted from the crushed palm kernel is rubbed on the whole body of the child and the child is covered in a blanket. Usually, the process of extracting palm kernel oil is tedious, and so in some cases, Vaseline or methylated ointment is used in place of the palm kernel oil. Rubbing the palm kernel oil requires massaging the body to relax the whole body from any possible contraction in the veins or joints. The child is then left for a few days and observed. If there is no recovery, then the effort of a traditional healer (herbalist) (in some cases witch doctor) will be sought. In the case of seeking the help of a witch doctor, it is so because traditional herbalist mostly does not have supernatural powers, while the witch doctors combine both herbal products and supernatural powers. Traditional healers are sought because of their higher experience and skills as they would usually combine different herbs while preparing the herbal therapy for the patient. In some other cases, supernatural powers are also involved, only in a situation when he perceives that the malaria illness is linked with a spiritual cause, otherwise called witchcraft. According to this review by Ngwum (2016), it explains that usually after visiting herbalists, the child often gets better, and can only return for further treatment if the illness persists. Both rural and urban dwellers perceive and rely on the efficacy of herbal medicine (Mbonye, Neema and Magnussen, 2006; Ukaga et at., 2006). Ngwum (2016) claimed that although the use of traditional remedies for the treatment of malaria and other disease is fast being abandoned and the use of allopathic medicine is widely and acceptably utilised even in rural settings.

A sequence diagram that illustrates the time sequence of activities in the traditional pathway for malaria treatment is presented in Appendix 20.

The Non-Traditional Approach

Ngwum's (2016) review of the care pathways for malaria treatment in Nigeria argued that there are two fundamental treatment pathways based on the non-traditional approach in Nigeria, and these include:

Self-Medication Approach

This pathway has been encouraged by patients in Nigeria for two reasons. Firstly, because they perceive that they already know that it is a common malaria attack that they are suffering from, therefore, purchasing medicines from across counters using pharmacy shops, chemists and other private patent medicine vendors enables them quick treatment; by this, hospital protocols are avoided. Secondly, it is considered a waste of resources going to seek consultation on a disease they already know about and are familiar with.

In self-medication when a patient first notices some signs and symptoms, the first aid treatment received is the use of painkillers, having a warm tender bath and also eating quality food. This emergency first aid treatment is first rendered because they perceive that the signs are not suggesting a serious ailment. Others may also take vitamins, and blood supplements and some even stock antimalarial drugs at home for such emergency conditions. if symptoms persist, the patient would visit a patent medicine store/dispensary and the shop owner (who mostly only has received informal training) would conduct further enquiries to know the extent of the illness and to understand what other prior effort has been done, this would enable the drug seller to know the type of medication to prescribe. Another study conducted by Sanjana et al. (2006) confirmed also that this fast and resource economical approach is also practised in Malaysia and some parts of Asia where malaria is prevalent. When symptoms persist, patients return to the dispensary where the drug is bought and would be advised to visit any of the medical laboratories around. In most cases, after the medical test, the result would show that it is malaria combined with typhoid fever. The drug seller would now dispense a combination of drugs to tackle the ailments specified in the laboratory test result. It is on a rare occasion that a drug vendor would refer a patient to the laboratory for further diagnosis, often time, they would change the type of medication to prescribe another different one to the patient to try again. Although the self-medication approach seemed to be fast and economical, it is has its challenges, some of which include, purchasing fake antimalarial drugs and because of the lack of medical training of the drug vendors, which may result in health complications (See appendix 21 for a sequence diagram showing the sequence of activities in the self-medication pathway for malaria treatment).

Hospital Approach

This is the second treatment pathway based on chemotherapy for malaria treatment in Nigeria. This hospital approach involves receiving treatment from either a private or public hospital facility. The private medical facilities are managed as personal businesses and enjoy more medical facilities, managerial attention, committed medical services, hence offering more efficient services and there is less bureaucracy. Though some of the government health facilites enjoy sophisticated medical equipment due to poor managerial constriant, it has become inefficient. Most patients who proceed to the hospital for malaria treatment often time must have attempted either of the above previously discussed pathways (Ngwum, 2016). On arriving at the hospital, the patient proceeds to the receptionist (administration section) where the patient is registered, and then proceeds to see a nurse who conducts some checks/investigations including blood pressure, body temperature, weight and height. The patient is then called in by a doctor who conducts a more prefessional investigation to determine the ailment and make an appropriate prescription. In some situations, the patient may be required to conduct some laboratory test. However, in some complicated health cases, the patient would be referred to a specialist hospital for further attention. In a situation of an uncomplicated malaria case, the patient's laboratory result is obtained and sent to the doctor by the nurse for interpretation and prescription of drugs. The patient's medical records are transferred afterwards to the receptionist for filing. In a case of a public hospital, the patient collects the laboratory result and returns to the doctor for treatment. On receiving the doctor's prescription, the patient proceeds to the pharmaceutical unit of the hospital to pick up the drugs (see Appendix 22 for the sequence diagram which describes the Nigerian hospital pathway for treating malaria).

2.4 Delay in effective health-seeking behaviours for malaria treatment

This section of the literature review discusses a range of empirical evidence available on the delay to effective health-seeking for malaria treatment from a global and local context.

The utilization of healthcare facilities and their effects on the population are directly linked to the community's health seeking behaviour (Hussain et al., 2019). In terms of malaria illness, the outcome of the disease in a population depends majorly on their health-seeking behaviours (Ituu, Dave-Agboola and Raji, 2018). A major critical challenge facing malaria elimination is the lack of prompt access and utilisation to effective health care service (HCS) across malaria-endemic countries worldwide (Paraïso et al., 2019), and therefore there is some evidence available on help-seeking for malaria treatment conducted globally to identify factors contributing to influence delay to access and utilisation of the effective healthcare services for malaria treatment (Okeke and Okafor, 2008, Onwuegbuzie et al., 2008; Chukwuocha et al., 2014; 2015; Dalaba et al., 2018; Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018; Oladimeji et al., 2018; Gondi et al., 2019; Hussain et al., 2019; Mpimbaza et al., 2019).

However, rapid literature search has shown that the available studies conducted in Nigeria which suggest some descriptive determinants contributing to influence delay in seeking effective treatment for malaria are predominantly carried out using a quantitative approach. Moreover, despite the evidence, it is also evident that very few of these studies have specifically focused and provided an in-depth understanding of how perceptions and attitudes contribute to health-seeking delay for malaria treatment from a triangulated perspectives of healthcare professionals, key stakeholders (policymakers from the ministry of health), traditional healers, and the lay participants (adult Nigerians). Furthermore, in Nigeria particularly, the available studies on HSB are conducted in different geo-political zones of the country, and it remains essentially limited in the North-central regions where this present research is conducted, thus, it is difficult to apply the results from the related studies beyond its original research setting based on the socio-cultural differences existing across these zones. A review conducted by Rumun and Terungwa (2015) highlights that the health-seeking behaviour of a person is strongly influenced by cultural and the social environment of the person. In other words, different traditional beliefs and superstitions are deeply and firmly embedded within the societies and the people's culture has a direct association with their health-seeking behaviour. Furthermore, illness is perceived to be culture-bound, and so, the perception and health-seeking behaviour of diseases are influenced by the culture of a group of people, hence treatment-seeking varies from one group to another (Rumun and Terungwa, 2015). The culture and values of a community direct the pattern of illness and health care seeking (Bamidele, 2002), therefore, the value a society holds regarding health care influences the use of health services. Every cultural group has a system of managing their health which is familiar to them and which they depend on (Rumun and Terungwa, 2015).

Therefore, this study extends the literature beyond the evidence conducted on health-seeking behaviour for malaria treatment in Nigeria, which predominantly is quantitative to provide rich and in-depth understanding using qualitative method design. Also, the literature around this field has been extended beyond the description of factors influencing appropriate health-seeking for malaria treatment to providing an in-depth understanding of how perceptions and attitudes contribute to influencing health-seeking decisions and behaviours for malaria treatment, in Nigeria and particularly in Makurdi, located in the North-Central region.

International literature has distinctively provided explanations and has classified delays into two forms, namely: 'system' or 'service provider' delay and, 'patient' or 'personal' delay (Yan et al., 2007). The latter usually refers to the time between the first access/utilization of a healthcare facility and the first inception of symptoms, whilst the former which is the 'system' or 'service provider' delay refers usually to the time between the first utilization of a health care service and a confirmed diagnosis/treatment of a disease (Bojovic et al., 2018; Kalan et al., 2018).

Previous malaria studies in sub-Saharan Africa have reported that delay in health-seeking behaviours or the untimely utilization of healthcare services remains a major obstacle to achieving effective malaria control in the region and across the world (Awuah et al., 2018; Tiruneh, Gebregergs and Birhanu, 2018). However, both the 'patient' and 'system' phases of delays are strongly interlinked in influencing diagnostic and treatment delays in health-seeking (Bojovic et al., 2018).

Existing studies (global and local) carried out on treatment-seeking for malaria highlighted a range of common factors influencing the decision to engage in effective health-seeking behaviour for malaria treatment, some of which include perceptions about the cost of health service treatment, socio-cultural beliefs, knowledge and misconceptions about malaria, perception about the effectiveness of orthodox medicines, perceptions about susceptibility and severity of malaria, perceived cost of treatment, accessibility or distance to the nearest healthcare facility (structural factor) and first place of seeking healthcare to mention a few (Getahun, Deribe and Deribew, 2010; Chukwuocha et al., 2014; Awuah et al., 2018; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018; Mazzi et al., 2018; Gondi et al., 2019). These factors and others are discussed in the following sections.

2.4.1 Factors influencing delays to effective health-seeking for malaria treatment

A review of the literature highlights a wide range of factors influencing delay in health-seeking for malaria treatment in different contexts. Presented below are some of the factors identified from previous literature on the subject.

Knowledge and misconceptions about malaria

Understanding the local knowledge and practices relating to malaria is crucial for the implementation of cultural, social, economically appropriate, sustainable and effective interventions (Lawal, Balogun and Bada, 2014). Hence, existing evidence base conducted reported that inadequate knowledge of the cause, symptoms and transmission, and misconceptions about malaria impact people's treatment-seeking behaviour (Okeke and Okafor, 2008; Bello and Rehal, 2014; Lawal, Balagun and Bada, 2014; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018). For instance, Dave-Agboola and Raji (2018) conducted a cross-sectional study to understand the health-seeking behaviour of patients in Lagos, south-western Nigeria. The findings of Dave-Agboola and Raji revealed that an inadequate level of knowledge about malaria negatively influences individuals' attitudes towards practising and seeking alternative treatment services for malaria which are usually inappropriate and ineffective, such alternative treatments include; treatment-seeking from herbal healers, deities or also patronizing drug retailers across the counter and self-medication. A study by Latunji and Akinyemi (2018) reported the effects of inappropriate and alternative treatment-seeking for malaria, and these included misdiagnosis, resistance to malaria medication and over-or under-medication.

The descriptive cross-sectional study by Latunji and Akinyemi (2018) in southwest Nigeria also highlighted that the various misconceptions about malaria influence health-seeking behaviours and decisions of individuals. The objective of the study of Latunji and Akinyemi (2018) was to determine factors influencing health-seeking behaviour among a defined set of the population (civil servants). This study recruited 337 civil servants using a semi-structured questionnaire to collect information. The result of their study shows a significantly high level of appropriate health-seeking behaviours among their respondents; this was attributed to their high level of knowledge about the disease, which was linked with their educational level/status because their demographic information highlighted that out of the 337 civil servants that participated two hundred and forty (71.5%) reported having completed tertiary education, only 96 (28.5%) completed only basic education.

A similar study conducted in Nigeria which identified knowledge and misconceptions about malaria as a factor influencing health-seeking behaviour for malaria treatment is a cross-sectional survey carried out by Lawal, Balogun and Bada (2014) in a south-western state of Nigeria. Their objective was to examine the knowledge of causes of malaria and belief as determinants of health seeking-behaviour in Oye-Ekiti, Ekiti state. Moreover, apart from an individual's knowledge about malaria, Lawal, Balogun and Bada (2014) suggested that peoples' misconceptions about malaria itself contributed to influencing health-seeking behaviours in rural communities, and so, it could determine the extent to which a person might want to seek help in treating malaria whenever he/she is sick.

In addition to the above evidence conducted in Nigeria, some other previously existing studies conducted in Nigeria with similar findings include (Okeke and Okafor, 2008; Okeke and Okeibunor,

2010; Eseigbe et al., 2012; Adindu and Hogan, 2013; Chukwuocha et al., 2014 and 2015; Gobir, Sambo and Hadjia, 2014; Chinweuba et al., 2017; Oladimeji et al., 2018). However, despite these studies carried out in Nigeria, there is essentially limited evidence base conducted in the North-Central regions of Nigeria. Hence, it is therefore difficult to apply the findings from these studies conducted in different geopolitical zones due to the cultural variations and practices that exist amongst these geopolitical zones in Nigeria as highlighted earlier under sub-section 2.2.1.

From a global context, there are as well examples of studies which highlighted knowledge and misperceptions about malaria as a factor influencing health-seeking behaviours for malaria treatment. For instance, in rural Northern and Southern Districts of Ghana, a mixed-method study which determined the perceptions of malaria and its influence on malaria treatment behaviour was conducted by Asante et al. (2010). The result of the study demonstrated poor knowledge about the causation of malaria leading to gross socio-cultural influence in household malaria treatment behaviour. For instance, in their study malaria transmission was associated with different misconceptions, such as associating mosquito bites with skin rashes, and hardly was the mosquito associated with malaria.

Furthermore, a cross-sectional study conducted in Ghana by Awuah et al. (2018) which assessed factors associated with seeking alternative treatment as the first response to malaria, relative to orthodox treatment in three urban poor communities in Accra reported similar findings. Moreover, from a global perspective, some previous studies which presented similar findings are Chuma, Okungu and Molyneux (2010) in Kenya and Bedford and Sharkey (2014) in Kenya; Beiersmann et al., (2007) in Burkina Faso; Das et al. (2013) in India; Workineh and Mekonnen (2018) and Mpimbaza et al. (2019) in Ethiopia, and Nuwaha (2002) in Uganda.

However, there are also some previous studies which reported contrary results showing that knowledge of respondents about malaria is not associated with malaria treatment-seeking and does not influence health-seeking behaviours, and examples of these studies include a cross-sectional study conducted in southern Ghana by Ahorlu et al. (2006), and another cross-sectional study carried out in southwest Ethiopia by Getahun, Deribe and Deribew (2010).

The findings of some successfully conducted systematic reviews on health-seeking behaviours for malaria treatment reported some commonly held beliefs about malaria that might present as barriers to effective treatment-seeking for malaria (Maslove et al., 2009; Bruxvoort et al., 2014 Anyanwu et al., 2016 and Bastaki et al., 2018). For instance, a systematic review which included 39 qualitative studies (focus groups and interviews) examined the beliefs about malaria and practices for malaria treatment carried out by Maslove et al. (2009), and they reported that the major barriers influencing appropriate treatment-seeking for malaria were: 29/39 of the studies reported lack of knowledge and understanding of the cause and transmission of malaria; 7/39 of the studies reported that most people especially those in the rural areas wrongly believe that the transmission of malaria is not by mosquito and malaria cannot

be prevented, and of these, the most frequently identified included environmental factors (wind, excessive heat or cold), dietray factors and supernatural causes (sorcery and witchcraft); and 12/39 of the studies reported that the use of ineffective prevention measures (such as accessing herbal treatment) is the best treatment.

Socio-economic status

Health-seeking behaviours for malaria treatment are certainly influenced/determined by an individual's financial status (Onwujekwe et al., 2009; Dave-Agboola and Raji, 2018; Paraïso et al., 2019). Previous studies in low and middle-income countries on health-seeking behaviour (HSB) for malaria treatment often neglect the critical role socio-economic status or social inequalities play in influencing health-seeking behaviours for malaria treatment (Shayo et al., 2015; Battle et al., 2016; Awuah et al., 2018).

Notwithstanding, the availability of effective healthcare systems (public and private healthcare services) present in Nigeria, people especially the poor or low-income class practice inappropriate health-seeking behaviour such as self-medication by purchasing antimalarial drugs from unqualified/unapproved patient medicine vendors (PMVs) and traditional therapists/healers (Arute and Odili, 2019). More so, others may not take any action or rather seek any kind of alternative treatment, thus leaving negative effects on their health status (Arute and Odili, 2019). The implications of alternative treatment for malaria as a first response include over-or under-medication, misdiagnosis, resistance to malaria medication and delayed medical treatment. Although, literature has shown socioeconomic status as a factor contributing to delay in health-seeking (Onwujekwe et al., 2008 and 2010; Dave-Agboola and Raji, 2018). However, the findings from the literature reviewed on care pathways for malaria treatment have also shown that the reasons why most Nigerians may seek these alternative (informal) care pathways to treat malaria may not necessarily be because of their socioeconomic status, as findings show that people usually access other informal sources of care before eventually visiting a healthcare centre when the condition no longer gets better (Uzochukwu et al., 2010; Ajala and Wilson, 2013; Ngwum, 2016), and actually, the total cost incurred in utilising these various routes could be more than seeking an effective treatment on time as the first-line treatment, therefore, this could be a perceived cost of medical treatment.

Contrary to this, existing literature on healthcare service use and expenditures for different health conditions highlighted that the upper socioeconomic stratum of any community show appropriate health-seeking behaviours towards various health conditions compared to the middle and low socioeconomic strata (Oladigbolu et al., 2018).

To demonstrate the influence of socioeconomic status on healthcare provision, Tan et al. (2019) conducted a qualitative study which involves in-depth interviews among 20 hypertensive patients in Singapore. Purposive sampling was used to recruit participants. Their study aimed to explore how the socio-economic status of people contributed to delayed help-seeking for hypertension management.

The findings of Tan et al. (2019) correlated with the result of a recent cross-sectional study conducted by Paraïso et al. (2019) in the Ouidah Benin Southern setting. This study recruited 450 participants through a random sampling technique and it aimed to identify the determinants of late use of malaria treatment in children under five years of age. Paraïso et al. (2019) reported that the socio-economic status of their participants contributed significantly to the 87.7% prevalence rate of delayed healthcare utilization for malaria treatment in under-five year children. Additionally, parents of middle and upper-income earners experienced fewer delays in healthcare facility utilization for malaria management for their under-five year children.

This disparity in health-seeking behaviours (HSB) for malaria treatment among the different socioeconomic classes of the population highlights the significance of addressing the influence of financial status contributing to delays in treatment-seeking for malaria in Nigeria (Dave-Agboola and Raji, 2018). This is fundamental to guide the formulation and implementation of policies; as an essential aspect of health-seeking behaviour as the choice of a care service made by people when responding to illness incidents (Latunji and Akinyemi, 2018).

Perceptions about the effectiveness of malaria treatment

Previous studies highlight that perception about the effectiveness of malaria treatment influences people's health-seeking behaviours and treatment actions (Okeke and Okeibunor, 2010; Chinweuba et al., 2017; Orwa et al., 2017; Tola et al., 2017; Adekannbi, 2018; Suleman et al., 2018; Mbah, Ekweanya and Kalu, 2019). Importantly, the inappropriate use of antimalarial drugs increases the risk and chance of under-treatment failure, over-dosage or under-dosage (or incorrect dosing), the occurrence of adverse drug reactions, resistance to antimalarial drugs and drug interactions which often lead to compromising the effectiveness of antimalarial treatment (Tola et al., 2017). Example of previous studies conducted that highlight perceptions about malaria treatment as determinants influencing health-seeking behaviours for malaria treatment are a descriptive cross-sectional survey by Tola et al. (2017); which examined antimalarial drug preference among people in the selected communities of Ajara, Badagry (Lagos State) and Alajue, Ede (Osun State), southwestern Nigeria. A semi-structured questionnaire was administered to 135 respondents. The result of their study shows that although the preference rate (57.1%) for utilizing malaria treatment from a healthcare facility and taking drugs prescribed by qualified health practitioners was high, however, 9.6% still preferred the use of herbal medicines, because 3 (2.4%) complained of fear of side effects that they could experience. The result of their study also shows that 32(23.7%) of their respondents took nothing to treat malaria because 13(9.5%) complained that they usually do not experience any improvement after taking antimalarial medicines.

The findings from a systematic review involving 39 qualitative studies were done by Maslove et al. (2009), and their review affirmed the perceived effectiveness of malaria treatment as an important barrier that influences access and utilization to the conventional form of treatment services for malaria.

Some of the key findings of Maslove et al. (2009) reported included beliefs about the efficacy and use of conventional medicines, and beliefs about the role of traditional therapies. Out of the 39 studies reviewed, a total of 17 articles described a preference for traditional remedies in cases where they perceived that the illness was caused by spiritual influences or witchcraft, and this is usually when complications occurred, or as a means of removing the root cause before supportive care in hospital, example in the case of childhood convulsions, which is often perceived to be caused by attacks from spirits or witchcraft, and hence were treated by using traditional means. The systematic review findings also reported that failure of hospital treatment was identified in 2/39 of the studies as an indication that the illness was due to witchcraft. In addition, Maslove et al. (2009) reported that concerning the effectiveness of malaria treatment, 23/39 of qualitative studies reviewed described conventional medicines and health care clinics as second-line treatment options, and the articles described the use of traditional healing methods, including consultation with traditional healers and various forms of herbal remedies as first-line treatment for malaria, before conventional treatments are employed.

Similarly, some qualitative research conducted by Abubakar et al. (2013) on the coast of Kenya, and another carried out by Bello and Rehal (2014) in the southwest region of Nigeria, both studies explored the health-seeking behaviours of their respondents to malaria treatment. The findings from the study of Abubakar et al. (2013) revealed that a person's perception of a particular treatment can be culturally influenced. Some of the negative perceptions include: some participants believe that traditional medicine is more effective and it is a waste of money seeking hospital treatment and to others, hospital treatment causes their babies to have a convulsion, especially when they are breastfeeding.

Several other studies conducted in different geopolitical regions and states in Nigeria have as well reported similar misperceptions about effective malaria treatment (Okeke and Okafor, 2008, Adeneye et al., 2013; Adedini et a., 2014; Chukwuocha et al., 2015). However, such evidence is scarce in the North-Central region of Nigeria, as well as in Makurdi which is located in this zone, although there are variations in culture and ethnicity across the country which could influence perceptions and attitudes about biomedical treatments.

Fear of developing side effects

Evidence suggests that the occurrence of an adverse drug reaction or side effects also contributes to the inappropriate use of antimalarial drugs (Nsimba, 2006; Tola et al., 2017). Several key health-seeking research conducted in Nigeria affirmed that because in Nigeria, drugs are purchased over the counter without presenting prescriptions from qualified health personnel contributes to encouraging the indiscriminate use of antimalarial drugs, and describing this practice as a major contributor to the proliferating antimalarial drug resistance recorded (Lawal, Balogun and Bada, 2014; Odikamnoro et al., 2016; Latunji and Akinyemi, 2018).

As a consequence, previous studies carried out in other parts of the world also confirmed that the fear of experiencing adverse/side effects resulting from the intake of biomedical medicines is one of the perceptions that contribute to encouraging the use of herbal remedies to treat malaria (Nsimba, 2006; Getahun, Deribe and Deribew, 2010; Matangila et al., 2017; Pell et al., 2017; Galatas et al., 2021). For instance, the result from the cross-sectional study conducted by Getahun, Deribe and Deribew (2010) in Ethiopia reported that the second key factor in their study that influences delay in health-seeking for malaria treatment is fear of the side effects of consuming orthodox antimalarial medications. The result of this study highlighted that mothers who complained about the side effect of drugs prescribed by health personnel before the illness of the current child were more likely to delay seeking malaria treatment for children because they perceived that the side effects of the antimalarial drugs could mean a sign of serious harm caused to their bodies, hence, mothers belonging to such category perceived that the antimalarial drugs are harmful. Cosnsequently, Getahun, Deribe and Deribew (2010), associated the perceived fear to be due to a lack of right counselling and poor education. Similar findings were reported by Nsimba (2006) in a qualitative study which conducted 12 focus group discussions in the Coastal Region of Tanzania. Findings from the study revealed perceived fear among respondents about developing drug resistance as well as fear of adverse reactions. More so, a finding of the study affirmed that participants expressed a lack of confidence in using antimalarial drugs. In Western Cambodia, a similar finding was reported in a qualitative study carried out by Pell et al. (2017); whereby participants perceived that the antimalarial drug is a threat to their wellbeing and health, and thus, expressed fear of side effects resulting from the drug use. Hence, the study reported that fear of experiencing side effects and developing drug resistance contributed to a decrease in seeking effective treatment for malaria. A similar finding was reported in the systematic review conducted by Maslove et al., (2009) in which they identified fear of side effects or adverse reactions as a factor that influences individuals' health-seeking decisions and behaviours. According to findings from the review, out of the 39 articles reviewed, 37 identified concern about conventional therapy, and 10 of the articles analysed reported the belief that a child with convulsions could die if given an injection, and three of these articles also identified the belief that a child who is sick could die if taken to hospital. Yet another article reported the belief that a child should not be given antimalarials when sick. Maslove and colleagues highlighted that almost all of the qualitative studies that reported these themes were carried out the Sub-Sahara Africa.

Perception about the susceptibility and severity of malaria

Perceived susceptibility is a significant factor that encourages and influences health-seeking behaviours of people (Hayden, 2013). According to Hayden (2013), this factor refers to an individual's self-belief about his/her vulnerability or risk of contracting a disease; consequently, the greater the level of a person's perceived susceptibility to an illness, the greater the chances that the individual would practice effective health behaviour to decrease the susceptibility. In other words, improved health-seeking decisions toward disease are significantly influenced by an individual's perceived susceptibility to that

disease. Perceived severity on the other hand refers to an individual's beliefs about the effects or impact an illness might have on a person if no action is taken (Hayden, 2013). This factor is as well shaped by an individual's past experiences with the disease, it also embraces the social and economic consequences of acquiring the disease (Rosenstock, Strecher and Becker, 1988).

The relationship between a person's perceptions about malaria, perceived vulnerability/susceptibility and perceived severity and its impact on delayed treatment-seeking have been recognized by previous malaria studies that examined health-seeking behaviours to effective treatment services for malaria among their participants (Falade et al., 2005; Beiersmann et al., 2007; Idowu et al., 2008; Getahun, Deribe and Deribew, 2010; Okeke and Okeibunor, 2010; Dembo, 2012; Gobir, Sambo and Hadejia, 2014; Lawal, Balogun and Bada, 2014; Mitiku and Assefa, 2017). Since malaria is endemic and at least over 50% of people in Nigeria experience at least one incident of malaria each year, it has been regarded by most people, particularly the uneducated perceive malaria as a normalised disease (Adigun et al., 2015), and this as a result, impacts on their health-seeking decisions and behaviours. Some misconceptions about malaria included: that it is caused by excessive exposure to hot sun, drinking dirty water and uncovered food, witches and to some, it is stress-related (Singh et al., 2014). Malaria is perceived as less severe compared to other forms of fevers such as typhoid fever. All these negative perceptions about malaria contribute delay to seek effective treatment. In other words, people who perceive that they are susceptible are more likely to seek care for malaria treatment (Dembo, 2012). For instance, one of the key findings of the cross-sectional conducted by Getahun, Deribe and Deribew (2010) in southwest Ethiopia which assessed determinants of delay to malaria treatment in under-five children in south-west Ethiopia was that mothers who have experienced and/or have a history of the deaths of under-five year child tend to seek effective treatment in time. This implies that the perceived risk and severity of the illness affect treatment-seeking behaviours. A similar result was reported by another cross-sectional study carried out among 491 caregivers of children under five in West Ethiopia by Mitiku and Assefa (2017). The result of their study highlights perceived susceptibility to malaria as a determinant of treatment-seeking, in that, caregivers who perceived that their child could be susceptible to malaria disease were more likely to seek treatment as compared to caregivers who had a low perception of susceptibility. Other factors identified that contribute to determining healthcare access are perceived barriers, severity, self-efficacy and benefits. Mitiku and Assefa (2017) reported that overall, 56.2% of caregivers had a low perception of susceptibility to malaria, 51.1% had low perception of the severity of the disease, 63.7% of caregivers had a low perceived barrier to seeking treatment for under-five children, 51.3% had a low perception of the benefits of seeking treatment and 58.7% had low self-efficacy. The finding of Mitiku and Assefa is consistent with a previous study that reported that knowledge of malaria influences health-seeking behaviours independent of other factors (Lawal, Balagun and Bada, 2014; Latunji and Akinyemi, 2018). Therefore, their finding could be attributed to the fact that seeking treatment on time is dependent on prompt identification and

recognition of the signs and symptoms of malaria in the household, especially by women. Hence, their study concluded that caregivers' knowledge about malaria treatment was key to improving health-seeking behaviours. A similar result was reported in a cross-sectional study conducted by Dida, Darega and Abebe (2015) in southeastern Ethiopia which assessed treatment-seeking behaviour and associated factors among malaria suspected patients. To identify factors that influence malaria treatment-seeking behaviour among suspected patients in malaria-endemic public health institutions, the resarchers used bivariate logistic regression and applied multivariate logistic regression to identify the predictors of treatment-seeking behaviour. The result of their study reported also that perceived susceptibility to malaria, perceived severity of malaria, knowledge of using mosquito nets can prevent mosquito bites and having health information to visit a health facility if fever occurs were significantly associated with the treatment-seeking behaviour of the respondents.

Perceived benefits and barriers to seeking malaria treatment

Perceived benefit refers to an individual's self-judgment of the rewards of using and continuing with the health actions to reduce the impact, consequences or severity of the disease (Hayden, 2013). This is essentially a key factor that explains a person's behavioural intention – to get well (Mitiku and Assefa, 2017), it is however challenged by perceived barriers. The perceptions of the benefit of seeking treatment influence a person's attitude towards his/her decision to seek help (Dembo, 2012), this is further determined by the individual's level of knowledge about malaria treatment (Mitiku and Assefa, 2017). The findings of the cross-sectional study conducted by Mitiku and Assefa (2017) showed that 37.8% of people who do not have adequate knowledge about malaria treatment, preferred alternative and complementary medicine for the treatment of malaria and other health conditions. While 23.2% who are aware of the benefit of seeking effective treatment considered clinical medication more beneficial and effective. Similar findings were presented by Diala et al. (2013) in a study carried out in Nigeria among pregnant women. The cross-sectional study by Mitiku and Assefa (2017) also identified a significant correlation between perceived barriers to effective malaria treatment and health-seeking behaviour. They reported that caregivers who had high perceived barriers were less likely to have higher odds of treatment-seeking for under-five children. However, a cross-sectional study conducted in Ethiopia by (Dida, Darega and Abebe, 2015) reported that perceived barrier is not associated with health-seeking behaviour. However, the discrepancy may be because of the socio-cultural variations/differences of the respondents (Mitiku and Assefa, 2017).

Socio-cultural and community perceptions about treatment

Socio-cultural factors refer to people having a common ancestral background that shares a language, social customs, and religion and are often linked to a geographical territory (Padela et al., 2015; Yarney, 2019). These factors are significant determinants that contribute to influencing people's perceptions towards engaging or not in prompt and effective healthcare-seeking behaviours for malaria treatment

(Sonkong et al., 2015; Jaiteh et al., 2016). A great deal of research conducted in developed and developing countries has recently demonstrated socio-cultural influence on delays to treatment-seeking behaviours for various health conditions (Khan et al., 2016; Azhar and Doss, 2018; Rochelle, 2019; Yarney, 2019).

Malaria research in endemic countries highlights that structural social factors such as the perceived risk of medication and cultural beliefs negatively impact an individual's perceptions about the disease treatment and health-seeking attitudes to effective health care service (Jaiteh et al., 2016). Overall, the evidence base has specifically highlighted that there is cultural support for the use of non-orthodox (traditional therapies) by some ethnic groups; which influences the decision of treatment choices and contributes to health-seeking delays to effective treatment services for malaria infection (Mitiku and Assefa, 2017; Tiruneh, Gebregergs and Birhanu, 2018). To demonstrate this, Nwakwasi et al. (2017) conducted a study among 360 randomly selected participants, in three Southeastern states of Nigeria which assessed rural households' attitudes towards traditional methods of malaria treatment and cultural beliefs that affect the choice of malaria treatment. The findings of the study show respondents' positive attitudes towards the use of traditional medicine for malaria treatment, and this was due to the influence of cultural beliefs. Nwakwasi et al. (2017) reported that the majority (95.3%) of the respondents lack trust in the western style of medicine, instead preferring the non-conventional mode of treatment which involves the use of herbs by consulting herbalists and witchdoctors.

The social and cultural influence on delays in treatment-seeking has been explained in relation to ethnic and religious groups across different countries of the world (Azhar and Doss, 2018; Eley et al., 2019). For example, recently, a qualitative study by Maiwada et al. (2018) in a North-eastern state of Nigeria through in-depth interviews and focus groups discussion with a purposive sample of some Muslim religious leaders. This study reported that based on a set of core beliefs, as outlined in the Prophetic traditions (Sunnah) and the Qur'an, some women opt for female medical doctors or healthcare assistants during a hospital visit, not minding the urgency and severity of their condition and lack of competent female personnel. Furthermore, Maiwada et al. (2018) confirmed that ethnic and religious influences contribute to the reported increase in self-medication, inappropriate treatment-seeking behaviours, and overall delays to seek effective treatment from a health facility, this has heightened specifically avoidable febrile-related deaths within this region of the country. The outcome of the study of Maiwada et al. (2018) agrees with the findings of a qualitative study carried out by Abubakar et al. (2013) in the Coastal Region of Kenya which examined health-seeking behaviour, and the factors influencing this behaviour. Socio-cultural factors were identified as one of the key factors influencing health-seeking behaviours for malaria treatment. They reported that if a community does perceive that a particular sickness is related to biomedical treatment, they would not even attempt to seek such help. Citing an example, they explained that in a particular culture in Nigeria called Yoruba, *Abiku* refers to a strong belief that some children are from the spirit world, and so they will die on their own. Consequently, this

belief in a ‘spirit child’ is likely to influence the treatment of children with different chronic illnesses and health conditions (Abubakar et al., 2013). The findings of Abubakar et al. (2013) reported that in the Kenyan community, based on their perception of treatment, diseases are categorised into two types - the diseases that require hospital treatment, and two diseases that require traditional treatment. Hence, based on this classification within the community, the diseases that are not taken to hospital are largely those that are perceived to have supernatural causes such as witchcraft, spirit possession, psychiatric problems and breaching of taboos. Consequently, their findings indicate that the efforts to improve health care access in Africa cannot ignore traditional health systems. This was the reason Adegoke (2008) argued in his study of factors influencing health beliefs that human societies have patterned sets of beliefs and practices concerning their lifestyle including health-seeking. These patterns of thought are, to a great degree, culturally determined and to some extent culture-bond.

Head of family’s decision of treatment choice

A range of studies conducted on health-seeking behaviours for malaria treatment has identified an important factor influencing delay in seeking healthcare services on time, and this is related to decisions made by the heads of the family (in most cases the father) in determining where treatment would be taken, as they are considered the ultimate decision-makers in the home (Falade et al., 2005; Abubakar et al., 2013). In addition, the father's role at home is very much defined by his status as the breadwinner in the family. Largely, the father’s decision of choice of treatment depends on his perceptions about a particular treatment option, and also other factors including cultural beliefs and practices, family upbringing and perceptions about malaria aetiology, severity and its treatment (Abubakar et al., 2013). Research has shown that if parents perceive a particular disease not to be related to biomedical causes, they are less willing to seek biomedical care, or overall, delay the speed at which they take up biomedical care (Abubakar et al., 2013). These affirmations point to the central role of the influence socio-cultural factors could have on heads of home in determining treatment-seeking and where it could be taken, hence, health-seeking behaviour. However, in some cases, it is only when the sick member of the family has been receiving herbal treatment for some time with no hope of improvement; then a father decides on when, where and to whom to go and seek medical care, and he also provides money for treatment. Hence, the study of Abubakar et al., (2013) emphasize the need for fathers to be actively involved in health programmes and interventions so that they can make informed decisions regarding treatment-seeking on behalf of their families. A similar finding was reported in an older mixed method study conducted by Falade et al. (2005) in the southwest region of Nigeria. Falade et al. (2005) examined determinants of treatment-seeking for childhood malaria and the influence of cultural beliefs of cause, complication and severity on health-seeking. Father’s role as decision-makers, among other factors such as wrong perceptions of the severity of malaria and cultural perceptions of malaria as a common disease was identified as one of the factors that contribute to delay in effective treatment-seeking behaviour for malaria.

2.5 Chapter summary

This chapter presents an important context for the study. It presented a discussion on Nigeria's healthcare system. Next, specifically discussion on the care pathways for malaria treatment was presented (objective one), which provided important context and details for the study design. The presented discussion on the care pathways for malaria treatment is based on the literature reviews conducted, and it detailed how the various care (formal and informal sector provisions) are rendered by different providers of care, and it outlined the various routes/pathways an individual takes for malaria treatment in Nigeria.

Studies that examined determinants influencing delay to effective health-seeking for malaria treatment have highlighted numerous factors. The studies conducted in Nigeria on health-seeking generally discussed determinants of delays to health-seeking and did not particularly address perceptions and attitudes. Additionally, the available evidence in Nigeria was conducted across different geo-political zones, with essentially limited evidence conducted in the North-Central region of the country, and specifically, in Makurdi, there is a dearth of evidence available. It is therefore difficult to apply the findings from the related studies beyond the original setting of the research due to the cultural variations and practices that exist amongst the different political zones in Nigeria. Moreover, predominantly, the available evidence in Nigeria adopted a quantitative method design which could be limited in its ability to provide in-depth information on the topic. Lastly, previous studies carried out in Nigeria show very scarce evidence that has triangulated perspectives of healthcare professionals, traditional healers, policymakers and the general public (lay participants). It is noteworthy that the results reported by previous studies conducted in Nigeria may have been influenced by the sample focus in the study. For instance, it is evident that studies concentrated on mothers of under-five children (Bello and Rehal, 2014); pregnant undergraduate residents in school hostels (Chinweuba et al., 2017); caregivers of sick children (Eseigbe et al., 2012 and Gondi et al., 2019); children of under-five years (Chukwuoch et al., 2014), and among civil servants (Latunji and Akinyemi, 2018) thus, the need for the exploration of this concept in a broader scope by adopting a qualitative approach to explore in-depth from a triangulated perspectives, specifically on perceptions and attitudes to delay in health-seeking for malaria treatment. Therefore, this study extends the literature beyond the descriptive factors highlighted by previous studies in Nigeria, and beyond the essentially limited evidence in the North-Central region of Nigeria, specifically in the Makurdi setting.

The subsequent chapter, therefore, discussed the conceptual framework considered suitable for this study.

Chapter three: Conceptual framework

3.1 Introduction

This chapter presents the conceptual framework for this study. It begins by discussing some of the notable health-seeking behavioural theories and models which have become important tools in the field of health-seeking research. In concluding this chapter, definitions of key terms used in health behaviour research, and how it is applied and used in the context of this study are presented.

The following widely adopted health-seeking behaviour models and theories in public health (Mackian, 2003) were evaluated to determine the suitable model to understand delay in health-seeking for malaria treatment in Makurdi, in relation to perceptions and attitudes, such as the Theory of Planned Behaviour (TPB) and Theory of Reasoned Action (TRA), Socio-Ecological Model (SEM), Social Cognitive Theory (SCT), Anderson's Model of Health Service Utilization (recognised in the field of medical sociology), and the Health Belief Model (HBM) (in the field of social psychology).

3.2 Health-seeking behaviour models

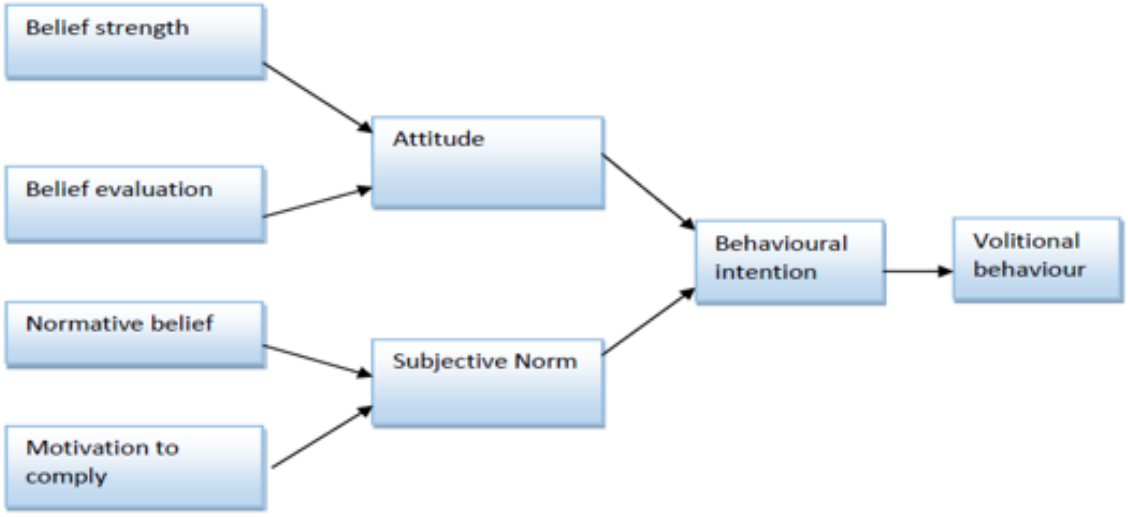
It is widely acknowledged that research on health-seeking behaviour is fundamentally significant for its contribution to promoting the understanding of why and how health services may be utilised when the health need is realized. Some existing studies by Mechanic (1995); Wright and Perry (2010) and Green et al. (2014) have argued that 'Health seeking' is a habituated behaviour, and therefore in other to encourage people to seek healthcare services promptly it is important to also have an in-depth understanding of people's motivation for such behaviour. This is because Khoso, Yew and Mutalib (2016) suggested that through an in-depth understanding of factors that influences behavioural practices, health interventions and promotional programmes can be successfully introduced into people's realities to bring about changes in health behaviour.

Notably, most of these health-seeking behavioural models and theories share some similarities in their components (Wagner et al., 2010; Montano and Kasprzyk, 2015). However, theories and models do not dictate what specific variables and methods to be used; therefore, quite often, they are modified and adjusted by various researchers to fit the specific nature of their research. Likewise, some researchers could also combine different models, with the main aim of increasing the number of key variables, instead of aiming at achieving theoretical advancements. Consequently, the key objective for adopting a model is to ascertain problematic areas in one's research to create a solution to the problem (Glanz, Rimer and Viswanath, 2008; Hausmann-Muela, Ribera and Nyamongo, 2003). For this reason, the sections that follow present a detailed analysis of each of the health-seeking behaviour models and theories while seeking the most appropriate model for this study.

3.2.1 Theory of Reasoned Action (TRA)

Developed by Ajzen and Fishbein in 1967, and a few years later in 1988, the Theory of Planned Behaviour (TPB) was added to TRA to address the shortfalls identified by (Ajzen and Fishbein, 1988). The Theory of Reasoned Action is a strong persuasion theory widely used in identifying components that predict behaviour. Moreover, the TRA explains behavioural influences involving conscious decision-making. This suggests a *causal model* of the reasoning processes that leads to a person's behavioural choice, hence, used to guide the content of persuasive interventions or messages (Greene, 2009).

In the development of the TRA, Ajzen and Fishbein (1988) postulated that a person is relatively rational and uses available information in an organized manner. This, therefore, implied that individuals usually consider the consequences of their actions before deciding to either engage or not in a behaviour. In the TRA, seven causal variables predict one's behaviours, and these are behavioural intentions, subjective norms, evaluation, belief strength, motivation to comply, attitudes and normative belief (Greene, 2009) (see Figure 7 below). The TRA further hypothesises that to predict the volitional behaviour of an individual, the best predictor is the person's behavioural intention to carry out that behaviour (Fisbein and Ajzen, 1975); thus, the combined result of an individual's influence (attitude) and normative influence (subjective norm) determines the person's behavioural intention (Hale, Householder and Greene, 2002). However, Fishbein and Ajzen (1975) argued that it is consistently unrealizable to measure the intention of an individual before performing the behaviour, and this is because the measure of intention obtained may likely not be the actual picture of the individual's intention at the time when the behavioural observation was performed.



Sourced from: Hale, Householder and Greene (2002)

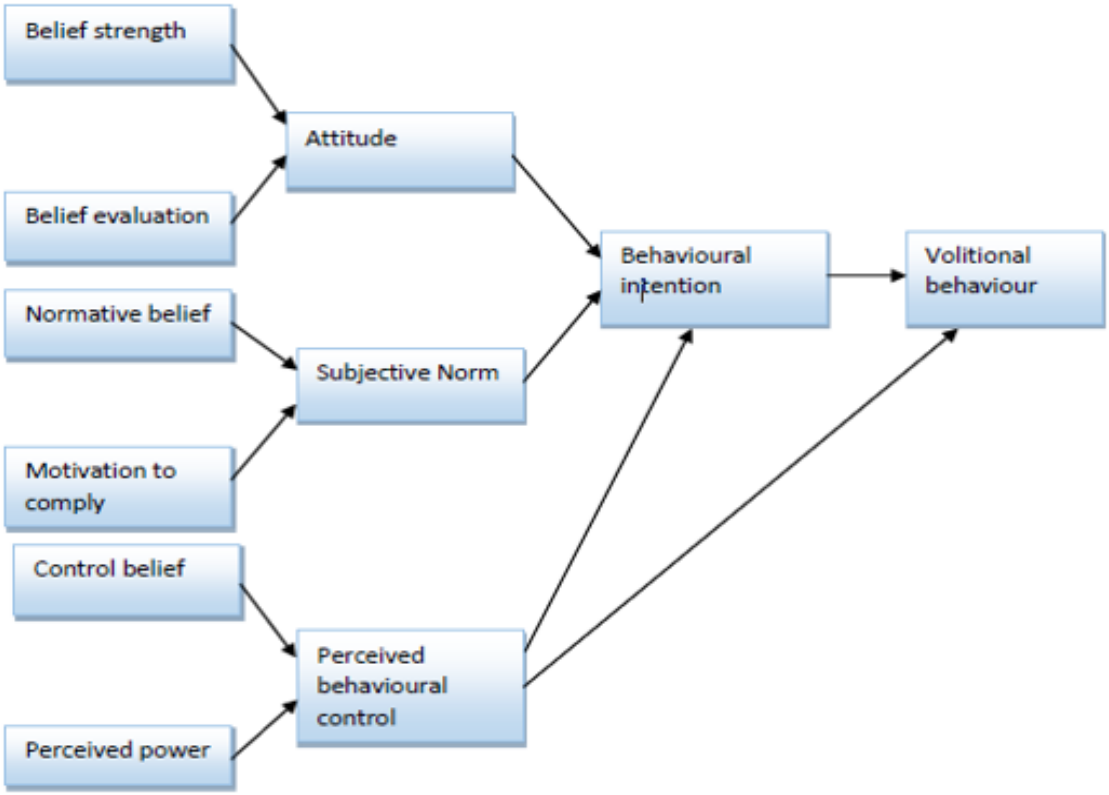
Figure 7: Theory of Reasoned Action (TRA)

One of the important shortfalls associated with the TRA was with individuals who have less (or feel that they have little) control over their attitudes/behaviours. This limitation, therefore, explained the reason Ajzen added to the original theory, the third element which is 'perceived behavioural control' (Ajzen and Fishbein, 1991). The development of the TRA was to explain volitional behaviours, hence it has been criticised for its narrow scope of application, as it excludes a wider range of behaviours, such as behaviours that are mindless, impulsive and spontaneous. In addition, Hale, Householder and Greene (2002) highlighted that TRA also does not include its range of behaviours involving unique opportunities and special skills.

3.2.2 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB) was first proposed by Ajzen (1991); it is an extension of the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975; Ajzen, 1991; Montano and Kasprzyk, 2015). The TRA was extended through the inclusion of an additional construct - 'perceived behaviour control' (PBC) over performance (Ajzen, 1991; Montano and Kasprzyk, 2015). This theory assumes that behavioural intention is the most important determinant of health-related behaviour that predicts the likelihood of an individual participating in the given behaviour (Ajzen, 1991; US Department of Health and Human Service, 2005).

The TPB conceptually suggests three key constructs which influence the behavioural intention of a person, which then affects the manifestation of the final behaviour (Munro et al., 2007; Ingabire et al., 2016). These constructs include attitude towards the behaviour (i.e., an individual's assessment of the negative or positive consequences of performing a behaviour); subjective norms (i.e., an individual's perception about a particular behaviour which is influenced significantly by the judgement of others, e.g., parents spouse, friends) and the perceived behavioural control (PBC) (i.e., it involves perceived difficulty or ease in carrying out a particular behaviour by an individual) (Ajzen, 1991; 2011; Ingabire et al., 2016). Explaining further, the TPB defines attitude toward the behaviour as a patient's response to disease; the subjective norm is defined as the perceived impact of the disease on an individual's social life and the perceived behaviour control (PBC) is defined as an individual's perceived self-efficacy in dealing with a disease by themselves (Ingabire et al., 2016). Figure 8 illustrates the various influences on behaviour and their connections. This theory supports that the more an individual has an intention to perform a behaviour, the more likely it is that he/she will perform it (Ajzen et al., 2011; Morris et al., 2012).



Sourced from: Hale, Householder and Greene (2002)

Figure 8: Theory of Planned Behaviour (TPB)

In broad terms, this theory is well supported by empirical evidence (Ajzen, 1991), it is an important theory that takes into account an individual's motivational feature in controlling disease and the influence of peer pressure and social networks in disease control (Randall and Gibson, 1991; Madden, Ellen and Ajzen, 1992). Although the TPB is widely adopted in public health research to address the prevention and management of various health conditions, however, this model is not consistent with my research question which addresses how perceptions and attitudes contribute to delays in health-seeking behaviours for malaria. This framework, however, could be relevant to the topic under investigation if it has provided an explicit explanation of how people's perceptions of malaria disease, its severity and susceptibility, which are very important factors that may contribute to influencing delayed action/behaviour towards their health. To this end, Ingabire et al. (2016), highlights that there are very few malaria studies which have reported the use of TPB specifically in relation to healthcare seeking. However, Ingabire and colleagues echoed that only one study so far, conducted by Jadgal et al. (2012) has successfully used the TPB in exploring the effect of health education on the use of malaria preventive measures.

This theory has some further limitations which prompted me not to adopt it for my study (Randall and Gibson, 1991; Fishbein, 2000; Madden, Ellen and Ajzen, 1992; Fishbein and Cappella, 2006). Firstly, the TPB did not take into account the economic and environmental factors that may influence an individual's intentions to achieve a particular behaviour (Randall and Gibson, 1991; Fishbein, 2000). Secondly, this theory does not acknowledge an individual's intention insofar as the individual has acquired the resources and opportunities that may support the person to succeed in carrying out the desired behaviour (Fishbein, 2000; Madden, Ellen and Ajzen, 1992; Fishbein and Cappella, 2006). Thirdly, the TPB neglects important factors such as mood, threat, fear and a person's past experiences (Ajzen et al., 2011). Finally, the time frame between 'behavioural action' and 'intent' is overlooked (Munro et al., 2007; Werner, 2004). Due to these reasons, it became necessary for me to search further into more theories and models that may be ideal and can fit into my study, in addressing my research questions. I next looked into the Socio-Ecological Model (SEM).

3.2.3 The Socio-Ecological Model (SEM)

The socio-ecological model (SEM) was introduced by Urie Bronfenbrenner in the 1970s as a conceptual framework to understand human development, and later it was improved and modified as a theory in the 1980s (Raingruber, 2013; Kilanowski, 2017). The initial demonstration of the theory was in the form of nesting circles, which then place an individual in the middle, surrounded by a range of systems (Bronfenbrenner, 1992; Kilanowski, 2017). See the illustration in figure 9 (overleaf).

(Adapted from Diala et al., 2013).

Figure 9: The socio-ecological model

The socio-ecological model also known as the ecological system theory (Kilanowski, 2017), explains the relationship between human behaviours and their environment (Raingruber, 2014). This socio-ecological model states that an individual's health is influenced by some interactions between the person (individual), political and social environments as well as the local community (Sallis et al., 2008; Reisner et al., 2013).

According to Glanz, Rimer and Viswanath (2008), for over two decades the socio-ecological model has been improved and modified by prominent researchers into different models (Glanz, Rimer and Viswanath, 2008). However, regardless of its modification, the Bronfenbrenner ecological systems theory remains the most commonly used framework by researchers to explain various health issues (Brown, 2011; Hickey et al., 2012).

This ecological framework is widely adopted in the field of public health for health promotion endeavours, as well as its application can be referenced to varieties of health issues (Kilanowski, 2017). For example, the Center for Disease Control and Prevention have adapted the SEM for various health promotion activities, by recognizing the: interpersonal, community, organizational, policy and community spheres of the framework (Kilanowski, 2017).

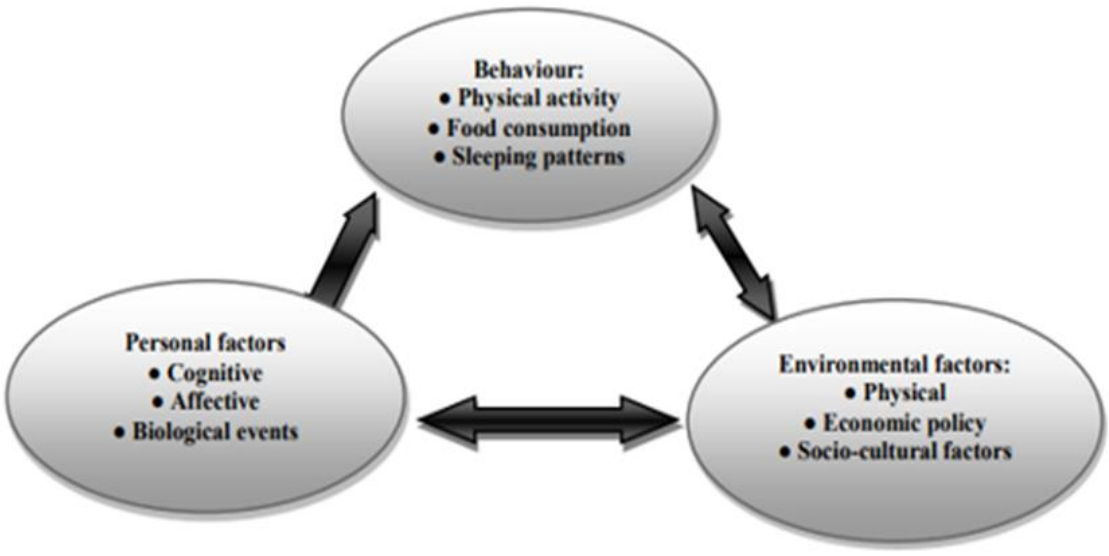
However, the focus of this present study is to look into the various malaria researches that have utilized SEM to address perceptions and attitudes in relation to health-seeking delays in malaria treatment. To this end, some malaria studies cited have used this framework. For example, a study by Awuah et al. (2018) used the SEM to address issues of factors associated with delayed treatment-seeking for malaria in urban poor communities in Ghana. Also, a study by Diala et al. (2013) used this framework to identify pregnant women and healthcare providers' perceptions of intermittent preventive treatment in pregnancy (IPTp) for malaria, and barriers to adherence to treatment.

However, although the SEM has been used by previous health-seeking behaviour studies in malaria, a limitation of this model as it relates to my study is the fact that it does not practically discuss details of an individual's life experiences, which the Health Belief Model can do, the Bronfenbrenner's models appear only more valuable as a rudimentary theoretical position (Raingruber, 2014; Stivaros, 2007). Regarding this drawback, it is important to bear in mind the aim of this present study which is to explore individuals' experiences about their perceptions and attitudes that contribute to delays in health-seeking for malaria treatment.

Furthermore, the second limitation of the SEM is that it does not account for an individual's abilities, and also it neglects the rights and feelings of individuals, as well as psychological complexity (Davis, 2011; Stanger, 2011). Thirdly, the developmental stages of biological and cognitive factors are overlooked in this framework (McLaren & Hawe, 2005; Raingruber, 2013). Hence, following these drawbacks, I next assessed another framework, which is the Social Cognitive Theory (SCT).

3.2.4 Social Cognitive Theory (SCT)

Initially, the Social Cognitive Theory (SCT) started as the Social Learning Theory (SLT) and was formulated in the 1960s by Albert Bandura (Bandura, 1986). Later in 1986, it became modified into the SCT and was seen as the cognitive origination of SLT (Bandura, 1986, 1997; Huitt, 2006). Albert Bandura demonstrated that an individual learns from their own experiences, as well as by observing role models (Bandura, 1986, 1997; Huitt, 2006). The SCT demonstrated human behaviour in a dynamic, triple-pathway as illustrated in the triadic reciprocal determinism model whereby, behavioural, environmental, and personal factors interrelate continually to influence each other in a dynamic process (Bandura, 2002, 2011; Crothers et al., 2008; Burke et al., 2013) see details in Figure 10 (overleaf). The SCT uses the following basic constructs in its study of human behaviour. These elements are behavioural capability/self-efficacy, observational learning, reciprocal determinism (this involves the relationship between a person, the environment and his/her behaviour), behavioural reinforcement and outcome expectations (Glanz, Rimer and Viswanath, 2008). These elements associate with each other, and each influences goal attainment and motivation (Bandura, 2002, 2011; Glanz et al., 2008; Burke et al., 2013).



(Sourced from: Wood and Bandura, 1989)

Figure 10: Triadic Reciprocal Determinism Model

With a focus on malaria studies, some researchers have adopted the SCT as a theoretical model in their studies. Examples include, a PhD research by Udenweze (2019) that adopted a cross-sectional design. Udenweze (2019) adopted the SCT to explore how socioeconomic factors and health-seeking behaviour contribute to the incidence of malaria during pregnancy in Nigeria. Another example is a study conducted by Omona (2009) who also utilized this theoretical model in his quantitative design study to

assess the appropriateness of social marketing as a technique in the fight against malaria in sub-Saharan Africa. The third example is a PhD study by Arori (2011) which also employed the SCT to assess the influence of attitudes, knowledge level, socioeconomic factors and practices among 360 study participants in Kenya.

However, despite the wide range of applications of this model, scholars have criticized it that it is a loosely organised theory; in the sense that it does not adequately specify how the three basic constructs – the individual, the environment and their behaviour – interact (Carillo, 2010). In other words, it does not specifically state the extent to which an individual and his environment may impact the behaviour, or has not specifically stated whether one of the elements is more powerful or influential than another (Carillo, 2010). Additionally, this model has not carefully considered the issues of personal barriers to learning, thus it is termed a depersonalised theory. In other words, for example, it neglected the influence of individuals' learning differences and brain development and also overlooks the relationship between self-efficacy and learning by observation (Harris et al., 2012). Another drawback of SCT is the fact that it explains that environmental changes influences or have an impact on a person's behaviour, which is not always the situation (Carillo, 2010; Munro et al., 2007). Hence, taking into consideration the limitations of SCT, it might therefore be concluded that it is unsuitable to answer my research questions. Having eliminated this theory from consideration, I went further to assess Anderson's Model of Health Service Utilization.

3.2.5 Anderson's Model of Health Service Utilization

Developed initially by Ronald Andersen in the 1960s, to assist in understanding why families or individuals may want to use healthcare services (Anderson, 1995). Subsequently, the works of Anderson shifted attention to ascertain the conditions that impede or facilitate access to health care services used by people (Andersen, 1995; Azfredrick, 2016). This theoretical model assesses the social behaviour of consumers of health services and also the health personnel (Andersen and Gibson, 1978). Anderson's model assumes that an individual's use of service is a function of the following three factors: his/her predisposition to use services, a factor which enables or impedes use and the need for care (Anderson, 1995, 2008). Anderson demonstrated that apart from predisposing characteristics, a range of factors including enabling and needs factors contribute to influencing an individual's health service utilization (Andersen, 1995). This theoretical framework categorizes factors that influence a person's health behaviour into three - predisposing, enabling and need factors (Weller, Ruebush and Klein, 1997) see figure 11 (overleaf) for the initial behavioural model – the model of the 1960s. Although the initial 1960s Anderson Model have been revised, improved and modified by various research experts, its initial three basic constructs remain valuable and applicable in many modern health-seeking behaviour types of research that examine a range of health issues (Anderson, 1995).

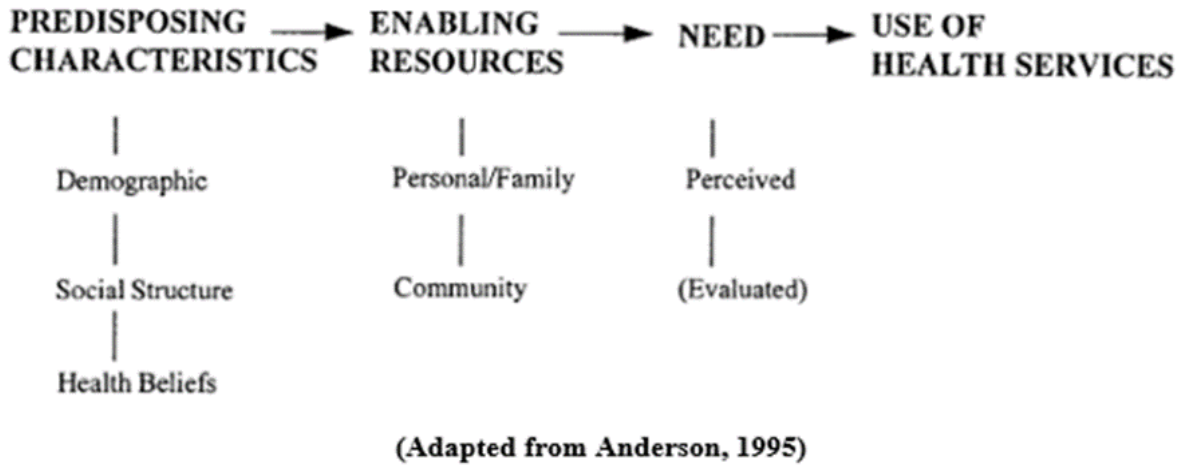


Figure 11: The Initial Behavioural Model (1960s**)**

Among the predisposing characteristics, the demographic factors including gender and age represent very important biological factors that predict the likelihood that a person will need health services (Anderson, 2008). The social structures represent factors that determine people's social and economic status in a community, depicting a person's ability to deal with arising challenges and the available resources to settle the problem (Anderson, 1995). Health beliefs are attitudes, knowledge and values that people are equipped with about health and the available services, which may likely influence their perceptions and their need to subsequently utilise health services (Anderson and Newman, 2005). The enabling factors are those that facilitate/enables an individual to access health services, for instance, availability of resources such as income and access to a free health care facility (Azfredrick, 2016). The needs factors, on the other hand, are those that encourage health care service use, such as the conditions of the disease and people's perceptions about the disease (Anderson, 1995). This theoretical framework is extensively adapted in public health fields for health promotional activities and has been applied in malaria studies involving health-seeking. For example, a PhD research by Mafuleka (2017) adopted Anderson's model in his cross-sectional study to identify the determinants influencing the utilization of intermittent preventive treatment (IPT) for malaria during pregnancy among mothers of under one year children in rural Malawi. Moreover, another study by Agbekpornu (2016) utilized this model to investigate the treatment-seeking practices of malaria among urban residents of Awoshie in Ghana. Anderson's model has also been applied to understand the utilisation of dental services, mental health services and utilisation of other informal health services such as traditional healers and drug vendors has been explored using Anderson's model (Evashwick et al., 1982; Fleury et al., 2014; Fosu, 1989; LaVeist et al., 1995).

Despite the wide range of applications of this model across various health-seeking behaviour studies, it is not consistent with my research question which addresses how perceptions and attitudes contribute

to delays in health-seeking for malaria treatment. The following limitations of the model explain further why it is not suitable for my study.

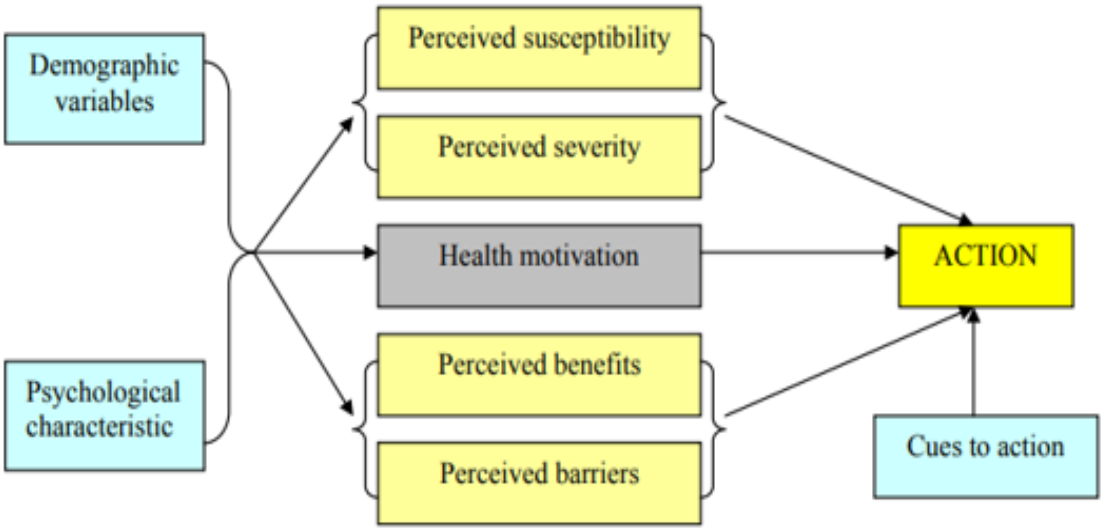
The limitations identified by research experts include: firstly, Anderson's model does not explicitly emphasise the role that an individual's perceptions about health service plays in accessing and utilizing HCS (Cummings, Becker and Maile, 1980). Rather its focus is on the role of health care and social network systems in influencing health care patterns and use (Aday and Anderson, 1974; Andersen and Newman, 2005). In this regard, Anderson heartily agreed to this as a drawback in his model (Anderson, 1995). Secondly, (Patrick et al., 1988; Kelley et al., 1992; Gilbert, Branch and Long-mate, 1993 and Weller, Ruebush and Klein, 1997), argued that the application of Anderson's model in developing countries does not fit as it is parallel to the developed countries and focus on the utilization of formal health services. This limitation also has been agreed upon by Anderson, he went further to suggest that knowing more about the various service organizations or pathways and their various care providers in the community would benefit understanding rather than dwelling on the hospital and physician knowledge (Anderson, 1995). Dwelling further on this, critics of Anderson's model highlights that a unique shortcoming of the model is its inability to rarely incorporate information on alternative sources of treatment or self-treatment compared to the HBM which incorporates people's perceived efficacy to the various treatment services (Mechanic, 1979; Subedi, 1989). Therefore, omitting alternative sources of care and treatment limits the understanding of the broader context of health care choices and the generalizability of findings (Weller, Ruebush and Klein, 1997). Furthermore, according to Weller, Ruebush and Klein (1997), Anderson's model is usually applied to large representative samples or national data. Therefore, methodologically also the application of Anderson's model does fit into this study's sample size. Because of these limitations, I ruled out this model and evaluated whether the next theory - the Health Belief Model (HBM), could be used as a suitable theoretical model to address my research question.

3.2.6 The Health Belief Model (HBM)

The Health Belief Model (HBM) is a health-specific behavioural cognitive model (Taylor et al., 2006; Orji, Vassileva and Mandry, 2012), that was initially proposed in the 1950s by the US public health service (Hochbaum, 1958; Rosenstock, 1960, 1974; Janz and Becker, 1984; US Department of Health and Human Services, 2005). It is considered the first theoretical model of behaviour developed to address public health issues, such as providing explanations for the widespread failure of participation to healthcare services for disease diagnosis and treatment (Hochbaum, 1958; Rosenstock, 1960, 1974; Janz and Becker, 1984; Orji et al., 2012; Baghianimoghadam et al., 2013). The application of the HBM has over the years been extended to provide insight into patient's compliance with medical prescriptions and/or treatment (Amico et al., 2018; Chen et al., 2019; Goodarzi et al., 2019). In addition, it is the most widely-used theory in health behaviour research (HBR) and is popularly applied to nursing to provide

explanations and aid understanding between the health behaviours of a person and his/her beliefs (Hochbaum, 1958; Rosenstock, 1960; Marriner and Raile, 2005; Roberts and Marvin, 2010). The HBM hypothesizes that the health-seeking behaviour of a person is influenced by the perceived threat caused by the health problem and the perceived benefits related to taking actions targeted at reducing the threat (Becker and Maiman, 1975; Becker et al., 1977; Hahm, Speliotis and Bachman, 2008). The model provides a pathway for predicting the health-related behaviours of individuals, specifically regarding their health-seeking and uptake of effective healthcare services, (Champion and Skinner, 2008; Kirscht, 1972, 1974). In order words, this conceptual model helps to understand the low turn-out and participation of people in health services or programs including diagnosis, prevention and treatment (Kirscht, 1972).

The theoretical model predicts six key constructs to help in determining the health-seeking decisions of people – i.e., whether to take any action to prevent or control the disease (Orji et al., 2012; Hayden, 2013). The central posits of this model is based on the idea that a person is more likely to change his/her health behaviour and adhere to treatments (Rosenstock, Strecher and Becker, 1988), if: (i) he/she perceives to be at risk of contracting the disease (perceived susceptibility/vulnerability), (ii) he/she perceives that the disease is serious or severe, thereby having an unfavourable outcome (perceived severity/seriousness), (iii) he/she perceives that taking a definite health behaviour and action would reduce the effects of the problem (perceived benefits), (iv) he/she perceives that the barriers to adopting the behaviour is minimal and insignificant (perceived barriers), (v) he/she perceives to have the ability to practice and/or apply the specific proposed behaviour (perceived self-efficacy), and (vi) he/she have the cues for motivating the proposed action such as internal cues (symptoms, pain, past experiences) or external cues (advice from relatives, friends and mass media campaigns) (cues to action) (Becker and Maiman, 1975; Becker et al., 1977). The first four constructs of the HBM represent the original tenets, these are perceived severity/seriousness; perceived benefits; perceived vulnerability and perceived barriers such as financial, psychological, physical constraints or other costs associated with the proposed action see Figure 12 (overleaf) (Becker and Maiman, 1975; Becker et al., 1977; Hahm, Speliotis and Bachman, 2008; Glanz et al., 2008; Orji et al., 2012). Later on, the following constructs were included in the model: cues to action (factors that prompt taking the specific action); self-efficacy and modifying factors including the demographic, individual characteristics and psychosocial variables (Hayden, 2013).



Sourced from: Hausmann-Muela, Ribera and Nyamong (2003)

Figure 12: The Health Belief Model (HBM)

The uniqueness of the HBM to health makes its application appropriate for use in understanding and explaining people's behaviour vis-à-vis their health outcomes – this further explains its wider use in public health (Bellamy, 2004; Roden, 2004). This research considered the elements of the HBM to be appropriate in exploring perceptions and attitudes of adult Nigerians contributing to delays in health-seeking behaviours for malaria treatment within the Makurdi context.

This theoretical framework has been widely and successfully used by several malaria studies in exploring perceptions and attitudes relating to delay in health-seeking for malaria treatment (Dembo, 2012; Mitiku and Assefa, 2017). Examples include, a qualitative study conducted by Dembo (2012), this study adapted the HBM to explore the perception of community health workers in Lilongwe on barriers to effective malaria control service delivery and utilisation at the community level. The findings of Dembo (2012) highlighted some determinants that health workers identified as barriers to effective health-seeking and practice of malaria interventions in Lilongwe. Some of them included: health professionals' perspectives about the community's traditions and beliefs about the causes of malaria which disagrees with the known biomedical causes of malaria; perceptions about alternative and complementary treatment use for malaria prevention and treatment; and lack of understanding about the perceived vulnerability to malaria. Another example of a study that used the HBM was conducted by Mitiku and Assefa (2017), this study assessed the perceptions of malaria treatment-seeking behaviours among caregivers of under-five children in the Mandura District of Ethiopia. The key findings of their study revealed that caregivers' perception of malaria, perceived susceptibility to malaria, place of residence (rural/urban) and perceived barrier to seeking treatment are contributing factors influencing treatment-seeking for malaria. Similarly, HBM has been successfully applied to

identify determinants of nurses' willingness to receive vaccine (Chen et al.,2019), explore the role of exercise for type 2 diabetes patients, (Koch, 2002), and explain factors inhibiting or encouraging utilization of mental health services (Henshaw and Freedman-Doan, 2009), increase rate of voluntary cervical cancer screening (Hay et al., 2003), chronic disease management (Clark et al., 1988), explain the perceptions of HIV prevention (Winfield and Whaley, 2002; Bailey, 2008), smoking cessations (Li et al., 2003), Osteoporosis prevention (Sedlak et al., 2007), and adult physical activity practices (Juniper et al., 2004), to mention a few.

This conceptual framework is therefore relevant and appropriate to answer the research question of this present study and provide a deeper understanding of how perceptions and attitudes contribute to influencing delays in effective health-seeking behaviours for malaria treatment in Makurdi. The section that follows further justifies the selection of this theoretical model as the conceptual framework for my study that explores the perceptions and attitudes contributing to delayed treatment-seeking for malaria in Makurdi among adults.

3.3 Rationale for selecting the HBM as my conceptual framework

Having analysed and considered the limitations that are associated with the above-mentioned prominently used models and theories in malaria studies as well as in a range of health behaviour research, I therefore in this particular section present the reason for selecting the HBM over the other theoretical frameworks.

The HBM has been widely utilized as an important theoretical framework across various malaria researches in examining a range of issues such as health-seeking behaviour (Dembo, 2012 and Mitiku and Assefa, 2017) and compliance to malaria interventions (including preventive and treatment measures) (Beer et al., 2012; Watanabe et al., 2014). Malaria researchers have used this model to conceptualise people's health behaviours and treatment adherence.

Critical analysis of the abovementioned models reveals that while the majority of these theoretical frameworks have the utility of explaining factors related to delayed treatment-seeking for malaria, they tend to highlight factors at the community level while disregarding individual-level factors such as (perceptions and attitudes), which are a significant theme in this current study - that explores how perceptions and attitudes contribute to delays in health-seeking for malaria treatment. In contrast, the HBM is essentially interdisciplinary in its approach to health behaviours, by considering social and psychological behaviours (Becker and Maiman, 1975; Becker et al., 1977).

In HBM, evaluating public belief about disease treatment, benefits and barriers to the treatment services available provide a basis for the development of intervention programmes that will challenge previously held treatment beliefs that have contributed to delay in health-seeking behaviours (Ritchie, Van Hal and Van Den Broucke, 2018). Consequently, using the HBM to understand the treatment-seeking perception

of the public can help to systematically develop strategies to reduce the barriers producing the beliefs, thereby narrowing the gap between the people that would benefit from the treatment and those who receive the treatment (Ritchie, Van Hal and Van Den Broucke, 2018).

Utilizing the cognitive framework in the HBM suggests interventions with a systematic and theoretical approach to assessing and adjusting the interventions (Henshaw and Freedman-Doan, 2009). This model can help to provide specific interventions for different cultural groups targeting the barriers that contribute to delays in health care seeking (Henshaw and Freedman-Doan, 2009), hence, the HBM can be applied to other country settings, taking into account varieties of other alternative treatments that could be contributing to influence an individual's health behaviour (Mechanic, 1979; Subedi, 1989). The HBM was therefore adopted as the key theoretical framework used to conceptualise this study and to understand how perceptions and attitudes contribute to delay in health-seeking behaviours for malaria treatment among adults in Makurdi. The section (below) highlights further some of the strengths of the HBM before discussing next on the limitations of the model.

3.3.1 Strengths of the HBM

One of the strengths of this model is that it provides three approaches that is used to improve health-seeking behaviour and consequent utilization of HCS, these approaches are: first, increasing the perceived severity and vulnerability to the health problem; second, decreasing the perceived barriers to taking action, (e.g., physical or psychological barriers) and third, increasing the perceived benefit of taking specific action to deal with the problem (Kelly, Mamon and Scott, 1987; Champion and Skinner, 2008). The components of the health belief model have considerable empirical support and it is grounded on well-established theories (Becker et al., 1977; Janz and Becker, 1984; O'Connor et al., 2014). Another strength of the HBM is that it specifies the significance of key psychosocial and demographic factors that indirectly plays a role in predicting an individual's health behaviour, including social support, age, knowledge, education, self-efficacy and personality (Rosenstock 1990; O'Connor et al., 2014).

Another key strength of the model in predicting health behaviours is its ability to use barriers and benefits (strongest predictors) which act in opposing each other, thus providing a dynamic representation of the decision-making process (Becker, 1974; Gillibrand and Stevenson, 2006; O'Connor et al., 2014). Based on this "common sense" representation, Henshaw and Freedman-Doan (2009) highlight that the impact of negative aspects is considered in the setting of positive aspects; it provides parsimonious justifications of the variety of constructs that exist within a clear framework. This theoretical framework can succinctly outline a person's cognition and cognitive thought process that surrounds his/her health-seeking decision choices (i.e., to either obtain, delay in treatment-seeking or forgo health care services) (Hahm, Speliotis and Bachman, 2008). Therefore, the HBM was adopted to guide, structure and shape both the adult Nigerian's aspect (objective two) as well as the healthcare

professionals, MOH policymakers and traditional healers' aspect (objective three) of this research. While the strengths of the HBM are presented as above, it is equally necessary to outline the limitations, as discussed below.

3.3.2 Limitations of the HBM

Although the HBM has a wide range of applications in different health behaviour research and has contributed to the understanding of diverse, critical issues relating to health-seeking behaviour in particular contexts, this model has received some criticism for some reasons.

First, this conceptual model did not consider habitual behaviours which may influence an individual's health-seeking choice and/or decision, to either promptly seek treatment or delay treatment-seeking (Glanz et al., 2008; Carpenter & Christopher, 2010; Jones et al., 2015). Second, the HBM assumes that everybody has the same access to getting information about the health problem (e.g., health-seeking delay for malaria), it also assumes that the cues or triggers to action are sufficient enough to encourage people to take specific health-related action concerning their health issues (Glanz et al., 2008; Carpenter & Christopher, 2010; Jones et al., 2015). Third, this model disregards non-health-related behaviours, such as peer and social norms (Sheeran and Abraham, 1996), it further ignores economic and environmental factors which are vital factors that may either positively or negatively influence an individual's health-seeking behaviours towards malaria treatment (Green and Murphy, 2014). A further limitation of this theoretical framework is the fact that it tends to consider behavioural changes as isolated events rather than event process that is dynamic (Jones et al., 2015). Also, this model does not extensively present in detail other individual determinants that may dictate the extent to which an individual's acceptance of healthy behaviour (Kirscht, 1983; Glanz et al., 2008).

Finally, it does not explicitly consider the impact of emotions on health-related behaviour, this is important as evidence suggests that fear may be a fundamental factor in predicting HSB for illnesses (Rosenstock, 2005).

Despite these limitations, the HBM is recognised as an essential framework that provides explanation and aids understanding between the health behaviour of a person and his/her beliefs, and so there is consensus that it is the ideal model for exploring how perceptions and attitudes contribute to delays in health-seeking behaviours for malaria treatment among adults in Makurdi (Hochbaum, 1958; Rosenstock, 1960; Kirscht, 1972; Marriner and Raile, 2005; Roberts and Marvin, 2010).

Consequently, I adopted the Health Belief Model as my conceptual framework to help me understand how perceptions about malaria, perceived susceptibility and severity/seriousness may lead to delayed action in seeking effective treatment (e.g., orthodox/biomedical interventions), instead of seeking treatment from inappropriate source (e.g., utilization of alternative and complementary medicine (A &CM)). As earlier discussed under this model, firstly, a person must feel vulnerable or susceptible to

malaria, and also must feel threatened with perceived severe consequences. Secondly, the individual must believe that the action (e.g., seeking medical treatment) he/she is taking is considered effective (perceived efficacy), beneficial (perceived benefit) and outweighs the perceived barriers to taking the action. Perceived susceptibility/vulnerability, perceived seriousness/severity, perceived efficacy, perceived benefits and perceived barriers form the key constructs derived from this theoretical framework that is explored in relation to delays in health-seeking for malaria treatment in Makurdi.

3.4 Key terms used in health behaviour research

Health behaviour literature from around the world shows that there are basic concepts used in explaining the subject. It is also evident that some researchers interchangeably use different key terms to mean the same. For example, health-seeking behaviours or 'help-seeking behaviours' have been used interchangeably in some studies to mean the same (Freud, McGuire and Podhurst, 2003; Nettleton, 2006; Wright and Perry, 2010, Green et al., 2014). Thus, this section seeks to succinctly define and state the terms used in HBR, which may also be applicable in this study. It begins with defining the concept of 'health behaviour'.

3.4.1 The Health Behaviour

Health behaviour is an important area of study which emerged in medical sociology and is defined as "any activity undertaken by a person believing himself to be healthy, to prevent disease or detect it in an asymptomatic stage" (Kasl and Kobb, 1966, p.246).

In addition, Gochman (1997) further defined health behaviour as a behavioural pattern, habits and action that is associated with maintaining, restoring and improving an individual's health. There are two components of health behaviour, these include health-enhancing behaviour and the health impairing behaviour (Khoso, Yew and Mutalib, 2016). The former involves a positive lifestyle of a person which promotes healthy living, such as healthy food intake, exercise and so on, while the latter component of health behaviour involves the negative lifestyle of an individual which impacts his or her health, such as excessive alcohol consumptions, engaging in cigarette smoking, unprotected sexual act and so on (Khoso, Yew and Mutalib, 2016).

3.4.2 The Illness Behaviour

To understand the behavioural aspect of sickness, the concept of illness behaviour was first proposed in 1960 by (Mechanic and Volkart, 1960), it is the behaviour of those who feel the need for medical help because they perceive themselves to be ill (Cockerham, 2016). Originally, illness behaviour was defined as "how given symptoms may be differently perceived, evaluated, and acted (or not acted) upon by different kinds of persons" (Mechanic and Volkart, 1960, p.87). Later, Gabe, Bury and Elston (2004) introduced some changes in the conceptualization of the concept "Illness behaviour" and it was defined

in their book Key concepts in medical sociology as “how people define and interpret their symptoms and the actions they take in seeking help” (Gabe, Bury and Elston, 2004, p.63).

Consequently, based on the given definitions of illness behaviour, Young (2004) acknowledges this concept as socially constructed and socio-cultural. Hence, it can be argued that illness behaviour is how an individual respond to disease symptoms in the context of his or her socio-cultural life (Khoso, Yew and Mutalib, 2016). This response can be manifested in the form of seeking help from traditional as well as spiritual healers, self-medicating or/and purchase of drugs across the counter from lay referrals, adherence to prescriptions and seeking medical help from an appropriate healthcare provider (formal or/and informal and public or/and private) (Khoso, Yew and Mutalib, 2016). Previous health-seeking behaviour studies have also interchangeably used illness behaviour to mean health-seeking behaviour (Latunji and Akinyemi, 2018). Therefore, it is important to have knowledge and understanding of some key terminologies used in HBR and how they are interchangeably applied in various research.

3.4.3 Healthcare-seeking behaviour

“Health care seeking behaviour involves decision making about utilizing or not utilizing public or private, formal or informal healthcare services, or only availing the options of indigenous home remedies” (Khoso, Yew and Mutalib, 2016, p.583). Healthcare service utilization which usually involves a person using a formal healthcare system is the end point of healthcare-seeking behaviour (MacKian, Bedri and Lovel, 2004). In other words, for any health problem, healthcare-seeking behaviour is often associated with the utilization of health services. According to the submissions of Khoso, Yew and Mutalib (2016), healthcare-seeking and treatment-seeking have a closely related meaning, as treatment is particularly concerned with consulting health experts who are professionally trained such as nurses, doctors, and specialists in providing healthcare services to patients who have certain health problems.

3.4.4 Health-seeking Behaviour or Help-seeking behaviour

In discussing illness behaviour, Khoso, Yew and Mutalib (2016) echoed that some researchers (Mechanic, 1960, 1978, 1995; Kasl and Cobb, 1966 a; Pescosolido, 1992; Cockerham, 1998; Freund, McGuire and Podhurst, 2003; Nettleton, 2006; Wright and Perry, 2010) have interchangeably used the term ‘health-seeking behaviour’ or help-seeking behaviour to mean the same process of responses and/or behaviour to illness/health condition. Also, Green et al. (2014) confirmed that some other studies have used these terms for similar meanings by using the connector ‘or’ and placing parenthesis for one of them. These concepts clarification is important to aid health care professionals’ understanding and guide the development of theories, practice and research (Cornally and McCarthy, 2011).

Over the years, based on different studies, the definition of health-seeking behaviour has evolved as Chrisman (1977) defined the term as the steps taken in an attempt to solve a health problem/condition

by an individual who perceives the need for help. Another definition by MacKian, Bedri & Lovel (2004) put it as a process of responding to illness or health problems.

The concept of health-seeking behaviours has recently gained popularity as it is a fundamental vehicle for exploring and understanding prompts or delayed actions of patients across different health conditions (Cornally and McCarthy, 2011). A more recent study revealed specifically that health-seeking behaviour is "concerned with how people monitor and respond to symptoms and symptom change throughout an illness, and how it affects the behaviour, remedial actions are taken and response to treatment" (Anwar, Green and Norris, 2012, p.508).

Consequently, for this research the most recent, suitable and appropriate definition of health-seeking behaviour is defined as "any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill to find an appropriate remedy" (Latunji and Akinyemi, 2018, p.52), this definition is borrowed from Kasl and Cobbs (1966) definition of illness behaviour.

Often time health-seeking takes place only when a person is ill, therefore, health-seeking behaviour is considered a part of illness behaviour rather than health behaviour (Chrisman, 1977; Ward, Mertens and Thomas, 1997; Grundy and Annear, 2010; Anwar, Green and Norris, 2012).

3.5 Chapter summary

This chapter presented the conceptual framework and the model used for this research - the Health Belief Model. Despite some of the weaknesses of this model, it was perceived to be a flexible model suitable. The flexibility of this model is in relation to its ability to be used to provide specific interventions for different cultural groups targeting the barriers that contribute to delays in healthcare-seeking. This explains that the model can be applied to other country settings, taking into account varieties of other alternative treatments that could be contributing to influencing an individual's health behaviour, as in the case of this study (in objective one which looks at the care pathways (formal and informal) for malaria treatment in Nigeria). Additionally, the HBM was perceived as the most appropriate, as it allows researchers to its components to fit their study with ease. Importantly, also the components of the model have extensive empirical support and are consequently grounded on well-established theories. However, before the decision to consider the HBM as the ideal conceptual framework, a few prominent models and theories which has also had wide applications in health behaviour research, including malaria studies were analysed, and their limitations about how it is not appropriate to answer my research question gave rise to my decision to eliminate them from being utilized in this current research. The chapter that follows presents in detail the methodology adopted by this research.

Chapter four: Methodology

4.1 Introduction

The review of literature on health-seeking behaviours for malaria treatment in Nigeria necessitated the discussion on the conceptual framework for this research in chapter three. The conceptual framework focused on how the Health Belief Model (HBM) is a key theoretical driver in conceptualizing the study investigated, which explored perceptions and attitudes to delays in effective health-seeking for malaria treatment among adults in Makurdi. This chapter presented the methodology of this research, which provides an overview of the research and begins with a discussion of choosing Makurdi as the study site. It then discussed the underpinning philosophical paradigm, specific methods adopted to meet each objective and the analytical approach. The following are sections presented in this methodology chapter: sampling technique, which also justifies the reasons for using a purposive sampling technique; recruitment of participants' (discussed both the initial recruitment strategies before the development of the coronavirus pandemic (Plan A) and the adopted alternative (Plan B) approach). Furthermore, this chapter then presented a discussion on; the justification for selecting each sample group; participants' eligibility criteria; sample size considerations in the qualitative study and also challenges faced during the data collection process and how they were mitigated. The chapter then turns its attention to presenting a discussion on ethical issues associated with health research such as informed consent, confidentiality and anonymity, before going on to discuss in detail how the topic guides for this study were formulated. Also, a discussion on the data analysis process is outlined. The findings from this research meet one of the originally intended contributions, in the aspect of providing empirical evidence for understanding how perceptions and attitudes contribute to delays to health-seeking in Makurdi, amongst adult Nigerians for malaria treatment.

4.2 Makurdi as the study location

Makurdi is a semi-rural port town, and seats as both a Local Government and also the Capital of Benue State (located in the North-Central Region of Nigeria) (Agbo and Ochangya, 2011). Makurdi is located within the Guinea Savannah region of Nigeria on latitude 7˚43'N and longitude 8°32'E, with an average annual high temperature ranging from a minimum of 21.7°C to a maximum of 45.2˚C and a mean annual rainfall of 1000 mm (Amuta et al., 2014). Records from the United Nations World Population Review (2020) confirmed that the population size of Makurdi town has constantly increased in the last three decades from a population of 149, 273 in 1991 to a current population size of 407, 257 in 2020, and it is estimated that in 2021, the population size of this town would be 422, 159 with a density of nearly 380 persons/sq km. These, therefore, present Makurdi as the most populated Local Government amongst 22 others making up Benue State. The predominant occupation of the people that constitute the Makurdi population is mostly peasant farming, cattle rearing, fishermen, civil servants, artisans, petty traders, military/police, students and retirees'. The settlement pattern in Makurdi is mostly

clustered style, and this is particularly evident amongst those living on the northern bank of the town, although a few others reside in scattered settlements mainly in tiny compounds of homesteads, particularly evident also amongst those who live in the southern bank of the town (Maxwell, Mile and Obeta, 2010; Amuta et al., 2014). By geographical description, Makurdi has naturally been divided into two halves settlements by the Benue River, and these settlements are the southern and northern banks. These two distinct of settlements are linked and connected by two bridges (Manyi, Vajime and Imandeh, 2014) (see figure 13). The southern part of Makurdi is made up of 11 wards and other important institutions, while the Northern bank of the town play host to mostly minority ethnic groups (Agbo and Ochangya, 2011; Ogbaje and Danjuma, 2016).

Makurdi is originally occupied by a tribe known as the Tiv-speaking people, who are governed traditionally by the Tor Tiv (Head of the Kingdom), however, as a result of continual migration, this semi-rural port town presently hosts people from different tribes/languages and/or socio-cultural backgrounds and religion (Amuta et al., 2014), including the Igbos (who are originally occupants of the south-eastern regions of Nigeria), Yoruba (occupying the south-western regions), Hausas (occupies the entire north-east and north-western regions of the country) and other minority ethnic groups such as Ibibo, Idoma, Igede, Jukum, Igala, Bassa and many more ethnic groups. Despite these ethnic diversities, the various ethnic groups live together in Makurdi. Interestingly, according to (Rumun and Terungwa, 2015), cultural diversity significantly influences the health-seeking behaviours and decisions of people. Consequently, this study seeks to explore how perceptions and attitudes contribute to delays in health-seeking for malaria treatment among adults living within this multi-cultural community called Makurdi.

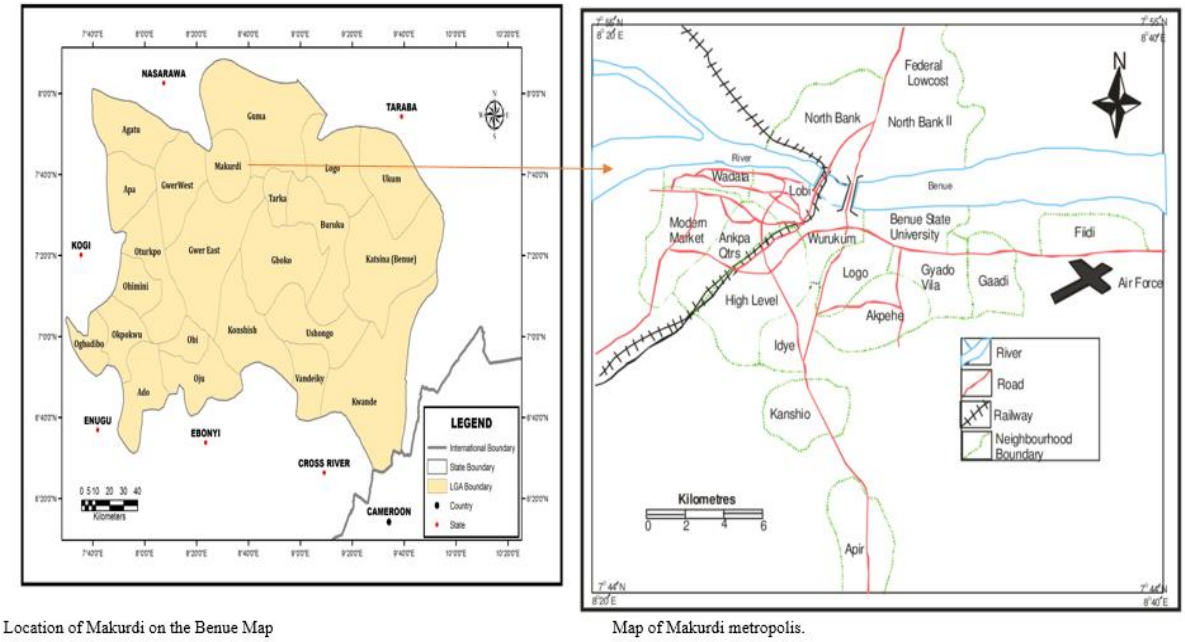


Figure 13: Map of Makurdi: study location.

Source: Ministry of Lands and Survey, Makurdi (2015). Source link: (https://www.researchgate.net/figure/Map-of-Makurdi-metropolis-Source-Ministry-of-Lands-and-Survey-Makurdi-2015_fig1_319666051)

4.2.1 Rationale for purposively selecting Makurdi as the study location

Makurdi was purposively selected as the study location because:

- As discussed earlier, there is under-researched evidence on perceptions and attitudes that contribute to delays in health-seeking for malaria treatment in Makurdi. This study, therefore, addressed the gap in the literature by providing empirical evidence for understanding the perceptions and attitudes to health-seeking delays for malaria treatment through its in-depth triangulated findings amongst adult Nigerians, healthcare professionals, policymakers from the Ministry of Health and traditional healers.
- Malaria is known to pose a major public health problem in Nigeria and this is due to the available suitable breeding climate that supports the female Anopheles mosquitoes to transmit the parasite to humans, however, the transmission intensity within the Nigerian states varies across the different geopolitical regions of Nigeria (Amuta et al., 2014). Makurdi for instance which is located in Benue state, the North-Central region of Nigeria has one of the highest prevalences of malaria among the six geo-political regions in the country (United State Embassy in Nigeria, 2011). There are two main reasons for this. Firstly, it is because of the highly favourable environmental and climatic conditions. This reason aligns with the World Health Organisation (2017b, 2018d) postulation which affirmed that the transmission intensity of malaria depends on factors related to the environment, temperature, altitude, relative humidity, nearness to water bodies, vector distribution and the human host. The prevailing high temperature (30 - 45.2°C) in Makurdi contributes to influencing the speedy hatching and development of mosquito eggs and allows the malaria vector to thrive leading to the high transmission intensity (Sanganuwa and Adelaiye 2007; Jombo et al., 2010; Manyi, Vajime and Imandeh, 2014). The second likely reason for the high transmission intensity of malaria in Makurdi is the environmental factor. Makurdi records annual mean rainfall of 1000mm; this high level of rainfall frequently leads to blockage of drainage channels as a result of human indiscriminate disposal of wastes and hence causes water to stagnate. For example, the transmission intensity is highest during and shortly after the rainy seasons in most tropical and sub-tropical regions of the world (WHO, 2017b). Also, noticeable in Makurdi are overgrown bushes around residential homes and offices which are easily noticeable and other sources of stagnant water supporting the breeding of the mosquitoes (Manyi, Vajime and Imandeh, 2014). It is important to understand that the rate of malaria transmission is more intense in areas where the lifespan of the mosquito is longer and this is sustained by a favourable environment, such as adequate breeding sites for supporting its lifecycle and hatching of eggs (WHO, 2017b and 2018d), and Makurdi is one of such area.
- The researcher lived and worked in Makurdi. Hence, familiarity with Makurdi town and some communities helped during the recruitment, data collection and dissemination parts of the research study. This was also a key rationale for selecting Makurdi as the study site because the researcher's

knowledge and familiarity with Makurdi would enable easy navigation and hence, help in saving time spent in recruiting participants and collecting data, as well as help to minimise the cost of transportation that would be incurred if I was to be present on the ground in Makurdi. However, as a result of the pandemic, travelling to Makurdi physically to collect data was not possible due to various challenges. Therefore, this supported the adoption of alternative data collection (plan B) methods. These alternative strategies employed the efforts of recruiters who are residents of Makurdi, and their primary responsibility was to assist in recruiting participants. Thus, all participant interviews were conducted remotely.

4.3 A qualitative research design

A qualitative research design was adopted as the most appropriate for answering the research question and meeting the aim and objectives of the study. The adoption of a qualitative research approach proliferates and is increasingly used within the health-seeking behaviour research by researchers to interpret and understand social phenomena (including behaviours, interactions, perceptions, attitudes and concepts such as health-seeking behaviours) in terms of meanings people attached to them (Pope and Mays, 2006; Green Thorogood, 2018; Sturrock et al., 2019). Decisions about the choice of the research design were influenced by the nature of the problem being addressed, the study designs used in the existing empirical evidence base in the area of health-seeking for malaria treatment and other health conditions, and finally, the conceptual framework (using HBM) of the study (Kitto, Chester and Gribich, 2008; Creswell, 2009). These are discussed further in the sections below.

4.3.1 The existing empirical evidence base

The literature review chapter presented a discussion on some of the existing studies conducted on health-seeking behaviour for malaria treatment, which identified a range of factors influencing delay in treatment-seeking for malaria. The review of literature in this study included studies from both global and local contexts to have broader perspectives on the subject. However, in the Nigeria context, the previous studies conducted on health-seeking generally discussed determinants of delays to health-seeking, and did not particularly address perceptions and attitudes. In addition, the empirical evidence in Nigeria was done across the different geopolitical zones, with essentially limited evidence available in the North-Central region of the country, and specifically, in Makurdi, there is a dearth of evidence available. It is therefore difficult to apply the findings from the related studies beyond the original setting of the research due to the socio-cultural variations and practices that exist amongst the different geopolictical zones in Nigeria as earlier highlighted (in sub-section 2.2.1). Moreover, this present qualitative study differs from other previous studies done in Nigeria in the aspect of methodological approach, as predominantly, the previous pieces of evidence in Nigeria are quantitative. Lastly, there are no previous studies carried out in Nigeria that investigated this problem from a triangulated

perspective of service users (lay participants) and providers (healthcare professionals, traditional healers and MoH policymakers). However, the previous studies conducted in Nigeria were carried out focusing on: mothers of under-five children (Bello and Rehal, 2014); pregnant undergraduates residing in school hostels (Chinweuba et al., 2017); caregivers of sick children (Eseigbe et al., 2012 and Gondi et al., 2019); children of under-five years (Chukwuocha et al., 2014), and among civil servants (Latunji and Akinyemi, 2018) thus, the need for an in-depth understanding of this concept to advance knowledge by adopting a qualitative methodology to explore from a triangulated perspectives participants views, specifically on perceptions and attitudes contributing to delay in health-seeking for malaria treatment. Therefore, this study extends the literature beyond the factors highlighted by previous studies in Nigeria, and beyond the essentially limited evidence in the North-Central region of Nigeria, specifically in the Makurdi setting.

The sections below provide a summary of the findings of the key studies in this field, and these are reported also from both global and local contexts.

Quantitative evidence base

In Nigeria, some key studies conducted in different geopolitical regions on health-seeking behaviour for malaria treatment which adopted quantitative method design includes Adindu and Hogan (2013) conducted in southsouth region of Nigeria, to determine help seeking behavior of mothers with children less than five years, and factors that influenced behaviour; Agu and Nwojiji (2005) carried out in southeast region, to investigate mothers perception of malaria and treatment-seeking behaviour in childhood malaria; Chinweuba et al. (2017) conducted in southeast, assess determinants of malaria prevention and treatment seeking behaviours of pregnant undergraduates resident in university hostels; Chukwuocha et al. (2014) conducted in southeast, and investigated determinants of delay in seeking early and appropriate malaria treatment for children (0–5 years); Dave-agboola and Raji (2018) conducted in southwest, and it assessed the health seeking behavior of malaria patients in Lagos, Nigeria with relation to health care Financing; Chukwuocha et al. (2015) conducted in southeast, to investigate the influence of social characteristics of mothers on time taken to seek treatment for their children suspected of having malaria in four rural communities; Emeka (2011) carried out in southeast to examine how the local culture and religion in Anambra State, Nigeria contribute to low healthcare utilization regarding malaria treatment; Eseigbe et al. (2012) conducted in Northwest Nigeria, and assessed the health care seeking behavior of caregivers of sick children who developed cerebral malaria; Gobir et al. (2014) conducted in Northwestern region, and assessed the health-seeking behaviour of rural dwellers for treatment of presumptive malaria in Gimba village; Latunji and Akinyemi (2018) conducted in southwest, and determined factors most important to civil servants when seeking health care; Lawal, Balogun and Bada (2014) carried out in southwest, and they examined knowledge of causes of malaria and malaria belief as determinants of health seeking-behaviour. To mention a few more,

other quantitative studies carried out in Nigeria include Okeke and Okafor (2008) and Okeke and Okeibunor (2010) both were conducted in the southeastern region of the country.

Furthermore, from a global context examples of some previous quantitative studies conducted in other developing and middle-income countries includes Asante et al. (2010) and Awuah et al. (2018) in Ghana; Abubakar et al. (2013) in Kenya; Getahun, Deribe and Deribew (2010), Deressa and Hailemariam (2018) and Tiruneh, Gebregergs and Birhanu (2018) in Ethiopia.
It is however not surprising that there is a wide range of evidence on health-seeking behaviours for malaria treatment, and this may be so because Nejati et al. (2018) acknowledged that research on health-seeking behaviour for malaria treatment is greatly relevant due to its extensive application in policy formulation by policymakers to help formulate key local policies for promotional health-seeking behaviour in a community.

The above previous quantitative studies conducted presented important factors influencing health-seeking for malaria treatment, these includes: socio-economic factors such as cost of treatment (Okeke and Okafor, 2008; Onwujekwe et al., 2008; Kwabe et al., 2013; Millar et al., 2014; Chukwuocha et al., 2014; 2015; Dave-Agboola and Raji, 2018; Oladimeji et al., 2018); accessibility barriers (Getahun, Deribe and Deribew, 2010); availability barriers such as absence of health personnel at health facilities and medication stock-out (Awuah et al., 2018); distance from health facility (Onwujekwe et al., 2008); socio-cultural factors (Chukwuocha et al., 2014); poor knowledge of treatment (Okeke and Okafor, 2008; Adeneye et al., 2013); seeking alternative and complementary medicine (Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018); negative perceptions about clinical treatment (Okeke and Okafor, 2008; Okeke and Okeibunor, 2010) and demographic characteristics such as marital status, age, gender and sex (Getahun, Deribe and Deribew, 2010; Deressa and Hailemariam, 2018; Tiruneh, Gebregergs and Birhanu, 2018). Although the findings of these quantitative studies could be generalizable, it is however weakened in the context of not being very in-depth and insightful as opposed to results generated from studies which utilise qualitative research designs (Creswell, 2009, 2014; Creswell and Poth, 2017). Qualitative design studies are contextualized and interpretive, they seek to understand and explore the process and/or patterns of development (Mays and Pope, 2020; Nassaji, 2020).

There is essentially very limited qualitative evidence existing on health-seeking behaviours for malaria treatment conducted in Nigeria. The majority of the evidence provided below are global contexts.

Qualitative evidence base

In Nigeria, a qualitative study carried out by Bello and Rehal (2014) is one of the very few pieces of available evidence carried out on this subject. However, it was conducted in the southwestern region of Nigeria, and they focused on children under-five years, thus, the study objective was to explore health-seeking behaviours and cultural attitudes of mothers of under five children suffering from

malaria. Thus, the need for the exploration of this concept in a broader scope using a qualitative design to specifically explore perceptions and attitudes to delay in health-seeking for malaria treatment in Makurdi, North-Central region of Nigeria from the position of both service users (adult Nigerians) and providers (health professionals, traditional healers and MoH policymakers). Therefore, this study extends knowledge by adding to the essentially limited qualitative literature in Nigeria.

From global contexts, there are limited qualitative studies carried out on the subject of health-seeking delay for malaria treatment. However, some examples of qualitative studies which used the Health Belief Model to conceptually frame their research include: (Beer et al., 2012; Dembo, 2012; Watanabe et al., 2014; Mitiku and Assefa, 2017; Mpimbaza et al., 2019). In addition, there are also some previous PhD researches conducted which explored the health-seeking behaviours for malaria treatment that employed also qualitative research design (Metta, 2016; Mafuleka, 2017). These previous qualitative studies which provided an in-depth understanding of the various behavioural factors that contribute to influence delays to prompt health-seeking for malaria treatment have shown those wrong beliefs about malaria treatment, misperceptions about the effectiveness of treatment, and that the orthodox health services available are ineffective to cure malaria, rather perceiving that the biomedical drugs can only provide temporal relief to a malaria sick person. For example, Dembo (2012) identified community misperceptions about the chronicity of malaria as key a determinant challenging prompt and effective treatment-seeking for malaria. Although there is empirical research conducted on malaria which adopted the qualitative approach and also which used the Health Belief Model to conceptually frame their research on health-seeking behaviours for malaria treatment, many of these studies have been carried out in other different countries around the globe with considerably different healthcare systems, for example; in Malawi (Dembo, 2012), in Vanuatu island, southwest pacific (Watanabe et al., 2014), in Mandura District, West Ethiopia (Mitiku and Assefa, 2017), in Uganda (Mpimbaza et al., 2019) and Zanzibar, Tanzania (Beer et al., 2012). Similarly, much of the available PhD research which employed a qualitative research approach in exploring health-seeking behaviours for malaria treatment is conducted in other countries where malaria is endemic for example; Southeastern Tanzania (Metta, 2016), Malawi (Mafuleka, 2017) but in Makurdi, Nigeria which is a multicultural community such evidence is essentially extremely limited and scarcely available.

The section below presents some of the available systematic review evidence base on health-seeking behaviours for malaria treatmemt.

Systematic review evidence

Some systematic reviews have been conducted around the globe which explored health-seeking behaviours for malaria treatment (Bruxvoort et al., 2014; Anyanwu et al., 2016; Maslove et al., 2009; Bastaki et al., 2018). These reviews outlined a range of factors which contributes to delays in health-seeking behaviours for malaria treatment and low adherence to the antimalarial regime. For instance,

Bruxvoort et al. (2014) conducted a systematic review of studies reporting quantitative results on patients' health-seeking behaviour and adherence to antimalarials. This review outlined that the following factors contribute to the influence of low adherence to antimalarial use and delays in treatment-seeking behaviour. The factors reported include; patient's perceptions about the safety and efficacy of orthodox drugs used for malaria treatment, poor knowledge level and wrong beliefs that malaria is best treated traditionally using herbs, hence contributing delay in prompt access to the available effective treatment services, attitudes of healthcare providers, affordability/cost of medication/treatment and accessibility or proximity to a health facility, just to mention few of the factors. A systematic review conducted by Bastaki et al. (2018) also identified similar factors highlighted by Bruxvoort et al. (2014), and they further classified these factors into two namely; patients's delay factors and medical delay factors.

These systematic reviews concluded that health-seeking behaviour studies have depended largely on cross-sectional studies in the context of quantitative methodology. The reviews further affirmed that researches which adopted qualitative research methods to explore delays to health-seeking for malaria treatment in an in-depth and comprehensive manner are scarce.

However, despite the recommendation from these systematic reviews (Bruxvoort et al., 2014 and Bastaki et al., 2018) which suggests that an alternative method design – the qualitative method – should be carried-out to provide a comprehensive and in-depth understanding to explore delays to health-seeking for malaria treatment and further investigate to understand how the various determinants influence health-seeking choices and hence delays to effective treatment, unfortunately, several recent health-seeking behaviour studies conducted to investigate malaria treatment have ignored this claim and have continued to use a quantitative method design (Gobir, Sambo and Hadejia, 2014; Chinweuba et al., 2017; Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018; Oladimeji et al., 2018). Although importantly the previous quantitative studies conducted have significantly contributed to our level of knowledge on health-seeking behaviour for malaria treatment, it is, however, essential to take into consideration the suggestions of these systematic reviews, which acknowledge that a quantitative method design is not robust and rigour enough to address and understand the issue of delays to health-seeking behaviour and by extension understand how perceptions and attitudes contribute to health-seeking delays for effective malaria treatment. Thus, using a qualitative design in this study has possibly improved our current understanding and knowledge about delays to health-seeking behaviours for malaria treatment, particularly in Makurdi, North-Central region of Nigeria.

To answer the research question and meet the objectives of this study, a qualitative research design was adopted, and this study used semi-structured interviews to explore and understand the perceptions, views, thoughts and attitudes of adult Nigerians from Makurdi, healthcare professionals (including, doctors and nurses), key health stakeholders (Ministry of Health policy makers) and traditional healers

and Complementary and Alternative Medicine therapist (CAM) contributing to delays in health-seeking for malaria treatment within the context of Makurdi culture. The rich in-depth triangulated findings from this qualitative study have made a key policy-related contribution in the field by providing evidence-based recommendations to policymakers that could lead to the development of a health-seeking promotional framework for malaria within the context of Makurdi and nationally.

Another factor on which the selection of a research design is based is the data collection technique adopted and this is discussed below.

4.3.2 Rationale for employing a qualitative method design

The choice of the qualitative method design reflects the need to collect rich, in-depth and insightful information by exploring, robustly investigating and understanding how attitudes and perceptions contribute to delays in health-seeking behaviour for malaria treatment in Makurdi among purposefully sampled individuals with characteristic that is appropriate in answering the research question and meeting the study aim and objectives (Chester and Gribich, 2008; Carter et al., 2014; Creswell, 2009; Creswell and Creswell, 2017).

Previous qualitative malaria researchers across the globe who addressed delays to HSB for malaria have used different qualitative approaches, including ethnography (Tynan et al., 2011); a narrative approach (Mpimbaza et al., 2019) and grounded theory (Tarr-Attia et al., 2018). However, this present study which used semi-structured in-depth interviews carried out remotely elicited the perspectives of adult Nigerians, healthcare professionals (including, medical doctors and nurses), key healthcare stakeholders (Ministry of Health policy makers) and traditional healers on how perceptions and attitudes contribute to delays in health-seeking for malaria treatment within Makurdi context, it did not neatly align with any of the above-listed approaches to a qualitative study.

This present study, therefore, adopted an interpretive qualitative research design with an in-depth interview to help in the identification of common themes and patterns characteristic of the phenomenon under investigation (i.e. delay to health-seeking behaviours for malaria treatment in relation to perceptions and attitudes), while accounting also for human subjective perceptions and generating explanations that may inform clinical understanding (Sandelowski, 2000; Thorne, Kirkham and O'Flynn-Magee, 2004). Hence, current research provides a deeper understanding of current evidence-based on the perceptions and attitudes of adults in Makurdi that contributes to delays in health-seeking for malaria treatment, this study further provided evidence-based recommendations to policymakers that could help to provide insight into the development of a health-seeking promotional framework for malaria treatment within the Makurdi context in Nigeria.

Within health behaviour research, the qualitative (Interpretivist philosophy) approach proliferates and it is increasingly and widely being used in health research and social sciences (Yardley, 2000; Creswell,

2009; Abubakar et al., 2013; Adesoro et al., 2016; Sturrock et al., 2019). Hence, a qualitative method often referred to as interpretative research is used by researchers to interpret and understand social phenomena (the phenomenon in question could be behaviours, interactions, perceptions, attitudes and concepts such as health-seeking behaviours) in terms of the meanings people attached to them (Pope and Mays, 2006; Green and Thorogood, 2018; Sturrock et al., 2019).

Further justification for choosing a qualitative research design reflects the need to develop a clear, accurate, complete and articulate description and understanding of a particular human experience and meaning (Greenhalgh and Wengraf, 2008; Kitto, Chester and Gribich, 2008; Creswell, 2009). For instance, a range of qualitative research methods have been employed in health behaviour research to answer important research questions about social phenomena, ranging from patients' compliance with treatment (Bollini et al., 2004); to health-seeking decisions (Shaw et al., 2008), healthcare professionals' decision making within the healthcare system or hospital/clinic (Bee et al., 2015); exploring patients attitudes and perceptions towards the prevention of osteonecrosis of the jaw (ONJ) using the multidisciplinary approach (Sturrock et al., 2019), and in malaria studies, some examples of qualitative researches are; (Abubakar et al., 2013; Umeano-Enemuoh et al., 2015; Adesoro et al., 2016; Mwaka et al., 2018; Oladimeji et al., 2018).

It is as well important to understand that a qualitative research design is not free from limitations, and some of which include its inability to generalise the conclusion, and this is because only a few participants' are explored, also the participants recruited sometimes possess unique characteristics compared to typical respondents (Carr, 1994; Murphy et al., 1998). In other words, Creswell and Creswell (2017) echoed that the small sample size linked to a qualitative research method as opposed to the large sample size associated with a quantitative research method alone makes it a limited method. However, this study is not particularly focused on providing generalisable findings, rather it aimed to explore and obtain rich, in-depth information from participants' perspectives on how perceptions and attitudes contribute to delays in health-seeking for malaria treatment in Makurdi. Therefore, the aim of the research reflected the need for a qualitative approach as the appropriate design. Although the findings of this qualitative study may not be generalisable, it may however contribute to the body of existing empirical qualitative research conducted on malaria that has examined delays to health-seeking behaviours in relation to perceptions and attitudes in Nigeria. Another weakness associated with a qualitative research design is that the process of data collection and analysis is time-consuming (Tetnowski, 2015). However, proper planning and allocation of adequate time (which is required for data collection and analysis) could help to mitigate this weakness in this study.

Many utilize a contrast between qualitative, quantitative and mixed methods approaches by specifically distinguishing the kinds of data generated, methods used for generating those data or the study design, the kind of questions asked and the overall aims of the research (Tashakkori and Creswell, 2007; Doyle, Brady and Byrne, 2009; Malina, Nørreklit and Selto, 2011; Thanh and Thanh, 2015; Green and

Thorogood, 2018). For example, the quantitative (positivist/postpositivist philosophy) approach which is also used in healthcare research to synthesise evidence, its data generated are usually in the form of numbers, and so it does not adequately explain human experiences and understanding and does not sufficiently answer "why" and "how" a phenomenon occurs, as oppose the data generated by qualitative research (Newman, Benz and Ridenour, 1998; Srivastava and Thomson, 2009; Malina, Nørreklit and Selto, 2011; Thanh and Thanh, 2015; Green and Thorogood, 2018), therefore, with regards to the current research question, aim and objectives of this study, quantitative research approach could not fully provide an in-depth understanding of how individual's perceptions and attitudes contribute to delays in health-seeking for malaria treatment. However, (Morse, 1991; Johnson and Onwuegbuzie, 2004) argued that this does not mean any of the research approaches is superior to another or vice-versa but emphasized that both paradigms have value in progressing knowledge. Hence, following this, Green and Thorogood (2018) highlighted that the best research approach is that which is most appropriate to answer the specific research question.

4.4 Philosophical justification for qualitative research approach

Interpretivism (often combined with social constructivism) is naturally seen as a philosophical stance for qualitative research, and it provides a significant background or framework for the research methodology and method used in the study (Creswell, 2009). Interpretivist views and understands the world from human experiences - individuals develop subjective meanings of their experiences (Creswell 2003; 2009; Yanow and Schwartz-Shea, 2011), thus, enabling a researcher to have an in-depth understanding of the world and to understand the relationships that exist between humans and their environment through different series of individual's perceptions; hence, selecting respondents with different views and interpretations of reality to defined the worldview (Thomas, 2003; Willis, 2007; Thanh and Thanh, 2015; Creswell, 2009; Creswell and Creswell, 2017). This aligned with the philosophical stance which focuses on understanding how attitudes and perceptions contribute to delays in health-seeking behaviour for malaria treatment in Makurdi. Interpretivist paradigm[5] therefore providing the researcher with in-depth and insightful information and a much more comprehensive picture of a situation (Smith, 1993; Johnson, 1996). In other word, interpretivism seeks and accepts many views or perceptions and is open to change and promotes holistic participation in the research, hence going beyond the inductive and deductive approach (Taylor, Bogdan and DeVault, 2015; Thanh and Thanh, 2015). In direct contrast to positivism, the strength of interpretivism lies in the researchers' empathetic stand (Lin, 1998).

[5] I have used the word paradigm in this research as Kuhn (1970) did in his study. Based on Kuhn's study, Bryman draws its meaning by describing a paradigm as 'a cluster of beliefs and dictates which for scientists in a particular discipline influence what should be studied, how research should be done, [and] how results should be interpreted' (Bryman, 1988, pg.4).

Within the interpretive paradigm, the researcher acknowledged social constructivism in understanding the social world of the research participants (Ritchie et al., 2013), as access to effective healthcare services for malaria treatment is a social practice. Also, to a social constructivist, knowledge is acquired by understanding and exploring the views, perceptions and social world of the research participants – individuals develop the subjective meaning of their experiences (i.e., either social, cultural, personal or historical perspectives) (Creswell, 2009; Ritchie et al., 2013). In exploring participants' views; open-ended, broad and general questions are used by the researcher so that participants can assign meanings to them, the researcher then attentively listens to what the participants are saying/doing, interpret it and/or make meanings out of it (Creswell, 2009).

A range of qualitative health research has used the interpretivism paradigm as a philosophical approach. Examples of such include an interpretivist investigation conducted by Yates et al. (2018) to explore primary caregivers' perspectives and experiences with music therapy during hospitalization for a paediatric blood marrow transplant. The second example is an interpretive investigation conducted by Sturrock et al. (2019) that explored patients' attitudes and perceptions towards the prevention of osteonecrosis of the jaw (ONJ) using the multidisciplinary approach. There are also examples of interpretive studies conducted on malaria, examples include; research conducted by Hutchinson et al. (2017) that used a mixed-method approach to investigate the use and interpretations of rapid diagnostic tests for malaria in Mukono District, Uganda, among drug shop vendors, their clients and local health workers. Another example of malaria research which adopted an interpretive paradigm is a study carried out by Reynolds et al. (2013) in Afghanistan which explored the perceptions of health workers on malaria diagnosis and treatment in practice and concerning the broader social and political context.

While deciding on an appropriate philosophical position for this study, other opposing paradigms that are well-referenced in research philosophies; including positivism as well as critical theory were acknowledged.

Positivism, historically stemmed from foundationalism and empiricism (Ryan, 2018), it values objectivity and disproving or proving hypotheses (Creswell and Creswell, 2017). The element of positivism is commonly associated with quantitative and experimental research (Ryan, 2018), it believes that knowledge is objective, free from bias and independent of human perceptions (Phillips and Burbules, 2000).

Ontologically, positivist believes that reality is the same for every person and measurement and observation tells what the reality is (Creswell, 2009). Objectivism asserts that there is only one version of what is real, regardless of any other person's opinion; hence, only measurement can be used to find truth and obtain credible data (Ryan, 2018). This philosophical paradigm is not considered appropriate for answering the research question and meeting the aim of this study which seeks to explore participants' perspectives based on their subjective experiences on how perceptions and attitudes contribute to health-seeking delays for malaria treatment in Makurdi.

Positivism is the direct opposite of interpretivism (i.e. also known as anti-positivism) (Flick, 2014). Interpretivism is the appropriate philosophical paradigm chosen for this study as discussed earlier, believing that knowledge is subjective and is based on people's experiences and their understandings of their world (Ritchie and Lewis, 2003; Ritchie et al., 2013). Subjectivism as opposed to objectivism takes into consideration the multiple and different views of people's reality – perception, feelings and experiences (Howell, 2013).

The ontological perspective of interpretivism is relativism, which is also of the view that reality is only knowable through socially constructed meanings and does not believe that reality is the same for every individual as opposed to a positivist (Ryan, 2018). For example, every patient in a hospital ward will have a different perspective and experience of the quality of care provided which is informed by their interaction with healthcare providers, visitors, other patients and their past experiences. This explains that an individual's meanings are the categories that make the person's view of reality, which further defines his/her action (Frankl, 1963; Krauss, 2005).

The critical theory seeks to challenge the worldview and underlying power structure that creates them, it is also commonly applied within social sciences research as a critique of social construction and postmodern society (Bronner, 2011). This element of philosophy values modified subjectivity by believing that reality is only shaped or influenced over some time by values such as politics, mass media, race, gender or culture (Guba and Lincoln, 2011). This philosophical paradigm was deemed not appropriate to answer the research question and meet the study objectives.

4.5 Visual overview of the research design for the study

Figure 14 is a visual model of the study design. It depicts the procedural steps in carrying out this qualitative method design adopted to answer the research question and meet the study's aim and objectives. The figure below highlights the following: each of the research objectives, the study participants, the data collection method and the technique used for the analysis. The content of the visual model of the study is explained below.

The first objective mapped the care pathways (formal and informal sector provision) for accessing malaria treatment in Nigeria, it identified the key providers involved in the provision of such care, and the various routes/pathways to malaria treatment. This objective was achieved by involving two stages, as explained below:

Stage 1: Reviewed available literature on the care pathways for malaria treatment in Nigeria as discussed in chapter two (section 2.3 – sub-section 2.3.3).

Stage 2: This stage was fulfilled as a consequence of answering objectives two and three.

The second objective involved semi-structured interviews with adult Nigerians (n=18) living in Makurdi on the perceptions and attitudes to delay in health-seeking delays for malaria treatment.

The third objective involved semi-structured interviews with healthcare professionals, key MOH stakeholders and traditional healers or CAM therapists to ascertain their views on the perceptions and attitudes of adults that contribute to the delay in health-seeking for malaria treatment in Makurdi.

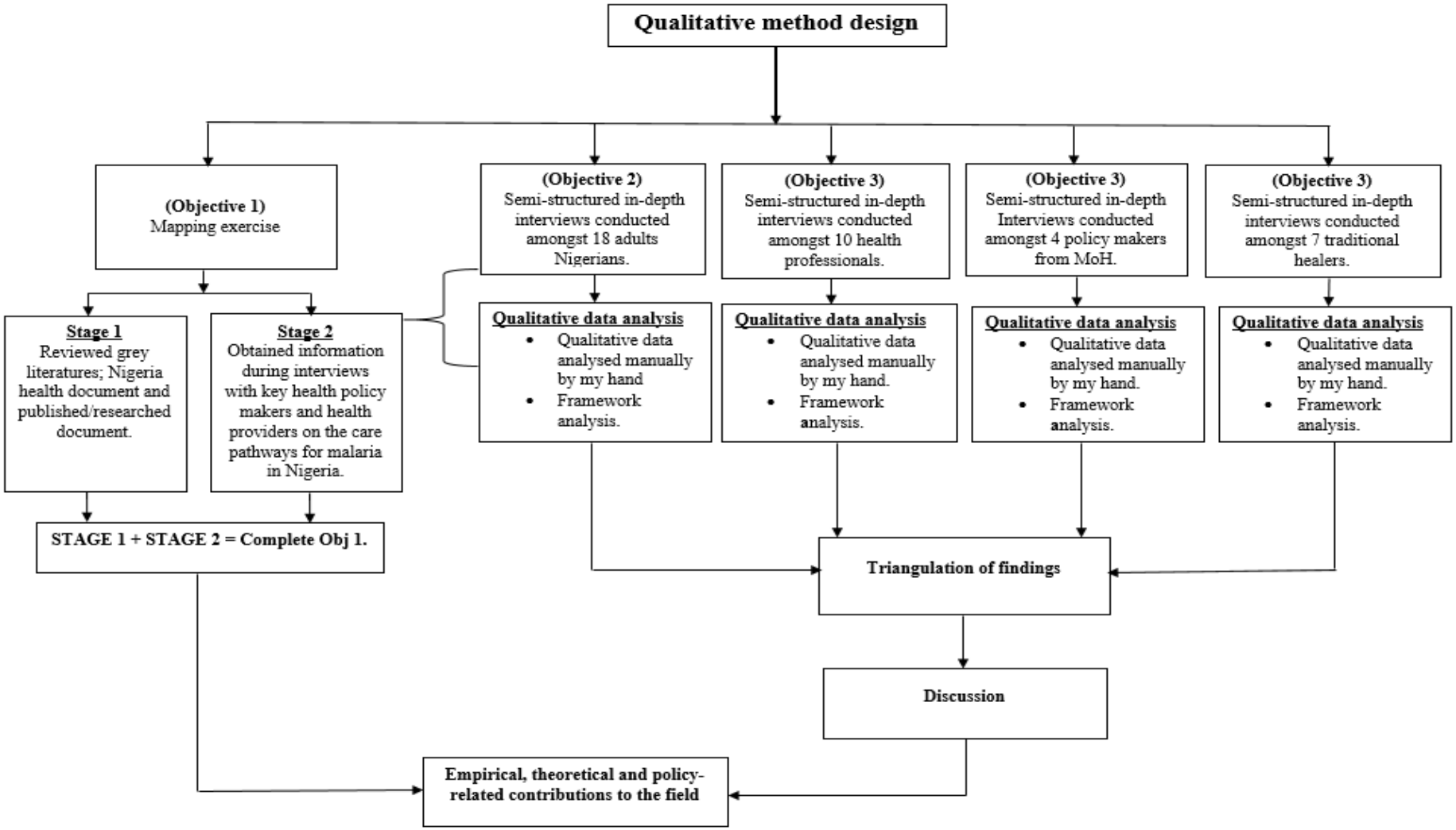


Figure 14: Overview of the research design for the study

4.6 Research methods

This section presents the specific methods (method, selection of samples and recruitment, data collection and analysis) suitable for achieving each objective of this research. Also, the various challenges experienced in the course of data collection for each of the study objectives are presented and discussed.

4.6.1 Objective one: map the care pathways (formal and informal sector provisions) for accessing malaria treatment in Nigeria

Method

Stage one: reviewed Nigeria's health documents, and grey literature, researched/published articles or documents on the care pathways.

The section that follows highlights the approach to conducting stage one.

In conducting this mapping study, the Nursing and Allied Health Resources Section (NAHRS) protocol was followed (Perryman, 2016). This protocol can be cited on: https://sites.google.com/site/nahrsnursingresources/mapping-protocol (NAHRS, 2017). The basic description of the NAHRS protocol is summarised in the following steps below.

1. Determine whether the topic has already been mapped (in other to identify if the current study is an update of the previous study).
2. Present succinct background information about the field to be studied/investigated, this, however, does not necessarily need to be extensive.
3. Identify top journals around the area of the subject. Moreover, not to be overlooked are the human sources of information about the discipline/speciality such as asking experienced healthcare practitioners and key policymakers. Other resources such as books and grey literatures, might as well be included in this step of the review and journals are regarded as the most productive resources.
4. Record article citations from core literature published in a recent time (generally, three years) in a database. At this step, decisions are made about what materials to include and exclude. For example, whether to include non-researched papers or reprints of historical articles. Publications types should be documented separately. Hence, materials cited can be separated into journal articles, books and government documents.

Search strategy

The search strategy included electronic databases and snowballing techniques (Brereton et al., 2008; Bettany-Saltikov, 2012; Aveyard, 2014). The electronic database was used to search for relevant literature and government health document which explained the care pathways for malaria treatment in Nigeria. The search was conducted on the University of Bedfordshire search engine, PubMed, Medline, AMED (Allied and Complementary Medicine), CINAHL, Global Health, Science Direct, PsycARTICLES, Cochrane Library, Google and Google Scholar. The reason for using multiple databases is to minimise missing out on important articles (McDonagh et al., 2013).

The second search strategy which is the snowballing technique is a manual search strategy which involved searching, identifying and assessing the references in every key paper (Greenhalgh and Peacock, 2005).

Other resources and health documents that were not available in the public domain were requested during the interviews with healthcare professionals and key health policymakers. Contacting human sources such as key health stakeholders and experienced healthcare professionals for relevant information about a speciality/discipline is a recognized strategy practised in mapping exercises as highlighted in the NAHRS protocol (Perryman, 2016; NAHRS, 2017). More so, a similar strategy was used during the mapping exercise conducted by (Saurman et al., 2019).

Data collection

The review of the health documents on the care pathways for malaria treatment in Nigeria was carried out by looking into the web pages of malaria and the overall health policymaking bodies in Nigeria such as the Federal Ministry of Health (FMOH) website (https://www.health.gov.ng/); National Malaria Control Programme (NMCP) website (http://www.nmcp.gov.ng/) and the Nigeria Centre for Disease Control (NCDC) website (https://ncdc.gov.ng/ncdc).

Stage two: this stage in objective one, was addressed as a consequence of answering objectives two and three during interviews with healthcare professionals, ministry of health policymakers, and adult Nigerians.

4.6.2 Objective two: To explore how the perceptions and attitudes of adults contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

4.6.3 Objective three: To explore healthcare professionals' (doctors and nurses) and key health stakeholders' (policymakers from the ministry of health) and traditional health practitioners' views on perceptions and attitudes of adults that contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

Method

The method used to meet objectives two and three are presented below. In-depth Interviews (IDIs) and Focus Group Discussions (FGDs) have been the increasingly used tools for data collection in qualitative health care type of empirical research to capture the views of participants (Legard et al., 2003; Moffatt et al., 2006; Gill et al., 2008). These objectives were met by carrying out in-depth interviews using semi-structured interview guides (see appendices 7, 8 and 9). A qualitative interview is a flexible technique used for primary data collection which provides a contextual explanation to observations carried out in the field (DiCicco-Bloom and Crabtree, 2006). According to Fontana and Frey (2000), an in-depth interview (IDI) is one of the most important and powerful tools used for exploring topics in-depth and gaining an understanding of human beings. Interestingly, this data collection method elicits rich, detailed, in-depth and context-specific information from individual's perspectives and personal experiences (Roper and Shapira, 2000; Russell et al., 2005; Kumar et al., 2009; Silverman, 2013; Carter et al., 2014; Jamshed, 2014). An in-depth interview provides the opportunity for researchers to interpret non-verbal cues through facial expressions, observation of body language and eye contact, thus, it is seen as a tool for data collection which enhances the understanding of researchers on what is been investigated based on what the participants (interviewees) are saying (Ryan, Coughlan and Cronin, 2009). As a result, it permits researchers to explore and probe hidden meanings and understanding (Ryan, Coughlan and Cronin, 2009). Empirical literature search shows a wide range of key contributions that qualitative research has made in the field of health (Moffatt et al., 2006). Consequently, employing this method of data collection was informed by previous qualitative studies conducted on malaria that also examined delays in health-seeking behaviours for malaria treatment (Dembo, 2012, Abubakar et al., 2013; Bello and Rehal, 2014). However, the previous empirical evidence base in the public domain has also stressed some disadvantages that exist in using IDIs, and these include: in-depth interviews are overall time-consuming and resource-intensive, it requires some degree of extensive training and interviewing skills as part of the interviewer's preparation (Gill et al., 2008; Bryman, 2012). In other to make interviewees feel relaxed and interested in the topic to be

discussed, effective interview techniques like friendly speaking and body language are required for interviewers.

As earlier discussed above, in-depth interviews and focus group discussions (FGDs) are the commonly used data collection techniques in qualitative research and studies involving health-seeking behaviour for malaria. FGDs on the other hand, are a very important qualitative research technique and therefore deserve considerable discussion. A focus group is described by the following studies (Jayawardana and O' Donnell, 2009; Brockman et al., 2010; Packer-Muti, 2010) as a flexible and unstructured dialogue between a trained or an experienced facilitator/moderator and members of a group (usually between 5 – 10 people), who usually meet in a convenient location. Although focus group discussion also elicits multiple views/perspectives on the topic of discussion, however, in-depth interviews were selected over focus group discussions for the following reasons:

- Groupthink: due to the susceptibility to groupthink, meaning that members pressure others to conform to group consensus (Carter et al., 2014; Fusch and Ness, 2015), this often results in disagreements and irrelevant discussion among the group members and distraction from the main focus of the study (Breen, 2006).
- Compared to semi-structured interviews, a focus group is not as efficient in covering maximum depth on a particular issue (Mears, 2012), as members may not express their sincere and personal opinions about the topic of discussion, this is because they may be reluctant to express their views, especially when their views disagree with another participant (Coombes et al., 2009).
- Under-researched evidence: There is a scarcity of evidence on perceptions and attitudes to delay in health-seeking for malaria treatment in Makurdi, Nigeria from triangulated perspectives of adult Nigerians, healthcare professionals, key MOH policymakers and traditional healers. Therefore, the in-depth interview method was adopted as the appropriate tool to generate rich, insightful, context-specific data and obtain a detailed explanation and understanding of the topic investigated in Makurdi (Jamshed, 2014; Silverman, 2013; Creswell, 2014).

However, despite these limitations, FGDs have also been used widely across a range of health research, including malaria studies. For example, some studies have adopted both FGDs and IDIs formats (Chuma, Okungu and Molyneux, 2010; Das et al., 2013; O'Neill et al., 2015; Mwaka et al., 2018; Oladimeji et al., 2018;), and some have utilised only FGDs (Deressa, Ali and Hailemariam, 2008; Idowu et al., 2008; Adhikari et al., 2019).

The rationale for selecting purposive sampling

Sampling techniques are usually divided into two main types – The random sampling method, otherwise referred to as probability sampling (traditionally associated with quantitative paradigm) and the non-random sampling, also known as non-probability sampling (often associated with qualitative research)

(Onwuegbuzie and Leech, 2007; Etikan, Musa and Alkassim, 2016). However, the choice of either sampling strategy should primarily be based on the level of generalisation required. For instance, generalisability in quantitative research is statistical, this means that the study sample is matched to the study population allowing comparability of their demographic information, and this is hence assumed that the result is generalisable (Horsburgh, 2003). In contrast, participants in qualitative research are selected based on theoretical sampling, this means that participants are selected based on their ability to provide in-depth and insightful information about the topic under investigation. Participants are therefore selected not on demographic representativeness but rather on a situational basis (Horsburgh, 2003).

Consequently, the sampling method adopted by this research is purposive sampling also known as subjective or selective sampling; a form of non-probability sampling technique (Seale, 2012; Etikan, Musa and Alkassim, 2016) that refers to the selection of study participants not based on randomisation but rather based on the personal judgment of researchers (Bryman, 2012). In other words, Creswell and Clark (2011) put forward that purposive sampling is the intentional selection and recruitment of respondents deliberately to answer the objectives of the research and it is based on the knowledge of the sample. However, even though the sampling is not random, it cautiously 'represents' the population of interest (Babbie, 2010; Bryman, 2012; Etikan and Bala, 2017). The reason for using this sampling technique is based on the opportunity it gives researchers to consciously identify and select individuals or study participants that are information-rich and knowledgeable about the topic of interest in other to answer the research question (Higginbottom, 2004; Mack et al., 2005; Onwuegbuzie and Leech, 2007; Bryman, 2012; Seale, 2012; Fusch and Ness, 2015; Palinkas et al., 2015; Etikan, Musa and Alkassim, 2016). This sampling technique is typically associated with qualitative research with smaller target populations (Onwuegbuzie and Collins, 2007; Dyson et al., 2008; Gledhill, Abbey and Schweitzer, 2008). Furthermore, the choice of employing a purposive sampling technique is informed by examples of some previous qualitative studies conducted on delays to health-seeking behaviours for malaria treatment (Dembo, 2012; Bello and Rehal, 2014; Adesoro et al., 2016).

However, a limitation of this sampling procedure is that, due to the subjective nature of selecting participants, non-probability sampling techniques are thus viewed as not a good representative of the entire population, hence its findings cannot be generalised to the entire population (Creswell, 2012; Etikan, Musa and Alkassim, 2016). However, it is useful particularly when randomization is not possible and also when a study is not aiming at generating findings that will be used to create generalizations relating to the entire population (Battaglia, 2008; Oppong, 2013), such as this present study which explored perceptions and attitudes that contribute to delays in health-seeking behaviour for malaria treatment in Makurdi considered it an appropriate technique. These present study therefore purposively selected four participant groups namely, adult Nigerians, healthcare professionals, key

health stakeholders (including policymakers from the ministry of health) and traditional health practitioners[6].

Convenience/Accidental/Haphazard sampling

In this type of sampling method, the subjects are readily available and easily accessible, it is affordable and easy (Oppong, 2013). The primary objective of convenience sampling is to collect information from subjects who are near the researcher (Trochim, 2006; Etikan, Musa and Alkassim, 2016). It is typically appropriate for smaller-scale studies such as pilot surveys, for pre-testing questions in other to obtain preliminary results before finally deciding on the sample design (Tuckett, 2004; Bryman, 2012). However, because the sampling frame in this technique is unidentified, its disadvantage is that it is likely to be biased (Tuckett, 2004; Brayman, 2012; Creswell 2013) and the subjects selected may not be representative of the whole population (Mackey and Gass, 2015). Hence, its findings may likely not be generalisable (Oppong, 2013).

Theoretical sampling

Theoretical sampling on the other hand is a commonly used sampling technique in the grounded theory approach to obtain insightful, rich and in-depth information from subjects for theory-generation (Oppong, 2013). This technique involves recruiting additional subjects based on data that has been previously analysed (Strauss and Corbin, 1998; Creswell, 2013). It is however important to understand that in theoretical sampling, the participants that were selected first were conveniently available or purposively selected while a subsequent selection of participants would be based on the preliminary investigation of the data (Schneider et al., 2013). It is costly and/or expensive when compared to other sampling methods and also consumes more time (Oppong, 2013). The primary limitation of this highly systematic sampling strategy is the scarcely available guideline for identifying how and when saturation is achieved (Bryman, 2012; Creswell, 2013).

Sample size consideration

Principles of saturation

Unlike in quantitative research where the calculation method is typically used in computing sample size, in qualitative research there is a lack of consensus on how to estimate the number of study participants to be recruited (Baker & Edwards, 2012; Bryman, 2012; Creswell, 2013). However, there are some factors acknowledged by researchers which can help determine the number of study participants required to be interviewed, this can also serve as guidelines towards achieving saturation namely: the quality of the interview; sampling procedure; researcher's experience; scope and nature of

[6] Appendix 1 presents the summary characteristics of the study participants.

the research; and the number of interviews per respondent (Mason, 2010; Morse, 2000; Marshall et al., 2013).

Furthermore, compared to quantitative studies, samples in qualitative studies are generally much smaller (Creswell, 2003, 2009; Mason, 2010). There is a point of diminishing return when more data does not essentially lead to more information (Ritchie, Lewis and Elam, 2003), this is because one occurrence of a code or piece of data is all that is needed to ensure that it becomes part of the analysis framework (Mason, 2010). However, qualitative samples should be sufficiently large enough to uncover most or all of the perceptions that might be significant to describe the phenomenon of interest and to address the research question (Kerr, Nixon and Wild, 2010), but at the same time bearing in mind that too large sample size risks having repetitive and eventually superfluous data (Ritchie, Lewis and Elam, 2003). To this end, Charmaz (2006) therefore advocated that a research aim is the ultimate driver of the sample size, and therefore the study design.

Qualitative researchers have widely used the idea of the "saturation point" technique to determine sample sizes in their studies (Creswell, 2008; Baker & Edwards, 2012; Bryman, 2012; O'Reilly and Parker, 2012; Sargeant, 2012). Consequently, the principle of saturation was used to determine the final sample size for this study. Determining how many interviews are enough (i.e., reaching saturation point) is a technique that requires a highly experienced and skilled researcher to implement, as it is a very tedious task. An example is a malaria study conducted by Mwaka et al. (2018) which explored the perceptions and attitudes of their participants. The sample size of this study was determined when they were thought to have achieved data saturation. Though Guest, Bunce and Johnson (2006) affirm that at a conceptual level, the concept of saturation is useful in determining sample sizes, for robust research before data collection the idea provides little practical guidance for estimating sample sizes.

To this end, critics of the idea of data saturation (Morse, 1995; Dey, 1999; Bowen, 2008) believe that the concept is inappropriate, arguing that what might be considered to be data saturation in a study may not apply to a more experienced researcher who would want to investigate the similar problem. In other words, researchers who claimed data saturation fail to proof of how saturation was achieved. Dey (1999) and Bowen (2008) suggest that if researchers take more time to examine, familiarise themselves and analyse their data there will always be a possibility for new data to emerge, instead researchers often close categories too early as data are just partially coded.

Although Guests et al. (2006) advocated that there is no specific strategy/method used to reach saturation, researchers however have agreed on these three general concepts and principles.

According to the principle of data saturation, it is reached when:

1. No new or additional information and themes evolve (Guest et al., 2006).
2. The information collected is sufficient to replicate the study (O'Reilly and Parker, 2012; Walker, 2012) and
3. Further coding is no longer achievable (Fusch and Ness, 2015).

Guidelines for sample size in qualitative research

Mason (2010) highlighted some guidelines for sample sizes in qualitative research as presented below.

- Grounded theory methodology: Creswell (2016) suggests that most studies are based on sample sizes between 20-30, while Morse (1994) suggests 30-50 interviews.
- Ethnography: Morse (1994) suggests 30-50 interviews
- Phenomenology: Creswell (1998) suggests between 5-25 interviews, while Morse (1994) suggests at least 6 interviews.
- For all qualitative research: Guest, Bunce and Johnson (2006) suggest, that the smallest acceptable sample is 15.

Furthermore, as suggested by some qualitative researchers that at least 20-30 study participants are needed to be recruited for the following purposes:

- Firstly, according to Warren (2002), for a published interview-based qualitative research.
- Secondly, for a grounded theory methodology to develop a theory (Charmaz, 2006; Creswell, 2013) and
- Thirdly, for successful postgraduate research (Bryman, 2012).

Though it is impossible to determine the number of participants to interview for a qualitative study in advance, a range of 20 to 30 respondents interviewed is likely to reach saturation point (Baker & Edwards, 2012; Bryman, 2012). Moreover, researchers advocate that in recruiting participants in a qualitative study, from a particular setting/location or each sub-group three subjects can be interviewed (Onwuegbuzie & Leech, 2007; Baker & Edwards, 2012). The reason for this is any preceding data that is generated tends to be superfluous. This suggestion was concurred by Onwuegbuzie and Collins (2007) and Hancock et al. (2009). They also recommended that three to four interviews for each sub-group are practicable, which enables researchers to attain data saturation at an early stage possible.

Therefore, for this study, I adopted the principle of saturation in determining the sample size for this research. However, I aimed to undertake 30 interviews on the assumption that this would be sufficient to achieve saturation, but with the preparedness to undertake more if necessary.

Table 1: Eligibility criteria for all sample groups

Sample	Inclusion criteria	Exclusion criteria
Adult Nigerians	• An adult[7] and a Nigerian. • Resident in Makurdi • Have had experience(s) of malaria attacks.	• Persons below 18 years. • Not resident in Makurdi. • Have no experience(s) of malaria attacks.
Healthcare professionals	• Medical doctors and nurses. • Resident in Makurdi. • Currently working in a health facility in Makurdi. • Have experience in treating malaria patients.	• Resident outside Makurdi. • Medical doctors or nurses who are working outside of Makurdi. • Have no experience with treating malaria patients.
MOH stakeholders (policy makers)	• Directors from the Ministry of Health (Associated with policy formulation and planning for malaria treatment). • The directors are from the following departments: **1.** Primary healthcare and Tropical Disease **2.** National Malaria Control Programme (NMCP). **3.** Nigeria Centre for Disease Control and Prevention (NCDC). **4.** Traditional, Complementary and Alternative Medicine (TCAM).	• Officers who are not directors. • Officers who are not from the Ministry of Health. • Officers who are not from the following departments.

[7] In the Nigeria setting 18 years and over is described as the age of adulthood, otherwise known as the age of majority, although this varies across countries) (National Population Commission Nigeria, 2015). The Age of majority refers exclusively to the attainment of the age when a person takes legal control over his/her life, actions and decisions, it is age of the termination of the legal authority of the parents or guardian(s) over the child's affairs and person generally.

Traditional healers	• Resident in Makurdi. • Currently practicing and treating as a traditional herbal practitioner. • Have experiences with treating malaria patients using herbal medicine.	• Non-traditional healers. • Not resident in Makurdi. • Have had no experience with treating malaria patients using traditional herbs.

Participants' recruitment and rationale for selection

This section presents a report on participants' recruitment. The discussion on participants' recruitment for this research is presented as Plan A (initial data collection strategy before the pandemic) and Plan B (alternative data collection approach adopted due to the pandemic). The Plan A data collection strategy detailed the initial data collection approach for this study before the development of the coronavirus pandemic, and it explained how it was initially intended to conduct face-to-face interviews. However, this approach was changed to Plan B, which is the alternative approach. The introduction of Plan B was necessitated by the development of the coronavirus pandemic (COVID-19) which affected the world (CDC, 2020; WHO, 2020c). In December 2019, the WHO announced the first outbreak of this novel coronavirus, and it was declared a pandemic. As result, at the time of data collection for this research, there was a lockdown; evidently, this affected my research as I could not travel to Nigeria for the data collection.

The first strategy presented is Plan A.

The Plan A data collection (pre-coronavirus pandemic era)

Adult Nigerian Recruitment

The initial plan to recruit adult Nigerian participants from Makurdi who fit the eligibility criteria is discussed as follows below.

The study location is Makurdi, a semi-urban town in Benue State, North-central of Nigeria (Agbo and Ochangya, 2011). Makurdi is divided into two regions – the southern and northern regions, and it is headed by someone who is politically elected called the Chairman of Makurdi Local Government.

Within these southern and northern regions of Makurdi town, there are two town halls where weekly meetings are conducted and chaired by both ward-heads of the two regions. The initial plan of the researcher was to recruit participants during the weekly town meetings. In doing this, approval in form of written consent would be gotten from the chairman of Makurdi Local Government and this is after the presentation of the recruitment letter (see appendix 19). Once consent and approval are obtained,

these community heads will proceed to address the entire community during the scheduled weekly meeting, and at this point, the researcher will be introduced and allowed to discuss the research. Using leaders from the community where a study will be conducted to help a researcher gain access to potential participants for a research investigation is a recommended solution to address such barriers (Hoffmeyer-Zlotnik and Harkness, 2005).

After the public presentation, those who are interested to take part would be informed to meet with me in one of the private rooms which is attached to the main hall, and at this moment any further question(s) would be addressed appropriately. The participant information sheet for adult Nigerians (appendix two) would be handed to any potential participant who meets the eligibility criteria. In addition to handing over the participant information sheet, I would have also read through it with them, and if they are okay with it, a mutually favourable date and time for the meeting (preferably working days and time i.e. between 8 am to 5 pm) would be scheduled. Potential participants would have been allowed to decide whether or not to take part in the research within a minimum of 3 working days.

The interview was planned to be conducted in the town centre hall, in a secluded attached room to the hall. On the agreed date for the interview date, the process would have begun by reading through the information sheet with the respondents and asking if the information read is clear and understandable. Participants would have been reminded that the interview is going to be audio recorded as already stated in the information sheet. At this point, the participants informed consent form (appendix 6) would have been handed over to the participant to print his/her consent. I would have reiterated the participant's right to stop and withdraw if they feel unhappy and no longer willing to continue at any point during the interview process, without explaining his/her reasons to me. Participants would have also been reminded of the duration of the interview which was to last not more than 60-90 minutes (Jamshed, 2014). Another aspect that I would have emphasised was the issue of confidentiality. As I would have referred to the participant information sheet, stressing that all data would be anonymised, no personal identifier would be attached to any information. All the recordings would be kept in a tightly secured/alarmed office by the university and participants' information in the computer will be kept under password protection and information would be destroyed upon completion of my PhD programme.

At the end of the interview, participants would be thanked and allowed to discuss any other information they feel is important to the study. The researcher will as well request if they express interest in having a copy of the findings of the research, an arrangement would be made with them through the researcher's contact detail (as printed on the information sheet).

Healthcare Professionals Recruitment

In recruiting health professionals for this study, a conscious effort would have been taken to approach only those individuals who voluntarily consent to take part in the study and are eligible. This sample

group was intended to be recruited from hospitals located only within the Makurdi metropolis (study location).

My initial plan was before I begin recruiting in any healthcare facility, consent would have been obtained first from the heads of these medical facilities, otherwise known as the General Medical Directors (GMDs). The process of obtaining consent from any of the GMDs would begin firstly by having a brief one-to-one discussion allowing me to present an overview of the research, this process was intended to last for about 5 – 10 minutes. Afterwards, the healthcare provider's information sheet (appendix 3) would be presented. A study by Bhambhwani et al. (2018) confirmed that presenting participant information sheets to potential study respondents promotes clarity and participants' better understanding of the topic to be investigated. On this note, each participant's information sheet contains the contact details of my academic supervisors printed on it, in case they have any concerns and/or would need further clarity about the research and for reassurance purposes.
After presenting the healthcare professional's information sheet to the GMD's I would have also presented to them the recruitment letters (see appendices 15, 16 and 17 for the recruitment letters for each of the health facilities), and then a mutually convenient date and time would be booked to enable me to meet with the rest of the health workers at the hospital during any of their meetings, which is usually held weekly.

On the appointment date, when having formal contact with the other doctors and nurses of the health facility, I would have briefly presented to them an overview of the research. Any open question would be addressed and given clarity and interested persons would have to notify me about their interest to take part in the interview, then a mutually convenient date and time for the interview would be booked but not later than 3 working days. Immediately after, the information sheet would have been given to each interested healthcare provider and allowed to go and re-think their decision to participate, should in case they would want to have a change of decision.

Interviews with healthcare professionals were planned to be conducted within the hospital premises - in any of their preferred locations within the hospital premises. On the date of the interview, the participant's information sheet would first be read through with them again and asked if there is anything that needs clarity. More so, before the interview starts, the participant's right to stop and/or withdraw from the study without requesting any explanations would have been reiterated (Pope and Mays, 2006). The duration of the interviews which would not be more than 60-90 minutes would also be explained to the participants. As it has been stated in the participant's information sheet, each participant would be informed that the interview will be audio-recorded with their consent. The reason for audio-recording is because; it allows the full interview data to be captured completely and also enables the preservation of meaning during the process of data analysis (Polit and Beck, 2004; Finlay

and Ballinger, 2006; Whittakar and Williamson, 2011). Moreover, audio-recording allows researchers to focus attention on participants, without being engaged in notetaking.

Furthermore, the issue of confidentiality and data protection as stated in the participants' information sheet would have been explained to each participant before the interview commences. Just before the interview begins again, an informed consent form (see appendix 6) and a recruitment form that indicated the demographic profile of participants (see appendix 10) would have been presented for them to fill and submit, indicating their willingness to take part. After obtaining full consent to take part and to audio-record the interview, I would then begin the interview with a brief introduction of the structure of the interview so that he/she is clear on the process.

At the end of the interview, participants will be thanked and allowed to discuss any other information they feel is important to the study. I would have as well asked if they express interest in having a copy of the findings of the research, an arrangement would be made with them.

Justification for recruiting healthcare professionals

In providing a holistic approach to tackling issues of public health importance, the healthcare professional's responsibilities extend beyond the provision of preventive, curative, promotional and/or rehabilitative healthcare services offered to patients and communities, into serving as an important resource for policy advocacy, counselling and community education, particularly when they are recruited to take part in any academic research by sharing their views and perspectives on the subject investigated, based on their years of experience and practice (CDC, 2016a; WHO, 2016c).

These groups of participants (e.g. doctors and nurses) are the starting point of referral, representing the first point of contact when patients visit a formal healthcare facility in Nigeria (Oladepo et al., 2007; Adesoro et al., 2016). They are frequently and directly involved in the treatment of malaria patients and other health conditions (Oladepo et al., 2007); hence, these sample groups were purposively selected because they possess the right knowledge and can provide relevant information about the topic being studied – perceptions and attitudes contributing to delays in health-seeking for malaria treatment specifically within Makurdi setting. In other words, this group of participant have a good chance of providing valuable insights and understanding of how perceptions and attitudes of adults in Makurdi contribute to delay in seeking effective treatment for malaria.

Just to mention a few, there are some documented examples of previous qualitative research on malaria that have also explored the views of community members as well as healthcare providers regarding malaria treatment (Ezeoke et al., 2012; Diggle et al., 2014; Umeano-Enemuoh et al., 2015). The study of Diggle and colleagues explored the perceptions of community members and healthcare providers on the acceptance of malaria diagnosis and treatment, while Ezeoke et al. (2012) explored the perceptions and experiences of healthcare providers and community members on the diagnosis of malaria. The study

by Umeano-Enemouh et al. (2015) also explored the perceptions of healthcare workers and community members towards malaria control, prevention and treatment.

Key health stakeholders (ministry of health policymakers) recruitment

This sample group were to be recruited through the researcher's contacts by snowballing through existing professional networks (the researcher also works for the Nigeria Government). There are documented examples of previous qualitative studies on malaria that have also explored the views of community members', healthcare providers and policymakers regarding malaria treatment. Examples of such research were conducted in India by Das et al. (2013), and in North-Eastern Tanzania by Mubyazi et al. (2005). The recruitment strategies outlined in these studies have helped to make decisions for recruiting this sample group.

Justification for recruiting MOH policymakers

The group of policymakers selected to be interviewed are those directly involved in the formulation and planning of malaria treatment policies from the Ministry of Health in Nigeria (Oladepo et al., 2007; Tesfazghi et al., 2015). (see Table 1, for inclusion criteria). They make health policies and decisions based on professional discretion, capping in policy improvements, whilst taking into consideration the available resources, practical arrangements and cost (Hlongwana and Tsoka-Gwegweni, 2017). These sample groups were purposively selected to obtain relevant information that relates to malaria treatment in Nigeria and to ascertain their views/perspectives based on their experiences and knowledge about the issues studied (Bryman, 2012; Mack et al., 2005; Onwuegbuzie & Leech, 2007).

Traditional health practitioners (traditional healers and CAM therapists) recruitment

This group of participants were intended to be approached by snowballing and I intended to recruit them from their traditional healing/treatment centre. At the healing centres, I would have approached these traditional healers and would have started by introducing and explaining the purpose of my visit (this would have included briefly introducing the study and its aim), and it would have lasted for about 5–10 minutes. After the introduction, I would have asked the traditional healer if he/she is interested to take part in the study. Following his/her willingness to participate, then I would have presented the traditional health practitioner's recruitment letter and further discussed in detail the research, to provide clarity to any question(s) that would have been asked.

I would have proceeded into presenting the information sheet (appendix 5) to him/her to go and think about their participation and see if they would have a change of decision. A mutually convenient date and time (preferably working hours of the day 8 am-5 pm) for the interview would be booked, but not later than 3 working days.

On the scheduled date for the interview, I would have read through the participant's information sheet with them again, in other to mitigate against poor literacy skills thereby ensuring full understanding which will further expedite informed consent.

Justification for recruiting traditional healers

Though traditional healers are informal sources of treatment and are not integrated into the Nigeria national health system (Egharevba et al., 2015), they are a very vital group of the participant to interview: as they are involved in the daily provision of non-orthodox services and treatment to patients of various health conditions including malaria (Krah, de Kruijf and Ragno, 2018). The literature review has shown that nearly 86% of Nigerians utilize this route of treatment for various illnesses (Adekannbi, 2018; Wada et al., 2019) and across the country, over 200,000 unregistered traditional health practitioners are practising in Nigeria with no means of official identification (Egharevba et al., 2015). Therefore, because they are also importantly involved in rendering community services in form of health, thereby being in continuous contact with people within the community, they are considered also like other participant groups to be suitable to obtain significant and useful information on the topic studied (Moffatt et al., 2006; Burnet et al., 2008; Sliwa et al., 2011; CDC, 2019). Similarly, like other groups of respondents, the community at large accepts also the views of traditional healers about their health without questioning (Trochim, 2006; Creswell, 2013).

The Plan B data collection (alternative plan)

Adult Nigerians

Employed the efforts of recruiters

In recruiting the adult Nigerians for this research, the alternative strategy employed the efforts of two recruiters. These recruiters received two days of training sessions with the researcher remotely (via audio/video calls on a social media platform, specifically via WhatsApp).

Reasons for organising online training sessions for recruiters

- The first was to adequately educate the recruiters on the overall aim and objectives of the research.
- The second reason was to provide the opportunity for the recruiters to familiarize themselves with the research methodology. Hence, this required sending them via email some sections in the methodology chapter of this study.
- The third was to provide the opportunity to emphasise and stress the necessity to conduct the entire process under strict ethics considerations. Some of the ethical principles that were repeatedly emphasised during this online training included: respecting the confidentiality and anonymity of

participants and the need to obtain verbal consent from potential participants about their willingness to participate and maintaining privacy (Beauchamp and Childress, 2001; Long and Johnson, 2007).

- The final reason for organising online training was to encourage the recruiters to strictly recruit participants who were eligible and met the inclusion and exclusion criteria presented in Table 1 above.

Procedure for recruitment

During the period of data collection, there was a lockdown in Makurdi, and so the adult Nigerian participants were recruited from around the neighbourhood. In this regard, the recruiters employed are familiar with their communities and so they were able to approach and recruit participants who live within the vicinity and are willing to take part. The steps below explain the recruitment procedure for adult Nigerian participants.

1. These recruiters because of their familiarity within their neighbourhood approached participants along the street/avenue and requested if he/she would be interested to take part in a research interview involving malaria. It is important to acknowledge that because of the lockdown that was in Makurdi at that time, potential participants were only approached within the streets, without moving into the town, and this was done while maintaining the guidelines set out by the WHO – observing social distancing, recruiters wore face masks and sanitized their hands often.
2. Any potential participant who was interested and wanted to know about the research before providing their verbal/oral consent to be recruited, the recruiters presented the participant information sheet to the individual and on this form, the recruiters printed their mobile/telephone numbers for them to call should they decide to go ahead to take part (not earlier than 24 hours). This gave them some time to go home and think as well as discuss with their family members and probably their friends if they would want to take part in the process.
3. When a potential participant calls the recruiters and agrees to be recruited and to take part in the process (i.e. after allowing a minimum of 24 hours), a date was then arranged when both parties would meet in an open space still within the vicinity (while yet observing social distancing) to discuss in detail about the study. This provided the opportunity for any questions to be addressed and any doubts to be clarified. At this point, the recruiters also informed interested participants that the interview would be conducted by an interviewer (researcher) via a social media platform remotely, precisely via FaceTime with the aid of an iPad which was made available to the participants by the recruiters. Initially, participants were to provide written consent but because of maintaining confidentiality to participants' information so that the recruiters will not have access to their information, and therefore verbal consent was taken by the recruiters if they are okay to be interviewed remotely. However, on the fixed date for the interview, I (the interviewer) also obtained verbal consent and was audio-recorded in the device which was used to record the interview.

4. When the recruiters and participants have agreed on a mutually convenient date when the interview would be conducted, the interviewer was then notified of the date.
5. On the scheduled date of the interview, the recruiter was physically present with the participant and when they are ready, the recruiter then calls the interviewer through the iPad. Before commencing each interview, the consent form was read to them, recording their response to the interviews. Participants, therefore, provided verbal consent regarding their voluntary participation, and this was audio-recorded by the audio-recording device used[8]. After taking their verbal consent then the interview commenced, and it was conducted at the participant's preferred location (either in his/her lounge or sitting room).
6. At the end of the interview, participants were thanked and also allowed to ask any questions and make any recommendation/contribution that they considered relevant to the topic under investigation. The adult Nigerian participants were asked to identify who their traditional/herbal practitioner is (this was used as a process for recruiting traditional healers).
7. The interviewer (researcher) asked each participant if they are interested in having the findings of the interviews. In an event when they agreed, an arrangement was made for it.
8. After every single use of the iPad by a participant, it was thoroughly sanitized and properly cleaned by the recruiter (using alcohol-wet wipes) while wearing personal protective equipment, and these include hand gloves and a face mask. After cleaning the iPad, it was kept ready for use by another participant.
9. Importantly, records for respondents who declined participation were also well documented as their reason(s) for refusal.

Healthcare professionals

Procedure for recruitment

In recruiting healthcare professionals, the researcher (interviewer) logged into the hospitals' websites and then sent emails and also followed up with phone calls through the numbers available on their webpage.

The steps below explain the recruitment procedure.

1. The researcher sent emails to these hospitals. The emails sent succinctly explained the purpose of contacting them and also explains the overall aim of the study. In the email I sent I included the letters to the GMD requesting their approval to recruit healthcare professionals from his/her facility.

[8] Verbal consent was taken and audio-recorded for all the sample groups of this research because of the issue of confidentiality; as to avoid participant information from being handled and seen by any unauthorised person. The UOB ethics committee were informed and approval for obtaining verbal consent was granted before beginning the process of data collection.

(See appendices 15, 16 and 17 for the details of the letters sent to the GMDs of the different hospitals). After sending emails, I allowed a minimum of 24 hours before starting to ring the hospital numbers.

2. When I called the hospital line I requested to speak to the General Medical Director (GMD), and when I finally established contact, I introduced the research and kindly requested the participation of healthcare professionals (including nurses and doctors) from the hospital.
3. Immediately after my conversation with GMDs of these hospitals, I forwarded an email attaching some supporting documents which included: the healthcare professional's information sheet, informed consent form, a copy of the research ethics approval obtained from the UOB, Ethics Committee and the research participant recruitment form (see appendices 3, 6, 11 and 10 for these documents).
4. When I obtained consent from the GMD confirming that I can carry on with the recruitment of healthcare professionals from his/her health facility, at this point, I requested that the recruitment form[9] which I had earlier sent should please be given to the interested potential participant.
5. When I received the recruitment form I contacted the individuals who had shown willingness to take part. I contacted them individually through phone calls and through their email addresses to discuss the research. At this point, I now sent them copies of the participant information sheet and I asked them to have some time (a minimum of 24 hours) to think about their decision to participate.
6. When they eventually agreed to participate, a mutually convenient date and time were fixed for when the interview would be conducted. The interview was conducted in their preferred comfort. Though some had the interviews with me at their office, the majority had it in their homes when they were not on duty.
7. On the very day of the interview, I email the consent form to each participant and politely asked for their signature and it was sent back to me. I also obtained verbal consent before commencing the interview. However, before I commenced the interview, I read through the consent form, recorded their response to the interviews
8. At the end of the interview, I asked each participant if they had any recommendations or comments regarding the topic under investigation. I also requested from them any relevant health documents or articles on the care pathways for malaria treatment which is not available in the public domain.
9. Participants were appreciated and thanked, and I asked them if they would want a copy of the findings of the interviews. The arrangement was already in place since I have their email addresses.

[9] These recruitment forms are presented to staff (particularly doctors and nurses) who agree to be recruited and participate. They would be required to complete the form and provide the details required in the form such as their phone number and email addresses so that they can be contacted. When the form is filled it was then emailed back to me. See the recruitment form in Appendices 10.

Policymakers

Procedure for recruitment

The alternative plan I adopted in recruiting policymakers from the Ministry of Health required that I contacted a director at the Ministry of Science and Technology through phone call. My experience of working in a Federal Government Organisation enabled me to establish a solid professional relationship with colleagues who supported during the data collection phase of my research and enabled me in overcoming the problem that arose due to the pandemic. For instance, it is important to understand that the researcher is an employee of the Federal Ministry of Science and Technology, and he is sponsored by the Federal government of Nigeria. This connection assisted me in contacting my director who happens to be my superior at the office. Based on the position of this director with the Government, he assisted me to get the attention of the directors of interest at the Ministry of Health (see Table 1 for a list of specific job roles for the directors). The steps for recruitment are reported below.

1. I contacted my director at the Ministry of Science and Technology via telephone call conversation.
2. I spoke about the research and the overall aim of the study. After the telephone conversation, I sent an email to the director and kindly requested to be linked to the above-mentioned directors of interest. He made telephone contacts with these directors because he is familiar with them, and informed them about the study and my request for their participation in an online interview with me. I attached the following document to the email which I sent: participant information sheet for policymakers, UoB ethics approval from the REC, recruitment form, a scanned copy of my staff identity card and my scholarship letter from the Petroleum Technology Development Fund (PTDF) indicating my sponsorship.
3. All the above four directors from the MOH consented to participate but none of them had the interview done with me on time because of their official duties (as they explained during the online interview sessions). None of the directors also filled out the recruitment form, rather they called me directly via the telephone when they felt ready and discussed their participation.
4. During the telephone conversation with the directors, I went ahead to introduce myself and discussed the study and its overall aim. I then forwarded to them the participant information sheet and the informed consent form via their emails (which they made available to me during the telephone conversation). I allowed them also to take some time (a minimum of 24 hours) and think about their decision to participate. I sent emails (as they were not picking up their calls) after about 72 hours to ask them about their decision to still take part.
5. When a director consented to take part in the interview, we both fixed a mutually convenient date and time for when the interview would occur.
6. On the interview date, I politely requested that they complete the consent form and forward it back to me. However, before commencing the interview, I read through the consent form and recorded

their response with the interviews. Therefore, with the policymakers also, I obtained verbal consent of their willingness to participate and for the researcher to keep the audio-recording of the interviews.

7. After each interview, I requested to know if they had any other relevant contributions and/or recommendations to make on the topic under investigation. Also, I asked if they were interested to have a copy of the findings of the interview, and they all expressed great interest to have a copy, an arrangement for this was made. I also requested from them any relevant health documents or articles on the care pathways for malaria treatment which is not available in the public domain.
8. At the end of the interview, I was very thankful to all the participants and reassured them of the confidentiality of their information and identity.

Traditional healers

Procedure for recruitment

Recruiting this sample group was possible because, at the end of each interview with an adult Nigerian participant, I requested the mobile number of a traditional healer in Makurdi that they could identify and/or would have accessed particularly with the singular aim of seeking treatment for malaria. However, before allowing any participant to provide me with the contact numbers of any traditional healer, I always requested that they first call them to inform them and seek their approval. Steps for recruitment are reported below.

1. After concluding the interview with each adult Nigerian participant, I asked them for the contact number of any traditional healer that they or someone else have accessed for malaria treatment in Makurdi.
2. Before allowing them to provide me with the contact detail (mobile number), I requested that they should please inform the traditional healer about the study and, hence let them know that it would be interesting to have their views on the topic being investigated. They consequently informed the traditional healers that the researcher wanted to have a phone call conversation with him/her concerning the study, and therefore, seeks your permission for me to share your mobile number with him. Therefore, I was only able to have the phone numbers of these traditional healers after they consented that their numbers be shared with me.
3. I rang each traditional healer and re-introduced myself and what the study is all about. Following this, I requested their voluntary participation.
4. However, because of their lack of knowledge of computer operation and also because there was a lockdown and movements were restricted during this period of data collection, I was able to read out the participant information sheet to them and asked if they understood what I have read. When a traditional healer agrees to carry on with the interview, I always advised them to have a minimum

of 24 hours to think about their decision and to also be free to share the information with their family members.

5. I called back much later again (not earlier than 24 hours) to understand if they have reconsidered their decision to withdraw or if they would want to still go-ahead to take part in the interview.
6. When they consented to take part, we both scheduled a mutually convenient date and time for the interview to be conducted. On the contrary, after rethinking their decision and they decide to withdraw, I often kindly requested to understand their reason(s) for declining to take part (a total of 2 traditional healers who initially consented to take part later withdrew, but they both provided reasons for the decline (Please see appendix 1 for summary characteristics of participants' and also stating reasons for any withdrawer).
7. On the interview date, before commencing, the consent form was read out to them, recording their response to the interviews. Therefore, with the traditional healers, also I obtained verbal consent of their willingness to participate and for the researcher to keep the audio-recording of the interview.
8. When I concluded an interview with a traditional healer, I thanked him/her and enquired to know if they would want to know the outcomes of the interviews conducted.
9. A closing remark and any other relevant contribution and/or recommendation that is related to the study were welcomed from them.

Language and setting consideration

All the interviews conducted were in English, essentially because it is the first language spoken in Nigeria, and it is understood by both the interviewer and interviewee. More so, interviews were conducted at the preferred locations of the interviewees. For instance, in the case of adult Nigerian participants, at the exact time of the interview, recruiters presented the iPad to the interviewee to take along with him/her while attending the interview session with the interviewer. The adult Nigerian participants were permitted therefore to take the device to their houses to attend the interview. When concluded, it was always returned to the recruiters who waited around the neighbourhood to collect it and sanitize/disinfect it, keeping it ready for another interviewee's use. While the rest of the three participant groups including healthcare professionals, traditional healers and the key MOH policymakers participated in their preferred settings, either at their homes or healing centres or offices. This aligns with the principle of allowing participants to select their most preferred venue or a 'natural' setting such as a library or home, offices or workplace or hotel lobby because it would encourage openness and free speaking in responding to the questions that would be asked. I conducted all interviews according to the booked and mutually agreed date and time fixed.

The Challenges of data collection

There were some challenges encountered during the data collection phase of this study, and these are discussed below:

Stigmatisation experienced by recruiters from potential respondents: during this phase of data collection, the coronavirus pandemic had developed fully which resulted in the lockdown witnessed in Makurdi at the time. Consequently, apparently due to the lack of adequate knowledge on how COVID-19 is transmitted, people (particularly adult Nigerians) that were approached acted aggressively and stigmatised the recruiters as though they were already infected to infect others with it. This was even though the recruiters were properly dressed; wearing their face masks and putting on hand gloves, also social distancing was maintained. In some disheartening experiences, some people ran away from them and were afraid to speak to them because they were regarded as external persons who are not their relatives. Consequently, the result of this stigmatization prolonged the duration of data collection.

Cancellation of scheduled interview date with respondents: On several occasions, some adult Nigerian participants who initially had consented with the recruiters to participate and had mutually agreed on a specific convenient date and time with the researcher to go ahead with the interview, decides to suddenly cancel and they did not respond to any further invitation from the recruiters when approached next time around the neighbourhood, to attempt to request and re-schedule for another comfortable and preferred date. All possible means to get in touch with such intended participants to request their reason for declining participation, in the event of this yielded no positive outcome, and on a few other occasions, they explained their reasons for not being able to participate and/or for declining to participate (see appendix 1 for the reasons provided by some potential participants who declined participation).

Internet and Network connection failures: it is important to understand from the empirical evidence base about the internet and network challenges in Nigeria before explaining this as a problem faced. Odusanya and Adetutu (2020) highlighted that, when compared to the rest of the world, there is a digital divide in the level of internet access and connection among developing nations particularly in sub-Saharan Africa (SSA). Also, the argument supported by regional broadband statistics, revealed that the entire SSA region has the lowest levels of internet penetration and wireless broadband infrastructure when compared to other regions of the world (Odusanya and Adetutu, 2020). Consequently, the challenge I encountered was that there were several instances when interviews would be in progress and suddenly the internet/network would interrupt (making it extremely difficult and/or nearly impossible to hear the respondent). In such events, I allowed a few seconds and I hung up the call, but would immediately call back. Unfortunately, when I call back some participants do not respond to their calls immediately again until after several attempts of ringing them, and then they would eventually pick up and continue. This also affected the flow of communication and the respondent's flow of ideas/thoughts.

There was a very frequent problem of low battery/charges in the iPad device used: this posed a serious challenge at the initial stage of the exercise. When I earlier started the data collection process there were some occasions when I would have interviews with the adult Nigerian participants already scheduled to take place in a few hours, but unfortunately, the battery charges in the device would be very low, and the interview time would need to be adjusted pending when the device was charged. It is well-known that Nigeria suffers from a poor electricity power supply and as result, there were challenges to getting the iPad charged, and no one could predict when the power cut would be restored. It was a very difficult challenge to mitigate, so I introduced the use of a power bank device. The power bank device was used on occasions when there are power-cut and the battery/charges in the device is low and would not be able to sustain an ongoing interview, hence, the power bank device served the purpose of a reserved battery or an alternative source of charge to power the iPad.

Interviews with policymakers from the ministry of health were very challenging because, at the time, there was an executive presidency order which required all offices to be closed and staff to work from home pending when arrangements for a safe working environment would be introduced. A few months later, the presidency ordered only essential workers (Grade Level 14 up to the director) to resume back to work. Despite this, the coronavirus pandemic created a lot of tension as people were still absent from work for fear of keeping safe and avoiding being infected with the virus. Hence, this became a very serious challenge for me as I could not establish any contact with them. However, after some time these essential workers began returning to their offices, but they became very busy attending to other unofficial duties. After several weeks, I was able to gain contact with them through the snowballing approach as explained earlier above in the procedure for recruitment.

All groups of respondents preferred it was a face-to-face interview so they could see and know who they were talking to and sharing information with. These were also some of the reasons given by some adult Nigerians as well as some traditional healer's participants group for declining to participate much later even after initially consenting to take part. Although the majority of the participants from across the sample groups understood the condition which was because of the then developing coronavirus pandemic which affected my possibility to travel to Nigeria to conduct face-to-face interviews.

Already, it is globally known that healthcare workers have been overburdened due to the coronavirus pandemic, and so gaining their attention to participate was an extra task. For example, there were instances when a scheduled interview date and time were adjusted just a few minutes before commencing, and the newly scheduled time would clash with another interview which was already booked. I had to negotiate for another farther date and time. These may be the reasons why most of the interviews conducted with healthcare professionals were in the evenings.

Backgrounded noises/distractions: There were several occasions when interviews were in progress and some family relatives would distract the respondent demanding their attention, these incidents happened

especially amongst the adult Nigerian and traditional healers. There was an instance when a family member demanded the attention of the respondent and it was going to take long and he declined to continue because he would not return anytime soon. Though we were 29 minutes into the interview process, so I enquired if I should keep or delete the recordings of the interview which was already recorded, he categorically stated that it should be deleted and I did as he requested. In some other situations when the distraction becomes quite serious such as distractions from demands from children, I politely requested if we should continue later but they would disagree and want to continue. These distractions may have also prevented detailed and frank discussions.

Another kind of challenge witnessed during data collection is related to religion and gender issues. Some of the participants which the recruiters approached were very religious, either conservative Muslim or Christian ladies. For instance, conservative Muslims, they cover their head/faces with Hijab (which is a religious practice), and they are not allowed to stand with men in public to discuss. Similarly, women who were of the Christian faith also refused to stand in open space to give an audience to the recruiters and this was likely because of the shame, ridicule and public gossip that comes with standing with the opposite sex and talking/discussing in public. Most of the women would have preferred if they were approached more privately, however, due to the unprecedented global situation, social distancing was strictly observed and thus this was not possible However, a couple of women who accepted to be spoken to by these recruiters were successfully recruited and interviewed.

The topic guides

The semi-structured interviews were conducted using topic guides. An interview guide *"is a schematic presentation of questions or topics that needs to be explored by the interviewer"* (Jamshed, 2014, p.87). The topic guides (see appendices 7, 8 and 9) represents topic guides for adult Nigerians and traditional healers, healthcare professionals and policymakers respectively. The discussion on the development of the topic guides and how the themes are presented relates to the HBM variables and is presented below. Before commencing any interview with a participant I read and summarised the participant information sheet. After reading through the information sheet and they have had the opportunity to ask a question(s) that were fully answered, they provided verbal consent about their willingness to participate in the research interview, and the verbal/audio consent was audio-recorded using the audio-recording device used. At the end of the interview, participants were thanked for participating.

Development of the interview topic guides

The development of the topic guide is an important step considered first when constructing the interview process (Ryan, Coughlan and Cronin, 2009), and its significance and relevance cannot be overemphasised. It helps researchers to maximally use the time for each interview; keeps the interview focused and precise on the topic being investigated; as well helps to guide researchers into exploring study participants systematically and comprehensively (DiCicco-Bloom and Crabtree, 2006).

The development of the topic guides was informed by important literature on attitudes and perceptions regarding malaria treatment behaviours, some of such studies included: Uzochukwu and Onwujekwe, 2004; Idowu et al., 2008; Okeke and Okafor, 2008; Onwujekwe et al., 2008; Okeke and Okeibunor, 2010; Iriemenam et al., 2011; Bello and Rehal, 2014; Chukwuocha et al., 2014, 2015; Chukwurah et al., 2016; Mwaka et al., 2018. More so, the topic guides developed were informed by reviewing the interview guides from published PhD dissertations that examined health-seeking behaviours for malaria, with reference to the definition of the HBM variables (Metta, 2016; Mafuleka, 2017; Udenweze, 2019). Also, the development of the topic guides was informed by studies which explored health-seeking behaviour in malaria and adopted the Health Belief Model in conceptually framing their research (Beer et al., 2012; Dembo, 2012; Watanabe et al., 2014; Mitiku and Assefa, 2017). Overall, the topic guides were informed by the research question, aim and objectives of the study.

Polit and Beck (2004) advocated that topic guides should consist of a framework of categories that are significant to the study; on which the questions of the interview are ultimately based. The topic guides were designed in a manner that the interview questions captured the broad question and many connecting questions (prompts) that are related to the principal question of the study (Robson, 2002; Seale, 2012; Creswell and Poth, 2017). The topic guide used was pre-tested and piloted by having some practice sessions with my supervisors and I also received some very important inputs from them. Also,

the topic guide questions were piloted and pre-tested amongst five adult Nigerian participants in the UK. The subsequent sections discuss details on how the interview questions were pre-tested.

Perceived susceptibility and severity

The correlation between perceptions about malaria as well its perceived vulnerability and severity and its impact on delayed treatment-seeking have been recognized by previous malaria studies that examined health-seeking behaviours to effective treatment services for malaria among their participants (Falade et al., 2005; Beiersmann et al., 2007; Idowu et al., 2008; Getahun, Deribe and Deribew, 2010; Okeke and Okeibunor, 2010; Dembo, 2012; Gobir, Sambo and Hadejia, 2014; Lawal, Balogun and Bada, 2014; Umeano-Enemouh et al., 2015). For example, the findings of research conducted by Gobir, Sambo and Hadejia (2014) in the North-western state of Nigeria confirmed that participants' perceptions about malaria, its, severity and susceptibility significantly impacted their attitudes towards the choice of treatment that they accessed, and it further contributed to influence delay to effective treatment-seeking. Similarly, the findings of another study conducted in the Southeastern region of Nigeria by Okeke and Okeibunor (2010) also presented similar results. According to the result from the study of Okeke and Okeibunor, participants' had wrong beliefs about the seriousness of malaria and their vulnerability to malaria, this likewise contributed to a negatively impact on their attitudes towards health-seeking. Some of the misperceptions about malaria reported in the studies (Okeke and Okeibunor, 2010; Gobir, Sambo and Hadejia, 2014) are: that malaria disease is perceived not a dangerous disease when compared to other diseases, the findings also highlighted that respondents perceived that malaria is caused by exposing the body to hot sunlight and eating uncovered or dirty food and drinking dirty water (i.e., contaminated food and water). Additional findings from these studies revealed that in terms of susceptibility to malaria, they perceived that it is a congenital disease, and others perceive that malaria attacks are spiritually related, hence discarding the fact that it is caused by any insect.

However, the result from a study conducted by Balogun and Bada (2014) in South-western Nigeria contrasts with that of both Okeke and Okeibunor (2010) and Gobir, Sambo and Hadejia (2014). Lawal, Balogun and Bada (2014) reported a good knowledge level among their participants regarding the severity and susceptibility of malaria, but concords with the findings of Okeke and Okeibunor (2010) and Gobi, Sambo and Hadejia (2014) on the aspect of delayed treatment-seeking for malaria amongst their participants'. One would expect that adequate knowledge about the susceptibility and severity of malaria should promote a positive attitude towards health-seeking behaviour, as Dike et al (2006) suggested that good health knowledge should influence positive attitudes and lifestyle patterns. Hence, people who have good knowledge are expected to display a positive attitude towards health more than those with inadequate/poor knowledge. The contrast in the findings of these studies conducted in different regions of Nigeria explained the need for further exploration through interviews with lay

participants (adult Nigerians) in Makurdi, healthcare professionals (including doctors and nurses), policymakers (from the Ministry of Health) and traditional healers. Insights from these participants provided explicit explanations and removed any confusion about the contrast findings of these previous studies, as it relates to the Makurdi context.

Perceived efficacy of treatment

There is documented evidence on malaria that explored delay in health-seeking behaviours which has demonstrated that the perceived efficacy of malaria treatment greatly plays a role in influencing people's attitudes towards the choice of treatment services they access, and as well significantly impacts their behaviours toward help-seeking (Agu and Nwojiji, 2005; Okeke and Okafor, 2006; Ajayi et al., 2008; Idowu et al., 2008; Onwujekwe et al., 2009; Asente et al., 2010; Mitiku and Assefa, 2017). Previous studies on malaria which explored perceptions of treatment in relation to health-seeking in Nigeria reported that participants in their studies compared the effectiveness of malaria treatment with either traditional healers or self-medication (Agu and Nwojiji, 2005; Okeke and Okafor, 2006; Ajayi et al., 2008; Idowu et al., 2008; Onwujekwe et al., 2009).

To buttress this point, for instance, the result of the study by Ajayi et al. (2008) carried out in rural southwestern, Nigeria reported that participants had negative perceptions regarding the biomedical treatment of malaria. Ajayi and colleagues highlighted that alternative and complementary medicine was considered by residents as their first line of treatment, and the second was the attitude of practising self-medication. Moreover, participants in their study considered hospital treatment or the use of any orthodox medication as the last option, usually after having exhausted other health-seeking treatment options such as traditional herbs or self-medicating themselves by buying antimalarials from across the counters. Ajayi et al. (2008) further reported some misperceptions amongst their participants about the orthodox medications, perceiving them as harmful to the body, especially for children believing it causes some complications such as deafness and blindness, and in pregnancy, their participants perceived orthodox medicines could cause stillbirth. As a result, of these misperceptions about malaria treatment, they preferred treating themselves using local herbs and visiting spiritual heads for cleansing, owing to the fact their condition may be caused by spiritual attacks. Evidence has, therefore, shown that delays to effective health-seeking for malaria are related to the attitude of seeking other inappropriate sources of treatment, stemming from negative perceptions about the effective treatment services available. Although a study conducted in the Southeastern region of Nigeria by Onwujekwe et al. (2009) revealed their findings of adequate knowledge level about malaria amongst their respondent, and in turn positive perceptions about the effectiveness of the treatment. However, despite the good knowledge level, participants' health-seeking behaviour to effective treatment-seeking for malaria was poor. It is however expected also that positive perceptions about malaria treatment would reflect prompt health-seeking behaviour, as well as positive attitudes toward treatment-seeking, just as Dike et al. (2006) advocated that good health knowledge would ultimately reflect good health behaviour. However, this

is not reflected in the case of Onwujekwe et al. (2009) study. Arguably, a study by Uzochukwu et al. (2011) argued that having positive perceptions about malaria treatment does not necessarily translate to good health-seeking behaviour toward treatment-seeking, this owes to the fact that others may choose not to act on it in a rational, logical way by seeking the right treatment on time. There is a need for further exploration to better understand why an individual though with positive perceptions about the effectiveness of malaria treatment may still choose to act reluctant in seeking treatment promptly for their condition, hence adding up to the issue of delayed treatment-seeking, within the Makurdi context. In achieving this, further exploration is required to understand this issue by interviewing the following participants from Makurdi: lay participants (adult Nigerians), HCPs, MoH PMs and THPs. The topic guide questions covered this aspect of the perceived efficacy of malaria treatment, as it helped to provide insight and explain this ambiguous problem.

Perceived benefits to effective health-seeking

Previous studies have confirmed that an individual's understanding of the perceived benefits associated with prompt effective treatment-seeking for malaria is considered one of the strongest driving-force towards taking the action (Dembo, 2012; Watanabe et al., 2014; Mitiku and Assefa, 2017). However, evidence from malaria studies that explored health-seeking behaviour has maintained that traditional herbal practice and orthodox/medical treatment have for ages been the most widely utilized methods of intervention by people across various endemic countries (Ukaga et al., 2006; Idowu et al., 2008; Sam-Wobo et al., 2008; SE et al., 2010), and also, their effectiveness has been argued and discussed in various malaria studies (Okeke and Okafor, 2008; Dembo, 2012; Adeneye et al., 2013; Mitiku and Assefa, 2017).

Dembo (2012) revealed that a person is most likely to seek intervention when he/she knows that the benefits of that action would cure, and make them regain their health. In other words, this can be explained that when the perceived barriers are lesser than the perceived benefits, then a person will be motivated and may likely take the action (Beer et al., 2012).

In discussing this argument further, some examples of malaria studies which explored perceptions regarding health-seeking will be analysed. First, a study conducted by Mitiku and Assefa (2017) in West Ethiopia explored the perceptions of caregivers in relation to treatment-seeking for malaria. Mitiku and Assefa research reported that respondents agreed that they utilized hospital treatment because they knew it would cure them. While others perceived that combining both traditional medicine and orthodox medication would benefit them more, as it works faster in curing their feverish condition. Another study conducted by Dembo (2012) in Malawi confirmed that participants perceived that traditional herbs are most effective and more beneficial than medical interventions. Hence, the results of Dembo (2012) and Mitiku and Assefa (2017) concluded that a person's perceived benefit of seeking an intervention towards malaria significantly influences the action taken. This current study will

therefore explore the perceived benefits that are associated with seeking prompt and effective treatment for malaria by interviewing the following participants from Makurdi: lay participants (adults), HCPs, MoH PMs and THPs. Raising this issue during the interviews with these participants helped to provide insight into understanding how malaria treatment is perceived and how it affects their health-seeking attitude in Makurdi. To explore and understand this issue from the perspectives of these participants (lay participants, HCPs, PMs and THPs) the topic guide was formulated to cover this aspect.

Perceived barriers

The study by Dembo (2012) classified the perceived barriers that may contribute to influencing treatment-seeking behaviour for malaria into two namely; the individual and community's perceived barriers. The individual perceived barriers refer to the personal views a person has that may contribute to hindering him/her from taking action toward seeking effective intervention, while the local community perceived barriers refer to general perceptions held by a community which may contribute to challenging health-seeking for malaria (Dembo, 2012). The result of Dembo (2012) revealed various barriers that oppose prompt access and utilisation of malaria treatment. These perceived barriers are discussed below.

Individual's perceptions about the causes of malaria

Dembo (2012) demonstrated that the beliefs a person has about the cause and transmission of malaria influence his/her attitudes toward health-seeking, and decisions towards the type of treatment he/she will use.

Community's beliefs and lack of knowledge about their susceptibility to malaria

Another important barrier that hinders prompt health-seeking behaviour for malaria stems from what the community believes is the cause of malaria and how susceptible a person can be to the disease. For instance, Dembo's study highlighted that the local communities in his study assumed different beliefs about the causes of malaria, and these perceptions differ according to the community's level of literacy. For example, in his study, due to the community's poor knowledge level about selective vulnerability to malaria, some participants disregarded the claim that malaria is spread by mosquitoes, let alone seeking medical help when they are sick.

People's assimilation of the community's traditions and culture

Another key perceived barrier that influences health-seeking behaviours of people is associated with how individuals have assimilated the traditions and culture of the community over time (Dembo, 2012). This greatly impacts their decision and the type of treatment they utilise.

This current study will therefore explore the perceived barriers that contribute to influence delays in treatment-seeking behaviours for malaria treatment in Makurdi by interviewing the following participants: lay participants (adult Nigerians), HCPs, MoH PMs and THPs. Raising this issue during the interviews has provided insight into understanding the different individual barriers (perceptions and attitudes) contributing to influence delays in health-seeking for malaria treatment in Makurdi. To explore and understand this issue from the perspectives of these participants' topic guide questions were formulated.

The topic guide for adult Nigerians and traditional healers covers the following themes.

Broad question: Experience with malaria.

Probes:

- Respondents discussed their experience of malaria, and described the action taken, discussion also focused on their frequency of attacks, and were probed to discuss reasons for the frequent episodes, perceptions on the prevalence of malaria in Makurdi, and explained reasons, description of causes, signs and transmission.
- Views on perceived susceptibility, perceived severity, perceptions of malaria in Makurdi, treatability, and explored how knowledge of these influences attitudes to health-seeking and effective help-seeking decisions, alternative treatment-seeking choices.
- Recommendations to improve perceptions and attitudes to effective health-seeking, media interventions (TV, radio), health education campaigns, health talks, subsidy for malaria treatment.
- Service improvement which requested views on how malaria treatment services could be made more accessible/acceptable to the community, and what are the main factors to be addressed to promote people's knowledge about malaria and perceptions of malaria treatment.

Broad question: Perceived efficacy to malaria treatment.

Probes:

- Effectiveness of malaria treatment, which focused on perceptions on malaria treatment efficacy, influence on health-seeking choice/behaviours in Makurdi, malaria treatment options in Makurdi and most perceived effective treatment option, differentiating traditional and formal health services, timely treatment and benefit of effective timely treatment, understanding of delay to health-seeking and effective malaria treatment.

Broad question: Perceived benefits to effective malaria health-seeking

Probes:

- Benefits of timely effective treatment-seeking, benefits of timely effective treatment and its influence on health-seeking attitudes.
- Benefits of combining traditional and allopathic medicines for the treatment of malaria, benefits of accessing traditional treatment over the formal health service, knowledge and perceptions about its effectiveness, trust, confidence, cultural values, and safety.

Broad question: Perceived barriers to effective health-seeking for malaria treatment?

Prompts:

- Explored the various perceptions about effective treatment for malaria, and how they act as barriers, other barriers challenging prompt and effective treatment-seeking, effective malaria treatment-seeking, perceptions about malaria and treatment as barriers to timely treatment, and various attitudes that challenge effective malaria treatment-seeking in Makurdi.
- Recommendations to increase effective malaria treatment through improved perceptions and attitudes that act as barriers.

Closure:

- Thanked respondents for participating, requested additional comments/feedback, and if they are interested to have the report of the final findings from the research at the end of the study.

Topic guides for healthcare professionals and policymakers cover the following themes.

Broad question: Care pathways for malaria treatment in Nigeria

Prompts:

- Care pathways for malaria treatment in Nigeria exploring the developmental stages of the healthcare system in Nigeria (system organisation), how it has evolved, and challenges facing the Nigeria healthcare system and delivery.
- How the various care pathways (informal and informal) for malaria treatment in Nigeria relate to each other in the provision of care, with a focus on how services are rendered and identifying the various care providers.
- Understanding how informal care pathways influence the perceptions and attitude towards effective health-seeking, available government intervention against the informal pathways of care in Nigeria.
- Views on recommendations to encourage prompt and effective health-seeking for malaria treatment in Nigeria.

- Closing the section which discusses malaria treatment pathways by requesting a document which highlights malaria treatment pathways in Nigeria.

Broad question: Experience with malaria.

Probes:

- Respondents discussed their experience of malaria as health providers, and described the action taken, discussion also focused on their frequency of attacks, and were probed to discuss reasons for the frequent episodes, perceptions on the prevalence of malaria in Makurdi, and explained reasons, description of causes, signs and transmission.
- Views on perceived susceptibility, perceived severity, perceptions of malaria in Makurdi, treatability, and explored how knowledge of these influences attitudes to health-seeking and effective help-seeking decisions, alternative treatment-seeking choices.
- Recommendations to improve perceptions and attitudes to effective health-seeking, media interventions (TV, radio), health education campaigns, health talks, subsidy for malaria treatment.
- Service improvement which requested views on how malaria treatment services could be made more accessible/acceptable to the community, and what are the main factors to be addressed to promote people's knowledge about malaria and perceptions to malaria treatment.

Broad question: Perceived efficacy to malaria treatment.

Probes:

- Effectiveness of malaria treatment, which focused on perceptions on malaria treatment efficacy, influence on health-seeking choice/behaviours in Makurdi, malaria treatment options in Makurdi and most perceived effective treatment option, differentiating traditional and formal health services, timely treatment and benefit of effective timely treatment, understanding of delay to health-seeking and effective malaria treatment.

Broad question: Perceived benefits to effective malaria health-seeking

Probes:

- Benefits of timely treatment-seeking, benefits of timely effective treatment and its influence on health-seeking attitudes.
- Benefits of combining traditional and allopathic medicines for the treatment of malaria, benefits of accessing traditional treatment over the formal health service, knowledge and perceptions about its effectiveness, trust, confidence, cultural values, and safety.

Broad question: Perceived barriers to effective health-seeking for malaria treatment

Prompts:

- Discussed how perceptions on effective treatment for malaria act as a barrier, other barriers challenging timely, effective malaria treatment-seeking, perceptions about malaria and treatment as barriers to timely treatment, and various attitudes that challenge effective malaria treatment-seeking in Makurdi.
- Recommendations to increase effective malaria treatment-seeking behaviour through improved perceptions and attitudes that act as barriers.

Closure:

- Thanked respondents for participating, and requested additional comments/feedback, and if they are interested to have the report of the final findings from the research at the end of the study.

Piloting the topic guide

Piloting topic guides used in qualitative research contribute to improving the data quality obtained from the research interviews (Castillo-Montoya, 2016). Before conducting the main interview, it was important to ensure that the interview questions align with the research question, and also to understand the practicalities of the study, hence, the topic guide was piloted with some prospective respondents. Also, I piloted the topic guide with my supervisors which yielded key feedback before going ahead to recruit prospective participants. Piloting the topic guides helps to identify uncertainties in the questions formulated as well as identify a variety of likely responses to each question that would be asked (Mason and Zuercher, 1995; Van Teijlingen and Hundley, 2001). Moreover, aside from ensuring that the wordings of the interview questions were straightforward and understandable without any ambiguity, the exercise helped me to authenticate that the questions are correctly worded and well-formulated and acceptable based on participants' responses and feedback (Van Teijlingen and Hundley, 2002). Though the piloting exercise was time-consuming, overall, it was very beneficial especially as it guaranteed that the data collected are robust and rigorous (Teijlingen van et al., 2001). The sections that follow present further rationale for piloting the topic guide for this research.

The exercise was conducted here in the UK among adult Nigerians who are family members of students studying in any of the UK universities. The following sections present the eligibility criteria. My reason for piloting the topic guide here in the UK was due to the coronavirus pandemic, which made it impossible to travel to Nigeria at that time, and secondly, it was due to time constraints, as it would have not been possible for me to travel to Nigeria whenever the lockdown was lifted and return into the UK in time to amend and upgrade the questions on the interview guides (based on participants' feedbacks) before then re-submitting the revised version to the Research Ethics Committee of the University.

Though I successfully piloted the interview guide in the UK, however, the participants that were recruited are not the exact representation of the sample group that I interviewed for the main study. For example, even though they were all adult Nigerians, and have had several experiences of malaria attacks, however, they were not specifically residents of Makurdi.

A completed PhD study by Hamdi Lemamsha (2016) who explored the risk and protective factors associated with obesity amongst Libyan adults, also piloted his study here in the UK among 5 Libyan adults (2 males and 3 females) between September and November 2014 before proceeding to Libya to conduct the main study. According to the researcher, his reason for conducting his pilot study in the UK was due to time-constraint and because of the deteriorating security environment in Libya at that time (mid-2013), particularly the situation in Benghazi, attributable to a proliferation of radical militia, hence, he viewed that conducting fieldwork in that area was relatively hazardous. Another example of a completed PhD study by Ghadah Ahmad Alfaqeeh (2015) that researched on access and utilisation of primary health care services in Riyadh province, Saudi Arabia, the researcher also piloted her topic guide here in the UK with her supervisor and one volunteer participant before proceeding to collect data in Saudi Arabia.

Consequently, in this present research, I approached a total of 9 adult Nigerians via phone calls, and I successfully recruited five (4 males and 1 female) and piloted the topic guides with them, and each interview lasted between 40-60 minutes and occurred on a mutually convenient date and time. Two of the interviews were audio-recorded and they occurred between August 28th to September 7th 2020. I audio-recorded these two interviews because I wanted to familiarise myself with how to use the audio-recording App and also these two participants requested that they would want to have copies of their audio-recordings. The information from the piloting exercise is not used in this study.

Below are carefully formulated eligibility criteria for respondents.

Eligibility criteria

Inclusion criteria

- They were adult Nigerians.
- Who are in the UK for visit or are on dependent visa.
- Not a resident permit holder to any other country.
- Have had the experience of a malaria attack.

Exclusion criteria

- Nigerians who are students.
- Nigerians who are UK resident holders or are permanently living in the UK or any other country.
- Have no experience of malaria attack.

Reasons for piloting the topic guide

The reasons for piloting the topic guide are two-fold:

1. To examine the practicality of the planned procedures for achieving the following aims:

- Overall, it was to improve the quality of the main interview of the study (Van Teijlingen and Hundley, 2002), as it provides valuable insight for researchers to identify any potential practical problems concerning a proposed recruitment strategy (De Vaus, 1993; Van Teijlingen and Hundley, 2002).
- To assess whether each question asked provided the opportunity for participants to give broad answers rather than restricted responses.
- To ensure that all the interview questions are clearly understood and are relevant to the study (avoiding repetitions), and where necessary, adjustments were made to the content based on the constructive feedback received (Mason and Zuercher, 1995; Teijlingen van et al., 2001).
- To estimate the response rate and duration to complete the interview (Prescott and Soeken, 1989; Muoio, Wolcott and Seigel, 1995).
- To acquire and hone the practical skills to administer in-depth semi-structured interviews using the interview guide, and to ensure familiarity with the topic guide (Polit, Beck and Hungler, 2001).
- To ensures that the flow of questions from one section to the next in the interview schedule was practicable and with ease (Jamshed, 2014).

2. The second fold reason was to practice how to audio-record interviews using the audio-recording App, listen to audio-recordings and how to transcribe the interviews, before the final stage (framework analysis).

Recruitment for the piloting exercise

I contacted some Nigerian students via the phone who I am aware have their family members living with them as dependants or are visiting the UK. These students were called and briefed about the study. At this point, I requested to link with their family members (via WhatsApp) requesting their participation in the study. I introduced myself as well as the study to all potential participants. Ethics consideration requires that it is important I inform potential participants that I was piloting the interview guide and that the interview was not for the main study. Also, I took out time to explain to them the significance of piloting interview guides in qualitative research.

Ethical consideration also further requires informing participants about audio recording. Participants were also informed that the audio-recording transcript would not be used in the main study, as it is to familiarising and practising before the main interview. Participation is strictly voluntary and this was informed to them (as stated in the participant information sheet and consent form). I reassured them

about the issue of confidentiality. Any potential participant who agreed to participate scheduled a mutually convenient date and time with me.

Conducting the pilot interviews

Before commencing the interview with each participant, the participant information sheet was read out to them and they were asked if it was understandable. I asked for any question(s) that would need clarity. Participants' right to withdraw or stop the interview process at any time without providing any reason was equally stressed. Also, they were informed about the audio recording. The reason for audio-recording was explained to them, which is to enable the researcher to listen to it and to remember what aspect of the process would need adjustment. They all provided verbal/audio consent to participate, and the exercise lasted between 40-60 minutes per participant.

In the end, all five respondents were asked if they had questions and if any of the questions asked were offensive. I also provided the opportunity for comments/feedback. For instance, I asked interviewees if the questions were formulated appropriately manner and if they were comfortable with the timing. Two of the five participants requested to have a final copy of their interview transcript so they can read through it. I requested to understand why they wanted a final copy of their interview transcript, and this is because they wanted to check the correctness of their interview.

Lessons learned from the piloting exercise

I confirmed from piloting the topic guide that the protocol used is viable for data collection and would help me to address the research question. The lessons learned from the piloting are discussed in two parts firstly, the lessons learned were relevant to conducting semi-structured interviews, and secondly, I identified various challenges particularly relevant to conducting online (remote) interviews and how to minimise them when conducting the main interview.

Interviews

This activity provided some important outcomes for this study. All five interviews were conducted strictly in English and each respondent provided verbal consent. Feedback received from respondents about the interview questions asked was that they were all well-formulated (i.e., straightforward and understandable). However, two of the five interviewees complained that the duration of the interview was too long and highlighted that some of the questions were repetitive. To this effect, particularly one of the two participants who complained about the duration of the interview suggested that repetitive questions can be taken away to shorten the duration of the interview. Also, another participant requested clarification to the first question asked, which was initially formulated as *"Tell me about your malaria experience"*. The question was later rephrased as *"Tell me about one of your experiences with malaria"* and the probes to this question remained unaltered. No further clarity to any other question was

requested by any of the five respondents, this confirmed that all other questions were in a regular sequence, meaningful and easy for the respondents to answer and elaborate on their answers.

When the topic guide was piloted completely among all the respondents and the adjustment was effected (based on the feedback), a revised copy of the topic guide was forwarded to my supervisors to cross-check and I received a key comment from my second supervisor. Consequently, when my supervisors cross-checked the changes effected in the topic guide, it was concluded they were minor changes, and I was granted approval to proceed with the main data collection.

Challenges faced when piloting the topic guide

The challenges I encountered while conducting the remote interviews varied from network interferences when interviews were in progress, and on some occasions, some of the potential participants felt reluctant to answer their phone calls and they didn't return the call, this happened both during the recruitment and interview phases. The network interfered with the interview process on one occasion so I had to drop the call and reconnect again. Particularly during the recruitment phase, when a potential participant does not answer the call after several attempts, I dropped a message, requesting if they would want to reschedule their interview. On three occasions when this happened, none of the potential participants was willing to re-schedule their interview, they instead declined their participation (see appendix 1 for reasons given by each participant who declined participation).

Another challenge was the issue of family and relative distractions. On one occasion, due to family member distractions the process was later rescheduled to hold a few hours later on the same day. The researcher requested that it can be continued later to enable him to attend to the situation, and also because of my concern that our dialogue has been interrupted, which may make it difficult for the interviewee to resume his train of thought. I followed the same method for the interviews in the main study, given that the interview with this man was successful. As much as I experienced some challenges while piloting the topic guide for this study, I have nevertheless learned some important skills on how to minimise the impact of any external circumstances. In one instance whilst the interview was ongoing, a participant suddenly said he was tired and would want to discontinue. On this occasion, I deleted his audio recording which was recorded up to that moment. This is stated in the participant information sheet (PIS) and informed consent form (ICF) that when such a situation occurs, the audio recordings from the participant would be deleted.

4.7 Data analysis

To maximise the quality of the data collected and analysed, and overall improve the credibility of this qualitative research findings the following key technical issues were taken into consideration before data collection and analysis: firstly, the processes for recording the interviews, and secondly, the transcription.

1. I used a high-quality digital voice recorder App Pro (Callbox) to record all the 39 interviews conducted for transcription purposes.
2. All the 39 recorded interviews were transcribed verbatim from audio to written form by the researcher, and I ensured diligence by checking each of the transcripts against the original recording to confirm accuracy. I anonymised each transcript to protect the identity of the respondent; by converting their name into their initials (Wiles et al., 2006). The data analysis was conducted manually, and the decision not to use NVIVO (a computer-assisted software for qualitative data analysis) was because of the relatively small data set (Creswell, 2009) for this study. Another reason not to have used the software was that it was my first experience attempting a qualitative data analysis, though I had received training. Hence, conducting it manually was thought to help me develop a better understanding of the various stages involved in framework analysis before attempting it in the future when I had become skilled in using the software package.

Data analysis in qualitative research involves pursuing the association between classifications and themes of data which is aimed at increasing the understanding of the phenomenon under investigation (Pope, Ziebland and Mays, 2000; Joffe & Yardley, 2004; Joffe, 2012; Hilal and Alabri, 2013; Braun and Clarke, 2014).

Framework Analysis (FA) was used to analyse the qualitative data from the semi-structured interviews conducted with adult Nigerians, healthcare professionals, key MOH policymakers and traditional healers.

This method of analysis was developed in the 1980s by social policy researchers in the UK and has become an increasingly popular approach used in medical and health research to manage and analyse qualitative data (Ritchie and Spencer, 1994; Ritchie and Lewis, 2003; Gale et al., 2013). More so, this approach of analysis has been used successfully in some qualitative studies on malaria (Tolhurst and Nyonator, 2006), and it aligns with the interpretive philosophical approach used; by finding themes based on participant views/perceptions and experiences. It is a flexible and systematic approach to data analysis, and can provide transparent results and clarity when generating an audit trail from original raw data to final themes, and can offer either a case-based or theme-based analysis by developing charts (Dixon-Woods et al., 2004; Swallow et al. 2011; Gale et al., 2013; Ward et al., 2013).

The strengths of FA make it an increasingly and widely adopted analysis approach by qualitative researchers for analysing primary qualitative data, particularly in health-related research (Murtagh et al., 2006; Tierney et al., 2011). However, it also has some inherent limitations which are common with all qualitative data analysis methods that are thorough. Some of these limitations include; that it is time-consuming and resource-intensive, and it lacks a theoretical foundation, just like in ethnography and grounded theory (Smith and Firth, 2011; Gale et al., 2013). The intrinsic flexibility (such that field notes taken during interviews can be included) associated with FA is considered by some researchers as a weakness. Being a flexible data analysis approach which is viewed as a limitation by some researchers,

it is very useful because it provides the opportunity for qualitative data collection and analysis to be undertaken successively (Lacey & Luff, 2009; Ritchie et al., 2003; Srivastava & Thomson, 2009), this was therefore very important to me in managing the time spent in data collection considering the short time-frame I had for my study.

The Framework Approach consists of different steps used in analysing the interview data (Gale et al., 2013; Pope et al., 2000; Ritchie & Lewis, 2003). These steps involved firstly, familiarization with the data set (transcripts) or immersion in the data – this stage involves a comprehensive reading and re-reading of all the transcripts; this purposefully enabled the researcher to have a full and detailed understanding of the participants' entire experiences (Thorne, Kirkham and O'Flynn-Magee, 2004; Amichai, Grossman and Richard, 2012). Additionally, Ritchie and Spencer (1994) re-emphasised that this first step in the analysis process enables researchers to familiarize themselves with the collected data, and thus, have an in-depth understanding of all the data set. The second step in the analysis process involved labelling and coding relevant pieces and statements from the data set (transcripts). For this research, coding was carried out to summarize the important and key concepts of each statement and discussion from the interview, hence preserving and maintaining the original information from the statement. The third step in the analysis involved the additional review of the codes in other to generate patterns, and link codes that are related to form categories. Importantly, the process of grouping into categories was not only based on codes that are just exact or closely similar; but was rather also based on codes that were linked in a way that might not have appeared and presented so at the face value, but are linked in some ways and having something in common (Guest, MacQueen and Namey, 2011). The fourth step involves developing important themes from the categories formed. Themes were generated and formed around reported practices and subjects on health-seeking behaviours for malaria treatment that were connected. In accomplishing this, the categories were classified based on their relevance and how they link and interact with each other. Consequently, based on this, categories that informed others or that were similar were combined to form a key theme. The final step was about integrating and interpreting the data. A summarised discussion of how these stages were applied is presented below.

4.7.1 Familiarisation with the data (immersion in the data)

I achieved familiarisation with the data by carrying out the following tasks. I was the interviewer of all the 39 interviews carried out with the sample groups, which included adult Nigerians (lay participants), healthcare professionals (medical doctors and nurses), policymakers from the Ministry of Health and traditional healers. I single-handedly transcribed all the audio-recorded interviews verbatim into written form, and I checked each transcript to ensure that it is accurate by comparing the audio recordings with the transcript. Also, to ensure further accuracy, my supervisors listened to some of the audio recordings and compared them with the transcripts submitted to ensure that it was accurate and exact. I read each

transcript several times for familiarization and to be immersed in the data and to obtain an understanding of the content.

4.7.2 Labelling and coding relevant pieces

At this stage, relevant pieces and expressions/statements from the data set (transcripts) were labelled and coded. This stage was carried out by summarising relevant and key concepts of each statement and discussing the interview (Bryman, 2016).

4.7.3 Further review of codes to generate patterns

This stage required additional review of codes to form and generate patterns, and further linking of related codes to generate categories. The process of grouping was based on exact or closely similar codes and also based on related codes that may not appear to have any form of face value, but have something in common (McAbee, Landis and Burke, 2017).

4.7.4 Developing relevant themes from categories

This stage involved developing relevant themes from the categories generated/formed. These themes are generated around reported practices and previous subjects on health-seeking behaviours for malaria treatment (Bryman, 2012; 2016).

4.7.5 Integration and interpretation of data

At this stage, I used the thematic charts which were formatted in the earlier stage as an instrument to map the categories of themes for comparisons – I checked the themes and sub-themes by comparing them with the original transcripts, audio-recordings and jotter to identify their (themes and sub-themes) patterns of association. I transformed the thematic charts into a visual format and this helped me to understand interviewees' perspectives contextually on the perceptions and attitudes that contribute to delays in health-seeking. The themes interpreted were supported with transcript quotations which highlighted the similarities and differences of the perspectives from the different sample groups. Also, included in each quotation were allocated participants' initials, participant identification numbers and classification of the sample group.

The inductive research approach in the data analysis

My thesis is inductive and the Health Belief Model is used to help analyse the results obtained from the study to explain how perceptions and attitudes contribute to delays in health-seeking malaria treatment, and not testing the theory.

Trochim (2006) and Bryman (2016) highlight that discussions that are based on participants lived experiences or observations is defined inductively, as induction entails moving from individuals to the general public. This, therefore, means that in inductive research, the views of participants are used to build broader themes (Soiferman, 2010). In other words, the inductive approach derived themes from

the raw data/data set (transcripts) (Thomas, 2006). Consequently, the inductive approach which involved working from participants' lived experiences, is the driver for the entire analysis of this research. Similarly, O'Reily (2009) explained further that an inductive research approach is when researchers start with as few preconceptions as possible based on participants' views and perspectives and allows the development of theory from the data set. Thomas (2006, p238) further stated that inductive analysis is an "*approach that primarily uses detailed readings of raw data to derive concepts and themes*". It involves comprehensively reading and re-reading through data and assigning codes to statement/expressions on paragraphs or segment as concepts that are relevant to the research question(s) keeps revealing (Thomas, 2006; Bradley et al., 2007; Curry et al., 2009; Bryman, 2016). This process is usually back-and-forth as it requires moving between the literature and data analysis to have a deep understanding of the emerging concepts (Neeley and Dumas, 2016). In inductive analysis, although the research objectives and questions to be answered influence the findings, however, the findings come directly from the analysis of the data set (Thomas, 2006). After the researcher has read the transcript several times and immersed himself in the data and digested it to have a comprehensive understanding of *"what is going on"* (Morse, 1999, p.404) through open-mindedness, he started identifying key themes, and he used the research questions as the lenses (Braun and Clarke, 2006). Bryman (2016) highlights that inductions contribute to the development of a theory that is testable, correct, and interesting because of its foundation in data, and importantly, a theory that is built through induction can as well be tested later using a deductive approach (Bryman, 2016).

The stark contrast to the inductive approach is the deductive (not applied in this research), where arguments are based on rules/laws and widely proven/acceptable principles (Soiferman, 2010). More so, deductive researcher *"works from the 'top-down', from a theory to hypotheses to data to add to or contradict the theory"* (Soiferman, 2010, p.3). O'Reily (2009) also emphasised further that deductive research involves the formation of a hypothesis which is based on existing theory and then the empirical world is then explored, and data are further collected, to test the hypothesis. More so, in the deductive approach, *"hypotheses are offered a priori, data are collected, and analyses are conducted to determine the degree to which the hypotheses are supported"* (McAbee, Landis and Burke, 2017, p.278). Deductive reasoning aims to achieve empirical adequacy through the testing of theory.

Critique of qualitative data analysis

Several qualitative research experts (Collis & Hussey, 2009; Johnson et al., 2010; Murphy et al., 1998) acknowledge that qualitative data analysis often suffers from uncertainty; this becomes more challenging to manage than quantitative data, however, the thematic analysis (TA) in qualitative data analysis is broadly used across the behavioural, psychological, social and in applied sciences including health, clinical and education (Bryman, 2012; Creswell 2012.; Thomas & Harden, 2008).

Though TA is a widely adopted approach of analysis in qualitative research, Bryman (2012) and Creswell (2012) argued that a possible limitation of this method of analysis is its flexibility, and this can make it challenging to identify what specific aspect of the data a researcher is to focus on. Thematic data analysis method lacks clear, transparent and concise guideline which instructs researchers on how to conduct the analysis; this lack of a clear procedural guideline could mean that this method is exclusively reliant on the skills and experience researchers have (Dixon-Woods, 2011; Furber, 2010; Ward et al., 2013). As a result of the different interpretations from researchers' standpoints, reliability will be an issue of concern in thematic analysis. Another drawback in TA is the fact that there is no defined practical guideline available for identifying relevant themes in an under-researched area of study. Hence, failure to identify and produce relevant themes could likely mean that the interview result is problematic (Bryman 2012; Creswell 2012). Methodologists, therefore, argued that the criticisms directed specifically at thematic analysis (TA) and overall qualitative data analysis have resulted in the development of the Framework Method, which is a form of qualitative thematic data analysis that has continually remained prevalent in the field of healthcare research. The preceding section has discussed the justification for adopting the Framework Analysis method to analyse the data of this research.

4.8 Ethical considerations

This section presents the ethical considerations and ethics in practice for this research. This research involves human participation, and it, therefore, becomes very pertinent to assess and consider potential risks and harms (Orb, Eisenhauer and Wynaden, 2001; Wiles, 2012b).

According to the British Psychological Society (BPS) (2006), risk is defined as "the potential psychological (emotional) or physical harm, stress or discomfort to human participants that a research project may generate" (BPS, 2006, p.4). The risk assessment is defined as "the systematic collection of information to determine the degree to which harm (to self or others) is likely at some point in time" (BPS, 2006, P.4). Owing to these definitions, I have the ethical responsibility of protecting participants from harms and respecting their autonomy (Orb, Eisenhauer and Wynaden, 2001; Allmark et al., 2009; Wiles, 2012a).

There were four main ethical issues which I considered that are associated with the interviews process, and these are: Ensuring confidentiality and privacy by anonymizing and protecting the interviewee's personal information; minimizing the risk of anticipated harm; adequately informing respondents about the study and what their participation entails before obtaining their informed consent and finally minimizing the risk of exploitation of participants (Beauchamp and Childress, 2001; Long and Johnson, 2007; Creswell, 2008; Bryman, 2012). The sections that follow address these issues individually in greater detail.

4.8.1 Ethical approval

Ethics approval was obtained from the Institute for Health Research Ethics Committee (IHREC) at the University of Bedfordshire on 13th July 2020 (appendix 11), and while the initial application included a Plan B, additional permission was sought for revisions to it as adjustments were made in light of COVID restrictions. Permission was gotten on 24th December 2020 (appendix 12).

4.8.2 Ethical principles

Consent

Participants' involvement in the study was strictly voluntary and they were informed of their right to withdraw from the process at any point without the researcher requesting for reasons (Connolly, 2003). Before the interview, all participants' voluntary informed consent was obtained by providing verbal/audio consent, and to comply with ethics regulations, I reassured all respondents about the following five ethical concerns: volunteering; informed consent; understanding and disclosure (Adams, 2013). The following ethical concerns are addressed individually in turn below.

Volunteering

Participants' rights and autonomy is another ethical concern which requires that all respondents' consent obtained is free of any form of coercion, but rather it should be voluntarily (Adams & Callahan, 2014; NHMRC, 2015). Following this, all potential respondents were informed that they are not mandated to take part in the study. All personal information will be kept confidential; as they were also informed that their consent was not necessarily permanent and they could either skip or refuse to provide an answer to any question that they feel uncomfortable answering. All participants were informed also of their right to withdraw at any given time from the interview without providing any explanation.

Understanding

Before participants finally consent to take part in the interview, an opportunity was given to them to raise any queries/questions they have about the research (National Health and Medical Research Council (NHMRC), 2015). To clearly convey the purpose of this research to all the potential participants, the participant information sheet (PIS) and informed consent form (ICF) was written by the researcher in the most simplistic way possible, without any ambiguity, in other to straightforwardly convey the information.

Disclosure

For each study participant, the Participant Information Sheet (PIS) and an Informed Consent Form (ICF) was provided. These documents provided participants with informed detail about the research as well as explained what their participation will entail. I was aware of my responsibility to provide all potential

participants with complete information regarding the nature and purpose of the research; the procedures to be undertaken; participants' responsibilities; the benefit of their participation to society; potential risks; reassurances regarding their safety and including maintaining confidentiality and anonymity of their information (Connolly, 2003; Wile, 2012a; Saunders, Kitzinger and Kitzinger, 2015).

Confidentiality and anonymity

All participants' information collected remained confidential. This aspect was also clearly highlighted in the PIS and ICF. Respondents were informed that apart from the supervisory team and the Research Ethics Committee (REC) from the Research Graduate School (RGS) of the University of Bedfordshire, no one else will have access to their information. I assured all the study participants of the privacy, confidentiality and protected storage of their recordings (securely stored in a password-protected computer). Each participant interview was de-identified or anonymised by using initials in place of their name (Brayman, 2012). I kept all the interview transcripts and the voice recordings secured on the University's password-protected computer. All the transcripts were carefully protected and stored in a secured cabinet at home, and all data will be carefully destroyed after this study.

4.8.3 Ethics in practice

Ethics in practice, are some of the unexpected ethical issues that appear on daily basis while conducting research, and these unexpected concerns were not earlier stated in the ethical procedure (Guillemin and Gillam, 2004). However, there is a crucial ethical moment required by a researcher in making decisions to respond to study participants with reflexivity which a key strategy that increases the trustworthiness and quality of qualitative research (Krefting, 1991; Dodgson, 2019).

Insider/outsider status as a researcher

The demographics and identity of a researcher such as gender, race, social and political status, language, origin and other sharing attributes or features (Cui, 2014) have been argued as influencing if the researcher is perceived as being an 'insider' or/and 'outsider 'and consequently the association between the researcher and the study participants. The researcher is a male Nigerian national and an employee of the Federal Government of Nigeria, and can therefore be viewed as an 'insider' in the context of this study (for the most part). A study by Dwyer and Buckle (2009) emphasised that one of the main problems of 'insider' research is that the researcher may find it challenging to maintain some detachment, thus, objectivity or simplification within the research than perhaps an 'outsider' researcher. Furthermore, in this study, based on the fact that it was conducted remotely, efforts of recruiters who live in the study location were employed, and so, both the researcher and recruiter's 'insider' status, particularly being Nigerians, and living in Makurdi were essential to enable this study to be completed for some reasons:

It would have been impossible for the researcher to receive 'The President of Nigeria's Scholarship Award' if he had not been a Nigerian who served the country during the National Youth Service Scheme in 2012. During the one-year service, the researcher had the opportunity to perform some key national assignments/duties, and this eventually led to his nomination and award presentation. Therefore, this award is only open to Nigerian youths that performed outstandingly during their national service year. Among other attached benefits of the award is automatic employment in a Federal Government Ministry, Department or Agencies (MDAs) and a fully sponsored study scholarship from master up to doctorate level, this, therefore, gave me the opportunity to be passionate about malaria research; of which during my master's dissertation, I researched on malaria and also currently as a PhD student I have been researching on malaria, particularly, the health-seeking behaviour aspect of malaria treatment. I have all along chosen to research malaria because of an unfortunate experience of losing my elder sister to malaria in 2009. The fact that the researcher and recruiters are Nigerian nationals, and the recruiters lived in Makurdi, this helped me minimise some of the challenges of identifying and recruiting participants; (specifically, the adult Nigerians and traditional healers), especially during this COVID-19 era; though there were a lot of inevitable challenges faced. More so, the fact that the researcher is an employee of the Federal Government of Nigeria made it quite easier to be able to recruit MOH policymakers and healthcare professionals. Without the effort of the recruiter, it would have been a serious challenge to be able to recruit participants from Makurdi. It was evident that during the interviews with policymakers' interview, they were very receptive and friendly, as I was considered a colleague after identifying who I am. They even promised to be of assistance to me in any other way after the interview. On several occasions, the policy makers mentioned that they were proud of me and happy for me. In some instances, while talking to the healthcare professionals, after realising that I work for the Nigerian Government, they gave me their support and created time for me (when it was possible). Therefore, being a Nigerian and working with the Government made things a bit easier, and 'opened the door' for me even though it was during the COVID-19 era. However, being an employee of the Nigerian Government does not mean the MOH policymaker did not request for all necessary proof such as a copy of my ethics approval letter, Government Service Number (Government Identification Number) and a snapshot of my school ID card (which was later deleted after confirmation). These checks were done probably because in this case the researcher may also be seen as an 'outsider'. This meant that it was difficult for the MOH policymakers to refuse consent from participating in the interviews but it may have influenced their openness and their responses. Despite this, the MOH policy makers ensured that I promise to keep their personal information very confidential before they provided their verbal consent, and this was in the interest of being a reflexive researcher. All participants were allowed their preferred place of choice to partake in the interview; some adult Nigerian participants had it in their cars, sitting room or living room and likewise with the healthcare professionals. The recruiters had to in some instances reinforced the researchers 'insider' status by informing the adult Nigerian participants that I am a Nigerian, who has lived in Makurdi as well, hence, this was an ethically

important moment ‘should the interview be rebooked/cancelled or to go ahead’. Also, during the data collection process which took place between August 2020 and January 2021, particularly during the Christmas season participant were not responding and willing to participate because it was a religious festive season, though the break was between three to four days.

In this present study, the researcher was sometimes an ‘insider’ and sometimes an ‘outsider’, and this explains why Dwyer and Buckle (2009) posited that the concepts of ‘insider’ and ‘outsider’ are more reflective of the intricacies in the relationship between the researcher and the participants. However, being reflective and critical is fundamental rather than understanding ‘insider’ and ‘outsider’ status as dualistic (Block *et al*., 2013; Franklin *et al*., 2012; Warin, 2011; Guillemin and Gillam, 2004). Reporting to my supervisors frequently about the progress and challenges encountered in the course of data collection, and having them regularly question the researcher about every step to soon release the importance of critical reflection (Hewitt, 2007) on the influence of his ‘insider’ and ‘outsider’ status and the relationship between the researcher and participants; and how all this process impacted on knowledge building in the entire research process and interpretation of findings. I, therefore, hope that learning to become a reflective researcher improved the trustworthiness, specifically the research quality and credibility (Krefting, 1991).

Trustworthiness

In this research, to ensure and assess the trustworthiness; the proposed model of Guba (1981) (in Krefting, 1991) was adopted. Although there are other models available such as Kirk & Miller (1986); Leininger (1985). However, this present study has sued the Guba (1981) model because it is conceptually relatively well developed and has been widely used in nursing and education fields (Krefting, 1991). Four aspects of trustworthiness are identified by the Guba model, and these are relevant as well to both quantitative and qualitative studies, they are credibility, applicability, consistency and neutrality (Krefting, 1991). *“Credibility reflected the truth by undertaking literature review/control, taking field notes, cross-validation of data analysis using a co-coder and contextualizing the research”* (Pinkoane, Greeff and Koen, 2008, p6).

Applicability refers to the level at which the findings of the study can be applied in different settings and contexts and with different groups; it is the ability to generalize from the findings to larger populations (Krefting, 1991). In this research, I ensured applicability was achieved by providing a comprehensive account of data collection and analysis.

Consistency refers to the consistent keeping of a record of the methodology and reporting of the findings to expedite critique and/or further research (Krefting, 1991). I collected the data for this study via an online platform at once for five months among all the participants, to overcome regression and morality; I ensured a good relationship with all participants that took part. Neutrality was achieved by cross-

checking the interview transcripts with the audio-recording using external experts, which in this case were my supervisors.

Additionally, I ensured that the quality of this study was enhanced by triangulating the findings; as it was based on the idea of convergence of different perspectives for cross-checking data to ensure that all aspects of the topic under investigation have been investigated (Krefting, 1991). Triangulation in qualitative research involves the use of various methods or data sources to provide an in-depth picture or to develop a comprehensive understanding of the research problem (Seale, 1999; Creswell, 2009; Tracy, 2010). Several qualitative experts have argued that this strategy: improves the quality of a qualitative study or helps to test the credibility of the research findings through the convergence of information from different sources (Carter et al., 2014; Roulston, 2018), thus, providing an in-depth understanding and a clearer or broader picture of the study problem under investigation, and thereby gaining detailed insight (Patton, 1999). Four different types of triangulation have been identified by Denzin (1978) and Patton (1999), and these are method triangulation, theory triangulation, investigator triangulation and data source triangulation.

Method triangulation: According to Polit and Beck (2012), this type of triangulation requires the use of multiple or different research methods of data collection to study the same phenomenon; it is commonly used in qualitative inquiry. Examples are observation, field notes and interviews.

Theory triangulation: Involves the use of different theories for analyses and interpretation of data. This type of triangulation assists researchers in supporting or refuting findings through the use of different theories or hypotheses (Carter et al., 2014).

Investigators triangulation: Denzin (1978) explain that this type of triangulation requires the participation of two or more researchers to study the same phenomenon to provide multiple observations and draw the same or different conclusions. Denzin revealed that this type of triangulation is capable of confirming the research findings and as well as provide different views and perspectives, thereby adding breadth to the research problem being investigated.

Data source triangulation: Involves the collection of data from different categories of people, and these include individuals or groups, families and communities, and the aim is to gain multiple perspectives and validate the data (Carter et al., 2014). Therefore, this is the triangulation strategy adopted by this study in other to answer the research question.

4.9 Chapter summary

This chapter centred a discussion on the chosen methodology for this study which described the particular method used to meet each of the research objectives. A qualitative research design which adopts an interpretive paradigm was considered the most appropriate to answer the research question

and meet the study's aim and objectives. The research design was semi-structured interviews with the following set of participants: adult Nigerians, healthcare professionals and traditional healers. The design of the research instrument was piloted and pre-tested, and this is presented in this chapter as well. Consideration of the appropriate data analysis for the qualitative findings was discussed.

Some ethical issues were also embraced in this section of the study, not only recognizing the standard of obtaining and gaining institutional permissions and ensuring the study participants are safe by maintaining anonymity and confidentiality to all data collected and responses but also other ethical concerns were discussed; this is to ensure that the entire research process is conducted within a good ethical practice. The amount of detail this chapter presented suggests a robust and rigorous methodological structure, adding credibility, and overall trustworthiness to the research, which would assure replication of the research.

Chapter five: Research findings

5.1 Introduction

This chapter turns its attention to presenting the findings of objectives one, two and three of this research. It begins by presenting a table summarising the sample structure of this research. Next, the findings of the objectives are presented accordingly, starting with objective one.

Table 2: Sample structure for this research study

S/N	Categories of interviewee	Sub-categories of interviewees	Number of interviews conducted
1.	Key stakeholders (involving Policy Makers from the Ministry of Health (MoH)). Directorate cadres.	Director, Primary Healthcare and Tropical Disease.	1
		Director, National Malaria Control Programme (NMCP).	1
		Director, Nigeria Centre for Disease Control and Prevention (NCDC).	1
		Director, Traditional Complementary and Alternative Medicine	1
2.	Healthcare professionals	Medical doctors	4
		Nurses	6
3.	Traditional health practitioners	Traditional healers	7
4.	Adult Nigerians	Lay participants	18
Total number of interviews conducted for this research			**39**

The information presented in Table 2 details the total number of interviews conducted which was 39, the categories of participants, and the numbers of interviews conducted for each sub-category. The semi-structured interview took place between 8th August 2020 – 14th January 2021 and was conducted in English language. All interviews were conducted remotely (online). Each interview lasted for about 45 – 60 minutes, and participants attended the interview at their preferred location.

5.2 Objective one

The objective one for this research was:

- Map the care pathways (formal and informal sector provision) for accessing malaria treatment in Nigeria.

Objective one involved two stages as reported below:

Stage 1: reviewed academics/published and grey literature on the care pathways for malaria treatment in Nigeria. However, following a wide range of literature searches, it is evident that there is essentially limited evidence base available in the public domain on malaria treatment pathways. Consequently, the available studies identified have been reviewed and the findings are presented in chapter 2 (section 2.3 – sub-section 2.3.3). The rationale for presenting the findings on the care pathways for malaria treatment early in the structure of the thesis (as opposed to the traditional approach of placing it after the methodology) is because it provided essential background and contextual information for the study, and the findings informed the formulation of some questions in the topic guide (see appendices 8 and 9).

Stage 2: This stage was fulfilled as a consequence of answering objectives two and three.

The challenges for data collection in objective one

There were some challenges faced during the literature search conducted on care pathways for malaria treatment in Nigeria. Principally, these challenges are associated with the websites of the following government agencies and ministries: The Federal Ministry of Health (FMOH), The National Malaria Elimination Programme (NMEP) and the Nigeria Centre for Disease Control (NCDC) websites.

Problems with the government websites: During the process of searching through the websites, it is confirmed that the organisation and presentation of information on the FMOH, NMEP and NCDC websites are generally poor. Though these websites are operational no useful information is provided on these websites. Overall, the websites lack up-to-date information and it was difficult to navigate through to extract relevant information including details on the care pathways for malaria treatment in Nigeria. In many cases, while navigating through the websites, to be able to gain access to another page, a password was needed, and this also hindered the process. In another situation, when a link finally opens, it shows that information had been removed or the link was no longer in use. While experiencing this challenge, I was able to retrieve a telephone contact number from their website which I tried to call several times but it never went through and was unsuccessful. I further went ahead to send an email message through their available address, yet no reply was received. Navigating through these websites and obtaining information was therefore a laborious exercise, lengthy and unsatisfactorily.

Scarcity of information in the public domain: there is limited information available on care pathways for malaria treatment in Nigeria in the public domain. There are no up-to-date records on the Nigerian government websites searched, though the access links to these Federal Government Ministry and Agencies are available there was no useful information available relating to the treatment pathways for malaria in Nigeria. The only document from the MOH and NMEP that I could access is the "2009 – 2013 National Malaria Strategic Plan" accessible through: https://www.thecompassforsbc.org/sites/default/files/project_examples/nigeria-national-acsm-implementation-plan%20%281%29.pdf. However, reading through this online document, no related information could be extracted from it.

Personal communication with officers at the Ministry of Health (through a professional network) confirmed that record keeping and particularly online updates from Ministries, Department and Agencies (MDAs) are scarcely available, and it was revealed that most information available is in hard copy formats which are filed and archived.

Impact of coronavirus pandemic: as a result of the coronavirus pandemic, the Federal Government of Nigeria through the Office of the President directed all government workers (non-essential workers) to work from home, this was aimed at controlling the spread of the virus which was developing at that time in the country. As a result of these changes, most of the government-owned institutions were not in operation, and this may be the reason contacts could not be made and emails were not responded to.

Busy policymakers: after conducting interviews with the key MOH policymakers and requesting relevant government or organisational health documents or publications, magazines academic journals and/or any material that was not available in the public domain on the care pathways for malaria treatment in Nigeria, they promised that they will check for them later, unfortunately, after the interview, they were always busy with their official duties. Despite numerous communication (calls and SMS) by the researcher, this documentation was not forthcoming. It was only one of the officials who responded to my call and explained to me that he was not yet chanced to check for the document after our contact because he was preparing for his promotional examination at that time.

5.3 Objective two: adult Nigerian's findings

Thus, objective two for this research was:

- To explore how the perceptions and attitudes of adult Nigerians contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

The presentation of the findings of this objective was driven by the themes identified, and these emerged themes were categorised based on the key components in the Health Belief Model (HBM), which includes perceived efficacy, perceived severity, perceived susceptibility, perceived barriers and perceived benefit. These constructs/components served as the parent themes for the findings. This section begins by presenting the socio-demographic characteristics of the adult Nigerian participants, it then turns its attention to present the key themes that emerged from the semi-structured interviews conducted with participants. After presenting the themes and sub-themes that emerged, participants' recommendations follow next, then the chapter ends by presenting a summary of the key findings. Participants' identity is coded using identifiers to maintain anonymity (Table 3 presented illustrates and explains the breakdown of the codes).

Table 3: Codes used to represent adult Nigerian participant.

Example of a code used to represent an adult Nigerian participant (AN1MU)			
Participant identification code	Adult Nigerian	Participant identification no.	Participant's initials
AN1MU	AN	1	MU

5.3.1 Socio-demographic characteristics of the adult Nigerian participants

A total of eighteen (n=18) adult Nigerians were interviewed (seen in Table 2). All the adult Nigerians that took part in the interviews verbally confirmed that they met the eligibility criteria required to participate in the research as outlined in the participant information sheet (see appendix 2). The sample structure and characteristics (see Table 4) of the adult Nigerian participants are presented first before proceeding to present the main themes and sub-themes that emerged from the in-depth semi-structured interviews conducted. The direct quotations from participants are as well presented verbatim throughout this chapter.

Table 4 shows a diverse group of adult Nigerian participants who participated in the interview. Their ages ranged from 26 - 61 years, and the majority (10) were married, while eight (8) were single. A range of professions was recorded and these included: eight traders (including farmers, plumbers and

electricians), one retiree, one civil servant (government-employed), four teachers, two students, one driver, and one applicant (unemployed). Furthermore, the majority (13) were males, and five (5) were females. The diverse nature of the participants is also reflected in their level of education; as two (2) participants reported to have acquired only primary education, and another two (2) attended technical schools, while eight (8) had secondary education and six (6) gained tertiary education.

Table 4: Socio-demographic characteristics of the adult Nigerian participants.

Codes	Gender	Marital status	Age	Occupation	Educational level
AN1MU	Male	Married	61	Retiree/cleaner	Secondary
AN2TA	Male	Single	37	Teacher	Tertiary
AN3CO	Male	Married	44	Trader/plumber	Technical school
AN4AN	Male	Married	45	Trader	Secondary
AN5NC	Male	Married	38	Trader	Secondary
AN6AO	Female	Single	29	Teacher	Tertiary
AN7KA	Male	Single	33	Trader	Secondary
AN8EI	Male	Single	35	Teacher	Tertiary
AN9JA	Female	Single	26	Student	Tertiary
AN10SA	Male	Married	51	Civil servant	Tertiary
AN11MEG	Male	Married	49	Trader	Secondary
AN12FA	Male	Married	44	Bus driver	Primary
AN13HA	Female	Single	28	Student	Tertiary
AN14IA	Female	Married	55	Trader/farmer	Primary
AN15JT	Male	Married	40	Trader/electrician	Technical school
AN16BI	Female	Single	30	Teacher	Secondary
AN17MD	Male	Married	59	Trader	Secondary
AN18AE	Male	Single	28	Applicant/unemployed	Secondary

*AN = Adult Nigerian

5.3.2 Perceived efficacy of malaria treatment

Perceived efficacy refers to an individual's level of confidence in the effectiveness of that performed health behaviour with the intention of the desired outcome (Rosenstock, Stretcher and Becker, 1988; Taylor et al., 2006). Therefore, individuals with low/negative self-efficacy about treatment, for example, will have low confidence in the effectiveness of that health behaviour (e.g. treatment-seeking) and this overall could affect the likelihood of performing the health behaviour. Five themes and six sub-themes emerged as presented in Figure 15. The coding framework is provided in appendix 13a.

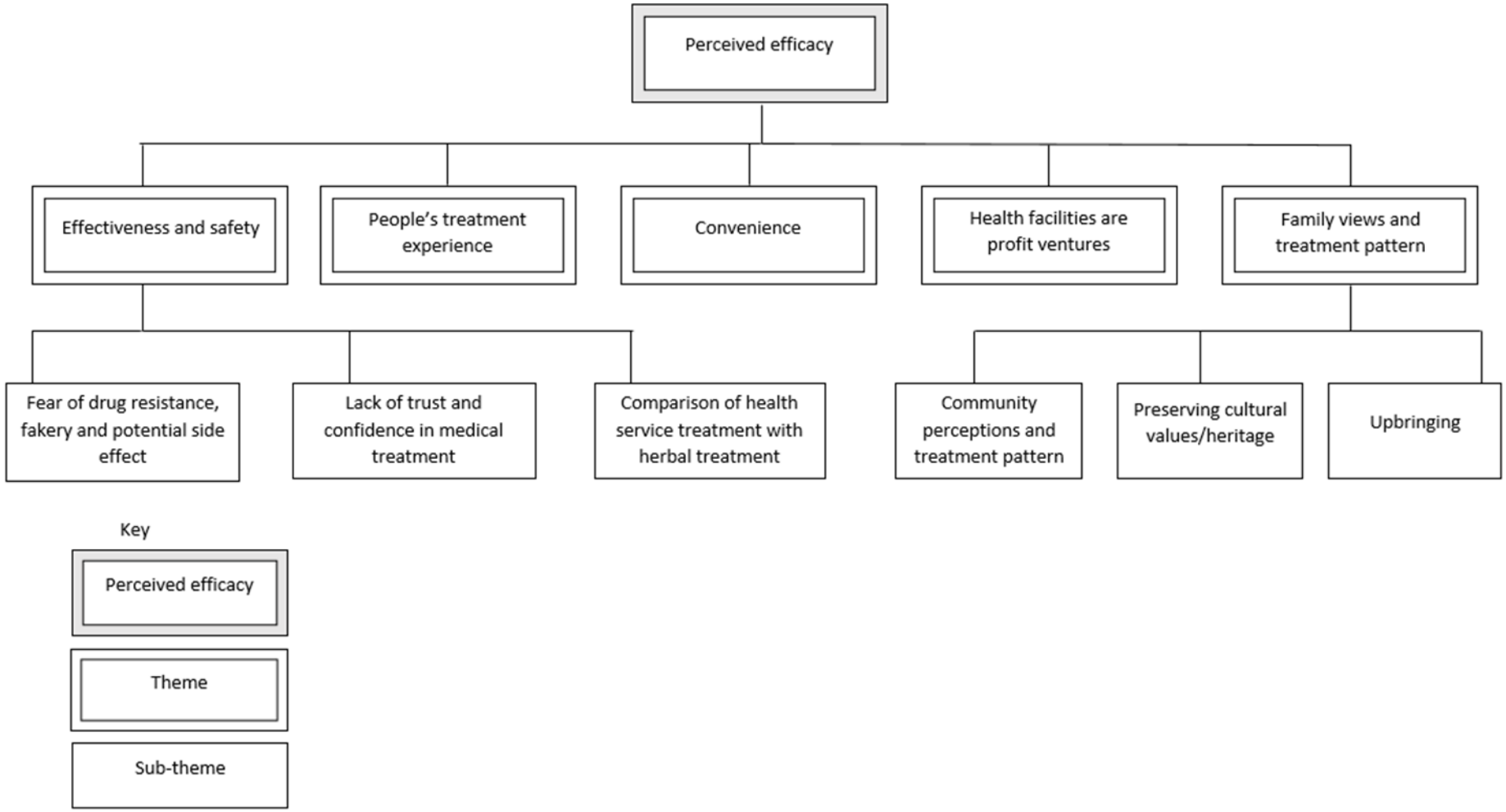


Figure 15: Themes and sub-themes that emerged from adult Nigerians interviews (perceived efficacy)

Effectiveness and safety

There were two distinguished views among the adult Nigerian participants regarding their perception of the effectiveness and safety of malaria treatment. A minority perspective was that malaria treatment (orthodox medicines) is effective and safe, and a majority perspective was that treatment for malaria involving biomedical/allopathic medicines is not effective and is also unsafe.

Those who perceived that biomedical treatment for malaria is not effective and safe discussed that they preferred treatment of malaria by using herbs, because they perceive it is safe to use in treating diseases, including malaria. They justified their claim by explaining that it is because of the re-occurring malaria attacks which they experience despite concluding a treatment from a previous episode, thus, as a result of these re-occurring malaria attacks, they therefore, perceived that it would require a person to take drugs frequently upon every episode. Hence, consuming antimalarial medications each time they are sick to treat the frequent malaria attacks is perceived as unhealthy and unsafe.

Furthermore, due to their perceptions that treatment of malaria using biomedical medicines are not effective, this group of participants, therefore, explained that they usually combine different treatment approaches, and this involves either mixing herbs with allopathic medicines at once, or they consume one immediately after another, and this is practised because they perceived that it makes the treatment effective.

Below are participant's quotations that perceived the biomedical treatment for malaria is effective and safe:

> I think the malaria treatment drug are highly effective for me because like I said from the beginning of this interview I usually have one or two episodes of malaria yearly and there is a particular drug that I take after diagnosis, the brand name is Lonart – DS is an ACT drug (AN8EI).

The participant whose quotation is presented above discussed how frequent he experiences malaria attacks annually, and how effective one of the products of the antimalarial drug which he often takes is.

The second quotation below expressed his confidence and argued that he perceives the biomedical treatment of malaria as effective because he has been using this method of treatment for a long time.

> For me I am confident about the effectiveness of malaria treatment, it is very effective and it works, this is what I have taken in all my adulthood life and it has been very effective, so I accept that it is good for treatment of malaria (AN1MU).

The quotations presented below represent the views of adult Nigeria with contrary opinions regarding the effectiveness and safety of malaria using biomedical approach:

> People even say that the herbs are even more effective than all of these orthodox medicine (of which I agree with this too), sometimes I have taken this other hospital medicines and it didn't work or it takes a longer time before I could start feeling the effect of the drugs, so they don't work quickly as the herbs do (AN17MD).

The above quotation discussed his view by explaining that he perceives that herbal treatment is more effective than orthodox (biomedical) medicines. He narrated his personal experience of how he received treatment from a health facility he could not get the expected result from the medication he took. This respondent, therefore, concluded that herbal medicine works faster than allopathic medicines.

> I know that the drugs are made from plants but it is mixed and combined with some chemicals which are not good for the body…it may not be today that the effect will start but maybe when you are not even expecting it, but for herbs, you don't need to worry and have fears at all (AN4AN).

The participants' quotation above perceives that biomedical drugs are manufactured/processed from plant products, which are then combined with chemicals (probably this could mean during its industrial production). Due to this, he perceives that it is not safe for consumption, especially frequently as malaria attacks are usually frequent. He associated his fears with developing side effects in the future which may arise unexpectedly because of the prolonged consumption of these drugs. Therefore, it is evident that his perception of the use of allopathic medicines to treat malaria encourages him to confidently use the traditional treatment without having fears of safety because it is perceived as very safe.

<u>Fear of drug resistance, fakery and potential side effect.</u>

Some of the adult participants reported that the fear of drug resistance, fear of purchasing fake antimalarial drugs and also fear of the side effects these drugs could have on them in the future are some perceptions that contribute to encouraging them to seek alternative treatment and thus delay in seeking effective treatment for malaria. They explained that because malaria is very rampant in Makurdi, so they perceived that the commonest fake drug sold is the antimalarial drugs, and so because of this, fake drugs are floating on the open market.

> "…because of drugs resistance when taking these conventional drugs, now you take them and not feel better so at that point you will now take the herbal drug" (AN2TA).

The participant's quotation above explained that one of the reasons people have confidence in herbs is because most people are concerned about fears of developing drug resistance, and so he revealed that due to drug resistance when a biomedical treatment is no longer effective, herbs become the alternative.

> Some people even perceive it that their body is already resistant to the drugs and it will not work anymore, so herbs is the best, and I agree with this one (AN9JA).

A similar view was argued by another participant as seen in the above quotation, she explained that some people have the perception that their bodies have developed resistance to these antimalarial drugs and so they have opted to use the herbs.

Fake antimalarial drugs have always been a serious issue in the Nigerian community. Although the government's effort has always been in place, however, this problem increases. Some respondents have explained their concern about this development, and therefore, some of the participant's extracts that reported their perceptions about fear of purchasing and utilising fake drugs for malaria treatment are highlighted below:

> "…so I think one major problem that is avoiding people from using any of the orthodox medication is their fear of buying the fake drugs, especially for malaria" (AN3CO).

The quotations above emphasised the issue of fake drugs. He argued that the fear of people purchasing fake antimalarial drugs is an important perception of people's refusal to utilize biomedical treatment.

Some participants also argued the issue of fear of the potential side effects as a result of consuming antimalarial medications. The below quotation explains this.

> In the course of treatment, I have had adverse drug reaction as a result of one of the treatment drug, chloroquine, where I was admitted into the hospital in the year 1999 for malaria and the reaction of the drug was adverse, I actually fainted because of the itching that was caused by that drug – chloroquine (AN8EI).

Lack of trust and confidence in medical treatment

Another perception identified that contributes to the delay in effective health-seeking for malaria treatment from participants' views is the lack of trust and confidence in medical treatment. The below extracts highlights this:

> I also believe that this medication can fail, I take the drug, which is produced by human and there can be human error, there can be industrial failure in the production line (AN8EI).

The above quotation pointed out a perceived trust deficit in the course of manufacturing these antimalarial medications, despite acknowledging that he takes the drugs but lacks confidence because of human error that might have occurred during production.

> "…lack of confidence in the originality of the drugs both the ones sold at the chemist shops or given at the hospital, so instead I will fall back to the herbal concoction which I know is not fake, it is original and works well" (AN4AN).

The above quotation illustrates the participant's preference for utilising herbal substances as treatment measures for malaria over orthodox medicine. The participant's decision was based on the lack of trust and confidence in the effectiveness and originality of clinical medicines.

Comparison of health service treatment with herbal treatment

Some of the adult Nigerian participants reported that because others perceive the traditional treatment as effective for treating different diseases including malaria and other health conditions, this, therefore, guarantees them to always fall back to the use of herbs again and again. Moreover, they argued that other people also compare the efficacy of herbal treatment with clinical treatment. For instance, the quotation below highlights the perceptions of people, as they argued that both the traditional and clinical medicines/treatments are effective.

> One of the perceptions people have may be contributing to delay in seeking hospital treatment is the fact that people perceive that both the traditional and the hospital treatment are effective and so they will instead choose the herbal treatment (AN6AO).

> "…another perception I am now having is that those who take herbs tends to have much longer protection than those who take the chemist drugs, so is it that it is better to treat malaria when we use our African kind of medicine and even save some

> money because we Africans knows how to treat diseases that affects us more" (AN11MEG).

The participant's quotation below compared orthodox and traditional medicines based on their ability to provide longer immunity which he perceived that traditional medicines provide longer immunity/protection.

> "…another perception I am now having is that those who take herbs tends to have much longer protection than those who take the chemist drugs, so is it that it is better to treat malaria when we use our African kind of medicine and even save some money because we Africans knows how to treat diseases that affects us more" (AN11MEG).

Family views and treatment pattern

Adult Nigerian participants reported family views and the patterns of treatment for malaria utilised by families as a perception that contributes to influencing delay in health-seeking for malaria treatment. For instance, one of the participants whose quotation is presented below explained that some families have a system of belief and a treatment pattern of using herbal concoctions despite their financial status. This participant explained that there are people who hold onto their family views and pattern of treatment strongly.

> They have a family belief system of taking herbs or concoctions as a means of treatment, even when they can afford the best treatment they will not because it is a family belief and they hold strongly unto it (AN18AE).

So, because members of a family have perceived that for example utilising herbal treatment as a means for treating malaria is a pattern and is being practised in the home, they also adopt and practice a similar treatment approach. For instance, the quotation below narrated a personal experience of how his mother is used to taking herbs for the treatment of typhoid fever and so he perceived it to be effective for treatment.

> "…am very much aware that the herbal drugs actually work, my mum takes herbal drugs, though not for malaria but it is for typhoid" (AN2TA).

Community perceptions and treatment pattern

Some of the adult Nigerian participants' argued that their use of traditional treatment is perceived as an environmentally inherited treatment pattern, which means that it is widely and commonly practiced

within their community. Therefore, one of the perceptions contributing to delay in seeking medical services for malaria treatment is the community perceptions and the patterns of treatment that are practised within that community. The quotation below explains this:

> "…for me also the environment you grow up from actually plays a role in affecting how people in Makurdi perceive treatment for malaria, some people in their houses, they do not know what conventional treatment is, when they are sick they usually use the herbal medicine, as such these group of people would always doubt the efficacy of formal treatment because they have been used to the herbal treatment over the years" (AN2TA).

The participant quotation below also reported how the use of herbal products or concoctions is a common practice within their community.

> "…herbs which is the oldest and longest serving treatment practice from the days of our forefathers and this what plenty people use here in our community, like in my village and it is very safe and I have confidence about it since I have been using it to treat different things whether it is malaria or any other thing right from my child age" (AN15JT).

<u>Preserving cultural values/heritage</u>

From the view of the adult Nigerians, one of the identified perceptions that contribute to delay in seeking treatment services from a health facility is that they perceive that by using traditional treatment, they are preserving the culture, values and heritage of their community. The quotations below reported that the use of herbs which is produced from medicinal plants is a generational practice by their forefathers. Moreover, they argued further that the medicinal plants used for this purpose have been blessed and therefore it remains their means of treatment.

> Herbs are well-known forms of treatment in this part of the world and we have been using this as old as our generations who have gone before us and we the present ones still use it (AN4AN)

> "…medicinal plants have been proven over the years many hundreds of years to be safe, and very effective for treating the different diseases it is used for and it is our forefathers' gift to we the coming the generations to use it, this herbal

> medicines, for instance, has been blessed by our forefathers' and when children take it, that means you are taking the blessings of our fathers and that goes a long way of making you lucky generally in life" (AN15JT).

Convenience

A minority of adult Nigerians reported that perceived convenience in seeking other treatment sources for malaria contributes to delay in seeking effective treatment services from health facilities. For example, one of the participants (AN2TA) quotation below explains that he feels more convenient purchasing medication over the counter from patent stores rather than seeking health services from medical facilities, and this is self-medicating.

> I take more of antimalarial drugs because it is easier to get (purchase) the drug at my convenience, I can just sit in my house and take the drugs according to prescription, but if it was to be injection, I would need to visit the hospital or local clinic or get a doctor or a nurse to administer the injection (AN2TA).

People's treatment experience

Some participants reported that people's treatment experience contributes to influencing their perceptions and impacts on their decision to seek treatment for malaria. The quotation below discusses his personal experience:

> "…hospital medicine is not safe at all, especially for malaria, for example, my wife tried using it because she normally doesn't like the bitter taste of herbs, so as she was receiving treatment, just not long after her whole body began to itch her, I think it is chloroquine injection, yes, and it was a serious case for me because if you see her face that time it was very swollen and her whole body" (AN15JT).

Another participant explained that people's experience of using the orthodox medication and not achieving the desired healing result, contributed to their decision of using herbs which proved to be effective to them.

> I have never tried herbal treatment for malaria but I have people who have been using it (herbs) constantly to treat malaria, they normally tell me that they tried taking the conventional drugs and they didn't really feel okay, so they had to take the herbal drugs, and it will actually work (AN2TA).

Another participant further echoed his view that their perceptions to seek prayer from spiritual leaders for treatment were influenced by the testimonies of others, and so they also began to adopt it.

> We have heard people testify severally that they were prayed for and they were healed of their sicknesses, so when we become sick, also we try to follow that pattern of prayer, i.e., following what others have done and they got well to do ours too (AN8EI)

Health facilities are profit ventures

Some participants perceived that the antimalarial tablets and generally the biomedical treatment of malaria being sold are aimed at making profits only. Some of their arguments were because the pharmceutical drug companies have yet to produce antimalarial drugs that should provide lasting immunity against re-infection. Perceiving that malaria is not novel, yet, there has not been such medication yet, therefore they suspected that the sales of this drug are for business purposes to make profit from people. They believe that the antimalarial drugs that are sold across patent shops and administered are ineffective and cannot provide lasting protection, this is because the manufacturers want people to keep on patronising them.

> "…people have said that these antimalarial tablets are for business purposes, not the original one that would provide maximum protection, they only provide temporal benefits alone" (AN12FA).

5.3.3 Perceived severity

The Health Belief Model describes perceived severity as a key construct that determines an individual's health-related behaviour. Therefore, in the context of malaria disease, perceived severity refers to a person's perception of how serious the illness and its consequences are. In other words, an individual must feel threatened with perceived serious or severe consequences of the disease or health condition to promptly seek appropriate health services and generally improve their health-seeking behaviour (Marriner and Raile, 2005; Champion and Skinner, 2008; Roberts and Marvin, 2010). Participants were asked about their opinions of how malaria is perceived as being severe. This facilitated the understanding of how their perceptions and views about the seriousness of malaria contributed to delay in treatment-seeking for malaria. Three themes and three sub-themes emerged as presented in Figure 16 below. The coding framework is presented in appendix 13b.

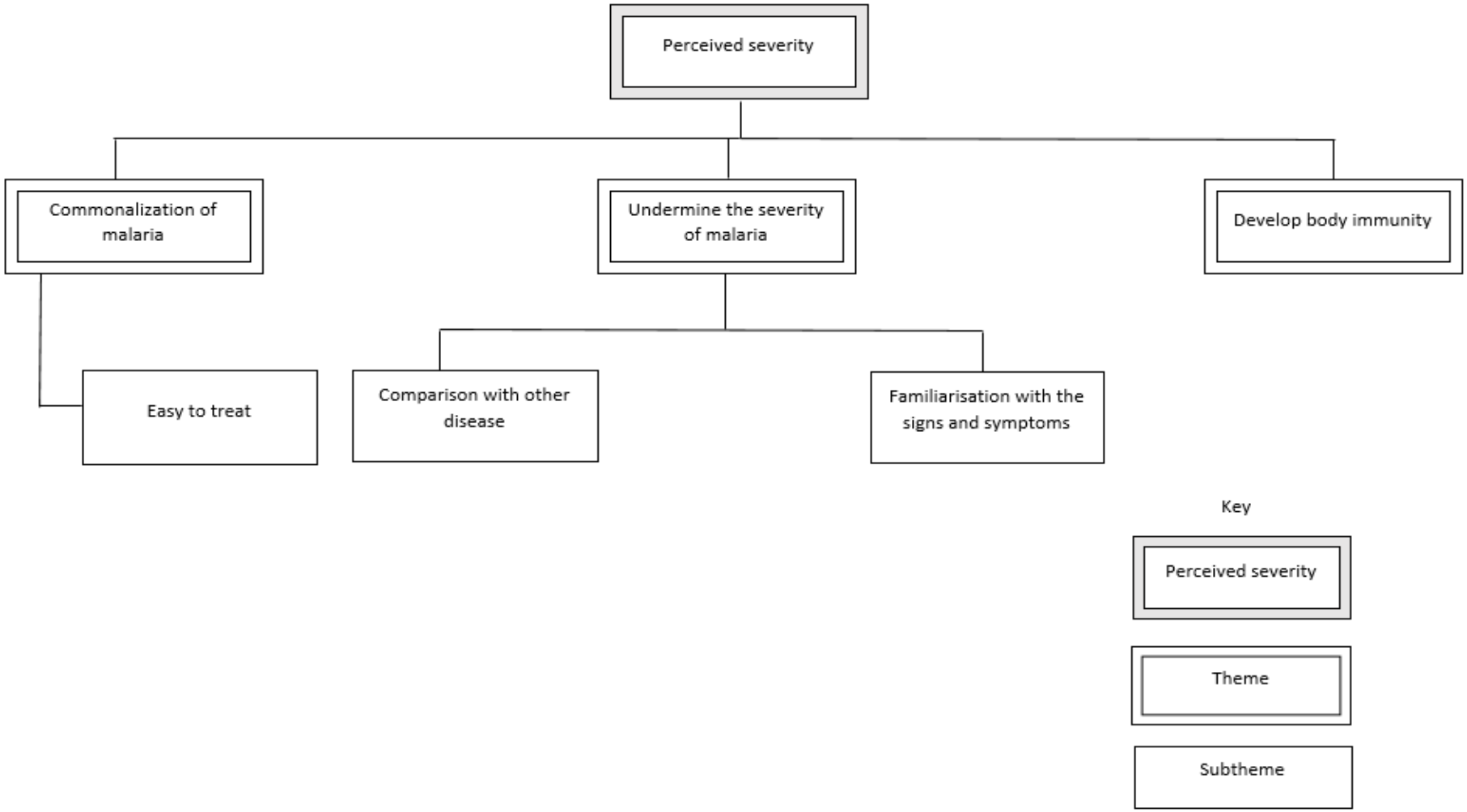


Figure 16: Themes and sub-themes that emerged from adult Nigerians interviews (perceived severity)

Commonalization of malaria

The majority of the participants discussed how malaria is perceived as a common disease, and this explains how this attitude could contribute to delays in seeking effective treatment for the disease. In perceiving malaria as a common illness, respondents explained that the majority of the residents in Makurdi experience malaria attacks at least two or three times yearly, and by this experience, participants perceive that the disease is normalised, and is a part of human existence. Furthermore, people's attitude toward characterising malaria as a common disease extends to impact on their health-seeking decisions, as they believe that even without seeking treatment and/or without taking any action their body's immune system would fight off the disease from their body and the individual will be well. Quotations extracts from some participants are presented below:

> It is not a stigmatized disease now; it is just a normal thing to have malaria…So to people, because malaria is common, they tend to procrastinate the treatment and then it will be delayed (AN7KA).

> Others think that malaria is very common and they can just live with it (AN8EI).

> "…the disease is a very common one here and people don't take the treatment seriously as well. They make light of the treatment, some even believe that if you start feeling sick, even if you don't take any action, malaria will disappear from your body slowly just like that because your body system can fight it" (AN4AN).

<u>Easy to treat</u>

Some participants discussed that malaria is a disease that is easy-to-treat. This perception could contribute to encouraging delay in effective treatment-seeking because when malaria is perceived as an easy-to-treat disease, the attitude of people towards health-seeking would be linked to the fact that it is not a deleterious ailment, and so they could seek treatment at any time.

> I just feel like malaria is something that I feel like okay, it can be treated quite easily (AN2TA).

Undermine the severity of malaria

Though the majority of the participants undermined the seriousness of malaria by explaining that when a person is infected, it cannot lead to any further complications or any serious problems. However, the

views from a minority argued that malaria can become a serious disease. Those who undermined the severity of malaria explained that it is because they have experienced several episodes of malaria over the years and nothing had happened to them nor have they developed any complications as a result of malaria.

> "…many people have had it (malaria) over and over again and has now underrated it" (AN5NC).

> "…people have actually neglected the fact that malaria is actually a serious illness" (AN2TA).

Presented below are some of the quotations from participants' who perceive that malaria is a serious ailment.

> Malaria is very severe, especially for children that are under the age of five (between the ages of 0-5 years), it leads to a high mortality rate in Nigeria and also, for pregnant women, it leads to serious complications such as loss of foetus (AN8EI).

> "…my perception is that malaria is a serious illness that should be taken seriously because if you don't nip the problem in the bud, it can lead to a complication because a high level of plasmodium in your system can lead to other health complications" (AN2TA).

Comparison with other diseases

Often time, people compare the severity of one disease with another, and this influences their health-seeking behaviours and decisions. During interviews with adult Nigerian participants, they argued that two common diseases that affect them. They emphasised that typhoid fever and malaria are prevalent in Makurdi. Participants discussed that typhoid is a more severe ailment which requires prompt treatment because it can cause serious complications, whereas malaria is perceived to cause mild symptoms.

> "…most of the times that I have malaria, it used to come with typhoid too, and I think maybe the two of them are always together, I don't know…I first start with typhoid to treat with Agbo (herbs) and take another Agbo for malaria…typhoid can

> enter your brain and cause another problem, but malaria is only small body pain, and sometimes vomit and hot body…I have not seen it where cause brain problems like typhoid will cause" (AN1MU).

In addition, one of the participant (AN2TA) quotation presented below further reported that malaria is not considered a deadly disease by people when it is compared with other diseases such as Lassa fever and the present coronavirus. Therefore, the attitude of comparing malaria with other diseases makes it to be perceived as a less dangerous disease, and which does not necessarily need prompt and treatment-seeking.

> I know there are some other illnesses that have come into existence and people feel they are more deadly. For instance, let me say the Lassa fever, coronavirus and other illnesses, so people do not really feel malaria is actually a global problem again, that is what a lot of people feel, from my own understanding (AN2TA).

Familiarization with signs and symptoms

Discussions with participants confirmed that familiarization with the signs and symptoms of malaria contributes to making people undermine and the severity, this therefore could influence their health-seeking behaviour for malaria treatment. Some of the respondents reported that often time they experience malaria, and it appears with different signs some of which are chills, nausea, headaches and so on. Hence, because they have become familiar with these signs and symptoms they would prefer to take some rest believing that they would be fine.

> "…when you become familiar with having a constant headache, feeling feverish and when you sleep you get better and so on, that makes you relaxed in treating yourself for malaria" (AN2TA).

More so, because people have become familiar with the signs and symptoms of malaria, when they experience a similar symptom in the future, they have developed the attitude of purchasing antimalarial medications over the counter from private patent medicine vendors (PPMVs), which is also considered an informal route to health care.

> We have gotten too used to the signs and symptoms of malaria, which include fever, headache, chills nausea such that and these are common symptoms for different diseases like typhoid and so many other diseases have similar symptoms,

> so, we just go straight and buy an antimalarial drug without even going to the hospital (AN8EI)

Develop body immunity

Participants explained that some people perceive that their bodies have developed immunity due to their frequent exposure to malaria attacks. Specifically, one of the participants (AN1MU) mentioned that he believes that a person is required to treat malaria only once each year. He explained further that each treatment of malaria could protect against a re-infection that may occur within the same year. The participant perceives that each malaria attack leads to the development of more body immunity against future attacks.

> "…for me what I have always known is that there is no need to treat malaria two times in year because my father told me that when you have treated it the first time, it can last you for the rest of the year because the body has developed fighting soldiers, and then but when it comes back again, it is another type of malaria" (AN1MU)

Another participant believes that the majority of people who live in rural areas would have developed more immunity against malaria than those in urban regions. She perceives this is so because rural residents are believed to experience more number of attacks, and so she perceives that they would be more immune.

> You see those people living in the rural areas because they experience more malaria attacks than those in the town and so their bodies are more resistant to malaria attacks now, well I am just thinking so because they have developed immunity for it, but those in the town you can see when they travel to the village let us say for Christmas or to attend any festival, they easily get sick in the village because of malaria but the villagers don't easily fall sick of malaria (AN16BI).

5.3.4 Perceived benefit of biomedical treatment

Perceived benefit is a fundamental factor in the Health Belief Model that determines the health-related behaviour of a person. In the context of malaria treatment, this construct refers to a person's belief in the efficacy of the biomedical treatment of malaria, which the individual perceives would reduce the severity of the condition or the perceived threat. Participants discussed their opinions on the benefits of utilising the biomedical treatment for malaria. The HBM hypothesises that if an individual perceives a treatment or a health-related behaviour to be beneficial he/she is likely to comply with it (Strecher and Rosenstock, 1997; Champion and Skinner, 2008). Four themes emerged as presented in Figure 17 below. The coding framework is presented in appendix 13c.

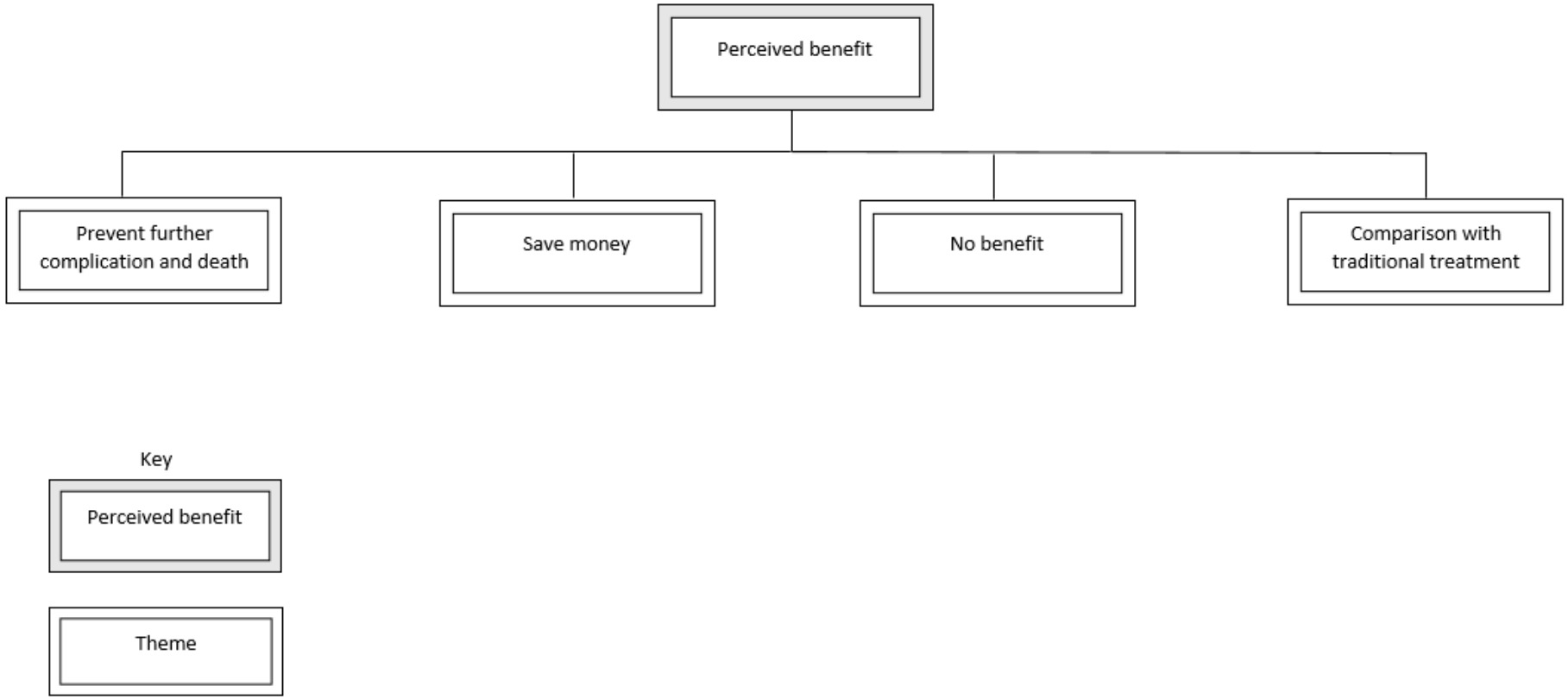


Figure 17: Themes that emerged from adult Nigerians interviews (perceived benefit)

Prevents further complications and death.

Some adult Nigerian participants, particularly those who perceive that biomedical treatment for malaria is effective and safe discussed their opinions regarding the benefits of prompt treatment-seeking for malaria. Amongst the benefits highlighted, interviewees argued that seeking effective treatment for malaria on time would help to prevent malaria-related complications and avoid associated deaths. For instance, one of the participants perceives that seeking appropriate medical treatment on time would prevent the breakdown of the individual.

> I would advise people that once they experience any symptoms, they should seek medical attention appropriately and timely so that they will not be broken down (AN2TA).

Similarly, another participant (AN8EI) argued that from his understanding, one of the main reason for prompt and effective treatment for malaria is to get some relief from the condition.

> "…the major reasons why we seek treatment is to get relief from the ailment" (AN8EI).

Save money

Participants also discussed that seeking appropriate treatment for malaria on time to prevent complications and deaths, also helps in saving the individual's and their family's income. One of the participant's opinions explained that when a person is sick, it would be difficult for the individual to carter for his/her family, hence the family's finances would be affected. Therefore, in delaying seeking appropriate treatment for malaria, eventually, more money will be spent.

> "…more money will have to be spent for the treatment and the person's finance will be affected because if a person is sick, he/she cannot go to work again and that person wouldn't be able to get money anymore to meet his needs" (AN6AO).

No benefit

Although some participants echoed their opinions on the importance of seeking biomedical treatment for malaria on time, a minority of the participant argued that there is no unique benefit in seeking treatment from a healthcare facility for malaria on time. Reasons for this opinion were discussed based

on the perception that herbal remedies are available and they also are effective based on their personal experience of using herbs for a long period. For instance, one of the participants argued that he does not perceive any benefit associated with prompt treatment-seeking from a health facility when herbal medicines which are his primary treatment source is available.

> I don't know the importance to hurry to go to the hospital when there is Agbo (local herbs). I don't waste time to taking Agbo and it is very okay for me. So the moment I notice that I am not feeling well and I take, I will sleep and wake up and then I will feel better (AN4AN)

Comparison with traditional treatment

Discussion with adult Nigerians revealed that the attitude of comparing the effectiveness of different treatment approaches could encourage delay in the right treatment. For instance, one of the female participants believes that based on her own opinion, both herbal medicines and biomedical treatment are effective, and so either can be sought when an individual is attacked with malaria fever rather than not doing anything.

> "…this one (traditional treatment) is also effective according to the explanation from people who have used it and I have as well used it one time before…they (traditional herbal and allopathic medicines) both are good depending on who is using it and the different kinds of bodies, to some people it may not work but in another person, it will work, I think this is the same thing for the hospital kind of medicine, it can work for others and not for another person" (AN6AO).

5.3.5 Perceived barriers to effective health-seeking

According to the Health Belief Model, perceived barriers refer to the perception of the cost associated with utilising a recommended treatment or a health-related behaviour that is beneficial in eliminating the perceived threat or in reducing the perceived severity of a condition (Strecher and Rosenstock, 1997). In the context of malaria treatment, this construct refers to the cost which an individual will incur when he/she utilises the biomedical treatment for malaria which is perceived as beneficial in reducing the severity of the condition or in eliminating the threat of further complications and death resulting from the disease. Participants discussed some of the perceived barriers that contribute to encouraging delay in health-seeking for malaria treatment during the semi-structured interviews. Four themes and three sub-themes emerged as presented in Figure 18 below. The coding framework is presented in appendix 13d.

Figure 18: Themes and sub-themes that emerged from the adult Nigerians interviews (perceived barriers)

Fear of being misdiagnosed with a different ailment

Participants discussed various views about barriers that contribute to influence delays in seeking treatment for malaria from a health facility. The fear of being misdiagnosed of a different ailment was identified as one important factor acting as a perceived barrier to prompt and effective health-seeking. The excerpts below identified this key factor. They both narrated their personal experience accordingly. One of the participants (AN9JA) narrated her experience about how she was sick and was hospitalized, and in the process, she was misdiagnosed with another ailment, but when a similar prognosis was conducted in another health facility, the result contradicted which indicated a false result from the first health facility, she explained that this experience almost cost her life.

> "…from my personal experience I understand that when you go to the hospital, they can make your problem to be worse, these hospital people are very annoying they will start to check (diagnose) for other things that you didn't come there for. Let me tell you something that happened to me. I was sick and I was taken to the hospital, instead of them just testing me for malaria and treating it, they gave me a useless result that I am positive for something. So, we did the same test somewhere again and it was negative. That thing almost cost my life. So hospitals conduct tests for what you didn't bargain for, you will not even know that they are going to conduct this test about you" (AN9JA).

Also, another participant (AN10SA) who identifies as a male worker with Makurdi local government, narrated his personal experience. He explained that when a patient present to a hospital, the health workers at the facility would want to compound the patient's bill and increase the cost of treatment by going ahead to conduct all sorts of diagnoses without the consent and prior knowledge of the patient, and this according to him, he perceived that it is deliberate and intentional to increase hospital charges of their patients. From his personal experience he gave an example of how unrelated conducting a genotype test was to the treatment of malaria, this according to his perception was because the hospital intended to increase the cost of treatment. This participant quotation is presented below:

> "…people may not like to go the hospital is because when you go to see a doctor in the hospital, instead of them to conduct test (diagnosis) for your problem, because they just want to increase treatment cost and bill you very much, they will conduct an unnecessary diagnosis to make it look like your health challenge is serious. Imagine what concerns conducting genotype tests and malaria treatment again, they did that to my friend's wife? So all these things can make someone not to go to the hospital again self" (AN10SA).

Perceived high cost of treatment at the health facility

The majority of participants reported that the high cost of receiving treatment at a health facility can be perceived as a barrier that contributes to delays in seeking treatment at these centres. Some adult Nigerian participants argued that the perceived high treatment charges at hospitals are a major reason people's attitudes are usually turned to seeking alternative treatment. According to an adult male participant (AN8EI), his narrative and description explain that people already perceive in their minds that obtaining treatment from hospitals is expensive, this, therefore, contributes to influencing their health-seeking decisions and behaviours. The participants' excerpts below explain this:

> "…when we go to the hospital, they charge us so much the cost of this treatment is so high for us that we cannot afford it, that is what makes us look for alternative, we don't have money and this treatment cost a lot of money" (AN8EI).

> The treatment at the hospital is expensive which is why people are not going there… (AN6AO).

> The biggest barrier for me is the financial constraint, what happens in Makurdi is this, about 90% of the resident are salary earners. So what happens when the government do not pay salaries? (AN2TA).

Stories of unpleasant experiences of others who accessed health facility

The unpleasant experiences of some patients who accessed health facilities are a contributing factor that acts as a perceived barrier to effective health-seeking for malaria. A female participant narrated her experience of how she was sick while holidaying in her remote village. According to her, there was no health worker at the facility. The excerpt presented below highlights this:

> I was rushed to the hospital in the neighbouring village when I was sick during one of my Christmas holidays, and you would be surprised that there was nobody there, even when I saw the place I wondered is this what the villagers refer to as a hospital (…) my uncle who lives in the village called a nurse who works there and she wasn't picking up her calls and it was at this point I was already feeling weak, you wouldn't understand, it was better you see things for yourself what had happened to me than explaining to you (AN16BI)

Health workers' behaviours toward patients

Some participants reported this as an important factor that acts as a perceived barrier in contributing to delay in effective health-seeking. Some of the participants spoke on different dimensions about how health workers' behaviours contribute to the late presentation at the hospital for effective treatment. One of the male participants (AN4AN) emphatically compared the level of compassion and care that is being shown to patients by a traditional healer when they present for herbal treatment to the behaviours of healthcare professionals towards their patients. He discussed further how patients are being ill-treated at health centres, which he perceives is wrong behaviour. In addition to his opinion, he explained that patients are shouted at the hospitals by health workers. Therefore, this factor could act as a barrier to prompt and effective health-seeking for malaria. The participant quotation presented below highlights this:

> "…herbal providers, are more compassionate and offer you very good care once you go there so even as a patient you will know that you are in the hands of people who care for you and want you to be well, but these hospitals people, their attitude towards patients is very terrible, imagine a sick person who is very sick they are even shouting at the person and even telling you to stand up while waiting for something like when you are waiting to see the doctor or going to collect your medicine from their medicine store or even when you want to go and collect your test result from their lab. They don't have good behaviours, some patients will even be crying because of their misbehaviours" (AN4AN).

Also, another male participant (AN8EI) whose quotation is presented below further restated this point.

> "…healthcare professionals (like the nurses) attitudes in handling patients such as talking rudely to patients" (AN8EI).

Media and publicity

Some of the respondents discussed how the role of media contributes to influencing people's delay to seek effective treatment. For instance, one participant (AN8EI) explains how airing and advertising certain wrong treatment behaviour could influence others to practice it, and in turn cause delay in seeking the right treatment. Therefore, even though media houses are set up for business, supporting to advertising how certain spiritual exercise provides healing and/or publicly advertising how a particular herb is effective for treating a particular disease such as malaria, could influence the health-seeking behaviours and decisions of others. The quotation presented below highlights this:

> People give testimonies of how God healed them of their sickness, this is seen on social media, TVs so we now know that if we seek this spiritual aspect we can be healed, so next time we will also want to try the same and this is applicable with the public adverts of some herbal solutions being aired by all the media houses (AN8EI).

Social lifestyle and peer pressure

Participants reported that the different social lifestyles people indulge in as well as pressure from peers are perceived as barriers that could contribute to delay in seeking effective treatment services using biomedical treatment. The participants' quotations presented below highlight this:

> I told a friend of mine who happen to know a lot about this herbal medicine, so he asked me to take something which is a concoction of plants boiled solution that will help heal fast (AN14IA).

> "…so this other friend of ours now suggested to him to take the herbal drugs which he did and he got perfectly well, so for me, these are reasons why I feel someone could prefer one of the treatments over another" (AN2TA).

<u>Adherence to previously adopted treatment pattern</u>

A majority of the adult Nigerian participant reported that another factor that is perceived as a barrier contributing to delay in effective health-seeking is the fact that different people have been accustomed to a particular pattern of treatment that they perceive is effective. Whether it is a formal or an informal treatment source. Discussion with participants' affirmed that people have developed their treatment pattern which is completely different from the formal health system. So, because of this, the moment they are sick, they will first start with the treatment pattern which they have been used to. The participants' quotation below explains this:

> "…they have developed their treatment pattern that is different with what we have with the normal health system" (AN8EI).

> People have established what works for them better and easily, to some people is steady herbal remedies, and others simply buy drugs from the chemist and different kinds of things (AN4AN).

5.3.6 Perceived susceptibility to malaria

Perceived susceptibility is a key factor in the Health Belief Model that determines the health-related behaviour of a person. This construct refers to a person's belief in the likelihood of contracting or being vulnerable to a disease (Strecher and Rosenstock, 1997). During the semi-structured interviews, participants reported their perceptions about their vulnerability to malaria attacks. Participants' perspectives about this enabled understanding of their health-related behaviours towards malaria infection. Three themes and four sub-themes emerged as presented in Figure 19 below. The coding framework is presented in appendix 13e.

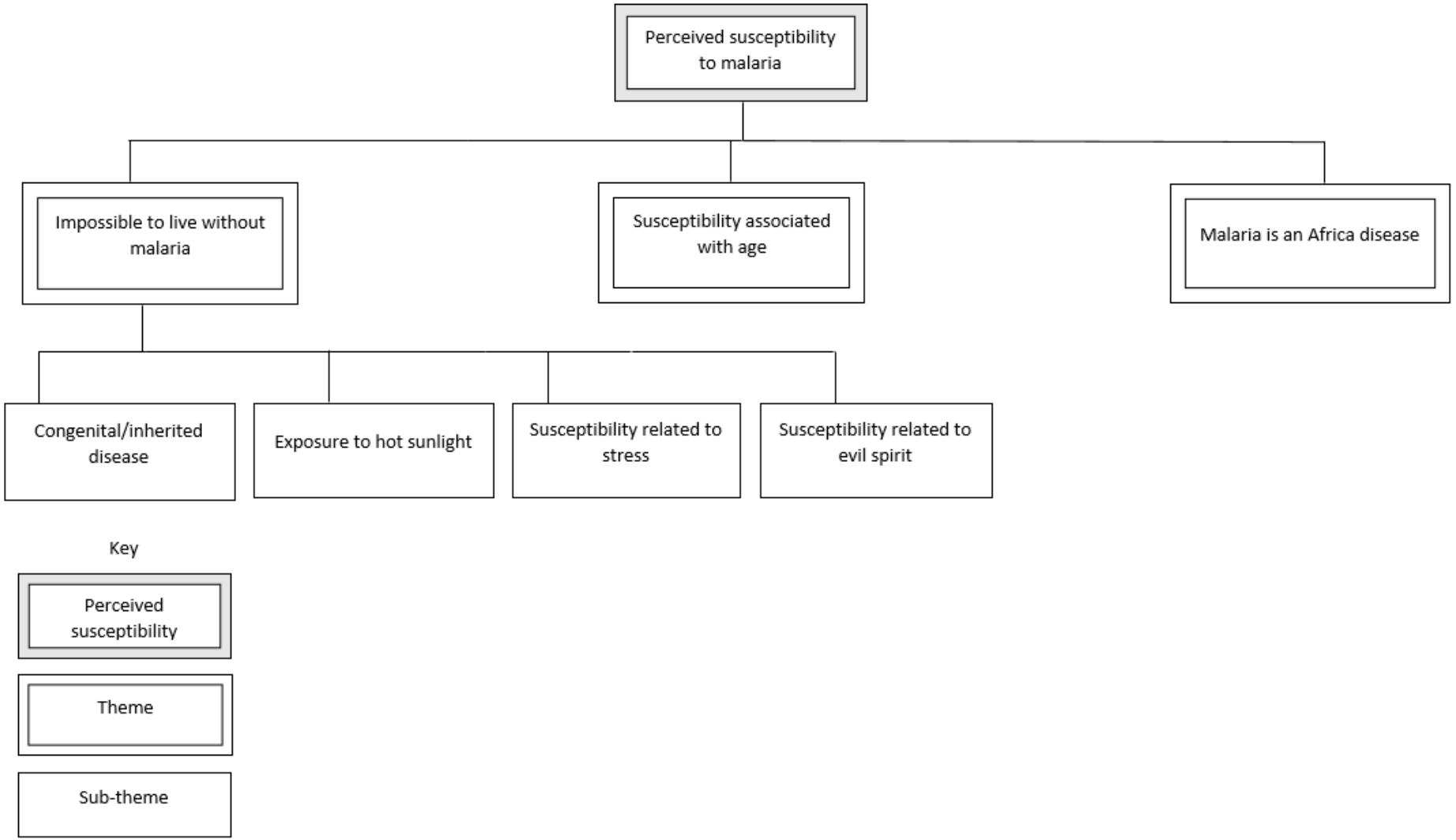


Figure 19: Themes and sub-themes that emerged from adult Nigerians interviews (perceived susceptibility)

Impossible to live without malaria

The majority of the adult Nigerian participants discussed their views about their perceived susceptibility to malaria. All participants that shared their opinions regarding this reported how highly vulnerable a person is to malaria when living in Makurdi and Nigeria as a whole. For example, one of the participants (AN8EI) emphasised that both children and adults are supposed to experience malaria attacks at least once for children and twice annually for adults. He further explained that malaria is perceived as a common illness which is part of human living. Presented below is the participant (AN8EI) quotation:

> It is like a common disease, just like we call common cold, malaria is like our disease – it is like saying it is our thing, we take it like it is a norm, we believe that at least once in a year a child should have it and an adult should as well have it at least once also or twice yearly (AN8EI).

Another respondent (AN6AO) emphatically restated that malaria is part of human living. According to her, residents of Makurdi are aware of the fact that they are very susceptible to malaria attacks. Her quotation is presented below:

> "…we all know that malaria is living with us and we are just like fish inside the sea, the water surrounds the fish, and so is the case of living in Makurdi and in fact, Nigeria as a whole in the midst of mosquitoes, we are very susceptible to malaria, it is everywhere you go" (AN6AO).

Congenital/Inherited disease.

To further explain how impracticable, it is to live without malaria, some participants discussed their views by explaining that they perceive that malaria is an inherited disease from birth which may manifest as the individual grows older later in life. Therefore, this misperception can also influence delay in seeking effective treatment. The participants' quotations presented below highlight this:

> I have heard people say that they gave birth to their child with malaria (AN1MU).

> …some other people even believe that they have malaria inside their bodies already, they perceive malaria comes with a child during birth, if your own has not manifested it means that your body is trying hard to fight it, and so no matter how you treat malaria, it is in our bodies (AN4AN)

Exposure to hot sunlight.

In terms of susceptibility to malaria attacks, some of the participants discussed that they perceive that prolong exposure to the hot sunlight makes a person sick of malaria. According to the participants' excerpts presented below, they argued that malaria attacks are more in areas with high temperatures, and it could be the reason prevalence of malaria in Makurdi. This perception, therefore, could contribute to delay in seeking treatment.

> "…some people believe that mosquitoes are not the cause of malaria, and so others would say it is caused by the heat from the hot sun when a person is under it for long" (AN7KA).

> "…it is caused by excessive exposure to hot sun, unfortunately, Makurdi is always a hot place and the temperature is too high and that is why I think that malaria is also very plenty" (AN18AE).

Susceptibility is related to stress.

More so, regarding susceptibility to malaria, participants argued also that performing stressful activities under hot sunlight could also make a person come down with malaria. As a result, participants discussed that instead of the person seeking treatment, he/she would prefer to rest believing that they will be fine afterwards. The excerpt below highlights that the number of times a person experiences malaria explains how hardworking the individual is whilst he/she works under the sun.

> "…most of the time a lot of people in Makurdi are exposed to lots of stressing conditions, so it is quite easy for people to have frequent headaches, and you know sometimes actually this headache could be as a result of malaria symptoms so you will feel like it is as a result of stress and you will be feeling like let me just sleep after having a shower and hopefully by tomorrow I believe the headache is gone" (AN2TA).

Susceptibility related to evil spirits

Some of the participant's discussions emphasised also that malaria is perceived as an evil disease/attack. Therefore, they perceive that the more malaria attacks a person experiences relate to the number of spiritual attacks the person is having, hence, the individual would need to seek spiritual cleansing from

a spiritualist, which is another form of informal source of treatment and in the process cause delay in seeking treatment from an effective treatment facility.

> So many people spiritualize it; they think it is caused by spiritual attacks, demonic influence and spirit (AN8EI).

> Some even say malaria is caused by an evil spirit (AN4AN).

Susceptibility associated with age

One of the participants (AN2TA) argued that he believes that different levels of age groups have varying susceptibility levels to malaria as well. Furthermore, he explained that the different activities that people engage in also determine their levels of susceptibility. This perception could therefore influence the health-seeking behaviours of people, because they would believe that if they are not classified under the age which is perceived as the most susceptible, then there might not be a need to seek treatment, even on time. See quotation below:

> "…for me, I feel that different age groups would have different levels of susceptibility to malaria depending on the factors in their environment and the activities that they engage in" (AN2TA).

Malaria is an African disease

To understand participants' views regarding their perceived susceptibility, some reported that malaria is believed to be an African disease by its origin. Therefore, participants reported that it will always be with humans, and this also would always require the use of traditional treatment. This perception therefore could contribute to influencing the attitude toward using informal treatment, particularly using herbs, which in turn would delay effective treatment-seeking. For instance, see the quotation below.

> Some also perceive it to be an African kind of disease that only requires an African or traditional kind of treatment (AN14IA).

Respondents' opinions about perceived susceptibility to malaria revealed how they perceive that it is impossible to prevent malaria attacks. The participant quotation presented below discussed that malaria will exist in humans for a very time, believing it has an ancestral origin in Africans.

> "…there is nothing anyone can do to prevent being infected with malaria, it is like a curse from the Africans gods because of our evils and a lot of people especially in my village perceive it that it will always live with us forever" (AN1MU).

5.3.7 Findings on participants' (adult Nigerians) recommendations

The key themes and sub-themes that emerged as participant recommendations, suggests how to promote prompt and effective health-seeking behaviours for malaria treatment including government regulations (policies) on free malaria treatment, massive health promotional campaign, religious leaders' participation as stakeholders in promoting health-seeking toward effective treatment, officially recognising and including traditional healers as part of the national treatment provider, disseminating academic research findings with the formal and informal sector providers, providing health insurance for all citizens. Additionally, a sub-theme of subsidy on malaria treatment for all Nigerian citizens also emerged. The coding framework for the adult Nigerian participant's recommendation is presented in appendix 13f. Figure 20 below sets out the visual representation of the emerged themes and sub-themes from the adult Nigerian participant's recommendation.

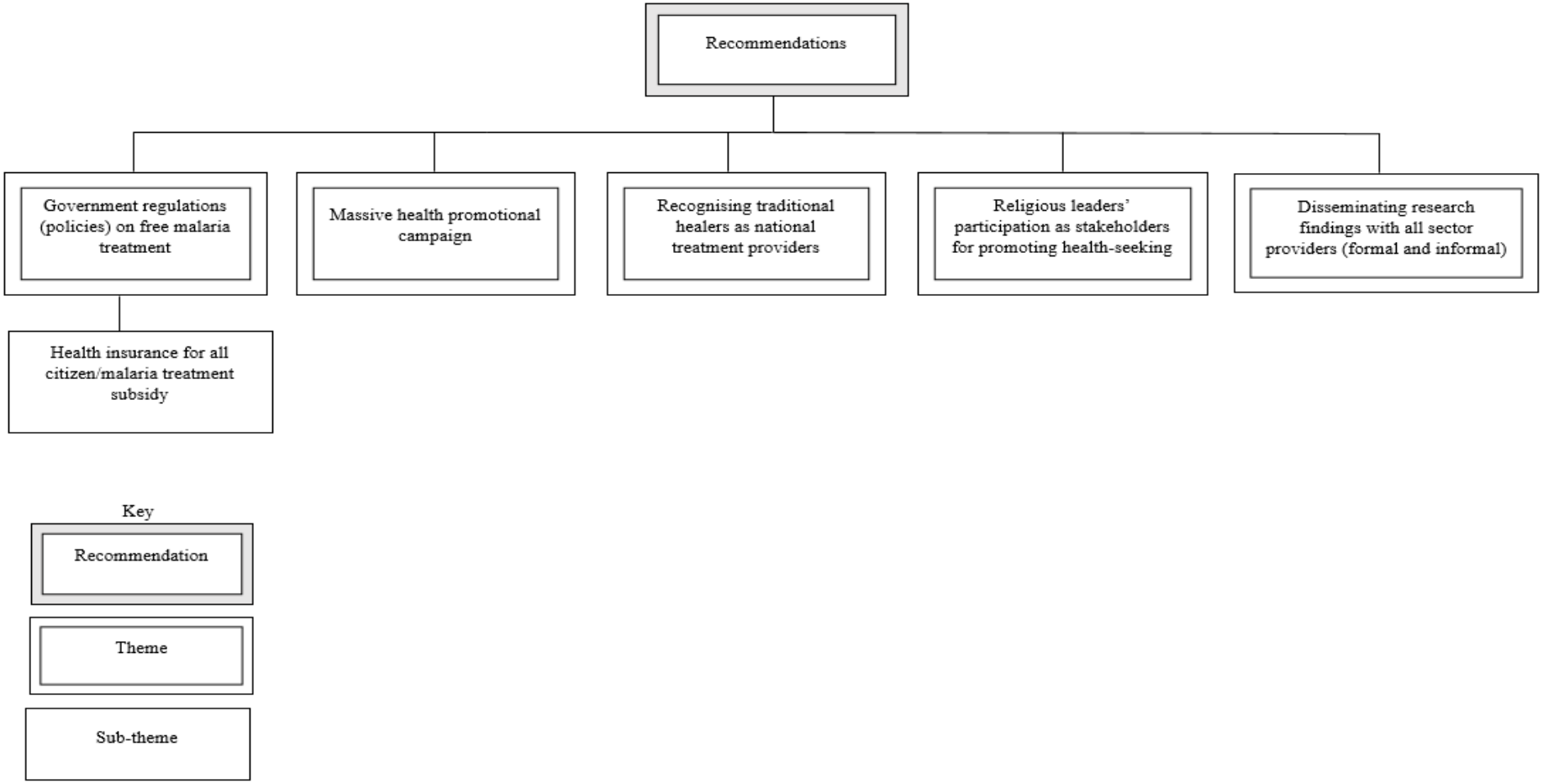


Figure 20: Themes and sub-themes that emerged from adult Nigerians interviews on recommendations

Government regulations (policies) on free malaria treatment

Participants discussed that the Nigerian Government have a crucial role to play to encourage prompt and effective health-seeking for malaria treatment among its citizens, and one such role discussed is the policy on free malaria treatment. Some participants argued that if the government of Nigeria introduces free malaria treatment policies, this could be a useful strategy in encouraging prompt health-seeking to effective treatment for malaria. They argued that most Nigerians do not access and utilise medical treatment due to the high cost it involves. They noted that free distribution of antimalarial drugs to households and the free malaria treatment at all government health facilities will help to change the negative health-seeking behaviours of people towards malaria treatment. See the quotation below.

> There should be at least free distribution of antimalarial drugs from the government to every household, the government should not give it to the hospital because these corrupt hospital people will still sell it to us, they should deliver it to people's houses (AN9JA)

Health insurance for all citizens'/malaria treatment subsidy

In line with the government's regulation, participants discussed that there should be a health insurance scheme for malaria treatment in the country that would capture all Nigerians and two participants suggested that the government of Nigeria should subsidise the cost of affording medical treatment for malaria. The major reason for recommending health insurance for malaria treatment for all citizens is because malaria is perceived as the most prevalent health issue faced by Nigerians. Hence, due to this high prevalence rate, most people engage in different treatment-seeking behaviours and decisions which are perceived as cheaper, readily available and accessible. Therefore, according to participants' narratives and descriptions, providing health insurance would encourage health-seeking toward effective treatment for malaria. The below interview extract explains this point.

> Government should provide a health insurance scheme for malaria treatment since it is a major health problem in our country, this is for people who want to use the hospital kinds of treatment (AN14IA)

> "…there should subsidized treatment cost for citizens who have malaria at the healthcare facilities" (AN1MU)

Extensive health promotional campaign

Some adult Nigerian participants' discussed the need for an extensive health promotional campaign which could encourage prompt and effective treatment-seeking for malaria. According to one of the participants (AN16BI) narrative, this campaign should majorly focus on the rural areas, as residents there are believed to bear the heaviest brunt of malaria infection. Furthermore, participants recommend that the health promotional campaign should emphasise the deleterious effect of malaria as well as the importance of prompt and effective health-seeking. See quotations below to explain this.

> "…we need massive health education campaign in public places, social media, churches, mosques, schools and offices this will go a long way, I think health education is key" (AN8EI).

> It will be also important to have a health education campaign to educate the masses about the importance of early treatment-seeking for malaria (AN2TA).

Religious leaders' participation as stakeholders in promoting health-seeking

A minority discussed the importance of involving religious leaders as a stakeholder in promoting prompt access and utilisation of effective treatment for malaria. According to his narrative, this recommendation is based on the fact that Makurdi residents are very religious and accord respect to their religious leader. Therefore, because religious leaders are respected, involving them as stakeholders to promote effective health-seeking would be key. See the quotation presented below.

> "…since a lot of people listen and give a high level of attention to religious leaders, these groups of people should help to encourage their worshippers to seek the medical treatment services on time rather than just offering prayers to them and delaying them" (AN1MU).

Recognising all traditional healers as part of national health providers

The majority of the participants' consensus was that traditional treatment should be formally acknowledged as a national and acceptable treatment practice in Nigeria, and this is because the majority of Nigerians access and utilise the traditional treatment. According to the participants' narrative, the herbal treatment is effective, readily available, accessible and affordability. Therefore, rather than the traditional providers perceiving the medical treatment as not effective and vice versa, working together could promote harmony. According to one of the participants, if the traditional treatment is recognised, it could help to reduce the burden of malaria. In other to recognise traditional

medicines as a national and acceptable treatment practice, a participant explained that it should be captured in the educational curriculum of schools. See the quotation highlighting this below.

> "…to encourage the traditional herbal practitioners to be part of health providers in this country and see how the services rendered by them would be improved and they will also lessen the burden of this disease in Nigeria (…) I will suggest that our educational curriculum should from primary school up until the tertiary levels to include the traditional educational section into them" (AN17MD)

Disseminating research findings with all sector providers (formal and informal)

The findings from academic research conducted on malaria must be distributed to both the informal and formal care providers, this was a recommendation from one of the participants. According to his narrative, research findings should be published and available for public knowledge. The participant perceived this recommendation to be able to promote prompt and effective health-seeking for malaria. See the participant's excerpt below.

> "…those who are into research works, the outcome and findings of their research should not be left in the archives of the library, it should be published and brought out into the public domain and let the general public know" (AN8EI).

5.4 Summary of key findings from adult Nigerian interviews

Socio-demographic details

- Characteristics of the adult Nigerians: Participants' ages ranged between 26-61 years, the majority (10) were married, six had tertiary education, eight had secondary level of education, two had primary education and another two attended technical schools. They comprised thirteen males and five females of which some were traders, retirees, civil servants (government-employed), teachers, tertiary students and applicants. All participants communicated in English.

1. **Perceived efficacy of malaria treatment**

- *Effectiveness and safety*: Generally, some participants perceived the biomedical treatment of malaria as ineffective and unsafe. Its perceived ineffectiveness is related to the frequent re-infection that is experienced shortly after treating an episode. They also perceived that it is unsafe and unhealthy to always ingest these medications due to the frequent attacks. Participants, therefore, perceived that combining allopathic medicines (purchased from private vendors) and traditional

treatment is a more effective treatment practice. Though, some other participants also perceived that it is safe and effective to use biomedical drugs to treat malaria.

- *Fear of drug resistance and potential side effects:* Some respondents perceived that their bodies have developed resistance to biomedical drugs because it is not effective for them. Hence, this results in the use of traditional medicines which they perceive as effective and safe without fear of developing side effects in the future; because herbs are 100% plant products without mixtures.
- *Lack of trust and confidence in medical treatment:* Participants spoke about a lack of trust and confidence in the use of allopathic medications because they perceive that there could be a human error during the production stage of these drugs and also they do not have confidence in the originality and/or effectiveness of the antimalarial drugs that are administered at both the health facilities and dispensaries, hence they prefer the use of herbs.
- *Family views and treatment patterns*: Participants discussed that different families have their adopted treatment patterns and beliefs about medical treatment and these beliefs are strongly upheld and practised by generations unborn. For instance, most families perceive that the use of traditional treatment is more effective and beneficial, and so this becomes an inherited treatment pattern and inherited negative perception about biomedical treatment.
- *Preserving cultural values/heritage:* Some of the adult Nigerian participants perceived that using herbs to treat diseases including malaria is a way of preserving the cultural values of the people because traditional treatment is well-known and commonly practised in their communities. They explained that even their forefathers used the same treatment and lived long. Hence, they perceived it as unimportant to utilising the medical treatment to treat malaria.
- *People's treatment experience with using orthodox medicines:* Some of the adult Nigerian participants narrated one or two experiences of a family member or a friend who reacted adversely to an antimalarial drug that was administered to them at a healthcare facility. These personal experiences negatively influenced their health-seeking decision towards utilising medical treatment; as they perceived therefore that all allopathic medicines are harmful and not safe when compared to using herbs.
- *Health facilities are profit ventures:* Participants perceived that the medical treatment involving malaria particularly (including treatment received from a hospital and drugs purchased over the counter) is meant to exploit the masses of their finances. They discussed that the antimalarial drugs when administered and taken, it does not guarantee a lasting immunity against re-infection, with the aim that the drugs would be purchased again. According to them, the drugs are weaker in their efficacy when compared to herbs, which they perceive as more effective and provide longer immunity.

2. Perceived severity of malaria

- *Commonalization of malaria*: Generally, participants classified malaria as a normalised, common disease, and that it is part of human existence and living; this perception influences the health-seeking behaviours of an individual. More so, their perception that malaria is a common disease is due to its high prevalence rate (including the frequency of attacks/person) and the fact that they are familiar with the signs and symptoms of the disease.
- *Easy to treat:* Malaria is perceived by participants as a disease that is easy to treat, hence, they felt that treatment could be sought anytime without worries because it is perceived also as not a serious or deleterious disease. Perceiving malaria as an easy-to-treat disease often results in most patients preferring to take some rest the moment they notice signs/symptoms which suggest it is malaria.
- *Comparison with other diseases*: Because the prevalence rate of malaria is high in Makurdi, making it to be perceived as a common and normalised disease that is easy to treat, participants further undermine its severity because they perceive that it cannot be compared with other diseases such as coronavirus, cancer or HIV/AIDS. Therefore, this perception could encourage their attitude of delay in effective health-seeking.
- *Develop immunity against malaria attacks*: Participants explained that some people perceive that their bodies have developed immunity due to their frequent exposures to this parasitic disease. This misperception makes people feel that they are immune to re-infection. Based on this misperception, participants explained that the rural resident has more immunity compared to the urban dwellers due to their higher level of exposure.

3. Perceived benefit of medical treatment

- *Prevents malaria-related complications and death*: Some participants reported that one of the benefits of seeking medical treatment for malaria on time is to avoid further health challenges that may arise and eventual death. However, some do not perceive that seeking medical treatment for malaria is beneficial; this is because it does not provide longer immunity against a re-infection, but they discussed that herbal treatment can provide longer protection.
- *Save money*: Participants explained that seeking medical treatment in time in other to avoid related complications, would help to money that would have been lost to treatment costs. Some other participants do not perceive that medical treatment saves money but rather people spend more to obtain treatment and it does not still provide them with a lasting immunity, hence making people not visit the health facility again.

4. Perceived barriers to prompt medical treatment

- *Fear of being misdiagnosed of a different ailment*: Some of the adult Nigerian participants discussed from their personal experience how they were misdiagnosed with a different ailment when they

presented to a health facility. More so, other participants explained that health workers often compound patients' treatment bills by conducting diagnoses without the knowledge and consent of the patient. Consequently, the fear of being misdiagnosed with a different ailment could act as a perceived barrier to prompt medical treatment-seeking.

- *Perceived high cost of treatment at the health facility*: Participants explained that the cost of accessing and utilising medical treatment is expensive. Therefore, they echoed that the perceived high treatment charges at hospitals are a major cause of alternative treatment-seeking behaviours displayed by people.
- *Health workers' behaviour towards patients*: Some of the participants spoke about healthcare workers' behaviours and how it contributes to influencing patients' health-seeking decisions of presenting to the hospital/health facility for treatment. They spoke about the negative attitudes of some healthcare providers towards patients at the health facilities, which discourages presentation to those facilities. Aside from the need for patients to receive the desired treatment for their ailment, there was also the desire for compassion, understanding and respect from the healthcare providers. Accordingly, when these expectations are not met and/or when patients perceive that he/she is bullied by healthcare providers, then they would have to look for alternative treatment options.
- *Social lifestyle and peer pressure*: Some adult Nigerian participants discussed receiving advice from friends to seek traditional treatment for their ailment as one of the reasons to have delayed in seeking effective treatment. More so participants noted that they were introduced to taking concoctions by their friends.

5. Perceived susceptibility to malaria

- *Impossible to live without malaria*: All participants explained how highly vulnerable a person is to malaria when living in Makurdi and Nigeria as a whole; they perceive it as impossible to live without malaria as humans, and so malaria is perceived as a part of human living.
- *Congenital/inherited disease*: Some of the adult Nigerian participants discussed that malaria is an inherited disease from birth that manifest as the individual grows older later in life. Therefore, this misperception could also influence delay in seeking effective treatment.
- *Exposure to hot sunlight and stress-related*: In terms of susceptibility to malaria attacks, some participants explained that they perceive that an individual could be sick with malaria when the individual is exposed or stays under the hot sunlight/rays for a long time. Due to the corresponding high temperature in Makurdi and also because most people living in Makurdi are petty traders who either hawk their products or sit under the hot sun to transact their business, participants felt also that such stressful activity which is conducted under the hot sun is one of the reasons for delaying to seek medical treatment for malaria, as people would rather have some rest, take herbs and avoid the sun for few days with the view to the intention to recover.

- *Susceptibility related to evil spirits*: Some of the adult Nigerian participants explained that malaria is perceived as an evil disease/attack. Therefore, most people perceive that the more a person becomes sick with malaria disease, it relates to the number of spiritual attacks the person is experiencing, hence requiring spiritual efforts from spiritualists; which is an informal source of treatment and in the process cause delay to in seeking treatment from an effective treatment facility.
- *Malaria is an African disease*: Some participants reported that malaria is perceived as an African disease and therefore establishes its origin in Africa and that is the reason for Africans being susceptible. Therefore, participants explained the need for traditional treatment to tackle a disease that has its origin in Africa. This misperception therefore could contribute to encouraging the use of informal treatment, particularly using herbs, which in turn would delay effective treatment-seeking.

5.5 Findings for objective 3

Thus, objective three for this research was:

- To ascertain healthcare professionals' (doctors and nurses) and key health stakeholders' (Ministry of Health policymakers) and traditional health practitioners (traditional healers and CAM therapists) views on the perceptions and attitudes of adults that contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

The presentation of the findings of objective three is also driven by the themes that emerged during the analysis of the transcripts, and these identified themes were categorised based on the key constructs in the Health Belief Model (HBM). The findings from each sample group are presented separately in this objective, starting with the traditional healer's findings. The section concludes with a summary of key the findings of objective three.

5.5.1 Traditional healers' findings

To start this section, the socio-demographic characteristics of the participants are presented, and then attention is turned to presenting the key themes that emerged from the traditional healers' interviews. Importantly also, while presenting the identified themes and sub-themes, the direct quotations from participants are presented verbatim throughout. Participants' identities are coded using identifiers to maintain anonymity. Table 5 explains the breakdown of the codes.

Table 5: Codes used to represent traditional healer participants.

Example of a code used to represent a traditional healer (TH1MT)			
Participant identification code	Traditional Healer	Participant identification no.	Participant's initials
TH1MT	TH	1	MT

5.5.2 Socio-demographic characteristics of traditional healers

A total of seven (n=7) traditional healers were recruited and interviewed using a semi-structured interview guide. These traditional healers comprised five males and two females. Their ages ranged from 33-68 years, and the majority (five out of seven) confirmed that they started practising traditional medicine from childhood, so they could not specifically state how long they have practised (or their years of experience). Though one of the participants confirmed to have 14 years of practice experience and another argued that between 25-30 years (still not specific). All the traditional healers interviewed were married. Table 6 below presents the socio-demographic characteristics (age, gender marital status

and duration/years of practice) of the traditional healers. All the traditional healers were living and practising in Makurdi.

Table 6: Socio-demographic characteristics of the traditional healer participants

Identification codes	Age	Gender	Marital status	Duration of practice/experience
TH1MT	68	Male	Married	From childhood - date
TH2EO	49	Female	Married	From childhood – date
TH3TO	46	Male	Married	From childhood – date
TH4TA	33	Male	Married	14 years
TH5MA	60	Female	Married	From childhood – date
TH6SY	57	Male	Married	25-30 years
TH7PO	42	Male	Married	From childhood - date

*TH – Traditional Healer

5.5.3 Perceived efficacy

From the interviews conducted with the traditional healers, three themes and two Sub-themes emerged as presented in Figure 21 below. The coding framework is provided in appendix 14a. The traditional healer's narratives and descriptions suggested the possible reasons why adults seek traditional treatment for malaria, based on their perception of the efficacy of the biomedical treatment for malaria.

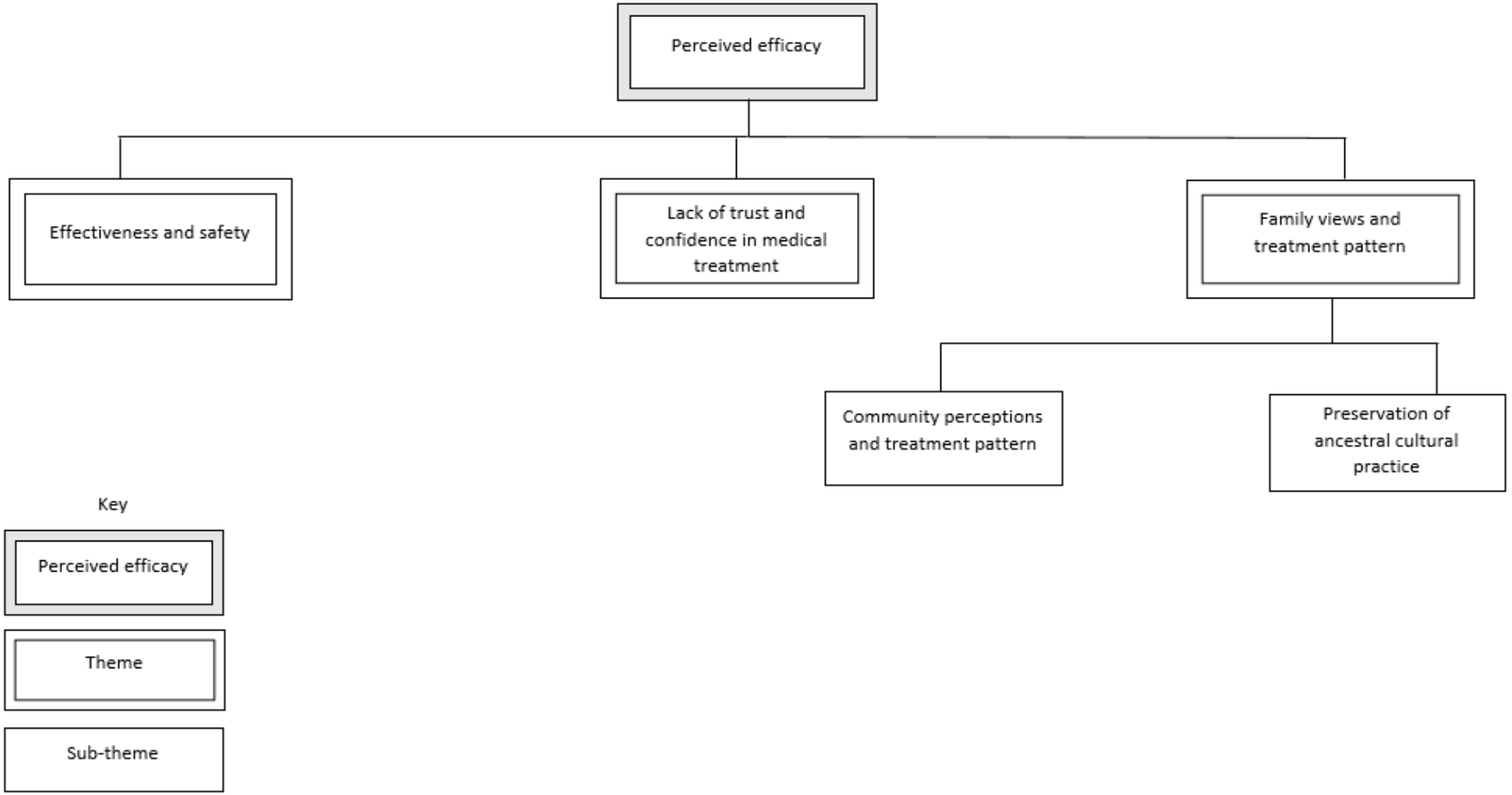


Figure 21: Themes and sub-themes that emerged from interviews with traditional healers (perceived efficacy)

Effectiveness and safety

All the seven traditional healers interviewed spoke about the effectiveness and safety of the medical treatment of malaria and discussed their views based on their experience and interactions with adult Nigerians who come to them for treatment. Some of the traditional healer's quotations are presented below.

> "…it (hospital treatment) is not good (effective) at all, it will just work for a short time and then the person will be sick again and the same thing happens again and then they will come here and meet me, the drugs in the hospital is not safe to health and not powerful (effective) at all, so true this our medicine is very good treatment" (TH4TA).

The quotation presented above argued that hospital treatment is not effective and also not safe for human consumption. He based his argument on the fact that the disease resurfaces even after a treatment using allopathic medicine and patients end up visiting him for herbal remedies. Therefore, according to his narratives and description, the treatment which involves the use of herbs is the best and is effective.

> "…plenty people that use to come here (herbal shrine) like this our medicine (traditional medicine) more because it is very natural and safe to the body, you do not need to worry because nothing will happen to you at all if you drink herbs" (TH5MA).

The participant's quotation above discussed that she has many patients who patronise her herbal medicines, and according to her she believes they do so because the herbal treatment is natural and safer for the body, as she further explains that there are no health concerns associated with consuming herbs.

Lack of trust and confidence in medical treatment

The majority of the traditional healers spoke about the trust and confidence a lot of people have in using traditional medicines. They argued that patients that usually patronise them are confident about the safety and also about the effectiveness of the herbal treatment compared to the medical treatment, which they perceive to be unsafe and ineffective. Participants' word-for-word quotations below highlight this.

> They (patients) know us (traditional healers) and trust the kind of treatment we offer to them, they are very confident that when we treat them they will be fine and alright, and it works very well (TH2EO).

> "…plenty people feel safe to use traditional medicine more than taking the hospital medicine, some are worried about the different things that are mixed and used to produce the hospital medicine and they know that our treatment is just natural and no harm at all" (TH5MA)

The quotation above stressed how people feel safe in using herbal treatment compared to using allopathic medicines. The participant argued further that the medical treatment which is perceived to be manufactured from a combination of different substances that are unknown, makes people lack trust and confidence in using it, and hence, prefer the natural herbal plants' products which they know its source and origin.

Family views and treatment patterns

There was a consensus among the majority (six of seven) of the traditional healers, as they discussed that most patients that utilise the herbal treatment do so because it is their family treatment practice and also they detailed how the perceptions of their families about hospital treatment influence their health-seeking decision, and thus their choice of herbal treatment. See direct quotations of a participant to highlight this.

> I was born into the family, and I grew up seeing different people who were sick coming to my parents for treatment. If my father is not at home, my mother will handle the case, they did it together (TH2EO)

The quotation presented above discussed that her family and upbringing influenced her perception of the effectiveness of traditional medicine and her attitude to using the service because her parents were traditional healers and also she observed how patients patronised the herbal treatment.

> I was helping my late dad that time when I was even a young boy I was fully given the full chance to practice herbal medicine when my dad was sick and could not treat people who came to him for help, I have always known different herbs can cure different treatment, so I don't see what hospital can do that herbs cannot do, and all of us in our family we use herbs and we are fine till today (TH3TO).

Also highlighted in the participant quotation above, he narrated how he began herbal practice in his early years because he was born to traditionalist parents, thus influencing his perception of the effectiveness of malaria treatment and his choice of treatment. Also according to his narrative, due to his experience in herbal practice, he perceives the hospital or medical treatment to be indifferent to herbs.

Community perception and treatment pattern

A minority of the traditional healers spoke about community perceptions regarding biomedical treatment for malaria and their treatment practice and how it could contribute to influencing people's health-seeking behaviours.

> "…before the existence of the hospital medicine, one of the oldest treatments is the herbs and so people in our community have long been using this before any other kind treatment" (TH5MA).

> We grew up knowing that traditional medicine is the only form of treatment for any disease in our village and my community, it is what we use to treat ourselves, and it is very good for treatment (TH6SY).

The above quotations pointed out how communities perceive herbal treatment and recognises it as the oldest treatment practice before biomedical treatment was introduced. This, therefore, points out that one of the perceptions that could contribute to delay in effective health-seeking is community perception about the treatment and the existing treatment practised within that community.

Preservation of ancestral cultural practice

The majority of the traditional healers spoke about the perceived pride associated with using herbal medicine which is understood to be a locally manufactured medicine to cure diseases. Participants also argued that it is important to use herbs as it is perceived as a form of preserving the cultural values and treatment practices which forefathers used. Presented below are some excerpts to buttress this.

> "…we will still use our herbal treatment because it is a blessing from our fathers and it is very important and the best treatment, it has no harm to the body whenever you take it because is pure plant" (TH1MT).

> This traditional herb is the oldest treatment that even our old fathers used and they lived long and very well (TH2EO).

5.5.4 Perceived severity

From the interviews conducted with the traditional healers, two themes and four sub-themes emerged as presented in Figure 22 below. The coding framework is provided in appendix 14b. The traditional healer's narratives and descriptions suggested how malaria is perceived and explains how these perceptions could likely be contributing to encouraging delay in effective health-seeking behaviour for malaria treatment among adults.

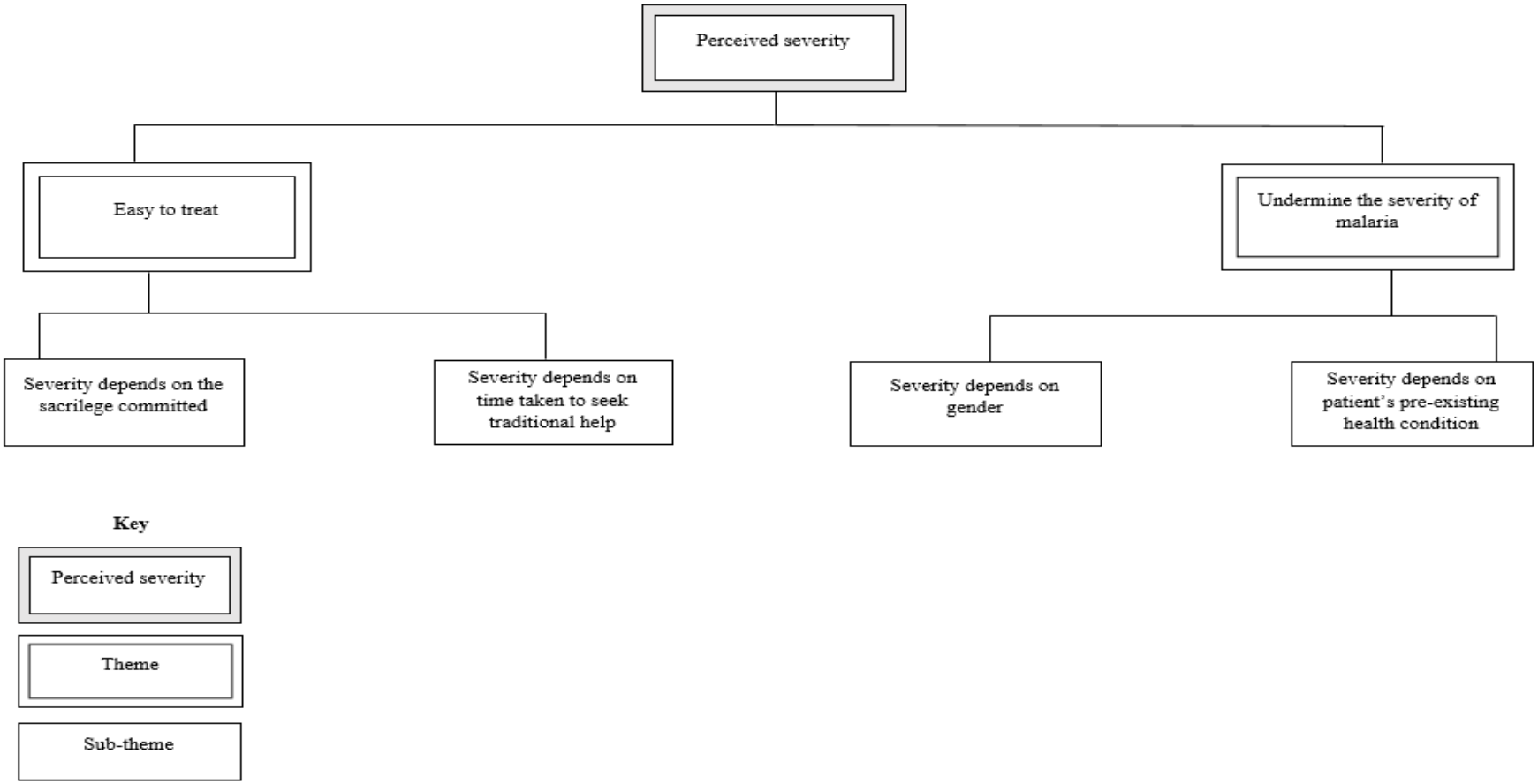


Figure 22: Themes and sub-themes that emerged from interviews with traditional healers (perceived severity)

Easy to treat

Findings from the interviews with traditional healers highlight that majority considered malaria disease an easy-to-treat illness. Some of the direct word-for-word quotations of participants are presented below. Malaria is perceived according to their description as a simple disease to treat. Furthermore, their discussion revealed no casualty has been recorded throughout their years of practice. Discussion with traditional healers revealed that they considered it unreasonable and a waste of resources to visit a hospital or a health facility, as they expressed fears that diseases could be contracted during hospital visitations. See the extracts from participants' quotation below.

> Nobody has ever died here of malaria, malaria is a very small and easy disease to treat now, haba, malaria (TH1MT)

> "…for only malaria I don't think people will waste their time and money and go and sit in the hospital for treatment, even when people go to the hospital they can carry (contract) another sickness inside their body, so a lot of people do not just go to the hospital for any kind of small problem like malaria" (TH6SY).

<u>Severity depends on the sacrilege committed</u>

The findings from this study revealed that among the seven traditional healers who were recruited and interviewed, two of them practice as both herbal practitioners as well as spiritualists. The difference according to them is that a spiritualist performs certain spiritual sacrifices for sick persons in other to obtain healing. These two participants spoke that malaria could be sent to a person as a spiritual attack on offenders in the community. Therefore, when a person commits certain abominable acts, malaria could be sent to attack the offender, and until certain rites are performed, it could progress leading to death. Therefore, one of the female spiritualists (TH2EO) concluded that the severity of the offence committed depends on the severity of the malaria attack on a person.

> "…as I have told to you before some human beings are very wicked; when a person commits abomination in this community, there is no way the gods will not know, it is just left for the person to go and confess to a spiritual man and perform some rituals, you see ehn, adultery is forbidden in this land and the person die self, or to even kill somebody whether because it is by fighting, all of these things have the kind of sickness that they will be sick o" (TH2EO)

Severity depends on the time taken to seek traditional help

Although, this is equally applicable in medical treatment, as it is understood that the severity of a disease depends on the time taken to seek effective treatment for that disease or health condition. However, according to the traditional healers' perspectives, this idea is different, as involves seeking early traditional and spiritual cleansing for those who are attacked with malaria through the spiritual means for their abominable act. It is perceived according to these participants that malaria is a spiritual attack and when an individual delay in taking the necessary action it could lead to death.

> "…when you know that what you did is bad just go and make a confession and report it to the Igwe (traditional head), if not the more you waste time the sickness will be very serious and can even kill the person fast, so but if you beg and do the things you are asked to do, then its fine the sickness (malaria) will not kill the person again" (TH7PO).

Undermine the severity of malaria

This relates to their perception in which they earlier described malaria as a disease that is easy to treat. A minority (three out of seven) of the traditional healers spoke about the inability of malaria to cause any serious harm to humans, hence undermining the severity of the disease. One of the participant (TH2EO) excerpt presented below perceives that malaria is caused by insect bites from mosquitoes which are perceived as not serious because it can be treated by resting and engaging in a therapeutic warm bath, but malaria is caused by a spiritual attack is the serious type and requires spiritual cleansing.

> "…there are two ways malaria can come to a person, first is one tiny insect-like that, eh, yes, mosquitoes, that one is not too serious and also the one that comes when you are tired and sun have beaten you very well, the two of them are not very serious because when you rest and sleep and take a hot bath with herbs that person can be fine, but if it is the one that is caused by spirits, like the gods of the land, it is very dangerous and that one will need some sacrifice" (TH2EO)

Severity depends on gender

One of the participants (TH4TA) perceives that the severity of malaria could be associated with gender. According to his narrative in the quotation presented below, he perceives that women and children are the most affected of malaria than men. He explained his reason by suggesting that men are strong bodily and so, they could resist illness from becoming severe compared to women and children.

> "…it (malaria) kill small children, mothers and women more because a man is not easy to be affected very seriously by malaria, you know that men are strong and their bodies are no easily down with sicknesses like women and children" (TH4TA)

Severity depends on the patient's pre-existing health condition

Some participants discussed that most of the severe cases of malaria which they have handled, it is because patients had other underlying health conditions. The quotation presented below explained that the type of malaria caused by spiritual attacks could become very severe when no spiritual rites are performed on time. Also, the type of malaria caused by insect bites is not severe, but it could be severe depending on the patient's health condition and underlying health issues.

> "…see, that malaria is not a serious sickness at all, and I mean say the ones that is caused by those insects bites, but the ones which is caused by evil spirit or by the gods because of maybe the person has committed abomination is very bad because those ones are punishment if any malaria caused by those insect bites becomes so bad in the person's body then, it means the person has already a different health issue that he/she did not know, so it is that sickness that is worrying the person not the malaria, so that one can take a long time to handle, like someone has typhoid already that is very serious and then malaria now come and add, so it the typhoid that you will focus more on" (TH6SY).

5.5.5 Perceived susceptibility

From the interviews conducted with the traditional healers, two themes emerged as presented in Figure 23 below. The coding framework is provided in appendix 14c. The majority of the traditional healer's discussed their views about susceptibility to malaria, and individuals' perceptions about the susceptibility to malaria suggest his/her health-seeking behaviours and explain how it could contribute to delay in seeking effective treatment for malaria and other health condition.

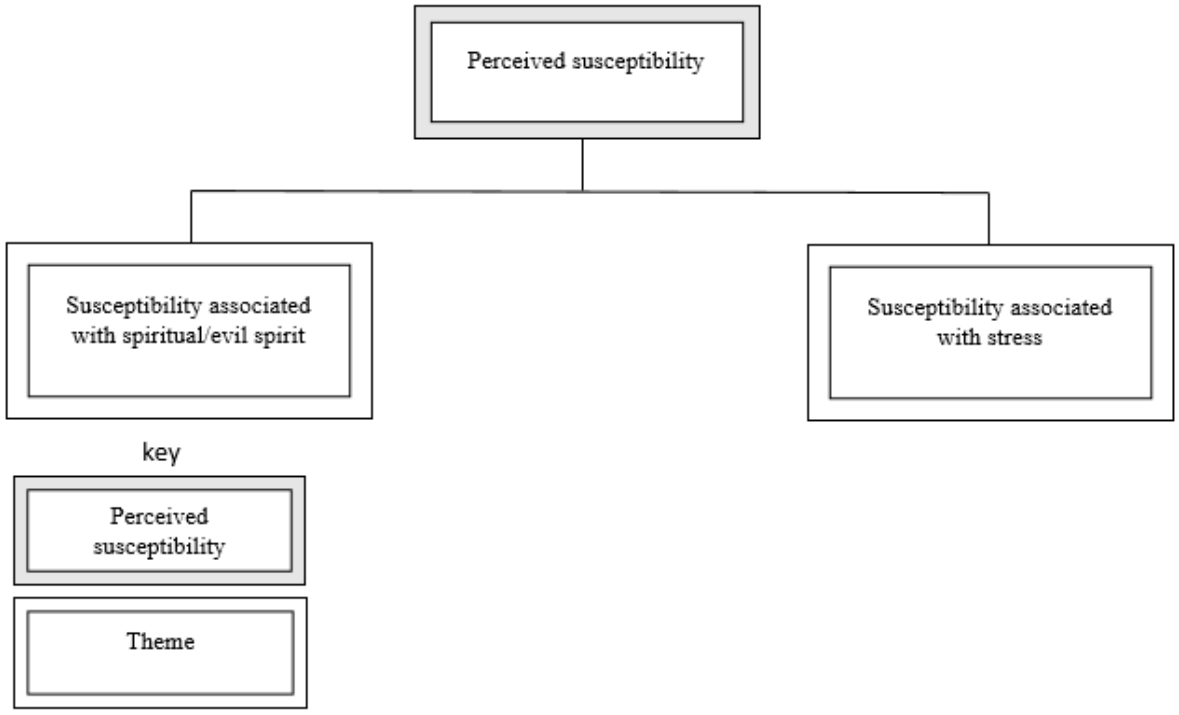


Figure 23: Themes that emerged from interviews with traditional healers (perceived susceptibility)

Susceptibility associated with spiritual/evil spirit

Some of the traditional healers reported that an individual's susceptibility to malaria is based on spiritual attacks or evil spirits and which also explains the number of offences committed. Two participant quotations (TH1MT and TH3TO) presented below emphasised that such spiritual causes of malaria require spiritualist help to perform certain rites.

> The ones (malaria) that are caused by a mosquito are not serious I can treat it one hand in just a few hours and they will be fine but you see that one that is caused by

> the spirits, it is very dangerous o and can kill quickly if they person do not do something about it quickly (TH1MT)

> "…it (malaria) caused by evil spirit self, but for me I do not treat people with sacrifice, but there are people who do all those things, I use plant to make herbs only no sacrifice, only some people do it" (TH3TO)

Susceptibility associated with stress

Three out of seven traditional healers associated stress with an individual's susceptibility to malaria. One of the participants (TH1MT) narrated from his personal experience that he is a farmer and combines it with traditional medicine practice, and therefore the stress he experiences increases. So, his remedy is by consuming herbs whenever he is weak and so he perceives that it is malaria caused by stress and insect bites.

> "…the moment my body is getting weak maybe because I am tired in the farm, even self that mosquito malaria can cause it too, so I will just go and sleep and take two cups of that energy drink which I have prepared for myself and I will get fine again" (TH1MT)

5.5.6 Perceived barriers

Five themes emerged as presented in Figure 24 below from the interviews conducted with traditional healers. The coding framework is provided in appendix 14d. During the semi-structured interviews, participants discussed some of the perceived barriers that contribute to delays in health-seeking behaviours for malaria treatment among adults.

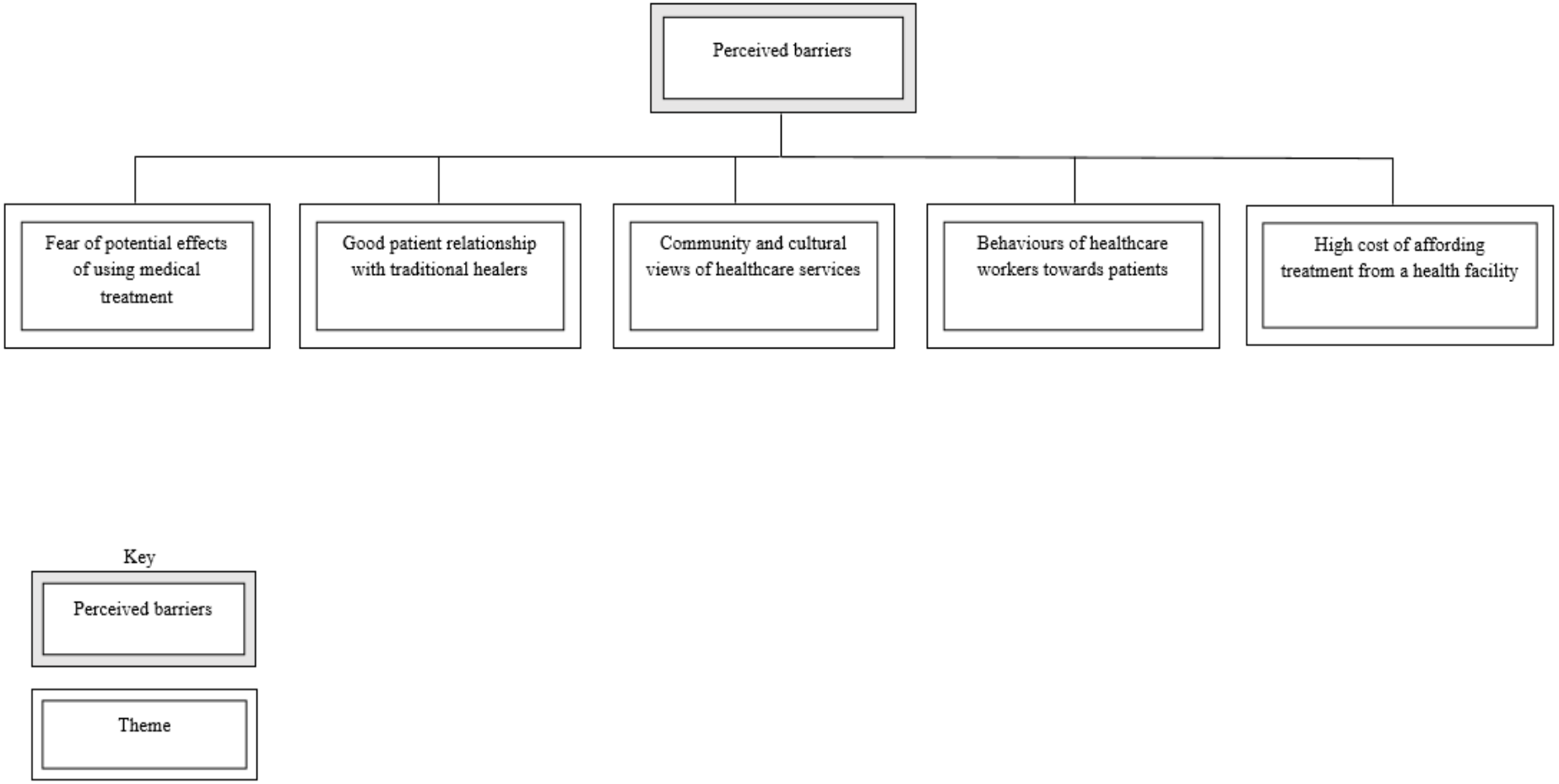


Figure 24: Themes that emerged from interviews with traditional healers (perceived barriers)

Fear of potential side effects of using medical treatment

The majority of the participants discussed how patients' express fears regarding hospital treatment. According to their narratives, some people express fear based on personal experience. They revealed that some of the people have had a family member, relative or a close friend that died at a health service in the course of receiving medical treatment. Further discussion also highlights that some patients even complain that after receiving treatment from a particular health service the individual died a few days later, and this is perceived to be either due to complications that may have resulted from the intake of the biomedical drugs. See the quotation below to explain this.

> I will also say that why other people are not want to go to the hospital is because maybe the hospital people have done something bad to them so they will not want to go there again, and again maybe because one of their family member have died in the hospital and so they have decided not to go there again, because even if it is you, you will not go there again na (TH2EO).

According to the quotation above, she discussed the reasons patients may avoid to go the hospital or a health facility for treatment, and according to her it could be based on the patient's personal experience, who may have had a tragic experience, including the death of a family relative

> You can even develop another problem self, see one woman her small daughter was taken to the hospital and she slept there many days at hospital when they discharged them she discovered that her child cannot hear very well again (TH3TO).

In addition, according to the narrative above, discussed that people are afraid they might develop further complications after or during medical treatment. He narrated the experience of a patient who developed hearing loss due to a medication she was offered. Hence, such fears prevent people from vising hospitals to receive treatment.

Good patient relationship with traditional healers

Some participants discussed their relationship with their patients and echoed how they offer free herbal treatment to patients who come to them and do not have money to pay. More so, due to this existing cordial relationship, they always advise patients not to use the orthodox treatment first before using the herbs, as they perceive that the allopathic medicines could interfere with the efficacy of the concoctions when it is taken. See the quotation below.

> "…like me what I tell the people that come here (shrine) for herbs or even buy it from those people that sell it is that, it is good to start with herbs first before you think of say you want to go to the hospital, because the medicine will work well, but if they go to and take the hospital medicine, it will not work very well again, and because I know them I say to them that even when they are not having money to buy it, I can give them, they are customers to me and to save their lives is better than money for me, this is what my late father told me when he was alive" (TH4TA).

Community and cultural views of healthcare service

The minority of the participants reported that due to the treatment practice that exists in their community, people are born into the practice of using herbal medicines, and so certain communities consider herbal treatment as their first line of treatment and therefore perceive that the idea of hospitals was introduced many years later after the local herbal treatment existed.

> "…it is not our traditional treatment that make them not to go there (hospital), but remember that even their parents used and old grandparent used this same treatment we are talking about, so it is an old treatment practice that has been with people for ages, they have seen, heard and known about how very important we are in this community" (TH1MT).

> In this our area (community), hospital is for some people that want to go, in our culture, we respect local medicine (herbs), but you see all those hospital, my question is before hospital ever come, what have been using, it is herbs, so how come now the same people that use it are saying it is bad, I think a lot of people do not know their history, well it is our culture here in this community, even my family all use herbs and it is very good (TH7PO)

According to the narrative from the above participant (TH7PO), he perceives that allopathic treatments are for certain groups of people who may choose it, but he reiterated his views that herbal medicines are the oldest which has been in practice for many years.

Behaviours of healthcare workers towards patients

The majority (six out of seven) discussed how their patients complain to them about the attitudes and behaviours of healthcare professionals. According to their narratives, patients complained that they

were not rendered the quality of service which they paid for. More so, patients reported to them the disrespectful attitude of the health providers, and this included healthcare providers showing no empathy to patients. This therefore may contribute to influencing patient's attitudes to delay effective treatment for malaria and other health condition through seeking alternative help. See quotations below.

> When you go to the hospital even the attitude of those people working there is very bad, they do not respect people (…) the behaviours of the people treating people (HCW's) is too anyhow, like wicked and rude and makes people never to come back there again (TH4TA)

> "…some may even say the way the hospital people behave is very bad and they are not giving them the best or they are not giving them what they want" (TH1MT)

High cost of affording treatment from a health facility

The minority (three out of seven) of the participants discussed the cost of treatment for patients as expensive. Based on their experience as traditional healers, they discussed that most patients do not visit the hospital because their treatment is expensive when compared to the cheap cost of receiving the local treatment.

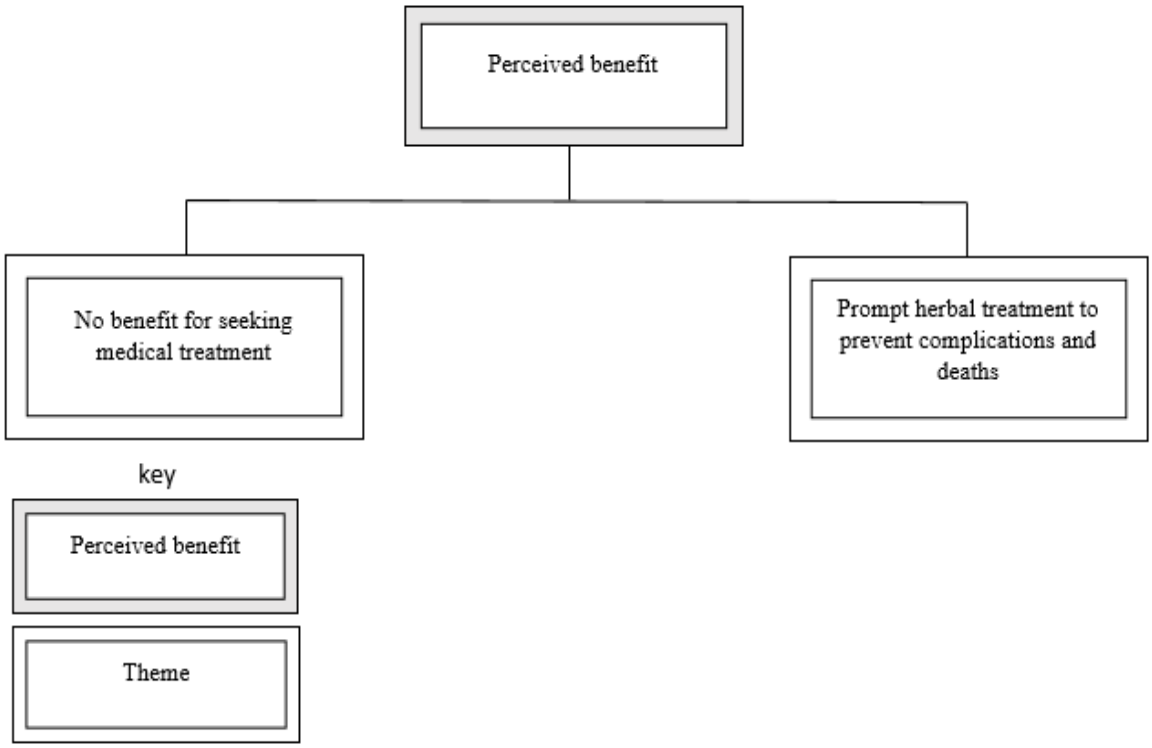
> "…well, some people may not go to the hospital because of no money, because to get treatment there needs big money, but people come here (traditional healing centre) because we charge small and we give them good treatment for the herbs" (TH2EO)

> "…people don't have enough money to go to the hospital because our treatment is cheap and anyone can pay not like hospital" (TH3TO)

5.5.7 Perceived benefit of effective health-seeking

Two themes were identified as presented in Figure 25 below from the interviews conducted with the traditional healers. The coding framework is provided in appendix 14e. During the semi-structured interviews, participants detailed their views about the perceived benefits of effective treatment-seeking for malaria.

Figure 25: Themes that emerged from the interviews with traditional healers (perceived benefit)



No benefit to seeking medical treatment

The majority of the participants reported their views and considered the hospital and allopathic medicine not beneficial. Rather, they perceive it as expensive and regarded malaria as not a severe disease that requires such expensive treatment. Furthermore, according to their narrative and descriptions, hospital treatment is perceived to be for the wealthy who considers themselves not to be part of the community because they are wealthy. Two participants (TH2EO and TH1MT) word-for-word quotations are presented below to highlight this.

> For me there is no single benefit to get when you waste plenty money just to treat malaria in the hospital, malaria is not a disease that anybody should waste that money for, I know that hospital is too expensive and a lot of people come here for treatment of more worst sickness talk less of malaria (TH2EO).

> "…how can to go to the hospital be helpful for malaria? Hospital is for some kinds of big men who thinks that our blessed herbs is not good for them to drink and be well, hospital drugs is not very good for the body and then you will still take money and give to them again, no use at all, at least for malaria" (TH1MT)

Prompt herbal treatment to prevent complications and deaths

Rather than perceiving any benefit in seeking treatment from a healthcare facility, participants have only emphasized the benefits of seeking the local traditional treatment. The majority of the participants echoed their views that seeking herbal treatment on time helps the patients to recover on time and will prevent any further complications that may arise from the attack and also would prevent the patient from dying untimely. See one of the participant's excerpts presented below.

> For me is when you don't come here (shrine) to get herbs to treat the malaria on time that I know what it can cause, and the answer is so that they will not die, or lose one part of their body, because you know there is a way malaria will worry you that you can be mental self, like I told you the story of that person (TH3TO)

5.6 MOH policymaker's findings

This section presents the findings from the semi-structured interviews conducted with the Ministry of Health policymakers. The interviews were carried out with four key MOH officials who are Heads of departments involved in formulating malaria treatment policies in Nigeria. For this study, the departments are identified as A, B, C and D as presented in Table 7 below.

To begin, the biographical characteristics of these key health stakeholders are presented and then extends to present the interview findings thematically using word-for-word data. The MOH policymakers' identities are coded using identifiers to maintain anonymity (Table 7 presented below provides an illustration and explains the breakdown of the codes).

Table 7: Codes used to represent the MOH policymakers.

Example of a coding frame for a MOH policymaker (ZS1A)			
Participants identification codes	Participants initials	Participant identification no.	Codes for Departments
ZS1A	ZS	1	A
NN2B	NN	2	B
NE3C	NE	3	C
AD4D	AD	4	D

*MOH – Ministry of Health

5.6.1 Biographical characteristics of the MOH policymakers

Four key stakeholders (MOH policymakers) were recruited and interviewed. They comprised two females and two males, representing four departmental heads from the ministry of health. Their duration of service as key health officials was between 18-30 years, and their ages were between 50-59 years. They were all married.

Table 8 presents the biographical details (age, gender, marital status and duration/years of service) of the key health stakeholders.

Table 8: Biographical details of the MOH policymakers

Identification codes	Gender	Marital status	Age	Codes for department headed	Duration of service
MOH policy makers					
ZS1A	Female	Married	59	A	30 years
NN2B	Male	Married	52	B	25 years
NE3C	Female	Married	50	C	22 years
AD4D	Male	Married	53	D	18 years

5.6.2 Perceived efficacy

The interviews conducted with the MOH policymakers identified three themes and three Sub-themes as presented in Figure 26. The coding framework is provided in appendix 14f. The health officials detailed their perspectives about the various perceptions and attitudes that contribute to delay in health-seeking for malaria treatment among adults, particularly regarding the perceived efficacy of adult Nigerians. They discussed how the various perceptions on the effectiveness of malaria treatment contribute to delays in seeking appropriate treatment services.

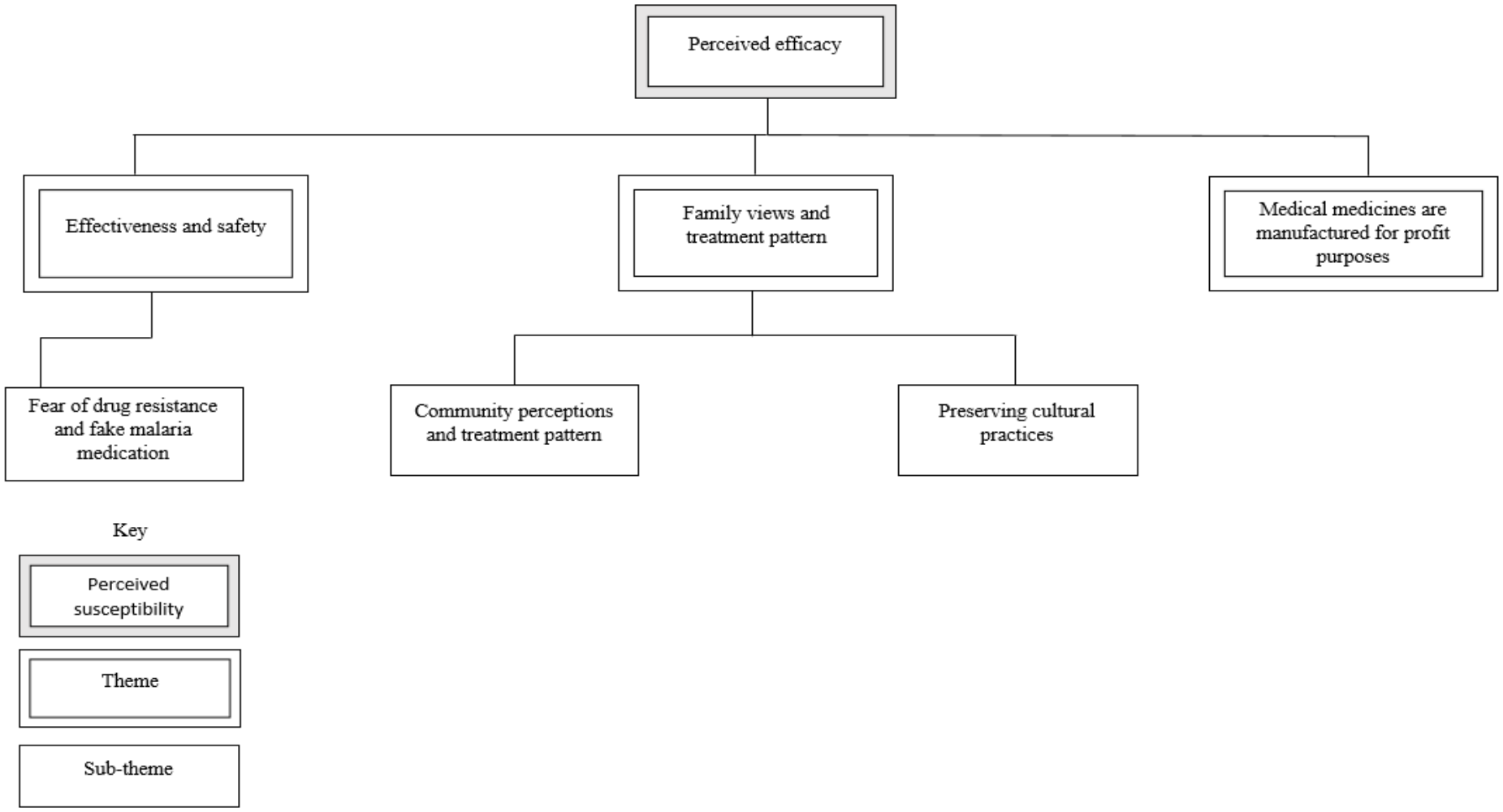


Figure 26: Themes and sub-themes that emerged from interviews with MOH policy makers (perceived efficacy)

Effectiveness and safety

All the MOH policymakers interviewed discussed extensively various perceptions regarding the effectiveness and safety of malaria treatment, and they further argued how it could contribute to negatively influencing patients' decision to delay effective treatment-seeking for malaria. Presented below are participants word-for-word quotations.

> "…very common perception is that many people perceive wrongly that the herbal medicines provide healing faster and that these herbs flush remnants of the plasmodium parasites from their bodies and that is why most times, you will observe that they drink and consume a large quantity of this herbs believing that the more quantity that is consumed the more malaria parasites will be flushed out, and also this perception makes them believe that the herbal medicines would give them a prolong body immunity against another episode than the medical treatment" (ZS1A).

The above quotation discussed some of the common misperceptions about the effectiveness of malaria treatment, in which treatment involving the use of herb is perceived as more effective than the medical treatment, and also it is perceived to have the ability to flush out remnants of the plasmodium parasite from the bloodstream of the patient. The participant's narrative above further detailed that people have the attitude of consuming a large quantity of herbal concoctions during treatment, and this is so because they perceive it would help to hasten their recovery. More so, another perception reported regarding efficacy from the above excerpt is that people perceive that using herbal treatment could provide lasting immunity against reinfection of this parasitic disease.

> "…there are reports concerning safety and effectiveness of malaria treatment that we have on record, some people perceive that they understand drugs are manufactured from plant extracts originally but their safety concern is that just because it was further mixed with some different pharmaceutical substances for it to be produced, it has become unsafe for human, this is another misperception a lot of people are having concerning medications generally and it contributes to affect their health behaviours" (NN2B).

The above quotation argued that people have safety concerns regarding medical treatment. He explained that some people perceive medical treatment as unsafe treatment; which could have potential health

side effects, and so this misperception could contribute to affecting the health-seeking behaviours of many people. The participant excerpt is presented above.

Fear of drug resistance and fake malaria medication

Two of the four MOH policymakers reported that fear of developing drug resistance and the fear of consuming fake antimalarial drugs as some of the perceptions that people have, and these could contribute to influencing delay in seeking effective treatment for malaria. Further discussions with the policy makers revealed that herbal treatment is considered the best treatment by most people because there is no problem with fake herbal concoctions being sold, unlike orthodox medicine which the majority believe that there are a lot of fake antimalarial medication being sold in medicine stores over the counter. In addition, their narratives highlight that most Nigerians perceive that their body has developed resistance to antimalarial drugs which explains the reason why it is not working effectively. This perception, therefore, influences their attitude to seek alternative treatment whenever they are sick. Below extract from the MOH policymakers (NN2B and AD4D).

> "…you know because malaria is prevalent, majority of Nigerians self-medicate, they just visit any patent medicine store and purchase these antimalarial drugs from them, so because of this abuse of drugs people have developed antimalarial drug resistance, and funny enough they know that their bodies have developed resistant, so most people will then turn to using herbs instead of them to go the hospital, they will say they can't waste money just to visit a hospital for malaria treatment, so you can see that they already have developed this fear for drug resistance, and may perceive it as a waste of money to buy this drugs and for it not to be effective" (NN2B).

> "…another perception people have about malaria treatment which contributes to delay in seeking effective treatment is because most people are scared of going to purchase fake antimalarial drugs from the medicine stores, we know that Nigeria is faced with a problem of fake drugs and fake antimalarial drugs are very rampant, so people already have the perceptions how that sure even the hospital drugs used for malaria treatment are original, in fact personally despite purchasing antimalarial drugs from big registered pharmacies, I still confirm the originality of the drug by typing the NAFDAC code, but in this part of the world, how many people can read and write, and so they would prefer to use the herbs which is what they perceive as original, and sincerely speaking these things work for them" (AD4D)

Family views and treatment pattern

The majority (three out of four) of the health officials reported that some of the perceptions people have about the efficacy of malaria treatment are also associated to their family views and the pattern of treatment in which they utilise, this, therefore, forms part of their views, thus goes further to contribute to influence their health-seeking behaviours and decisions. See the participant (NN2B) quotation below to explain this.

The excerpt presented below emphasised that as Africans, some families are traditionalists they do not attempt to use the orthodox medication because of their beliefs and practice. Hence, such beliefs and practice is passed unto generations, which is likely to influence their perceptions and attitude towards effective health-seeking with their preference to use herbs.

> "…you should understand also that this is Africa and so there are families that are actually very traditional and fetish such things exists here, so there are families that hold strong importance to traditional treatment practice. They actually do not even attempt to use the medical treatment at all, and this practice becomes a pattern of treatment for them from one generation to another, so they do not even contemplate to use allopathic medicine which is against their family decision to continually use herbs as their source of treatment" (NN2B)

Community perception and treatment pattern

Participants also noted that aside from the inherited family misperceptions about the biomedical treatment for malaria and their pattern of seeking treatment, there were also generally community perceptions about the medical treatment and the acceptable pattern of treatment. One of the MOH officials (NN2B) whose quotation is presented below highlight that some communities disallows certain group of people from accessing and utilising medical treatment because it is perceived that it could affect their babies, but these communities permit the use of indigenous traditional medicines.

> "…there are some communities you go in this town that have a specific way in which people are permitted to seek treatment, for example, imagine communities that forbids pregnant women from using medical treatment because it is perceived as not effective and believing that it weakens the immune system of their babies, especially pregnant women in her first trimester during pregnancy, but she is permitted to use herbs for treatment, according to this culture it is a pattern that must be seriously complied to when you from that tribe and living in that land" (NN2B)

Preserving cultural practices

A minority of the participant reported that it is often perceived by majorly some rural residents in Nigeria that by utilising the herbal medicines, the African cultural treatment is preserved so that coming generations would as well utilise it. Participants also argued that some people culturally consider it a sense of pride to use their herbal medicines to treat themselves and know full well that the products used to prepare the concoction was gotten from their community. Hence, such perception is likely to encourage the use of herbs, thus delay in effective treatment-seeking for malaria and other diseases. See the participant quotation presented below.

> "…to so many people taking traditional medicine is a way of preserving cultural heritages, I understand that as an African person, you will feel a sense of pride knowing fully well that this medicine I am taking is made from my village by a man in my village, so such perception can impact their willingness to seek prompt and effective treatment for malaria" (ZS1A)

Medical medicines are manufactured for profit purposes

Two of the policymakers discussed that people also have the perception that treatment received from hospitals, and generally allopathic medicines are intended for profit making. A common perception is that when these medicines are purchased profits return to the manufacturers, and they believe also that with this intention of profit-making, malaria drugs are deliberately not produced to attain a high level of effectiveness in such a way that it could provide lasting immunity. Hence because of this misperception, they prefer patronising and utilising herbal and traditional medicines which are considered cheaper and natural and provide longer immunity against a re-infection. See participants (ZS1A and NN2B) direct quotation below.

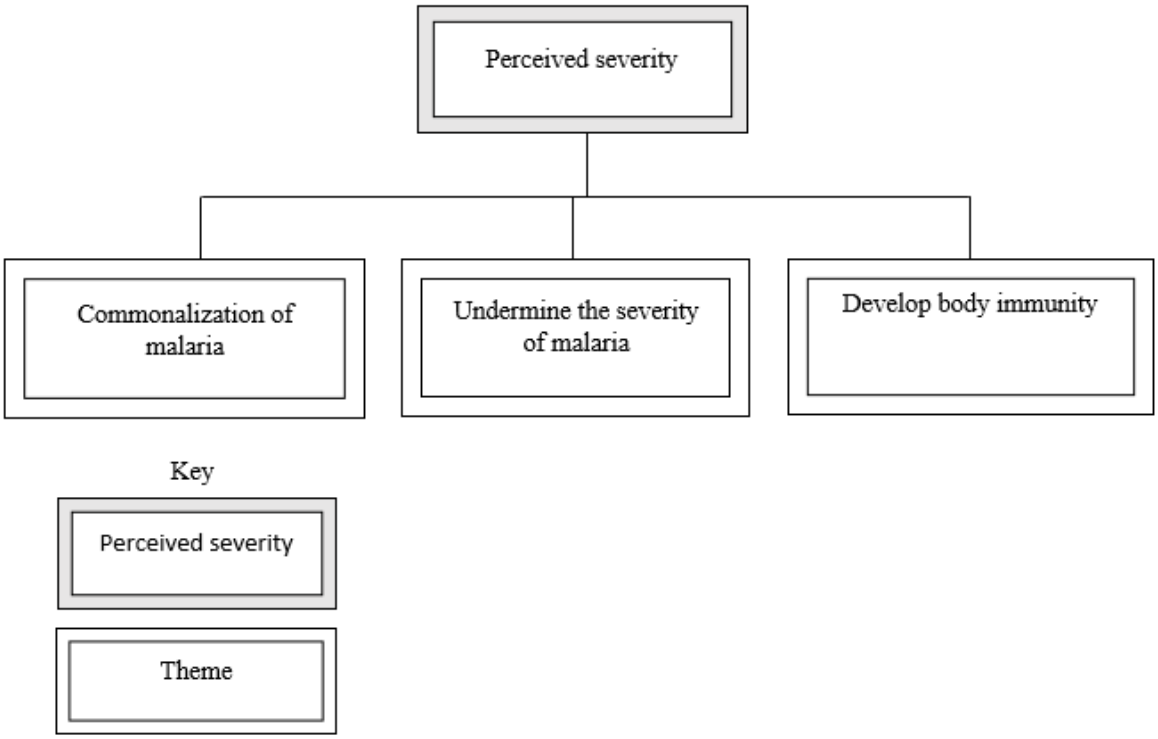
> Some people say it is just a way of enriching the hospital people when the clinical medicines are purchased, so they rather patronise the African herbal medicines, so funny that they perceive it that when you buy these medicines, the profits would still go back to them who are sitting in their various countries enjoying and not come back to Nigeria, and so would rather use the herbal medicine (ZS1A)

> Many people have this wrong perception that the antimalarial drugs manufactured are deliberately substandard so that people will still purchase it again and again, they believe that it is a kind of pharmaceutical business strategy that is used to extort money from people (NN2B)

5.6.3 Perceived severity

From the interviews conducted with the MOH policymakers, three themes emerged, as presented in Figure 27. The coding framework is provided in appendix 14g. The MOH officials discussed their views regarding the perceived severity of malaria among adults. Also, their narratives further explained how this perceived severity of malaria could contribute to a delay in effective health-seeking behaviours for treatment.

Figure 27: Themes that emerged from the interviews with MOH policy makers (perceived severity)



Commonalization of malaria

The majority (three of the four) of the policymakers reported that many Nigerians classify malaria as a disease that is experienced monthly by families. This meant that each month a member of a family will be sick of the disease; hence it is perceived as a common disease. Further discussion with the officials' highlights that due to the several episodes of malaria attacks individual experiences annually, the majority of people have perceived malaria as a common and normal illness. Also, they argued that a vast majority of adult Nigerians do not classify malaria as a severe illness, and therefore this could contribute to encouraging delay in health-seeking. Presented below are extracts from participants to this explain this.

> "…people have gotten used to malaria attacks over and over again that they normally refer to it as common malaria, I have heard people call it so even during our "world malaria day, even among the educated people such wrong perception exists" (ZS1A)

> "…another major reason why people delay in seeking effective treatment for malaria is the fact that malaria is perceived as a common and normal illness, most people who practice self-medication will not only believe that they are sick of malaria, instead they will also combine typhoid treatment alongside, so for malaria, people have referred it as a common illness, means one shouldn't panic for experiencing malaria attacks, it will come and go as a very common slogan they use" (NN2B)

Undermine the severity of malaria

The officials further explained that malaria is not perceived as a severe disease, that is, most Nigerians undermine its severity. Though all officials acknowledged malaria as one of the recorded leading causes of death in the country, however this is contrary to the perceptions of the majority of Nigerians. Therefore, the attitude of undermining the severity of malaria could contribute to delay in effective health-seeking. See quotations presented below.

> It (malaria) is a very serious, severe and debilitating illness, like I have said and it been acknowledged in records as the 4th leading causes of death, including infant mortality and maternal mortality in the country, but the challenge is that majority of Nigerians do not perceive malaria to be as serious as it is being publicised in the media (ZS1A).

> Malaria is a very serious and dangerous disease, I remembered how it killed my mother, but something bothers me and it is fact that people take it for granted, and this shows that more efforts and advocacy programme needs to be in place (AD1D).

Develop immunity against malaria

Two policymakers reported that malaria disease is prevalent in Nigeria, which explains the number of attacks that a person experiences, their narratives highlight that some of the views of Nigerians are that they are immune to malaria because their bodies have developed some sort of protection against the

disease. More so, participants' discussion revealed that some adults perceive that even if they are attacked by malaria, it cannot be severe because they have developed immunity from their several previous exposures. See participant extracts below.

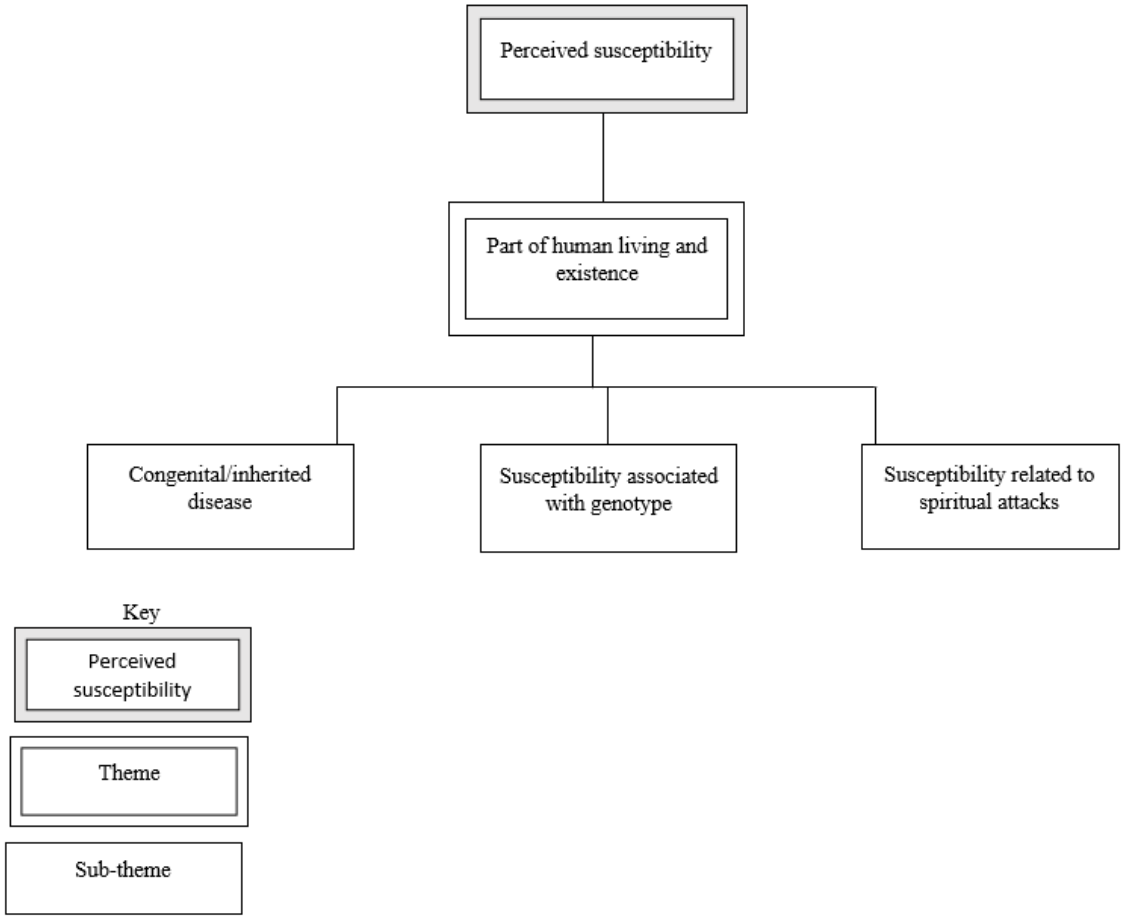
> "…people have perceived it because of the repeated malaria attacks which they have experienced over the years, then it gives them immunity against malaria being harmful to them" (NN2B)

> I think those who perceive that they immunity against malaria might have thought so because, it is understandable that a person can develop natural immunity against a particular disease because of the numbers of attacks the person has experienced. However, what people fail to understand is that it doesn't mean the individual is vaccinated against the disease or cannot be attacked by the disease, so most people have thought it that they are immune to malaria attacks, and so they delay to seek help believing that what they may be experiencing is not malaria but rather stress, which would require them to have some rest (NE3C)

5.6.4 Perceived susceptibility

From the interviews conducted with the policymakers, one theme and three sub-themes emerged, as presented in Figure 28. The coding framework is provided in appendix 14h. The health officials discussed their views about how adults perceive their susceptibility to malaria. This further explains how these perceptions could contribute to encouraging delays in effective health-seeking for malaria treatment.

Figure 28: Theme and sub-themes that emerged from interviews with MOH policy makers (perceived susceptibility)



Part of human living and existence

The majority of the officials revealed during their discussions that some adult Nigerians perceive that malaria is part of human existence, which means that humans cannot live without experiencing malaria. More so, their narratives and descriptions highlighted that malaria is perceived by adults as being part of human lives and existence, which manifests itself at certain times when triggered by certain things such as stress/performing very heavy duties. A participant (NE3C) quotation is presented below to further explain this.

> "…most Nigerians do not consider malaria as a disease at all, they perceive it as part of human living and existence, it is like asking someone what is your genotype, and so malaria is perceived to be inside of all humans, especially if you are living here in Nigeria, this is so because of how prevalent it is, almost every household have a case of it, so to most people, malaria is not caused by anything, but it is in

> all humans and could manifest when certain things trigger it. From a personal experience, I went to the village to visit my parents and I heard my elder sister to her oldest son that it is like this malaria has come again because she felt she worked hard at the farm, and so what she is feeling is the malaria which could have been triggered by the hard labour" (NE3C)

Congenital/inherited

Because malaria is perceived to be part of human living and existence, two MOH policymakers (NE3C and ZS1A) argued that some Nigerians also perceive malaria as a congenital disease. According to their narratives, they explain that some Nigerians who perceive that it is a congenital disease believe that if a person is not attacked by malaria then it means the individual does not have the plasmodium parasite in his/her bloodstream. This misperception could encourage delay in seeking treatment from a medical facility.

> There are people I have also heard that perceive that malaria can be genetic and could be congenital, all these things one I attribute it to lack of knowledge about the disease, my niece had a baby and immediately after delivery that remained at the hospital and during one of my conversation with her, she told me that the child was born with malaria and so they had to hold them back at the hospital, this could be a case of malaria-related complications during pregnancy, but she has concluded that the child was born with malaria, so that is the misperception most adult are having about malaria, and so when they are attacked by malaria it could simply mean that they were born with it after all, it is a birth condition sort of (NE3C).

Susceptibility associated with genotype

A minority of participants highlighted that another perception people have about their susceptibility to malaria is that they perceive that individuals born with the AA genotypes are susceptible to malaria and persons with AS and SS are not susceptible to malaria disease. This could also encourage delay in health-seeking among people who perceives that they are not susceptible to the disease.

> "…well there are others who perceive that certain people with a particular genotype are the ones who are susceptible to malaria, some said because their genotype is AA that is what makes them susceptible to malaria and those with genotype AS or SS would say they are not susceptible to malaria, but the thing is this malaria is a disease caused by the bite of infected female anopheles mosquito, it does not select

whose genotype is what before attacking a person, so from my understanding as far as we humans and living in an endemic environment then we are susceptible, so this kind of perception can affect people's health-seeking decision" (NE3C)

Susceptibility related to spiritual attacks

Two participants spoke about the perceptions of most Nigerians, particularly those living in rural areas in considering an individual's susceptibility to be associated with spiritual attacks. According to their narratives, due to their perceptions, most Nigerians would usually prefer to seek traditional and spiritual help. Also, another participant (NE3C) discussed that because of the cultural, religious and ethnic diversities, the majority of people worship different gods and thus they have different cultural beliefs about diseases, particularly concerning their causes, treatment and prevention. Therefore, this misperception could encourage alternative treatment-seeking rather than utilising the medical treatment. See the participant's excerpts below.

"…you know we Africans we are too concerned about all of this spiritual and evil attacks, enemies are after me sort of mentality, and so there are people perceive that one can only susceptibility when he/she has an enemy and o the enemy will attack the person by attacking the person with malaria. I think the majority of such thoughts exist in the rural communities and very scarcely in the urban settlement, so you can see when someone perceives that malaria is caused by certain spiritual forces, he/she will rather seek spiritual solutions either by visiting a spiritual leader for prayer or a spiritualist for cleansing, thereby delay to seek the right and effective treatment on time" (ZS1A).

5.6.5 Perceived barriers

The interviews conducted with the MOH policymakers identified five themes as presented in Figure 29. The coding framework is provided in appendix 14i. The health officials discussed their views about the perceived barriers that contribute to the delay in effective treatment-seeking for malaria among adult Nigerians.

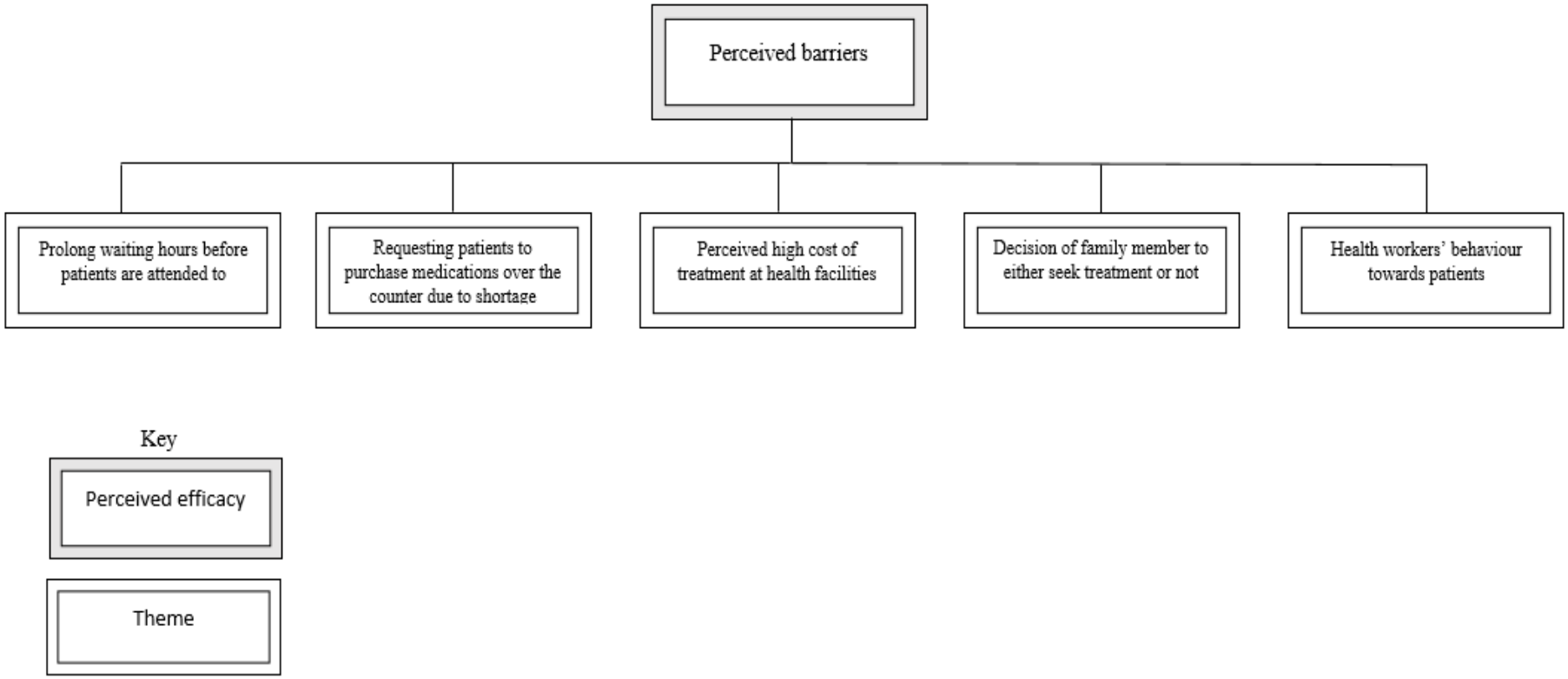


Figure 29: Themes that emerged from interviews with MOH policy makers (perceived barriers)

Prolong waiting hours of patients at the health facility

All four policymakers stressed that many patients prefer to seek alternative treatment options such as visiting a traditional healer or purchasing herbs from those who hawk them. Furthermore, they explained that the majority of Nigerians prefer to buy drugs over-the-counter. Further discussion reveals that patients avoid patronising medical services for treatment because of the prolonged waiting hours spent before a patient is attended to by the health providers. This could, therefore, encourage patients to delay health-seeking by patronising alternative sources of treatment and practising self-medication. See the participant excerpt below.

> "…among the perceived barriers that contribute to delay in seeking effective treatment, let say from a hospital or a good clinic, is the problem of prolonged waiting hours before a patient is usually attended to by either the nurses or doctors, here in Nigeria, when you go to the hospital, the queue is very much and this makes people wait for a long time before being attended to. Now we are talking about malaria, which already people have classified as a common, harmless and normal disease, some even say it is a congenital disease, so they would not even think about wasting their time about such illness just to go and keep them waiting, whereas they know that we have various informal routes here which a lot of people access, so they would rather go these informal services like buying over the counter drugs, herbs and so on" (NN2B).

> Waiting hours wasted at the hospitals are not encouraging at all and would encourage delay to effective treatment and in turn also encourage self-medication, like going to the chemist to purchase these medicines, buying herbs or visiting a herbalist for concoction (NE3C)

Requesting patients to purchase medication over the counter due to shortage at the facility

Three health officials argued that patients who visit medical facilities are sometimes asked to purchase over-the-counter drugs and this is due to the shortage of medicines. Participants discussed their personal experiences about how they were given prescriptions by healthcare professionals to buy some unavailable drugs from a patent medicine shop. They explained that in Nigeria, medicines including antibiotics can be purchased over-the-counter, so it is easy to practice self-medication. This practice therefore could discourage patients from patronising/visiting the hospital/health services for treatment because purchasing over the counter drugs could expose patients to fake antimalarial drugs. Due to this practice, most people will not be encouraged to seek treatment from the hospital on subsequent episodes,

they would rather prefer to practice self-medication by purchasing over the counter drugs. A quotation to explain this point is presented below.

> "…it is sad and very discouraging to ask a patients or members of the patient's family to go out of the health facilities and purchase certain medications that would be used to treat them, often time, patients come to the hospitals and after medical examination and it time to administer medication, the pharmacist department of the hospital may on most occasions ask the patients to purchase certain drugs written on prescription form from over the counter, I have witnessed this before and I have remained in a state of shock for that incident till today, if the patients can purchase these drugs on their own from over the counter, then why did they have to come to the hospital and waste their time and resources there, this can actually be a perceived barrier that could contribute to delay in seeking treatment from health centres" (ZS1A).

Perceived high cost of treatment at health facilities

Two policy makers discussed that the cost of accessing treatment from a medical facility could be a major reason for most patient's delaying to seek treatment. According to the extracts from their interviews presented below treatment from hospital is perceived as expensive. Their excerpts below revealed that because malaria is also perceived as not a severe disease, patients usually would access other alternative treatment sources such as using herbs or purchasing drugs from chemists' shops which are perceived as cheaper treatments.

> "…most people here in Nigeria if you ask them to go to the hospital and seek treatment for malaria, the first they might say to you is you mean I should go to the hospital to treatment just malaria, so that hospitals should charge them very high? People perceive that the it is expensive seeking treatment at the hospital for the malaria, no it not, but relatively affordable, the reason why most people wouldn't want and go the hospital, but rather choose to blame to the cost of treating malaria is because they already do not perceive malaria as an important disease worth spending that amount on. But I can tell you that it is more expensive to self-medicate, and I have said so because in self-medication the chances to buy a fake drug is higher that might require the patient to buy another one, another is that it could lead to complications which could eventually land the patient in the hospital and this could more" (NE3C).

Decision of family members to either seek treatment or not

Minority of the policy makers reported that, as a common practice in most African culture, some families would request for permission from the head of their homes before seeking treatment from a medical health facility. In most cases it is the husband who is the head of the home, and so certain decisions such as treatment seeking must be reported to him and consent approved before the patient can be permitted to access treatment. According to the interview extract below such practices however commonly exists in rural villages.

> "…there is this family hierarchy that exist in Africa, wife must not take any decision without the husband's knowledge and consent, so also in the event of treatment-seeking, there are some families no matter how serious a health issue may turn out to be, if the husband's approval and consent is not gotten that sick person cannot go to the hospital. Yes, such things exist here in Nigeria among certain families and these things happens more in rural areas, but it does not rule out the fact that even in the urban areas it does exist, and so such things could lead to delay in seeking treatment for malaria and any other disease and eventually death" (ZS1A)

Health workers' behaviours towards patients

All four participants reported that some of the unpleasant behaviours of health workers towards patients could likely be a reason for patient's preference to seek alternative help, thus delaying to seek health care service. According to their narratives, despite the complaints boxes that are provided at hospitals, such rude behaviours among healthcare workers stll persits in the Nigerian healthcare system. See extracts below.

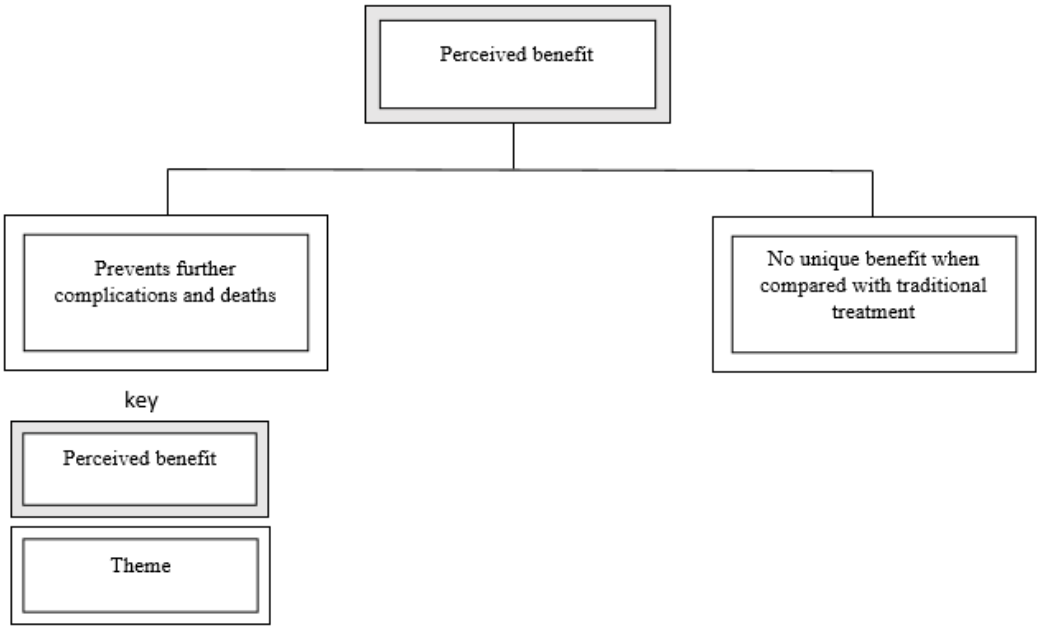
> "…it is a very common perception that health workers here are very rude and speak to patients aggressively, and you know such things can make a patient avoid seeking treatment from the hospital or any other healthcare facility, instead they will attempt self-medication. This is the more reason why there is the SERVICOM department mostly in public hospitals, so that patients can either drop their compliant in the box or simply call" (AD4D).

> I have heard that patients are treated rudely at most public health facilities, unfortunately by the same group of people (healthcare workers') that are supposed to care for them. The issue of patients being shouted at, commanding them to for instance to go the laboratory for test, when a patient can barely walk, not minding if the patient slumps or not (NN2B).

5.6.6 Perceived benefit

The interviews conducted with the policy makers identified two themes as presented in Figure 30 below. The coding framework is provided in appendix 14j. These officials discussed their views about the adult Nigerian's perceptions regarding the perceived benefits of seeking effective treatment for malaria.

Figure 30: Themes that emerged from interviews with MOH policy makers (perceived benefit)



Prevent further complications and deaths

All four of the MOH policy makers discussed that some adult Nigerians understand that prompt and effective treatment seeking for malaria could help in preventing complications and deaths. However, most patients patronise over the counter drugs, which is a form of self-medication practice, also most of the private medicine vendors do not have the requisite knowledge. See a direct quotation presented below to explains this:

> "…well, I guess nobody would want to die from illness, and so I would say just a few people would certainly understand the necessity and importance of seeking proper treatment on time, also a few may further understand that delay in seeking the right treatment may cause further complications and problem, which they would need to avoid" (NE3C).

No unique benefit when compared with traditional treatment

Majority of the participants discussed that some Nigerians especially the rural resident do not perceive any difference in terms of benefits between seeking treatment from a medical facility or a traditional herbal medicines. According to the extract from the participant interview below, it was discussed that due to the fact that people are familiar with using the herbal treatment, and having used it for a long period of time, they have perceived it to be very effective, hence concluding that there is no unique difference in terms of benefit between herbal and allopathic medicines. More so, according to their narratives, people also perceive that herbal medicines are safer because it is perceived as a natural plant product with medical importance.

> Majority of Nigerians use herbs for treatment of malaria and other illnesses, and this practice has been ongoing for long now, others have practiced this all their lives, and so some of would proudly declare that there is nothing the medical treatment can treat or handle that the herbal treatment cannot, they see nothing different or special in seeking the medical treatment when their can do the same thing and even more safely, but the problem the fail to understand is the traditional and complementary medicine is just a supporting treatment. Also, remember I said earlier that not all herbal providers' are registered or licensed to practice in Nigeria, so we have fake and unlicensed herbal practitioners' scattered all over and this is the issue as most Nigerians patronise them (ZS1A).

5.7 Healthcare professional's findings

This section turns its attention to presenting the findings from the semi-structured interviews carried out with the healthcare professionals, and this included medical doctors and nurses. The interviews were carried out with four medical doctors and six nurses from four hospitals. The healthcare professionals interviewed all had experiences in treating malaria patients. For the purpose of this study to maintain anonymity, the health facilities are represented as A, B, C and D as presented in Table 9 overleaf.

Before proceeding to present the findings that emerged from the semi-structured interviews carried out with the healthcare professionals, their biographical characteristics is presented. All the identity of the healthcare professionals' interviewed are coded using identifiers to maintain anonymity (as seen in Table 9 below).

5.7.1 Biographical characteristics of the healthcare professionals

A total of ten healthcare professionals were interviewed, and they comprised of four medical doctors (three males and one female) and six nurses (four males and two females).
The healthcare professionals ages ranged between 31 - 55 years, and their duration of working in the healthcare profession ranged from 6 - 22 years. The nurses had the lowest duration of practice which was ranged between 6 and 21 years when compared with the duration of practice among the medical doctors, which is ranged between 8 to 22 years. All the healthcare professionals were married. Table 9 below presents the socio-demographic characteristics of the healthcare professionals.

Table 9: Socio-demographic characteristics of the healthcare professionals

Identification Codes	Age	Gender	Codes for health facilities	Marital status	Duration of practice
Healthcare professionals – Doctors					
DJIA	43	Male	A	Married	12 years
DCUC	51	Female	C	Married	22 years
DPTD	38	Male	D	Married	8 years
DADB	55	Male	B	Married	18 years
Healthcare professionals – Nurses					
NISB	31	Female	B	Married	7 years

NJAC	37	Male	C	Married	10 years
NJOB	55	Female	B	Married	21 years
NMMC	34	Male	C	Married	6 years
NNOD	46	Male	D	Married	12 years
NAMD	38	Male	D	Married	9 years

5.7.2 Perceived efficacy

The interviews conducted with the healthcare professionals identified two themes and four sub-themes as presented in Figure 31. The coding framework is provided in appendix 14k. Participants detailed their views about the various perceptions and attitudes that contribute to delay in health-seeking for malaria treatment, specifically, regarding the perceived efficacy of malaria treatment among the adult Nigerians. The healthcare professionals discussed their opinions on how the various perceptions about the effectiveness of malaria treatment contribute to delay in seeking appropriate treatment service.

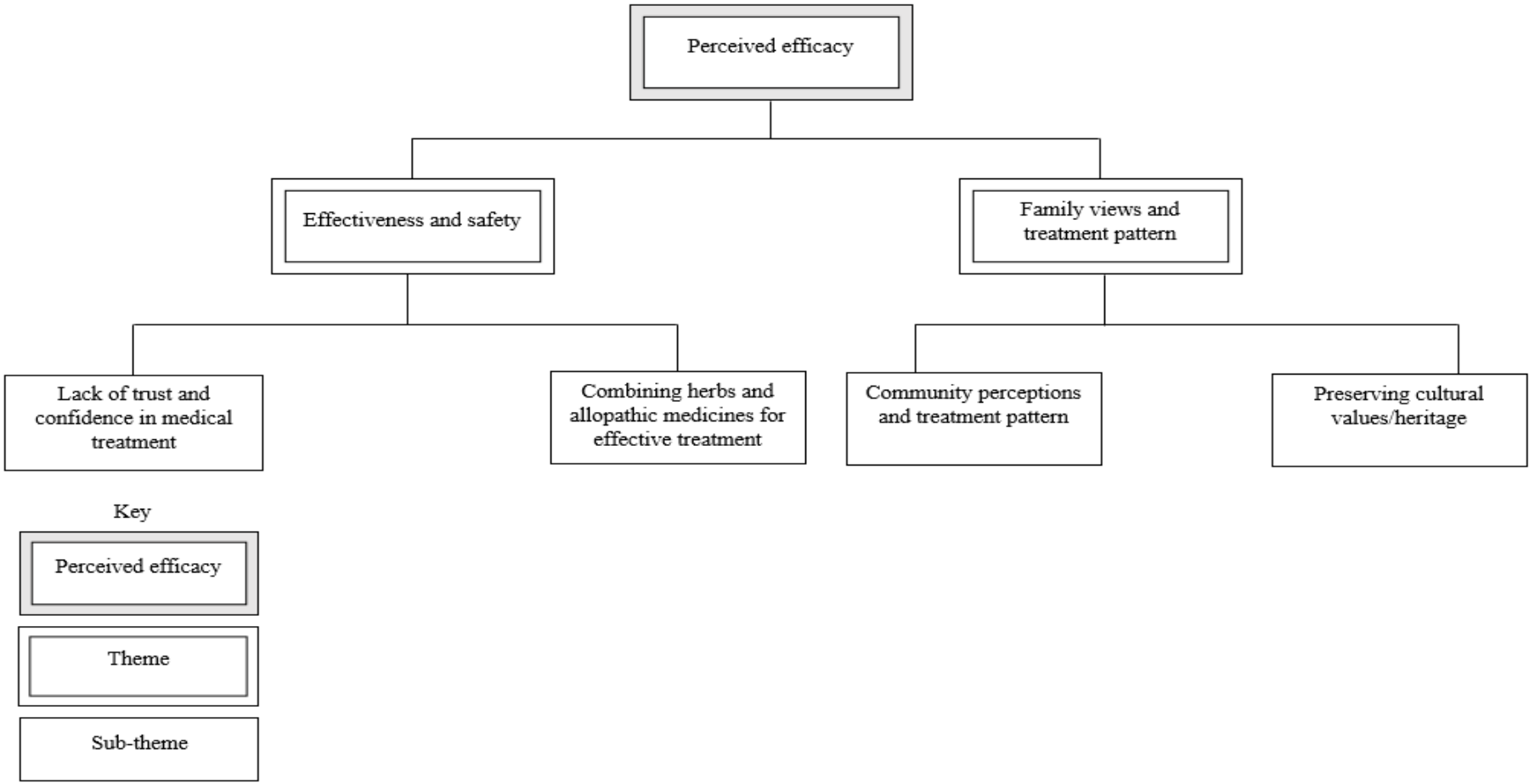


Figure 31: Themes and sub-themes that emerged from interviews with healthcare professionals (perceived efficacy)

Effectiveness and safety

Majority of the healthcare professionals spoke concerning patients' perceptions about the effectiveness and safety of the biomedical treatment for malaria. Their narratives and description explained how these perceptions could contribute to influence their attitudes to seek alternative treatment, and thus, delay in effective treatment-seeking. See quotations below.

> "…whenever I ask patients or the relative that brought them to the hospital, their reason for late presentation, their response will tell you how they already have a preconceive judgement about the hospital treatment, most patient always say to me that the drugs at the hospital and the ones which is sold at the open medicine stores are not effective, because they have taken several types of antimalarial drugs and it did not work and also they will express their disappointment that it was just few months that the last treated malaria and now again they are at the hospital, so they don't feel safe at all to be always taking drugs frequently because they are treating malaria, so they started taking herbs in the process and that is why they delayed" (DADB).

The above extract from a medical doctor revealed that based on experience and interactions with patients, some of the late hospital presentations are due to the fact that most patients already have a negative preconceive judgement about the hospital treatment, as patients tend to argue that treatments involving the use of allopathic medicines are not effective, and this include hospital treatment and drugs purchased over the counter. According to the narrative above, patients usually complain of experiencing a new episode of malaria even after completing treatment, hence compounds their fears about not feeling safe to take any more antimalarial drug, this results to most people seeking herbal sources for treatment and even visiting prayer houses.

> "…well as a nurse from my experience and interaction with a lot of patients, they complain of how weak and ineffective hospitals treatments are because it does not afford them long protection against malaria, and so they will say the manufacturers of this drugs should know fully well that malaria is very much in this country and so they should manufacture drugs that are very effective to prevent too near attacks, because the present ones are not effective. Some even go as far as saying that herbal treatment boosts the immune system and affords longer protection against near malaria attacks more than when you come to the hospital" (NNOD)

The extract above explained that patients perceives that the medical treatment for malaria is not effective, and some patients go on to consider it as a weak treatment. Participants argued that based on their interaction with patients, this perception is due to the fact that when antimalarial drugs are administered and taken, it does not provide long lasting immunity against a re-infection. Further discussion from participants emphasised that patients perceives that herbs are more effective and provide stronger immunity.

Lack of trust and confidence in medical treatment

Some of the healthcare professionals spoke concerning how their patients have expressed lack of confidence and trust in accessing and utilising medical treatment for malaria. This lack of trust and confidence in visiting a hospital or a health facility informed their decision to utilise the herbal concoctions. See participant's quotation presented below.

> I have heard most patients say to me that they do not have confidence anymore the kind of antimalarial drugs that are being produced lately, because when you think that you have bought the drugs and taken, not long again you can be sick of the same malaria which was just treated, and so because they do not trust it they simply go into taking herbal drugs which at least they sourced for the plant products and prepared the concoctions themselves rather than come here and spend a lot of money to treat malaria that will resurface (DPTD).

The extract extract above from a medical doctor highlighted that patients particularly expresses worry and lack of confidence and trust about the quality of the recently manufactured antimalarial drugs, as the perceive that it as not effective because despite after treatment, one still experiences another episode of attack. Also, according to his narrative, due to this lack of trust and confidence, patients have developed the attitude of using herbs by preparing it by themselves.

Combining herbs and allopathic medicine for effective treatment

Majority of the health professionals reported about an attitude that is commonly practiced by some adult Nigerians, and this is the practice of combining both biomedical treatment and traditional treatment. According to their narratives, patients indulge in this beause they perceive that it is more effective than taking single treatment approach, and so they perceive that it would provide longer immunity against re-infection. According to the interview data presented below, they argued that majority of people purchases antimalarial drugs from over the counter and take them alongside the herbal concoction. This perception contributes to delay in health seeking and leads to further drugs-related complications.

> "…since they perceive that the medical treatment for malaria is not effective, what most people do especially these motor park boys are doing now is that they will buy drugs from the chemist shop and then dissolve it inside a drink and then consume it once, they will tell you that, that's how to make the drugs more effective, we have a lot of cases of kidney failures and liver problems currently on admission in our hospital" (NAMD).

Family views and treatment pattern

Four healthcare professionals discussed their opinions by explaining that some of the perceptions that contribute to delay in health-seeking for malaria treatment are the family views and the pattern of treatment in which they practice. Their extract below highlights that based on upbringings, people inherit certain perceptions and pattern of treatment from their families. According to participants' narratives, there are some families that do not utilise the orthodox medicines but believe in the spiritual powers for treatment, and there are other families that believe strongly in the use of herbs which they perceive as effective. These family treatment practices are particularly associated with the different ancestral family beliefs.

> "…there are families I am aware of that do not come to the hospital neither do they even use the orthodox medication, they will tell you that they do not take those things (medications) but they strongly believe in spiritual exercise and because they have this strong believe, it works according to them, and also there are individuals I know that believe strongly on herbs and they depend on it for their treatment, it is like a family kind of practice. You know we are Africans and we have a lot of belief system here especially regarding treatment since we believe that sicknesses could have evil root, and so people have their family or upbringing kind of beliefs and the way they choose their treatment and these things are followed also by coming generations" (NNOD)

Community perception and treatment pattern

Minority (three of ten) of the healthcare professionals spoke about community perceptions regarding malaria treatment and the pattern of treatment practiced in the community. They further explained how these perceptions contribute to influence the health-seeking behaviours of people. The quotation below explains that herbal treatment is perceived as important and effective source of treatment in some communities within Makurdi. People within these communities consider it a waste of resource seeking medical treatment for malaria. According to the medical doctor's narrative below patients rarely present

to the hospital for only malaria treatment, and this because of the available alternative approaches in which they utilise in the community.

> "…we have communities in this Makurdi metropolis, especially inside the villages of Makurdi that place high value or importance on herbal treatment more than the orthodox medicine, they could prove their decision by explaining that even people go to the hospital for treatment malaria would be back and fall ill of it again, but they who take herbs do not come down with malaria too soon, so they perceive it that it is a waste of resources seeking treatment for malaria in the hospital, infact, I will that majority of people here in Makurdi and Nigeria as a whole rarely come to the hospital for just malaria, they usual practice is buy drugs over the counter or take herbs or even go for prayers, it is not common, except on severe malaria cases" (DADB)

Preserving cultural values/heritage

Some health professionals argued that most adults especially those living in the rural areas consider their attitude of using herbal medicines as a pride; because it is an ancestral treatment which has been in practice for several decades. Also, people do not feel safe to always consume the biomedical kinds of medicines because of their perception that it is manufactured through the process of mixing chemicals which could have harmful effect to them in the future. According to the excerpt presented below, most people who utilise the herbal medicine do so with the believe that they are preserving cultural practices. See the quotations below to explain this.

> From my interaction with a lot of patients, there are some who perceive that the traditional herbal concoction has existed as old as man in itself and they will even go on to defend it by saying that even our forefathers consumed these substances and they lived over a hundred years, in fact they would even say that the hospital medications are just chemical mixed with plants products and they are worried that always consuming these orthodox medicine will have future detrimental impact on a person (NJOB)

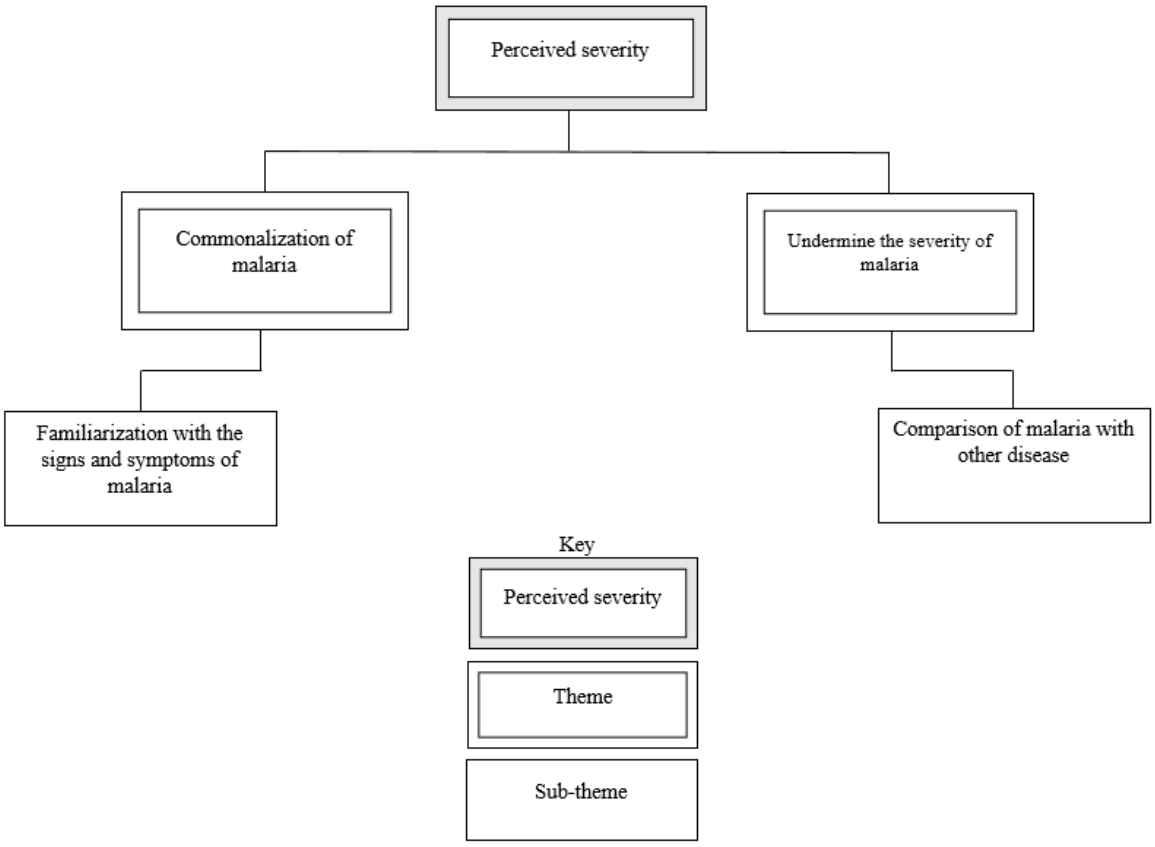
> I have seen different cases where patients are brought to the hospital in a bad condition due to delay in seeking treatment and after conducting examination on these patients, the level of damage done because they were taking herbs for so long you will marvel, according to them it what they have been using all these

years and it has been effective, even their forefathers used it and so they have been using it, but this time around maybe the sickness has increased (NISB)

5.7.3 Perceived severity

The interviews conducted with the healthcare professionals identified two themes and two sub-themes as presented in Figure 32. The coding framework is provided in appendix 14l. The healthcare providers detailed their views about how adult Nigerians perceives the severity of malaria, and their narratives and descriptions explains further how their perceptions could contribute to delay in effective treatment-seeking for malaria.

Figure 32: Themes and sub-themes that emerged from interviews with healthcare professionals (perceived severity)



Commonalization of malaria

All the healthcare professionals discussed that most adults perceive that malaria is a common disease, and this misperception is due to the fact that its prevalence rate is high in Makurdi. Hence, as a result of this perception, its severity is undermined, as it is perceived as a less harmful disease. Furthermore, discussions with the participants' highlights that this attitude of commonalizing malaria explains the reasons why most people practice self-treatment, and seek alternative treatment such as the use of herbs and purchasing drugs over the counter from private patent medicine sellers. Two participants' extracts are presented below to highlight this.

> "…people in Makurdi perceives that malaria is a common illness…and because of the way and manner in which they commonalised malaria, they think it isn't a serious illness, and so they actually treat it themselves using the various care pathways I have earlier mentioned without visiting the hospital" (DJIA)

> "…a lot of people have the attitude of commonalizing malaria, perceiving it as a less dangerous disease, in fact, it is perceived or seen as a normal thing for someone to be sick of malaria since no matter what you do, one will still come down with malaria" (DADB)

Familiarization with the signs and symptoms of malaria

Four participants argued that because malaria is perceived as a common disease, it is also perceived as a are familiar disease with known signs and symptoms, and due to this familiarization, most people practice self-referral and self-medication by simply purchasing drugs over the counter. According to participants' narrative, due to the fact that malaria is a common disease with familiar signs and symptoms, some families have already prepared herbal concoction standby to be used for treatment of malaria in their homes. Two participants' extracts are presented below.

> "…because they are familiar with the signs and symptoms of malaria, once they know that it is malaria, they will simply self-medicate themselves either buying patronizing the drug peddlers or even buying this local herbal drinks that is being hawked about on streets and market places" (NAMD)

> "…for others since they know it is malaria based on the usual signs and symptoms that it presents itself with, they already have a standby herbal concoction cooked, and so all they will do is to fetch from it and drink and sleep, and funny as this

thing maybe, it works for them but it has quite well, but from the medical point it not advisable, as it leads to further complications" (DPTD)

Undermine the severity of malaria

Majority (six of ten) of the healthcare professionals discussed their views that some adults undermine the severity of malaria, and some of the main reason for this is that malaria is perceived as a common and familiar illness. See quotation below.

"…they underestimate the ailment, which is malaria, then people have this common belief that malaria should be a mild illness" (DCUC)

"…malaria is actually a very serious illness because of the attendant complications that comes with it, unfortunately this not is not perceived by a lot of people, as they underrate its ability to cause any serious harm" (DJIA)

Comparison of malaria with other disease

Four healthcare professionals discussed that majority of Nigerians have the attitude of measuring the severity of a disease by comparing it another disease. As a result of this comparison, according to participants' narrative and description, malaria is perceived not a serious illness, as people usually compare it with the severity of other diseases such as HIV/AIDS and other disease. The participants' extracts below revealed that due to the fact that most people have no personal experience or have not witnessed the severity of malaria on a patient, but have witnessed how severe HIV or cancer diseases are. Patients therefore, conclude that malaria is not listed as a severe disease.

"…you know we humans we appreciate personal experience, and so if people have not personally witnessed the havoc that malaria can cause they always perceive that it is not a dangerous disease like maybe say HIV/AIDS or even something like cancer, so they have this attitude of comparing the severity of other illnesses with malaria and then come to the conclusion that it isn't in anywhere a dangerous illness" (DADB)

"…according to many people, who has ever died from malaria illness? Then that must be another kind of malaria and not the one known to them, they don't even imagine that malaria can kill them, infact, some have started comparing it with the recent coronavirus and so, they perceive that if a disease is serious, the world

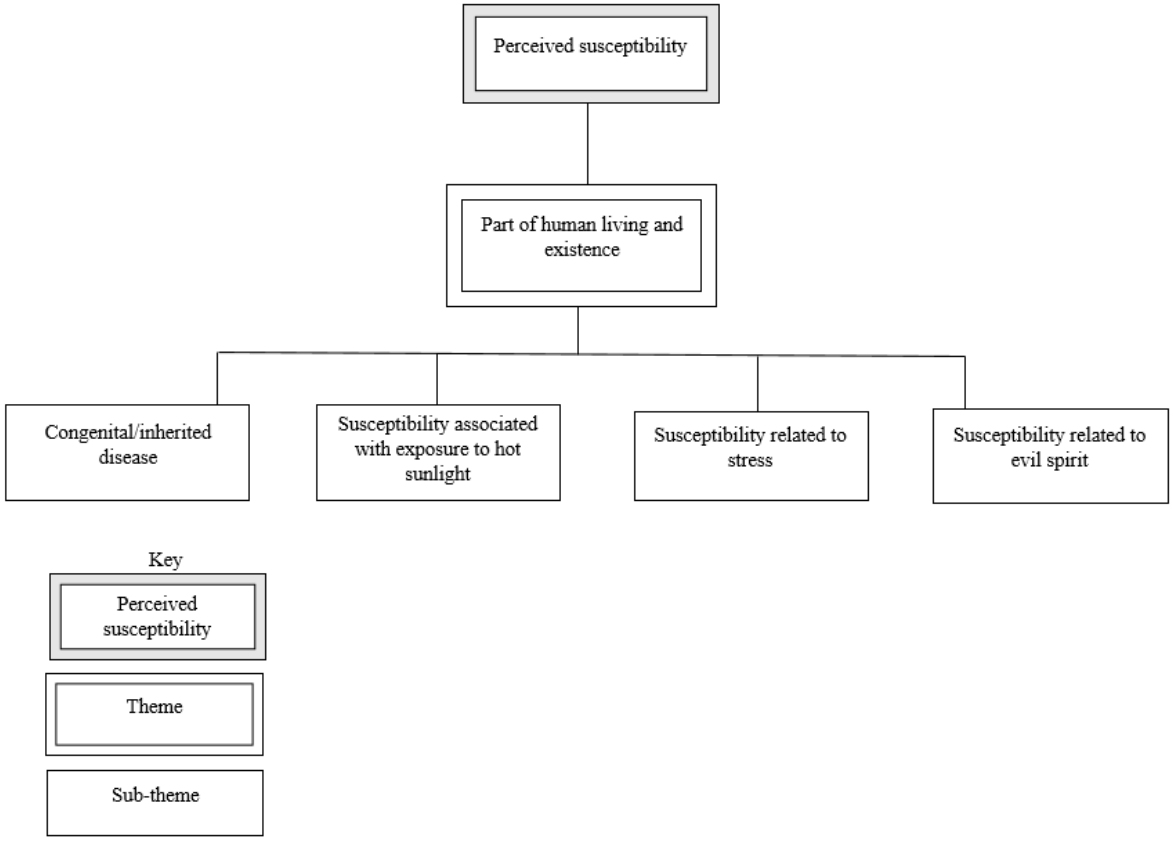
> will definitely rush to have a cure or solution for it, though I get their point but they don't understand malaria is a silent killer" (NMMC).

The above quotation highlights that patients do not perceive that malaria is severe in terms of its ability to cause death, when compared with another disease. Based on participants' narrative, patients usually compare the severity of malaria even with other diseases such as recent coronavirus outbreak which they perceive is serious because of the global response rate in tackling it. Therefore, this perception and attitude of comparing the severity of other disease with malaria could possibly contribute to encourage their attitude of delay in effective health-seeking for malaria treatment.

5.7.4 Perceived susceptibility

The interviews conducted with healthcare professionals identified one theme and four sub-themes as presented in Figure 33. The coding framework is provided in appendix 14m. Participants detailed their perspectives concerning the perceptions of adult Nigerians regarding their susceptibility to malaria. The health provider's narratives further explained how the adult Nigerian's perceptions about their susceptibility to malaria could contributes to delay in practicing appropriate health-seeking behaviours for malaria treatment.

Figure 33: Theme and sub-themes that emerged from interviews with healthcare professionals (perceived susceptibility)



Malaria is part of human living and existence

Minority of the health professionals reported that most adults understand the fact that all humans can have malaria, hence, they believe that there is nothing any human being can do to prevent being infected with it. Furthermore, the health providers argued that most adults perceive that malaria is part of human

living and existence; this perception therefore encourages delay in seeking medical treatment. Two participants' extracts from their interviews are presented below.

> "…others even perceive that nobody can live without the disease and so they just don't feel any bothered being attacked by mosquitoes or even coming down with malaria, so being susceptible, some of the patients I have interacted with are aware that they are all at risk of malaria attacks, and so they believe that there is nothing anyone can do to avoid been infected but the problem is that even though they are aware that they are risk, seeking treatment on time becomes the issue, so they are not worried about whether they are risk or not" (NISB).

> "…to a lot of other people malaria is like a sickness that is normal and what I mean is that in as much as humans exists so also will malaria exist with humans, simply, this can also be said that malaria is part of human living and this is one major issue as it affects their health-seeking behaviours, because the take it to be a norm" (NJOB).

Congenital/inherited disease

A minority of the participants discussed that some adult Nigerians perceives that malaria is an inherited disease and that a child could be born with it. The health providers' narratives further revealed that most people believe that a person who has no history of inherited malaria are not susceptible to the disease. In other words, susceptibility of a person to malaria is associated with being born with malaria. For instance, the narrative extract presented below highlights that some women after delivery request to know if their babies were born with this parasitic disease. According to their narratives and description, the delivering mothers asks the question because they argued that they gave birth to a child with malaria. The health providers therefore conclude that this misperception could be one of the reason why people would delay in effective health-seeking for malaria because they would perceive that they are free from malaria because they were born malaria-free, and so when such people becomes sick they would not perceive it to be malaria, it rather would be associated to another disease and then seek alternative treatment for it.

> "…some women they give birth they will be asking please I want to know if my baby has malaria because according them when they gave birth to the last child he/she has malaria, so most people especially women from my experience as a nurse thinks that malaria is a congenital disease, so such lack of knowledge will make them not do the right thing in seeking for treatment on time, because they

will feel like after all I was not born with malaria and so they one that the experiencing is something else and not malaria disease" (NISB).

Susceptibility associated with exposure to hot sunlight

Majority of the healthcare professionals discussed a common opinion of most Nigerians, who perceives that malaria is caused by excessive exposure to hot rays coming from the sun. Their narratives and description explains that this misperception is because in Makurdi, most people perform menial and laborious jobs which constantly exposes them to the hot sunlight. Some of the common menial jobs that exposes people for prolong hours under the hot sunlight includes; hawking and petty trading in the market while sitting under the hot sun in a local market. Hence, when such people who are exposed to the hot sunlight begins to notice some signs and symptoms suggestive of malaria, they would always associate it to the fact that they have been exposed to the hot sun. In this case, most people would prefer to take some days off to rest because they perceive that when a person rests, the malaria would be gone, thus, delaying to seek appropriate and/or medical treatment for the disease.

"…the temperature in Makurdi is very high, the weather is too hot and because most of the people living here are petty trader who transact their businesses under this hot sun, so they are already used to the signs and symptoms of this disease, which they wrongly would most times associate it with because of prolong exposure to hot sun…so there are people who perceive that they are down with malaria because of their exposure to the hot sun" (NMMC).

"…others would say they don't know the reason why they are down with malaria, because they claim that for some time now they have been indoors and not getting out there into the hot sun to scorched. So there are people like this who have this misperception about their susceptibility being linked to exposures to hot sunlight, and this make them not to seek treatment on time even when they are sick, simply because it is not believed to be malaria as they have not been under the hot" (DADB)

Susceptibility related to stress

Minority of the participants also spoke concerning adult Nigerians perceiving that their susceptibility to malaria is related to stress. The narratives from the following participant highlights that some adult Nigerians also perceive that certain unskilled and strenuous jobs make a person to be susceptible to malaria than the less stressful jobs. For instance, as discussed in the extract presented below, that most

Nigerians understand that certain menial jobs which requires a lot of effort, makes a person to be susceptible to malaria. The extract below highlight that most of such people purchase the local herbs which is sold and hawked, with the intention to flush malaria out of their bodies.

> "…again there are some people wrongly perceive that malaria is caused by stresses, depending on the kind of job you do. For instance, in Makurdi here we have truck pushers, this people that carry heavy luggage for money this job is very hectic and so you will see them mostly patronising these herbal sellers that sells them in little cans, and they will tell you that they are flushing sickness including tiredness and stress out from their system, so they think that people who perform heavy tasks are more susceptible to malaria attacks" (DPTD)

<u>Susceptibility associated to evil spirit</u>

Some participants stressed that most residents in Makurdi practice various religions, and so majority perceives that all sicknesses including malaria are caused by spiritual attacks. Hence, healthcare professionals explained that due to this perception, most people seek spiritual help and/or prayer or some sort of spiritual exercise as a means of seeking treatment and getting well. The extracts below highlights this.

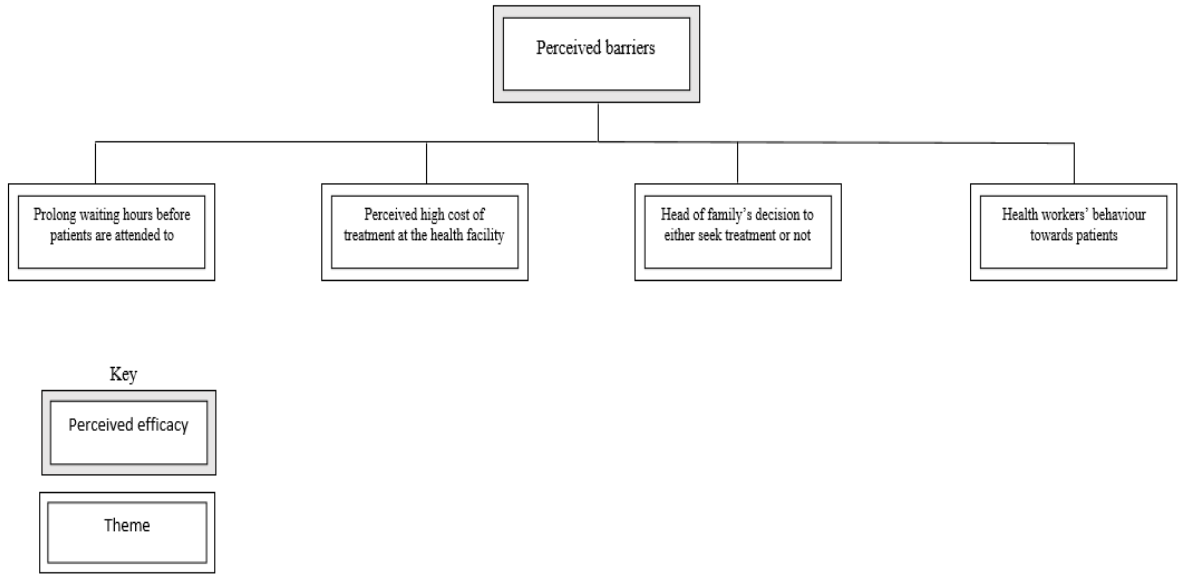
> "…a lot of people have this attitude of perceiving malaria to be caused by some spiritual or demonic powers or influences but this not true is common ignorance and lack of knowledge" (DPTD)

> The attitude of spiritualising the causes of disease also contributes to people delaying in treatment-seeking, instead they would be praying and meeting their spiritual leaders (DADB)

5.7.5 Perceived barriers

From the interviews conducted with the healthcare professionals, four themes emerged as presented in Figure 34. The coding framework is provided in appendix 14n. In this section, the health professionals detailed their perspectives about the perceived barriers that may be contributing to delay in effective health-seeking for malaria treatment among adults.

Figure 34: Themes that emerged from interviews with healthcare professionals (perceived barriers)



Prolong waiting hours spent before patients are attended

The majority consensus was that most people do not present to the hospital because of the perceived prolong time they could the facility before they are attended to. According to participants' narratives, people understand that it is easier and faster to purchase drugs from over the counter, and so would prefer to practice self-medication than presenting to a healthcare service which at the end delays in attending to patients. According to healthcare professionals' narratives, the ratio of patients to a doctor is very high in the country, as there are insufficient medical doctors to attend to patients on time. So patients would prefer to seek alternative help rather than spending much time at the hospital. Most people perceive it as stressful going to the hospital because of the length of time it takes, and this is because the alternative source of treatment are readily available. Presented below are quotations from participants.

"…the delay system in the clinic before attending to patient is another serious perceived barrier that makes patients not to come to the hospital or clinics on time, well also this is not the case in most times it can also be their perceptions, although in Nigeria the ratio of patient to doctor is very high, we have a large number of patients to attend to" (DPTD).

Patients know that when they get to the hospital, they will need to spend more time to see a doctor, all these things will make the patient want to access the other care pathways that are readily available on the street (DJIA)

Perceived high cost of treatment at the health facility

Majority of the participants' discussion highlighted that most adult Nigerians perceives that accessing and utilising the medical treatment from a health facility is expensive, costing more money. Hence, as a result of their perceptions, they prefer to patronise the private patent medicine vendors or even seek herbal medicines. According to the health practitioners' narratives most of these patent drug dealers do not have adequate knowledge concerning prescription of medication, yet people patronise them simply because they perceive that their treatment is cheap/inexpensive. Therefore, the perceived high cost of obtaining treatment at the health facility could as well be a barrier to prompt and effective health-seeking for malaria. See quotations below.

"…it is an issue of finance, the patient may perceive that when he come to the hospital they spend more coming to the hospital, so by patronizing herbal cure, which they can afford it at least it cost as low as #50 or #100 they will prefer to access their services" (DJIA)

Most people in Makurdi are already used to self-medication practice either through patronising herbal providers or purchasing drugs from over the counter, these are very cheap treatment sources because first of all they are not effective, not licensed to practice, have no requisite knowledge, and so telling them to come to the hospital is going to be a big problem as they already have this wrong perception that hospital treatments are expensive, one would need to pay for hospital card before seeing a doctor, and maybe even be recommended to conduct diagnosis/test which as well cost some money and finally offering them prescriptions to go get the medication form the hospital's pharmacy unit (DCUC)

Head of family's decision to either seek treatment or not

The majority consensus was that most patients delay in presenting to the hospital because they needed to seek permission from the head of their home who has not yet granted the permission and so they would have to wait. This is a cultural practice by majority of the ethnic groups in Makurdi as echoed by participants. More so, some healthcare professionals spoke that patients delay to present to the hospital because their spouses offered to them herbs which they perceive is more effective, and so in the process of using the herbs they are delaying to seek the right and effective treatment. Therefore, according to participants' narrative, the perception that the head of the home approval must be obtained before seeking medical treatment could be a barrier towards seeking medical treatment for malaria. See quotations below to highlights this.

> It is usually a common practice here in Makurdi and in almost all Nigeria cultures where decisions in the home are to be respectfully given permission by the supposed head of the home, which in this case is the husband, one of such decision is treatment seeking. even in some tribes and religion it is even more strictly observed that all decision cannot be taken with the husband consent, so this is a very serious barrier that could contribute to delay in seeking effective treatment on, a lot of people have died in the process of waiting for consent before seeking treatment, infact I am speaking from experience, I have worked I several states here in the country (NJOB)

Health workers' behaviours towards patients

All the healthcare professionals discussed that most people do not seek medical treatment principally because the perceive that healthcare workers are rude to patients and they show no empathy towards the sick. According to their narratives, the behaviours in which health providers display towards patients discourages patients from coming to the hospital, and so they would prefer to self-medicate and purchase drugs over the counter, while others would prefer visiting traditional healers whom they perceive are more compassionate and treats them with kindness than the health workers. Therefore, most people have had personal disagreement with one or two health workers, and so they would have decided not to visit the facility again, and probably other facilities, hence leading to seeking alternative help. See excerpt from a participant below, as the quotation highlight this.

> I think one major barrier patients have complained about is the issue of dissatisfaction with the healthcare providers' behaviours of attending to patients, this is what a lot of patient will complain about, when they are asked they will say a particular nurse or doctor or that person offended me and so I refused to go

> to that hospital again, and now they are using herbs which is also working fine and it is perceived to be cost effective for them (NJAC).

5.8 Findings on traditional healers, policy makers and health professionals' recommendations

From: traditional healers

The key theme identified as recommendation to encourage prompt health-seeking for malaria treatment from the traditional healer's perspective is that the traditional healing services should be acknowledged and accepted by the Federal Government of Nigeria as a national treatment remedy similar to their medical counterparts.

Recognising traditional healers as national health providers

All the traditional healers recommended that the Government of Nigeria should also acknowledge the traditional medicine rather than undermine their effort as providers of health services. The traditional healers acknowledged that a lot of adult Nigerians patronises them for herbs and other spiritual/ritual services in quest for help for their various health conditions. They argued also that some patients return to them to purchase herbs and seek their services even after utilising the allopathic medicine, because they are aware that herbs are most effective and safe. According to their narratives if the traditional medicines are nationally accepted and recognised, both the healthcare workers and traditional healers can also collaborate in the provision of care to patients through referral of patients. More so, they perceive that when they are recognised legally as providers of care, it will increase the rate of health-seeking and treatment would be affordable. See extract below.

> The only way I can encourage people to go to the hospital is when the hospital people and us start to work together and when they also know that we are doing the best treatment and they are referring people to us, if not I cannot encourage anybody to go to the hospital treatment, especially for malaria treatment (TH2EO)

From: MOH policy makers and healthcare professionals

The key themes and sub-themes identified as recommendations to encourage prompt health-seeking for malaria treatment from the perspectives of the key MOH policy makers and healthcare professionals are presented below.

Government regulations (Policies) on free malaria treatment

All the MOH officials discussed that one of the key reasons for delay to effective health-seeking for malaria treatment is the perceived high cost of biomedical treatment. Consequently, according to their narratives, an important recommendation is that government should consider providing a free malaria treatment for Nigerians, particularly among the vulnerable groups; which include the pregnant women and under-five children. By providing free malaria treatment it will eliminate/reduce this perceived barrier and promote access and utilisation to medical health services for malaria treatment. See quotations highligting this.

> "…free malarial treatment for all Nigerians or at least for the vulnerable groups of people" (ZS1A)

> "…there is a need to definitely pass into law a policy that should capture pregnant women and children under-five years for free malaria treatment across all government health facilities of the federation" (NN2B).

<u>Health insurance for all citizens/subsidy for malaria treatment</u>

All the policy makers also recommended that a national health insurance should be available for all citizens specifically for diseases that are most prevalent such as malaria and typhoid. Hence, considering the increased morbidity and malaria-related mortality rates, one of the policy makers suggested the need to implement the policy on malaria treatment in Nigeria. This would encourage prompt and effective health-seeking behaviours.

> Let there be a national insurance policy for all citizen of the country for all major and tropical disease, including malaria and typhoid (this are disease that are very frequently attacking people) (NE3C).

> "…malaria treatment needs to go back to the subsidy regime, when we used to have malaria treatment subsidized for all Nigerians, this time it is more important to implement such policy" (NN2B)

According to the narrative of the healthcare providers, all Nigerians are to be registered into the national health insurance scheme (NHIS), as this would promote access to appropriate healthcare service without the out-of-pocket payment, as most people are not gainfully employed, hence cannot afford to pay for their treatment service.

> "…government can provide a health insurance scheme for them and ensure that these patients are enrolled into the scheme, so that when they are sick and they visit the hospital they should be able to have accessed proper care without paying out of their pockets since they are insured by the government" (DJIA)

> "…the issue of health insurance should not be limited to only workers because the major problem of Nigeria is employment (…) the place of health insurance is very important to do the magic, because if the people have insurance they would always want to walk to the hospital" (DCUC)

Extensive health promotional campaign

All four policy makers acknowledged the importance for a change in campaign approach from the present public media based approach to a door-to-door campaign strategy. They argued the need for urgent health promotional campaign in order to achieve universal health coverage, through encouraging people to access and utilise the health services available. More so, another policy maker contributed to this by recommending a health campaign that target at a particular group in a population rather than a general campaign without specifically targeting at a particular population group.

> "…let us, which I mean the government increase our rate of awareness on the danger of accessing illegal care providers (…) we would need to change our strategy of awareness from the public media kind of approach to a door-to-door approach, this would be of great benefit (…) health education campaign is necessary and urgently needed if we are to achieve health coverage for all" (ZS1A)

Healthcare professionals also recommended public enlightenment/promotional campaigns on the need for prompt and effective health-seeking behaviours for malaria treatment. More so, one of the healthcare professionals suggested that all public medias including radio, billboards and TV stations; that are used for advertising the products of the informal providers should be discouraged from doing so.

> "…there would also be need for public enlightenment to tell people about this and campaign about the danger of not coming to the hospital on time for proper care when they are sick and tell them about the free health services that has been provided by the government" (DJIA)

> "…public health education should be improved and the message being passed across should be simplified and also the media that are used by these informal care providers should be discouraged from advertising such product" (DCUC)

Religious leaders' participation as stakeholders for promoting health-seeking

One of the policy maker suggested the need for organising a stakeholder's conference and seminars involving various care providers - traditional healers, spiritualists, religious leaders, owners of private patent medicine vendors, healthcare professionals and policy makers. She recommended this conference/seminar in other to educate and enlighten each other on the issues of healthcare provisions.

> Conference and seminar should be organised to bring together all the various care providers both the herbal and PPMVs to educate them and enlighten them further on the need for healthcare provisions to patients (ZS1A)

Acknowledging traditional healers' as national health providers

Some policy makers suggested that all traditional healers should be given licence to practice and they should be supervised and monitored by government agencies on how treatment are rendered to patients. In supervising the services of the traditional healers it must meet certain standard and quality before given licenses to practice and be recognised as part of a national care provider. This recommendation is thought to be able to promote health-seeking and eliminate the issue of delay in effective treatment seeking though the collaborative efforts of traditional healers and healthcare professionals.

> We need first of all harmonize both the CAM and the orthodox to work together and not in antagonism for the purpose of providing care to the general populace (ZS1A)

> I would suggest that all traditional healers practicing in the country should be given the platform by the government and supervised by the institution that regulate herbal treatment in the country to perform trials on the herbs they use in treating people, these concoctions must meet certain standards and approved by NAFDAC before been granted permission into the public market by doing so we are recognising their efforts as well as key providers of health (NE3C).

5.9 Summary of key findings for objective three

From: Traditional healers

Socio-demographic details of the traditional healer participants

- Characteristics of the traditional healers: participants comprised of five males and two females, and their age range was between 33-68 years. They were all married, and majority started practicing traditional herbal medicines at an early age (from childhood). All participants communicated in English.

1. Perceived efficacy of medical treatment

- *Effectiveness and safety*: Generally, all participants argued that the medical treatment for malaria is not effective. They argued this based on their interactions with patients that patronises them for herbal medicines, as patients often complain to them that the medicines that was administered to them at the health facility is not very effective because they are still experiencing the same symptoms even after completing the medication and that is the reason for most patients patronising the traditional treatment. More so, traditional healers discussed that the medical treatment are unsafe due to the fact that they perceive it is not a natural product, rather it is manufactured by mixture of different components which makes it unhealthy for human consumptions. Unlike the herbal treatment, they all describe it as the oldest and safest form of treatment which is naturally obtained from plants products without mixtures of any other component.
- *Lack of trust and confidence in medical treatment*: Generally, majority of traditional healers explained that patients that patronises them are confident knowing that it is safe and effective compared to the medical treatment, which they perceive contrary. The fact that patients perceive that orthodox/allopathic medicines are manufactured by combining different substances, this could contribute to negatively influence their levels of trust and confidence in the safety of the utilising the drugs, and in turn encourage delay in seeking the medical treatment.
- *Family views and treatment pattern*: Majority of the traditional healers discussed that most of the patients that utilises the herbal treatment do so because it is their family's treatment practice and/or upbringing. More so, participants detailed that family's misperceptions about medical treatment influences their health-seeking behaviours and encourages people to patronise the herbal treatment.
- *Community perception and treatment pattern*: Some traditional healers explained that most communities perceive that the herbal treatment is the oldest and safest treatment practice; which places it above the biomedical treatment. Therefore, this explains that one of the perceptions that contributes to delay in effective health-seeking is the community perception about the treatment and the existing treatment practice within the same community.
- *Preservation of ancestral cultural treatment practice*: Majority of the traditional healers spoke about the pride that is associated with using herbal medicines/therapies to cure diseases; as they

perceived the use of traditional treatments as a practice of preserving the cultural values and treatment practices of the forefathers. Citing examples about themselves because they as well inherited the practice from their parents and helping people with traditional treatment which is cost effective and safe.

2. **Perceived severity of malaria**

- *Easy to treat*: Some traditional healer explained that malaria is easy to treat. Also, patients that patronises them understand that malaria is easy to treat using local therapies. Thus, this misperception could encourage delay in effective treatment-seeking.
- *Severity depends on the sacrilege committed*: Among the seven traditional healers that participated, two doubled as both herbal providers and spiritualists (performs sacrifices and rituals). Hence, two participants explained that malaria is a spiritual attack primarily for offenders or law breakers of the community, and therefore, when certain abominable acts are committed, malaria attacks the offender until certain rites/cleansing are performed. Consequently, such misperceptions could encourage delay in seeking medical treatment among patients.
- *Undermine the severity of malaria*: Malaria which is perceived as easy to treat by majority of the traditional healers, they further explained that malaria cannot cause any serious harm to human, hence undermining the severity of the disease. Except that the malaria is a spiritual attack that would need spiritual intervention, hence it only the individual delays to perform the sacrifice/rite that it then could lead to a severe condition and death.

3. **Perceived susceptibility to malaria**

- *Susceptibility associated with spiritual/evil spirit*: Traditional healers discussed that an individual's susceptibility to malaria is based on the spiritual attacks or evil spirits and which also depends on the numbers of offences committed.
- *Susceptibility associated with stress*: Three out of seven traditional healers associated stress with susceptibility to malaria.

4. **Perceived barriers to prompt medical treatment**

- *Fear of potential effects of using medical treatment*: Participants discussed how patients expresses fears regarding hospital treatment, and this is based on their personal experience. Some of the patients explained how they lost a family member or friend in a health service while they were receiving medical treatment. Such experience would discourage them from seeking medical treatment from a health facility, owing to the fact that they feel unsafe.
- *Good patient relationship with traditional healers*: Participants discussed about their existing cordial relationship with patients that visits them, and also they explained that they render free herbal treatment to patients most of the times. Therefore, due to this existing relationship traditional healers revealed that they advise patients against using the orthodox medication before using the

herbs because they perceive that the allopathic medicines could interfere with the efficacy of the concoctions when it is taken.

- *Community and cultural views of healthcare service*: Some of the traditional healers noted that in some ethnicity there are certain communities that consider the herbal treatment as their first line of treatment and not the medical treatment, therefore illnesses must be treated using traditional treatment. So, such community and cultural restriction could be one of the barriers that contribute to delay effective health-seeking behaviours.
- *Behaviours of healthcare workers towards patients*: Participants explained that patients are unhappy about the attitudes and behaviours of some healthcare professionals each time they present to a health facility or whenever they visit a patient in the hospital. Participants explained that patients are not respected and treated with empathy. Such unwanted behaviour could act as a barrier which contribute to delay in health-seeking at a health centre.
- *High cost of affording treatment from a health facility*: Participants explained the cost in which patients pay to receive medical treatment is perceived to be expensive. They discussed that most patients do not visit the hospital due to the expensive nature of the treatment compared to the cost effective herbal treatment which they render.

5. Perceived benefit of prompt medical treatment

- *No benefit for seeking medical treatment*: Majority of the participants explained that medical treatments are not uniquely beneficial than the traditional treatment. They rather perceive it as expensive and regarded malaria as not a severe disease that requires such expensive treatment.

From: MOH policy makers

Biographical details of the MOH policy makers

- Characteristics of the MOH policy makers: participants comprised of 2 males and 2 females, and their age ranged between 50-59 years. All four participants were married, and have years of working experience which ranged between 18-30 years. These policy makers were heads of four different departments from the MOH.

1. Perceived efficacy

- *Effectiveness and safety*: All the MOH policy makers discussed some misperceptions about the effectiveness of malaria treatment among adults. One of such misperception is that treatment involving the use of herbs is perceived as more effective and safer than the medical treatment. It is as well perceived that the traditional treatment has the ability to flush remnant of the plasmodium parasite from the blood stream of a patient, thus providing lasting protection against a new infection.
- *Fear of drug resistance and fake malaria medication*: Policy makers reported that fear of developing drug resistance and the fear of consuming fake antimalarial drugs are some of the

perceptions most adults have, and this contribute to discourage prompt and effective health-seeking behaviour for malaria.

- *Family views and treatment pattern*: The MOH officials explained that some of the perceptions people have about the efficacy of malaria treatment is associated to their family views and the pattern of treatment practiced. Detailing further, they argued some instances where pregnant women are forbidden to consume medical treatment because they perceive it could harm the foetus. This therefore forms part of their views as a family, and thus goes further to discourage prompt and effective health-seeking behaviours and decisions.
- *Community perception and treatment pattern*: Policy makers noted also that aside from the inherited family misperceptions about the effective treatment for malaria and their pattern of seeking treatment, there were also generally community perceptions about the medical treatment and the acceptable pattern of treatment
- *Preserving cultural treatment practices*: Policy maker noted that it is often perceived by Nigerians, especially in some rural ethnic communities that by utilising the herbal medicines, African cultural treatment is preserved for generations unborn and it is an African pride.
- *Medical medicines are manufactured for profit purposes*: Policy makers explained that generally most Nigerians perceive that when these medicines are purchased profits are returned to the manufacturers. Consequently, because of this intention of profit making, malaria drugs are deliberately not produced with high level of effectiveness to provide lasting immunity.

2. Perceived severity

- *Commonalization of malaria*: Majority of the MOH policy makers reported that majority of Nigerians are familiar with malaria and so they perceive it as a common disease experienced by all at least twice or thrice annually.
- *Undermine the severity of malaria*: All the MOH officials explained also that a vast majority of adult Nigerians do not classify malaria as a severe illness, and therefore this could possibly contribute to encourage delay in health-seeking.
- *Develop immunity against malaria attacks*: Some of the MOH policy makers explained most people believe that because of the frequent attacks experienced by an individual, it therefore means that they are immune to malaria, and even if they were attacked by malaria, a vast majority of adults perceive it cannot be severe because of similar reason, of perceived immunity.

3. Perceived susceptibility

- *Part of human living and existence*: The MOH officials explained that a vast majority of Nigerians perceives malaria as part of human existence because they are familiar with the attacks. A common perception is that no human being can live without experiencing malaria attacks.
- *Congenital/inherited disease*: Some of the policy makers explained that because most Nigerians perceive that malaria is part of human living and existence, they further revealed that some

Nigerians also perceives that malaria is a congenital disease, meaning that other people are born with it.

- *Susceptibility related to spiritual attacks*: Some of the MOH officials explained that due to culture and ethnic beliefs, majority of adults perceives that diseases are caused by spiritual attacks. This belief is particularly notable among those resident in the rural areas. As a result, this misperception could encourage alternative treatment seeking rather than utilising the medical treatment

4. Perceived barriers

- *Prolong waiting hours before patients are attended to by a health professional*: Policy makers generally explained that most adult Nigerians prefer to seek alternative treatment such as visiting traditional healers or purchasing herbs from those who hawk it or even prefers to self-medicate by purchasing drugs from patent shops because of the prolong hours of waiting to be attended to by health providers during hospital visitations.
- *Requesting patients to purchase medications over the counter*: MOH policy makers explained that majority of adult Nigerians perceives that due to shortages of medication at the healthcare facility, encouraging patients to purchase drugs from patent stores discourages patients from coming to the hospital.
- *Perceived high cost of treatment at the health facility*: Policy makers noted that the cost of accessing treatment from a medical facility could be a major reason for most patient's delaying to seek treatment. Hence, seeking treatment from hospital is perceived as expensive by a vast majority of Nigerians; this is one of the reasons most patients would access alternative treatment services.
- *Negative behaviours of healthcare workers towards patients*: The policy makers generally explained that they negative behaviours of healthcare providers towards patients could be a reason for most adult Nigerians preferring to seek alternative treatment rather than visiting a health centre for effective treatment.

5. Perceived benefit

- *Prevents further complications and deaths*: All policy makers explained that though majority of Nigerians are aware of the benefit of seeking effective treatment from a health facility, this does not really matter as majority also practice self-medication by purchasing drugs over the counter and consuming herbs.
- *No unique benefit when compared with traditional treatment*: The MOH officials further explained that there are some people that do not perceive any unique benefit in accessing and utilising the medical treatment, as they perceive that the traditional medicines are also effective in treating malaria.

From: Healthcare professionals

Biographical details of the healthcare professionals

Characteristics of the healthcare professionals: The healthcare professionals comprised of 4 doctors and 6 nurses recruited from four health facilities. Their age ranges between 31-55 years, and the years of their working experiences ranged between 6-22 years. They were all married and were comprised of 7 males and 3 females.

1. Perceived efficacy

- *Effectiveness and safety*: The healthcare professionals generally spoke about two distinguishable perceptions of majority of their patients regarding the effectiveness and safety of biomedical treatment for malaria; some healthcare professionals explained that majority of their patients who are adults do not perceive that the allopathic medications (including drugs purchased over the counter) are not effective and so most cases that are admitted to the hospital are severe and complicated. Another group of healthcare professionals spoke that some of their patients perceives that accessing treatment from hospital is effective. Despite knowing about this they will explain that they have delayed in presenting for different reasons.
- *Lack of trust and confidence in medical treatment*: Healthcare professionals explained that lack of confidence and trust in accessing and utilising the medical treatment of malaria due to the fact that majority perceive it as not effective and safe. Hence, this lack of trust and confidence in visiting a hospital or a health facility informs their decision to utilise the herbal concoctions, visit prayer houses and spiritualist.
- *Combining herbs and allopathic medicine for effective treatment*: Due to the fact that some of the people living in Makurdi perceive that the biomedical treatment are not effective, healthcare professionals explained that some patients perceive that in other to effectively treat themselves of malaria they usually self-medicate by purchasing over the counter drugs and supporting it with the herbal concoction. Consequently, such perception encourage delay in seeking treatment from a health facility.
- *Family views and treatment pattern*: Some of the healthcare professionals explained that some of the misperceptions that people have about biomedical treatment of malaria is associated with their family views and the established pattern of treatment practiced by such families. For instance, a healthcare professionals noted that some families do not visit a hospital and do not utilise the orthodox medicines because they perceive that their spiritual practices are more effective and trusted. Also, some individuals strongly perceive that herbs are more effective.
- *Community perception and treatment pattern*: Likewise, some healthcare professionals explained that there are patterns of treatment practiced by some rural communities; in some community, higher relevance and importance is accorded to traditional medicines than the orthodox medicines, and this is because it is evident to them that most people who visit the hospital for treatment shortly

becomes sick again of the same ailment but when herbal medicines are used it provides longer immunity.

2. **Perceived severity**

- *Commonalization of malaria*: Healthcare professionals acknowledged that majority of people perceive malaria as a common ailment, and this is due to the fact that they are familiar with its signs and symptoms because of the frequent attacks they experience. Hence, because people are familiar with malaria attacks, most people undermine its severity; this encourage delay in seeking an effective treatment from a medical facility through the practice of self-medication.
- *Comparison of malaria with other disease*: The healthcare professionals explained that malaria is not perceived as a severe disease because majority of people compare the severity of a disease with another. Such perceived comparison could encourage delay in effective health-seeking for malaria treatment.

3. **Perceived susceptibility**

- *Congenital/inherited disease*: Some of the healthcare professionals highlighted that some people perceive that susceptibility of a person to malaria is associated with being born with malaria; as it is perceived that malaria is an inherited disease.
- *Susceptibility associated with exposure to hot sunlight*: Healthcare professionals explained two distinguishable perceptions of most adult Nigerians, others perceives that the more frequent a person is exposed to hot sunlight determines how frequent their experience with malaria attacks. Therefore, most people perceive that traders who sell in the market under exposed hot sunlight are more susceptible to malaria. Another perception is that majority understand that susceptibility to malaria depends on an individual's levels of exposures to mosquito bites and, so they perceive that it is almost impossible to live without mosquitoes bites in Makurdi.
- *Susceptibility related to evil spirit*: Some of the healthcare professionals noted that in Makurdi, people practice various religions, and so because of their beliefs and faith majority perceives that all sicknesses including malaria could be caused by spiritual attacks, hence the need for them to seek spiritual help rather than visiting an appropriate health facility.

4. **Perceived barriers**

- *Prolong waiting hours at the health facilities*: There was a consensus that most people do not present to a health facility because they perceive that it takes long before a person is attended to. The healthcare professionals explained that most patients present late to the hospital and would complain about the established processes a patient needs to follow before being attended to. Therefore, because people perceive that hospitals takes long before they are examined by a professional, this discourages them from seeking medical treatment on time.

- *Perceived high cost of treatment at the health facility*: Healthcare professionals highlighted that most people perceive that accessing and utilising the medical treatment is expensive, and so they self-medicate and patronise the private patent medicine vendors and also seek herbal therapies.
- *Head of family's decision regarding treatment-seeking*: Some of the health professionals noted that most patients especially women delay in presenting to the hospital because permission needs to be granted by their husbands, and this is a cultural practice amongst some rural ethnic group.
- *Health workers' behaviours towards patients*: The healthcare professionals explained that most people do not seek medical treatment majorly because the perceive that healthcare workers are rude to patients and they show no empathy for the sick people, and so they would rather prefer visiting a traditional healer or practice self-medicate by buying these drugs from patent shops.

5.10 Chapter summary

This chapter presented the findings of this study. Starting with objective one, which was achieved in two stages. The stage one, was about the review of literatures on the care pathway for malaria treatment, and it was presented earlier in chapter two. The rationale for presenting the finding from the review earlier in the structure of this study was because it provided important contextual background and details for the study design. This current chapter therefore provided explanation on how the review of the literatures on care pathways for malaria treatment contributed to inform the formulation of the interview questions. This chapter also presented in detail some of the key challenges faced in achieving the first objective of the study before proceeding to present findings of objectives two and three accordingly. However, it is worthy to note that the stage two of the first objective was achieved as a consequence of answering objectives two and three respectively.

Furthermore, in this chapter, the findings of the second objective of this study involving semi-structured interviews conducted among 18 adult Nigerians was presented also. The adult Nigerian participants' recommnedations on how to improve timely and appropriate treatment-seeking for malaria was also captured in this chapter. The section of the adult Nigerians' findings concluded with summary of the key findings before proceeding to present the findings of objectives three.

The findings of objective three was presented in this chapter, and it involved findings of the semi-structured interviews from the perspectives of 7 traditional healers, 4 key health stakeholders (ministry of health policy makers) and 10 healthcare professionals (nurses and doctors). The various recommendations made by these participants was also presented in this chapter before concluding with a summary of the key findings of objectives three.

The next chapter presents discussions of the triangulated findings of this research, and it includes comparing the similarities and differences of the findings of this study with the extant literatures.

Chapter six: Discussion

6.1 Introduction

Chapter five has presented the thematic findings of this qualitative research from the interviews with adult Nigerians (objective two), traditional healers, healthcare professionals and key health stakeholders (ministry of health policy makers (objective three). The finding of objective one which reviewed the literature on care pathways for malaria treatment in Nigeria has been presented earlier in the structure of this thesis in chapter two (sections 2.3 – 2.3.3), as it presents important contextual background and information for the study. This chapter, therefore, turns its attention to presenting a discussion of the triangulated findings of objectives two and three primarily in relation to the key constructs of the Health Belief Model (HBM), and the existing evidence base in the area and the extent to which the research question has been answered. The section ends with a discussion on the usefulness of the HBM to answer the research questions and meet the aim of the study.

6.2 Discussion of the findings in relation to the study objectives

The objectives of this study were developed to obtain different but complementary data to answer the research question and meet the study's aim. Thus, the objectives were:

Objective one: map the care pathways (formal and informal sector provisions) for accessing malaria treatment in Nigeria

Objective two: explore how the perceptions and attitudes of adults contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

Objective three: ascertain healthcare professionals, traditional healers, and key health stakeholders' (ministry of health policy makers) views on the perceptions and attitudes of adults that contribute to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria.

6.2.1 Care pathways for malaria treatment in Nigeria (objective one)

Chapter two (sections 2.3 – 2.3.3) discussed the different routes/pathways (formal and informal sectors) that are available and accessbile for malaria treatment in Nigeria. The finding provided contextual background and information for the research, in that it helped to identify those directly involved in the provision of care for malaria patients in Nigeria, how treatments are rendered and the routes in which patients follow. Thus, the finding of the review of the care pathways was key in formulating questions

in the topic guide and helped in identifying purposively selected participants for the study. The finding highlighted that there is no specific pattern in which patients follow to access treatment for malaria, as one of the studies reviewed by Ajala and Wilson (2013) argued that the cultural interpretation of the cause of malaria determines the choice of care pathway a patient would access and utilise. However, four key care pathways for malaria treatment in Nigeria were reported, and these include; home management involving the use of homemade traditional remedies, (first stage), a self-medication approach involving purchasing drugs from vendors (second stage), visiting traditional healers, which also involves seeking help from spiritualist for rituals (third stage), and hospital consultation, either form public or private facilities (fourth stage) which are usually the last. The study by Ajala and Wilson (2013) further argued that these treatment patterns are not serially followed always nor are they mutually exclusive because there are some situations when patients combine two, three or more treatment approaches simultaneously to treat a single attack of malaria. For instance, some people combine both traditional medicines with antimalarial purchased over the counter, others consult spiritualists and purchase traditional medicines (herbs) from hawkers and so on. Consequently, these are some of the attitudes of Nigerians toward malaria treatment that contributes to the delay in seeking effective treatment in Nigeria. Further detail on this discussion is presented in the above-referenced chapter and section.

6.2.2 Objectives two and three

The sections below primarily discuss the triangulated findings of objectives two and three in relation to the key constructs of the HBM, which are perceived efficacy, perceived severity, perceived susceptibility, perceived benefits and perceived barriers.

Perceived efficacy

This section presents the first of the five key themes of the HBM. The key themes discussed below belong to the first construct – perceived efficacy.

Effectiveness and safety

This theme is linked to perceived efficacy which represents the first component of the Health Belief Model (HBM). According to the HBM, perceived efficacy explains that the likelihood that an individual would engage in appropriate health-seeking behaviour by promptly seeking and utilising the effective biomedical treatment for a particular disease or health condition, for instance, malaria, is a function of the person's level of confidence in the effectiveness of that performed health behaviours and/or treatment with the intention of a positive/desired outcome (Rosenstock, Stretcher and Becker, 1988; Taylor et al., 2006; Hayden, 2013). Consequently, this would imply that a person with low or negative perceived efficacy of a treatment for instance malaria, will have low confidence in the effectiveness of

that health behaviour, and this could negatively affect the likelihood that the individual would perform the health behaviour (e.g., seeking-treatment) (Champion and Skinner, 2008; Mitiku and Assefa, 2017).

Therefore, from this research, the perspectives of all participant groups (adult Nigerians, traditional healers, key MOH policymakers and healthcare professionals) were obtained suggesting that the issue of effectiveness and safety of malaria treatment is one of the perceptions that could be contributing to delay in seeking effective treatment for malaria in Makurdi, Nigeria. However, the particular aspect of this finding that previous evidence base has reported is the aspect of malaria treatment being perceived as not effective (Okeke, Okafor and Uzochukwu, 2005; Okeke and Okafor, 2008; Odikamnoro, 2016; Babalola, Idowu and Ademolu, 2021). Therefore, my study has specifically found out from the triangulated views of the participants that there is a safety aspect to this perception, in which they perceived that the biomedical treatment of malaria is not safe. In addition to this perception, another aspect specifically found by this study is the perception that the use of traditional treatment is not only effective but it provides longer immunity against a new episode of malaria attack.

The majority of adult Nigerians perceived that allopathic/orthodox medicines for malaria treatment are not effective and are unsafe. Supporting their claim, they argued that they experience frequent re-infection (a new attack) within a short period of completing treatment from a previous attack. This perspective is consistent with the results of some previous studies which reported that malaria treatment is not effective (Okeke, Okafor and Uzochukwu, 2005; Okeke and Okafor, 2008; Odikamnoro, 2016; Babalola, Idowu and Ademolu, 2021). For example, a cross-sectional study by Odikamnoro (2016) in southeast Nigeria reported that respondents used more than one treatment approach to treat malaria because they argued that taking biomedical medicines alone is not effective to treat their malaria condition. Consequently, Odikamnoro (2016) reported that 12% purchased antimalarial drugs over the counter and combined the treatment with traditional medicines, 10% presented to a health facility immediately after using the traditional treatment, and 12% combined all three approaches (purchased drugs from shops, visited the health facility and used the traditional medicines). Okeke, Okafor and Uzochukwu (2005) also reported a similar result in a qualitative study in southeast Nigeria which investigated perceptions of traditional healers regarding causes, symptoms, treatment of uncomplicated malaria and referral practices for severe malaria. Okeke, Okafor and Uzochukwu (2005) reported further that participants disagreed to refer patients to a healthcare facility for treatment because they perceived that it is not effective, but they emphasised that herbal treatment is effective.

Therefore, specifically, the aspect of this research that contributes to wider knowledge is the finding that the biomedical treatment of malaria is not only perceived as ineffective but it is also perceived to be unsafe. Participants' perception that it is not effective was related to the fact that it does not assures a longer immunity against experiencing a new episode of malaria attack. Furthermore, the perception that biomedical treatment is not safe was related to the fact that they perceived that taking the orthodox

medicines (antimalarial) frequently as a result of frequent malaria attacks could cause potentially harmful effects in the future to a person. Hence, the traditional treatment is perceived to be effective and safe because herbs are manufactured from natural plant products.

Traditional healers' views were similar to adult Nigerians which has been discussed earlier above. Traditional healers also argued that biomedical treatments are not effective, especially for malaria treatment. Reasons were provided for their claim, as they revealed that most patients who visit them for medicines complained about how unwell they still feel despite completing their antimalarial doses which were administered to them by either a health facility or a dispenser from a chemist shop. They argued further that allopathic medicines are not as effective as their herbal treatment, and they gave reasons for their claim by explaining that when patients use herbs to treat malaria, it usually would take a long time before the individual becomes sick of malaria disease, and so, they believe that the traditional/herbal treatment guarantees lasting protection against a new episode of attack. Furthermore, specifically regarding their perception of the safety of biomedical treatment for malaria when asked, the traditional healers re-echoed their views that biomedical drugs are unsafe, and their reasons were similar to the views presented by the adult participants earlier above, in which they explained that allopathic medicines are not manufactured from natural plants products just as the herbs.

Therefore, in line with the previous literature, the aspect in the views of the traditional healers where they reported that the biomedical treatment of malaria is not effective is similar to the findings of other studies (Okeke, Okafor and Uzochukwu, 2005; Adekannbi, 2018; Mbah, Ekweanya and Kalu, 2019). For example, as already discussed above, the findings of the qualitative study of Okeke, Okafor and Uzochukwu (2005) are consistent with the views of the traditional healers in this present study. Another example is from a qualitative study conducted by Adekanbi (2018) in southwest Nigeria which reported that currently in the Nigerian healthcare system, traditional medicine is the centre of focus in the management of health-related problems and treatment of illnesses, and majorly this is due to the proliferated perceptions of people in perceiving that the traditional treatment is more effective than the medical treatment in the treatment of malaria and other health-related issues. Additionally, Adekannbi (2018) reported that participants (who were all traditional healers) argued that some medical doctors also refer some patients (with serious and critical health conditions) to them because they know very well that they cannot treat them, and so they perceive that the medical doctors are aware that the herbal treatment is effective.

Similarly, the views of both the MOH policymakers and healthcare professionals of this study were consistent with the perspectives of both the adult Nigerians as well as the traditional healers earlier presented above. The MOH policy highlighted that the misperception that traditional treatments are more effective and safer the orthodox treatment is one of the fundamental perceptions among the adults in Makurdi, and on a broader aspect, in Nigeria. They reported that it is commonly perceived that herbal

treatments are effective, as most adults believe that it flushes all the remnants of the plasmodium that resides in the body of the sick person even after recovery. Consequently, due to their perception that using herbal remedies flushes out all remnants of the plasmodium from the body, it is then commonly perceived that it provides longer immunity against re-infection, which is what allopathic medicines can not do. Similarly, the views of health professionals in this present study also confirmed the views of the above respondents' discussed. However, discussions with healthcare professionals also reported some of the perceptions among adults, concerning the effectiveness and safety of the biomedical treatment. The first of their views reported was that some adults Nigerians perceive that all forms of orthodox medicines, including drugs purchased over the counter are not effective, and therefore as a result of this misperception, the majority of the malaria cases admitted in the hospitals are severe and complicated as patients usually practice inappropriate treatment behaviours such as the use of herbs, visiting traditional herbalist, purchasing herbal concoctions from hawkers and seeking for spiritual solutions before they eventually turn up late to the hospital or any health facility, however, at this time the condition is severe. From a global view, the findings of this study also align with previous studies. For example, an older qualitative study in Southwestern Uganda by Nuwaha (2002) also reported that biomedical treatment for malaria was perceived to be ineffective as their participants reported that there was no improvement after taking the medications. Verschuere et al. (2017) also reported a similar finding in Cambodia in which biomedical treatment was reported as ineffective and the reason given was because they do not experience steady recovery, so they combine spiritualist service and herbal remedies to treat malaria.

Lack of trust and confidence in medical treatment

This emerged theme from the findings of this study links to perceived efficacy, representing the first component in the HBM. As previously discussed above, emphasizing that perceived efficacy refers to the possibility that an individual would engage in appropriate health-seeking behaviour that he/she perceives as beneficial in helping to achieve the desired outcome of getting well, and this is dependent on the level of confidence in which the person has on the effectiveness of that performed health behaviours (Rosenstock, Stretcher and Becker, 1988; Taylor et al., 2006; Hahm, Speliotis and Bachman, 2008). This, therefore, infers that an individual with a low or negative perceived efficacy about the use of biomedical medicine for the treatment of a disease, such as malaria, would lack confidence and trust in utilizing the allopathic medicines for treatment, hence, contributing to negatively influence the possibility that the person would perform appropriate health behaviour (Mitiku and Assefa, 2017).

Consequently, the perspectives from three participants group (adult Nigerians, traditional healers and healthcare professionals) were obtained which suggested that lack of trust and confidence in the use of medical treatment for malaria is one of the perceptions that could be contributing to encouraging delay to effective treatment-seeking for malaria in Makurdi, Nigeria. Previous studies carried out have

reported the lack of trust in biomedical treatment as a perception that contributes to influencing participants' health-seeking behaviour (Okeke, Okafor and Uzochukwu, 2005; Agu and Nwojiji, 2005; Diala et al., 2013; Adedini et al., 2014; Oladimeji et al., 2018; Portugaliza et al., 2019). However, my research found out additional perception which is people's confidence in the use of herbal remedies over biomedical medicine, rephrased as lack of confidence in the use of biomedical treatment, and this is related to participants' perception that there could be a likely error that might have taken place in the course of manufacturing the biomedical drugs. This study, therefore, supports existing knowledge in this field by providing further understanding into the aspect of lack of trust and confidence as a perception that contributes to delay in seeking healthcare services for malaria treatment promptly.

The views of some adult Nigerians reported that they perceived that there could be human errors which could have likely occurred unconsciously and unknowingly without the manufacturers' knowledge in the course of producing the biomedical medications from the pharmaceutical companies. When questioned on the reason behind their claim, they argued that drugs are manufactured by humans, and humans are prone to error/mistakes, therefore in the course of production there could be anhuman mistake which may not be known or discovered by the manufacturers. The aspect of lack of trust in biomedical treatment for malaria has been reported by other studies such as (Okeke, Okafor and Uzochukwu, 2005; Agu and Nwojiji, 2005; Adedini et al., 2014; Ezenduka, Okonta and Esimone., 2014; Oladimeji et al., 2018; Portugaliza et alk., 2019). For instance, the findings of the qualitative study by Portugaliza et al. (2019) which explored the community perception of malaria and their treatment behaviours align with the findings from this present study in that majority of their participants expressed mistrust in the use of biomedical medicines, and therefore, they prefer the traditional treatment, which has remained the dominant method of treatment in their community. Also Ezenduka, Okonta and Esimone. (2014) reported a lack of trust in clinical treatment among respondents in southeastern Nigeria. However, Hooft et al. (2020) findings agree with this study to an extent, and it also disagrees in the sense that participants trusted both the traditional and biomedical medicines because they usually alternate their treatment between these two sources. Hooft et al. (2020) reported that some of their participants mistrusted both therapies provided by healthcare and traditional providers. It can be explained that the contrast in their findings could probably be due to the differences between social and cultural settings (Rumun and Terungwa, 2015) between where their study was carried out and this study; their study was conducted in southwestern Uganda and this present study was conducted in Makurdi, North-Central Nigeria. Another possible reason could be differences between the samples of both studies.

The traditional healers' views coincided with the perspectives of the adult Nigerians earlier presented above, as they re-emphasised that the majority of adult Nigerians patronise them to seek traditional treatment because they trust them and are confident about their herbal treatment which they render in the community. To buttress their argument, all the traditional healers stressed that they have not

recorded any casualty as a result of one's use or intake of any herbal concoction, and while debating further, they claimed that whereas in hospitals, there are many cases of casualties being recorded. In addition to their claim, they discussed that some of the patients who visited hospitals still end up visiting them when especially when the treatment they have received from the health facility does not improve their condition. Consequently, it was based on this argument that they perceived that most people lack trust and confidence in treatments involving biomedical medicines for malaria. Traditional healers emphasised also the issue of safety as a contributor to why patients' confidence in the use of allopathic medicine, as they discussed that most people do not feel safe using drugs manufactured because they perceive that drugs have been manufactured and have undergone several industrialised processes, and as a result, different substances including chemicals have been mixed to produce the drugs which are not known to the people taking the drugs, thus, they perceive that the chemicals mixed to produce drugs could cause harm to them, but in herbs, this is not the case because herbs are completely natural. After all, it is manufactured from plants and most people know the name of the herbal plants that are used to produce the herbs which anybody can find around their environment and so they are confident to use it. Okeke, Okafor and Uzochukwu (2005) reported also that traditional treatment is the most utilised in the community the reason was because of biomedical medicines were not trusted within the community and malaria was often explained as a spiritual attack.

There was also a coincidence with the healthcare professionals' views as they restated that most adults are confident, trust and feel safe using traditional medicines, and this explains one of the reasons for their late presentation at the health facility. They explained that most of their patients lack trust and confidence in utilising and accessing medical treatment for malaria. They agreed that this attitude of not trusting and having confidence in the medical treatment is one of the major reasons why patients particularly first visit a traditional healer for treatment before presenting later to the hospital or health facility for treatment. According to healthcare professionals, patients complain that they experience a new episode of malaria immediately after completing the treatment, hence they do not have confidence that they will keep fine for long, and this is one of the reasons why they do not trust and have confidence in biomedical drugs. The findings by Nuwaha (2002) reported also that perceived low quality of care and lack of trust in the biomedical medicines is one of the reasons identified that encourage people to shift health-seeking to traditional medicines. Furthermore, the health professionals explained also some of the treatment practices which patients involve in as a result of this lack of trust and confidence; they revealed that some patients perceive that combining two approaches of treatment could improve the effectiveness of the treatment, hence making them confident. According to the health professionals' views, the attitude of combining allopathic medicines with other substances is one of the major causes of organ failures currently on the rise reported in Nigeria hospitals.

Fear of drug resistance and potential side effects

This emerged theme links to the first construct of the HBM - perceived efficacy. According to the model, perceived efficacy refers to a person's level of confidence in the effectiveness of utilising a performed health behaviour (such as treatment-seeking) (Becker and Maiman, 1975; Rosenstock, Stretcher and Becker, 1988; Taylor et al., 2006). It is therefore assumed that an individual with a high level of perceived efficacy about a particular treatment (e.g., allopathic medicines) for a disease such as malaria, would engage in appropriate health behaviour to get well which is the desired outcome (Mitiku and Assefa, 2017). On the contrary, individuals with a negative perception or low self-efficacy about a particular treatment (such as biomedical treatment) will have low confidence in utilising the health behaviour (Ritchie, Van Hal and Van Den Broucke, 2018). The study findings, therefore, reveals a significant negative perception and low confidence about the perceived efficacy of malaria treatment, which is the fear of drug resistance and potential side effects.

The perspectives of two participants group (adult Nigerians and MOH policymakers) were obtained suggesting that the fear of drug resistance and the potential side effect is one of the perceptions that could be contributing to influence delay in seeking effective treatment for malaria in Makurdi. Many previous literature has reported majorly on the aspect of fear of potential side effects as one of the perceptions that contribute to hindering the use, adherence and negatively influencing health-seeking behaviour towards malaria treatment (Akinleye et al., 2009; Oladimeji et al., 2018). However, studies that have reported fear of drug resistance as a perception contributing to delay in effective health-seeking are very limited. Therefore, this study has specifically found that the fear of developing drug resistance is another perception that could be contributing to discouraging prompt and effective health-seeking for malaria treatment in Nigeria. This study, therefore, supports existing knowledge in this field by providing further understanding from a triangulated perspective of adult Nigerians and policymakers. Further discussion is presented in the paragraphs below.

Some adult Nigerians reported that based on their experiences of frequently falling sick of malaria because the prevalence of the disease is high in Makurdi and Nigeria at large, which often makes them practice self-medication, they perceive that due to their frequent intake of these drugs almost on monthly basis, it could lead to their bodies developing drug resistance and it could be a risk to them in the future. Therefore, they argued further that the fear of developing resistance to antimalarial drugs and fear of the potential harm these drugs intake over the years could cause to their bodies are the reason why they mostly alternate the treatment for malaria by taking over-the-counter drugs (allopathic medicines) to treat an episode and in subsequent attacks, they use the traditional/herbal treatment. Explaining this further, some adult Nigerians revealed their reasons for alternating treatment approaches, they argued that they believe that by doing so, their bodies will not get used to the antimalarial drugs which would avoid them from developing resistance and also this practice would help them to reduce the intake of the chemicals used to produce the drugs into their bodies. They further emphasised that concerning the

use of traditional medicine, there is no such fear of developing resistance or potential harm associated with them as they perceived that herbs are made purely from plants. The findings of this study are consistent with several previous studies on the aspect of fear of developing adverse/side effects due to taking biomedical medicines (Akinleye et al., 2009; Odikamnoro et al., 2016; Oladimeji et al., 2018). My study has further added to this perception by reporting that the fear of developing drug resistance is another perception which could be contributing to discouraging people from timely and effective treatment-seeking for malaria. For instance, Oladimeji et al. (2018) reported fear of side effects of taking the biomedical treatment as a perception i people have, that contributes to the delay in health-seeking. Also, Akinleye et al. (2009) reported fear of side effects of utilising biomedical treatment as a perception that contributes to influencing health-seeking behaviour. However, the findings from my study do not concord with the findings of a descriptive cross-sectional carried out in the southwestern region of Nigeria by Tola et al. (2017) which assessed antimalarial drug preference and usage among rural dwellers. Tola et al. (2017) reported that Eighty-three percent of the respondents claimed they did not react to the drug, and so sixty percent expressed their willingness to take the drug again due to this fact and is recommended by a doctor. Similarly, the difference in the social and cultural variations and settings could be one of the reasons for these findings' dissimilarity, as Rumun and Terungwa (2015) suggest that culture is a key determinant of health-seeking behaviour. Another reason could be based on differences in their religious perspectives as Tola et al. (2017) reported that over 90% of their participants were Muslims in this study, the majority are Christians; this could have also explained the reason why during the interviews with participants, they reported seeking spiritual prayers from religious leaders as one of the care pathways accessed by people, which could be based in their belief system (Rumun and Terungwa, 2015).

The views of the policymakers also re-emphasised that most adults perceived that the fear of developing drugs resistance, which is a situation whereby an antimalarial drug is no longer effective in treating the malaria condition could be the reason for their refusal to utilise treatment from the healthcare facility for malaria treatment but encourages their attitude to seek treatment from other alternative sources. The policymakers further explained that the perceived fear of most Nigerians purchasing fake and adulterated antimalarial drugs over the counter also encourages people's attitude toward seeking and utilising the traditional treatment services. Therefore, due to the proliferation of fake antimalarial drugs sold over the counter, people are afraid to be a victim and subsequently develop problems with their health. In other African countries, the findings of this present research align with theirs (Nsimba, 2006; Matangila et al., 2017; Pell et al., 2017). For example, a qualitative study by Pell et al. (2017) in Battambang province, in western Cambodia. The finding from their research also reported that participants expressed fear of the side effects of using allopathic medicines as they perceived that it poses threat to health and wellbeing. Thus, Pell and colleagues argued that this misperception contributes to a decrease in effective health-seeking for malaria in the province.

Family views and treatment patterns and preservation of cultural values/heritage

This theme links to the first construct - perceived efficacy in the Health Belief Model. According to the HBM, perceived efficacy refers to the level of confidence of an individual in utilising and seeking a particular treatment or engaging in a particular health behaviour with the intention of the desired outcome (Becker et al., 1977; Rosenstock, Stretcher and Becker, 1988; Taylor et al., 2006; Ritchie, Van Hal and Van Den Broucke, 2018). This, therefore, infers that the level of confidence of an individual in utilising a particular treatment and engage in a particular health behaviour determines the likelihood of the person in performing the health behaviour and in utilising the particular treatment (Becker and Maiman, 1975; Becker et al., 1977; Hahm, Speliotis and Bachman, 2008). However, this theme links to the construct perceived efficacy of the HBM, in a manner that explains that participants have negative perceptions regarding the use of biomedical treatment for malaria, and these negative perceptions are equally associated with the views of families and the pattern of treatment preferably practised, which is the use of traditional treatment. For instance, as discussed below, some of the misperceptions about the perceived efficacy of biomedical treatment for malaria are inherited perceptions which exist within families and are passed on generations, for example, participants discussed that the biomedical treatment of malaria is not effective compared to the herbal concoction. More so, participants argued that herbal treatment is perceived to be more effective because it is naturally gotten from plant extract which they perceived to have been blessed by their forefathers.

The perspectives from all participants (adult Nigerians, traditional healers, policymakers and healthcare professionals) were obtained suggesting that inherited family views and treatment patterns practised and people's perceptions that using traditional treatment preserves the cultural values and heritages could be an important perception encouraging delays to effective treatment-seeking for malaria in Makurdi. Several previous literatures conducted in Nigeria have reported majorly on the aspect of the inherited family pattern of treatment as a perception that could contribute to influencing the health-seeking behaviour of people for malaria treatment (Uzochukwu et al., 2005; Ogbuehi and Ebong, 2015). For example, the qualitative study conducted by Uzochukwu et al. (2005) among 23 traditional healers in southeastern Nigeria. The findings of Uzochukwu et al. (2005) reported that all the 23 traditional healers argued that they inherited the traditional treatment pattern from their forefathers and that it is a family inheritance, hence, they believe that it is more effective than the health facility of which majority (16/23) reported that they will not refer anybody to the hospital. Therefore, specifically, the finding of this study reported another aspect of this perception which is the perception that using the traditional herbal treatment is perceived as a way of preserving the cultural values/heritage of the people. I have presented the discussion of these perceptions together because of their closeness. For instance, a review by Rumun and Terungwa (2015) explained the relationship between family and cultural beliefs in relation to health-seeking. This study, therefore, supports existing knowledge in this field by providing

further understanding from triangulated participants' perspectives. Further discussion is presented in the paragraphs below.

This study suggests that some of the misperceptions about biomedical treatments for malaria are inherited perceptions and views from families. For example, the views of some adult Nigerians highlight that even if they can afford the biomedical treatment, they will first use the herbal treatment because it is their first line of treatment in their families, and they all share the same belief and treatment pattern. Hence, some families perceive that utilising traditional treatment is a pattern of treatment practised in their homes, and some adult Nigerians revealed that in their homes, they prepare the herbal concoctions by themselves, because it is a normal method used for treatment, especially for malaria and typhoid because they are best treated using traditional medicines, and this has been their practice form childhood. The views of the adult Nigerians were similar to some previous studies conducted (Ogbuehi and Ebong, 2015; Lestarisa and Keman, 2018). For example, a mixed method study conducted in a southeastern state of Nigeria by Ogbuehi and Ebong (2015) ascertained the treatment practice in three commercial markets in the town of Onitsha. One of the findings from Ogbuehi and Ebong (2015) is consistent with the findings of my study is that majority of their participants explained that people in the society prefer seeking and visiting traditional medicine practitioners for treatment because it is an affordable and familiar treatment practised by most families, and it is a treatment commonly in their communities; as the medicinal plants can be identified and sourced for around their neighbourhood.

Discussion relating to the perception that utilising herbal remedies is perceived as preservation of cultural value is presented next from the adult Nigerians' views. Some adult Nigerians argued also that traditional medicines are old and they are very well-known treatment practices which have been in use for many centuries, thus they perceived that using herbs for the treatment of ailments including malaria preserves the cultural values/heritage of the people. More so, they argued that traditional treatments are produced from medicinal plants, and these medicinal plants are sources of healing and blessings from grandparents; so by taking herbal medicine to treat illnesses, it is perceived that the individual would have a favourable life. This view is consistent with the study carried out in Indonesia but not in Nigeria by Lestarisa and Keman (2018) as it reported that participants argued that traditional treatment which is an ancient treatment is the best to use to treat malaria because it is their treatment root (origin) and so, it should be maintained. Hence, it, therefore can be suggested that family views and treatment patterns and preservation of cultural values are important perceptions reported by this study in contributing to encouraging delay to effective health-seeking behaviours for malaria treatment in Makurdi and Nigeria.

The views of the adult Nigerian participants discussed above were similar to the traditional healers' perspectives, as they argued that they grew up to discover that their parents were traditional healers, hence, traditional treatment was already presented to them as a reliable treatment source for any diseases including malaria. According to the traditional healers, they started practising herbal healing from

childhood because they inherited it from their parents, and they perceived it as a gift to have received such healing power from them. Similar findings were reported by Uzochukwu et al. (2005) as discussed above. Therefore, it can be explained that one of the reasons why the majority of Nigerians access and utilises the traditional treatment is because they have inherited the perception that herbs are the most effective treatment, and also because it is the usual and known pattern of treatment practised in their homes which has always worked for them, so even at adulthood, they practice the same treatment pattern. Furthermore, the traditional healers also reported that herbs are natural products which in turn are a blessing from God, and it is harmless and effective, so they regarded traditional practices as the oldest source of treatment which was also used by many generations in the past. Consequently, traditional healers perceived that using the herbal treatment shows recognition, acknowledgement and alignment of the person with the African cultural treatment; which thereby preserves the values/culture of Africans for generations to come. They explained further that if herbal medicines are not used and practised, they would go extinct and the generations to come would not benefit from them.

Both the views of the policymakers and healthcare professionals reported similar perceptions as the traditional healers and adult Nigerians presented earlier above. However, they provided further insight into what has been discussed from both perspectives of adult Nigerians and traditional healers by revealing that as Africans, many families are traditionalists, which involves both spiritualists and herbal practitioners, and as family members from a traditional background some people do not use the orthodox medicines because it is a belief system and this system of belief is passed unto coming generations, hence the treatment pattern continues to other generations, and these families majorly reside in the rural areas. The MOH policy makers' views reported that there are people who do not attempt to utilise orthodox medicine which is against their family's decision (as they only depend on herbs as their option of treatment). In addition, healthcare professionals reported that the majority of the family treatment pattern practised by people are associated with different ancestral family beliefs. Consequently, the key policymakers reported that there are different views and perceptions of families about malaria treatment, and it could have a serious impact on the ways and manners members would approach the treatment of a disease. According to one of the healthcare professionals, he said some families that do not access and utilise hospital treatment, but they strongly believe in spiritual healing and this works for them. The finding of this study is in line with the results of some other previous studies which have reported the issue of inherited family views and treatment pattern as perceptions that contributes to encouraging inappropriate treatment-seeking (Makundi et al., 2006; Okeke, Okafor and Uzochukwu, 2006; Orwa et al., 2007; Ndetei, 2013).

Perceived severity

This section presents the second of the five key themes of the HBM. The key themes discussed below belong to this second construct – perceived severity.

Commonalization of malaria

This theme is linked to perceived severity which represents the second component in the Health Belief Model (HBM). Consequently, according to the HBM, perceived severity is key in determining a person's health behaviour (e.g., treatment-seeking) towards a particular health condition or disease (Becker and Maiman, 1975; Becker et al., 1977). This construct is explained in the context of malaria as an individual's perception of the seriousness and consequences of malaria (Mitiku and Assefa, 2017). In other words, the HBM asserts that for a person to engage in appropriate health behaviours (such as prompt and effective treatment-seeking from a healthcare facility), he/she must feel threatened with perceived serious or severe consequences of the disease or health condition (Marriner and Raile, 2005; Champion and Skinner, 2008; Roberts and Marvin, 2010). This emerged theme, therefore, links to perceived severity in the manner that malaria is perceived as a common and familiar disease which is unable to cause any fatality. According to the details presented below, participants regard malaria as a usual occasional disease, hence perceiving malaria as not a severe disease that should cause panic, and therefore, contributing to delay in effective treatment and delay in engaging in appropriate health behaviours.

Perspectives from three participants group (adult Nigerians, MOH policymakers and healthcare professionals) were obtained suggesting that the perception that malaria is a common disease is one of the perceptions that could be contributing to encouraging delay in seeking effective treatment in Makurdi among the adult Nigerians. The perception that malaria is a common disease and explanation of how this perception contributes to influencing delay in effective health-seeking for malaria treatment is a widely reported aspect. My study has also identified some of the common misperceptions reported by previous studies, and it has also specifically added another aspect of the perception that views malaria as an easy-to-treat disease (meaning that malaria is a common disease that is is easily treated). Some previous studies that reported the perception that malaria is a common disease as a factor that contributes to delay in effective health-seeking (Falade et al., 2005; Idowu et al., 2008; Okeke and Okafor, 2008; Okeke and Okeibunor, 2010; Gobir, Sambo and Hadejia, 2014; Lawal, Balogun and Bada, 2014; Adigun et al., 2015). Therefore, the additional aspect to this perception which is the perception that malaria is easy to treat could be viewed as an important contribution to the body of existing knowledge. Detailed discussions are presented in subsequent paragraphs. However, the section that discusses malaria being perceived as an easy-to-treat disease is discussed separately in the section below.

The findings from this study which discusses the perceived severity of malaria among the adult Nigerians revealed that the majority perceived that malaria is a common and familiar disease. The explanation they gave for this perception is that they always experience several attacks of malaria yearly from their childhood, and so, they perceived that it is common for people to experience malaria, and so it is not perceived as a serious disease. This view is similar to the findings of previous studies that show

that malaria is perceived as a common disease in the community with which everybody is familiar (Falade et al., 2005; Okeke, Okafor and Uzochukwu, 2006; Idowu et al., 2008; Okeke and Okafor, 2008; Okeke and Okeibunor, 2010; Gobir, Sambo and Hadejia, 2014; Lawal, Balogun and Bada, 2014; Adigun et al., 2015; Mitiku and Assefa, 2017). For instance, a cross-sectional study by Mitiku and Assefa (2017) assessed the perception of malaria and treatment-seeking behaviours of children under five years. Mitiku and Assefa (2017) reported that 94.1% perceived malaria as a common and familiar disease of which 51.1% perceived that malaria is not a severe disease, and due to this perception 18.5% of the caregivers sought traditional treatment and a considerable number sought treatment late by practising self-medication. Also, the result of Okeke, Okafor and Uzochukwu (2006) reported that the majority (14/23, 60·9%) of their participants (traditional healers) perceived malaria as a common illness which is suffered by children. My study, therefore, suggests that the perception that malaria is a common disease could negatively influence the health-seeking behaviours of adults in Makurdi towards effective treatment-seeking for malaria.

Both the MOH policymakers and healthcare professionals' perspectives were consistent with the above views of the adult Nigerians as they argued that a great number of Nigerians perceive that malaria is a disease that almost everyone is familiar with, and this is because it is prevalent in Nigeria. They also explained that due to the high prevalence rate of malaria and because people are familiar due to the frequent attacks, the severity of malaria undermine and it is perceived that malaria cannot cause any complication or result in death because it is a familiar disease that usually presents with familiar signs and symptoms. This finding from this study, therefore, suggests that the perception that malaria is common and familiar could discourage prompt and effective treatment-seeking. The sub-section below discusses the perception that malaria is easy to treat disease, and it explains how this perception influences the perception of the severity. This is aspect reports specifically the findings of my study.

Easy to treat

This theme is linked to perceived severity, representing the second component in the Health Belief Model (HBM). As discussed above, perceived severity is explained in the context of malaria as an individual's perception of the seriousness and consequences of malaria (Mitiku and Assefa, 2017). This can therefore be assumed that to engage in appropriate health behaviours, a person must feel threatened with severe consequences of the disease or health condition (Marriner and Raile, 2005; Champion and Skinner, 2008; Roberts and Marvin, 2010). Therefore, this emerged theme links to construct in the manner that malaria is perceived as a disease that is easy-to-treat, which they perceive can be treated using home remedies traditionally. More so, the participant's argument revealed that malaria which is perceived to be caused by mosquitoes is perceived to be easily treated using herbal concoctions. However, the perceived spiritual cause of malaria which is considered severe and capable of causing death requires urgent attention from spiritualists through the performance of rituals.

The perspectives from two participants group (adult Nigerians and traditional healers) were obtained suggesting that the perception that malaria is easy-to-treat is one of the perceptions which could also contribute to influencing the delay in effective treatment-seeking for malaria in Makurdi among the adult Nigerians.

The traditional healers' perspectives revealed that malaria is perceived as a disease that is easy to treat and it cannot be severe. In explaining this perception from their views, they revealed that the severity of malaria depends on what the cause of that malaria disease at that moment is; they reported correctly that malaria could be caused by bites of infected mosquitoes (which they called flying insects) and also that malaria could be caused by spiritual attacks. The findings of this study which reported that malaria is caused by a spiritual attack is consistent with other literature which reported that malaria is perceived to be caused by spiritual forces/spirits/attacks (Okeke, Okafor and Uzochukwu, 2006; Okeke and Okafor, 2008; Okeke and Okeibunor, 2010). For instance, Okeke, Okafor and Uzochukwu (2006) reported that malaria is caused by an evil spirit, and due to their perception that it is caused by an evil spirit, they argued that its treatment is by conducting sacrifices to gods and seeking interventions from herbalists. My study has, however, differentiated the health behaviour between malaria perceived to be caused by spirits and caused by infected mosquito bites. For instance, the traditional healers' in my study highlighted that the kind of malaria which is caused by spiritutal attacks is perceived to require a prompt response by seeking help from spiritualists to avoid the condition from becoming severe and leading to death. They also further explained that the severity of the type of malaria caused by spiritual attacks depends on the seriousness of the abomination/evil committed. However, they argued that malaria caused by mosquito bites is not severe or dangerous, as it is usually easy to treat by local intake of herbal concoctions. They perceived that visiting a healthcare facility for malaria treatment is a waste of resources. The views of some adult Nigerians also reported that malaria disease is easy to treat, and according to their explanation, it is easy by simply taking traditional concoctions or using herbal remedies. This study has therefore reported the perception that malaria is easy to treat as another aspect of the perception that malaria is a common disease in contributing to influencing effective health-seeking behaviour for malaria treatment in Makrudi, Nigeria.

Comparison of malaria with other diseases

This emerged theme from the findings of this research is linked to perceived severity in the Health Belief Model (HBM) in such as manner that participants undermined the severity of malaria as they compared malaria with other diseases which they perceive are serious illnesses and require urgent care such as HIV/AIDS and cancer. Hence, this misperception could contribute to negatively influencing the health-seeking behaviours of people towards accessing utilising and accessing the appropriate treatment services for their health condition.

The perspectives from two participants group (adult Nigerians and healthcare professionals) were obtained suggesting that the perception that malaria is less severe when compared to other diseases is one of the perceptions which could also contribute to influencing the delay in effective treatment-seeking for malaria in Makurdi among the adult Nigerians. In other words, this perception reflects the attitudes of most people towards malaria in Nigeria because its severity is usually compared to other diseases that are perceived as more severe, thereby undermining the importance of prompt and effective health-seeking behaviours for malaria treatment. Although, there is previous evidence that has reported that malaria disease is common and this was concerning the fact that it is familiar and prevalent, hence, it is perceived as not a severe illness (Okeke, Okafor and Uzochukwu, 2006; Okeke and Okafor, 2008; Okeke and Okeibunor, 2010). However, the findings of this study have particularly reported the perceived severity of malaria in relation to comparison with other perceived severe diseases and not concerning the fact that it is common and familiar.

From the perspectives of the health providers, they argued that the majority of Nigerians are used to comparing the severity of disease with another disease. They discussed that most times patients present late to the hospital or a health facility for malaria treatment because malaria is perceived as an unserious ailment when compared to other diseases that would require prompt care-seeking. In buttressing their argument, they explained that in Nigeria generally, most people usually would conclude that there are more serious and dangerous illnesses that should cause panic/worries or concern that would require urgent hospital visitation but it is not malaria. Therefore, the perception that malaria is not severe when compared to other perceived serious diseases is another aspect of perception and attitude that could contribute to the delay in effective health-seeking for malaria treatment in Makurdi, and in Nigeria.

Similar views were reported by the adult Nigerian participants as they also perceived malaria as not a severe illness in comparison with other diseases such as cancer and HIV/AIDS, and so they considered that a common, familiar disease that is easy-to-treat is not among the list of their perceived serious illness that would require prompt care or hospital visitation. The finding from this study which reported participants' perception of the severity of malaria in comparison with other diseases is similar to the report from an older qualitative study conducted in Gabon, by Pilkington et al. (2004), which determined mothers' reaction when faced with fever in a child. Pilkington et al. (2004) reported that fevers were classified into two - malaria and typhoid fevers. Malaria which was correctly perceived to be caused by mosquito bites was perceived as not serious, while, typhoid fever was perceived as a more dangerous and serious illness than the type of fever caused by mosquito bites. My study, therefore, suggested that the perception that malaria is not severe when compared to other diseases is another perception that contributes to the delay in effective treatment-seeking for malaria. in Makurdi, Nigeria among adults.

Furthermore, this current finding shows a connection between attitudes towards malaria, the common cold and COVID. Participants perceive malaria, for example, as less severe, more widespread and more

easy-to-treat than HIV/AIDS. Therefore, as a result of its ubiquity and ease of treatment, malaria is perceived as not being serious, which leads to delays in treatment. **Similarly**, the common cold has been reported by several studies (Macintyre, 1993; Wilson and Wilson, 2021; Van Prooijen et al., 2022) to be perceived as a familiar and common disease, and its symptoms perceived as normal, which are often neglected and treated presumptively by self-medication. In addition, Macintyre (1993) argued that although the experience of a common cold can be unpleasant, it is usually perceived not to have the same degree of severity, chronicity and seriousness when compared to other diseases, which leads to delays in treatment. Another study by Petricek et al. (2019) reported that participants **consider** treatment-seeking for the common cold **needless** because they assume their bodies have developed immunity from previous exposures. Petricek et al. (2019) further reported that participants perceived it as impossible to prevent getting a cold because it is a seasonally occurring disease, which makes it a familiar disease.

A comparison can also be made with COVID because for many people, its health impact is similar to that of influenza (Hodson et al., 2021). As a result of this similarity, Hodson et al. (2021) revealed that the majority of their participants perceive that treatment for the common cold could be used for COVID, leading to self-medication and home management. Like malaria, however, it can have severe health consequences, especially when treatment is delayed.

Perceived susceptibility

This section presents the third of the five key themes of the HBM. The key themes discussed below belong to this third construct – perceived susceptibility.

Susceptibility associated with hot sunlight

This emerged theme from the findings of this study links to the construct - perceived susceptibility in the Health Belief Model (HBM). According to the HBM, perceived susceptibility is a fundamental factor in determining the health-related behaviour of an individual (Marriner and Raile, 2005; Champion and Skinner, 2008; Roberts and Marvin, 2010), and it refers to an individual's belief in the possibility of being vulnerable or susceptible to contracting a disease or health condition (Strecher and Rosenstock, 1997). This theme is therefore linked in the manner that participants perceived that everybody is at risk and is susceptible to contracting malaria which is perceived to be caused by exposures to hot sunlight. In other words, participants related an individual's vulnerability to malaria to the number of exposure to hot sunlight. More so, as a result of misperception, participants argued that rest, use of herbal concoctions and pain killers are the treatment strategy and solutions which they employ.

The existing literature has reported that everybody is at risk of malaria infection, and at least over 50% of the Nigerian population experiences at least one episode of attack each year (Okeke and Okeibunor,

2010; Udenweze, 2019). Therefore, due to the high prevalence rate of malaria in Nigeria, a lot of people have different perceptions about their susceptibility to the disease, and so the findings from this study reported important perceptions that could be influencing the health-seeking behaviours of adult Nigerians towards prompt and effective treatment-seeking. A wide range of previous evidence conducted in Nigeria has reported that prolonged exposure to the hot sunlight is one of the perceptions among Nigerians that determines their susceptibility to malaria (Okeke, Okafor and Uzochukwu, 2006; Okeke and Okafor, 2008; Orimaegun and Ilesanmi, 2015; Chinweuba et al., 2017). My study also found similar perceptions regarding susceptibility to malaria as participants reported prolonged exposure to the hot sun as a determinant to be susceptibile to malaria. However, concerning perception about the susceptibility of malaria, my study has specifically found out that malaria is perceived as a disease that is part of human existence, particularly as an Africans; meaning that for Africans, malaria is part of living and existence, hence there is nothing an African can do not to have it. Also, my study found out specifically that malaria is perceived as a congenital/inherited disease. However, this particular finding from my study where participants perceived that malaria is congenital/inherited from birth does not align with the findings of the cross-sectional study of Chinweuba et al. (2017) which reported that participants do not perceive that malaria can affect an unborn child because the mosquitoes cannot bite him in the mother's womb. The detailed discussion is presented in the subsequent paragraphs.

The perspectives of some adult Nigerian participants were that because of the extremely hot weather from the hot sunlight in Makurdi, they perceived that prolong exposure to this hot sunlight determines how susceptible a person would be to becoming sick. Hence, as a result of these perceptions majority of the respondents explained that when someone perceives that he/she is experiencing the symptoms of malaria (which are familiar), they usually relate it to either because they have exposed themselves for a long time to the hot sun. So, as a result of this misperception, they usually perceive that when they take some time to rest and self-administer pain-relieving medications they usually feel well. This finding aligns with a previous study conducted by Orimadegun and Ilesanmi (2015) which also reported that in their study 6.9% of their participants believed that working under the hot sun makes a person to be susceptible to malaria. Also, a similar finding was reported in a qualitative study conducted by Okeke, Okafor and Uzochukwu (2006) in South-east Nigeria which investigated the perceptions of 23 traditional healers on causes, symptoms and treatment of uncomplicated malaria and referral practices for severe malaria. Okeke, Okafor and Uzochukwu (2006) reported that the majority of the traditional healers perceived that malaria was an environmentally related disease and therefore, a person's susceptibility to the disease was based on their exposure to the heat of the scorching sun. Also, consistent with my study finding Chinweuba et al. (2017) also reported in their study that malaria is caused prolong exposure to sunlight, and participants perceived that pregnant women should minimise their amount of exposure to the sun. Hence, as a result of this misperception, the health-seeking behaviour towards malaria treatment is influenced negatively.

The views of adult Nigerian participants align with healthcare professionals' perspectives in that they reported that patients who present late to the health facility usually do so based on their perception that their feverish condition/signs are related to the fact that they were exposed under the sunlight, and would then begin self-medication practice of taking analgesics and taking out time to rest, hence delay in appropriate treatment-seeking. The healthcare professionals reported that due to this perception that malaria is caused by prolonged exposure to sunlight, the majority, therefore, perceive that malaria is not a harmful disease and does not need to panic to seek effective treatment and so they will be managing the condition and going on with their activities until it becomes severe.

The views of the adult Nigerians aligned with the policymakers as well as the healthcare professionals as they further re-emphasised this view. The healthcare professionals and policymakers explained that the views of perceived susceptibility in relation to prolong exposures are predominant among the rural and uneducated Nigerian population. The existing evidence base in Nigeria has not reported this perception as a factor contributing to the delay in effective health-seeking for malaria (Uzochukwu and Onwujekwe, 2004; Okeke and Okafor, 2008; Uche et al., 2009; Okeke and Okeibunor, 2010; Otuu et al., 2019).

Susceptibility related to evil spirits and stress

This theme links to the construct - perceived susceptibility in the Health Belief Model (HBM), in the manner that susceptibility to malaria was perceived to be related to evil spirits and stress. Regarding the perception that susceptibility is related to evil spirits, participants discussed that when an offence or taboo has been committed by a person within the community, he/she would be visited by a severe form of malaria which can lead to death unless spiritual intervention is sought, and such intervention would require rituals and sacrifices. More so, the number of offences and crimes committed by a person determine the episodes of attacks. Regarding stress, participants argued that performing menial and hard jobs makes a person susceptible to malaria, and therefore, the more stressful a particular menial job is the more episodes of attacks that individual would experience. These misperceptions, therefore, encourage improper health-seeking behaviours, which constitute delay to prompt and effective treatment-seeking.

One of the perceptions that emerged from my study was that a number of the adult Nigerian participants spiritualised malaria by perceiving that it is a disease caused by spiritual attacks, demonic influence or evil spirits, and as a result of this misperception they sought spiritual help such as visiting spiritualist to perform sacrifices/rites or requesting for prayers from a spiritual leader such as the pastors and imams, which is an informal pathway. This study, therefore, found out that if a person perceives that susceptibility to malaria is related to evil spirits, it could influence his/her health-seeking negatively to seek spiritual treatment, hence, contributing to delay in seeking effective treatment. In line with previous evidence, there is a range of studies which have reported that malaria is perceived to be caused

by an evil spirit and have discussed how it influences health-seeking (Okeke, Okafor and Uzochukwu, 2006; Okeke and Okafor, 2008). Also, this finding is similar to the result of a systematic review of qualitative studies (which were all carried out in Sub-Sahara African countries) by Maslove et al. (2009) which reported also the perception that malaria is perceived to be caused by an evil spirit, and the review also highlighted how this perception influences health-seeking of people towards accessing inappropriate treatments such as visiting spiritual doctors, hence delay in appropriate treatment-seeking. Another review by Nofal et al. (2019) also reported a similar finding that in Cambodia, people perceive that their susceptibility to malaria is depend on supernatural deities, ghosts, sorceries and forest spirits.

Furthermore, aside from malaria being perceived to be associated with evil spirits in Nigeria, some previous studies conducted in Nigeria have also reported that some diseases have been perceived and linked to spirituality (Ekeh and Ekrikpo, 2015; Oluyombo et al., 2016; Labinjo et al., 2020). For instance, Oluyombo et al. (2016) assessed the level of awareness, knowledge and risk factors associated with chronic kidney disease (CKD). The study reported that out of the total 454 participants recruited, 45.9% associated CKD **with** spirituality, and thus **believed** that it is best treated using spiritual means, while 47.8% argued that traditional/herbal **concoction** is best for treatment of chronic kidney disease.

More so, a scooping review by Labinjo et al. (2020) reveals that mental health disorder (MHD) is an ostracized and stigmatized health **condition** in Nigeria, and inadequate knowledge has been blamed as a factor for the stigma. Labinjo et al. (2020) reported that the commonest and key determinants of mental health disorders perceived by a significant proportion of the Nigerian population are spiritual/supernatural causes such as possessions of evil spirits, witchcraft, sorcery, and also it is perceived to be associated with divine punishment. According to Labinjo et al. (2020), Nigerians strongly perceive that mental health disorders are associated with spirituality and supernatural forces.

Furthermore, a cross-sectional study carried out to assess knowledge, attitude and perception towards epilepsy by Ekeh and Ekrikpo (2015) in Uyo, South-South, Nigeria also reported that some of their participants perceive that epilepsy is associated with spirituality, caused by an evil spirit, and witcraft, hence preferring spiritual forms of remedies as the best treatment and management practices. Of the total 232 participants who are medical students (preclinical and clinical), 58(47.93%) of the pre-clinical students and 31(27.93%) of the clinical students argued that seeking spiritual help from the church is best for the management and treatment of an epileptic condition, while 9(7.44%) (pre-clinical students) and 5(4.45%) (clinical students) argued that traditional remedies are preferred for treatment and treatment of epilepsy.

A review conducted by Oduyemi, Ayegboyin and Salami (2016) on the perception of Ebola virus disease in Nigeria also reported that some Nigerians have equally linked the 2014 Ebola virus disease outbreak to being caused by spiritual agents/forces and witcraft, and so a significant population perceive

that it needs to be dealt with spiritually using, for example, anointing oil and water or by engaging witchdoctors for ritual sacrifices.

Likewise, Covid-19 has been reported in a literature review by Ossai (2021) to be perceived by a significant Nigerian Christian population as a spiritualised disease. Ossai (20212) aimed to understand how Nigerian Christians perceived and dealt with Covid-19. Three important spiritualised perceptions relating to Covid-19 **were** reported. Firstly, it was perceived that the disease signifies the imminent second coming of Christ and that it is a product of the Antichrist, secondly, it is spiritualised as God's way of communicating to the world that He is supreme and most powerful, and lastly, it was perceived God's punishment to the sins of the world (Ossai, 2021). Ossai (2021), emphasises that the problem and consequence of misperceiving and associating disease causation and transmission with spiritual beliefs include inaction and/or delay in seeking effective treatment.

My study has specifically found another perception in relation to perceived susceptibility, which is the fact that participants perceived that malaria is associated with stress. A minority of participants reported that stress was associated with malaria. The minority of the adult Nigerians who perceived stress to be associated with susceptibility to malaria claimed that it was because of the nature of the stressful jobs in which most people living in Makurdi engage themselves such as petty trading and selling in the open space market under the scorching sun, hawking goods from across the streets under the scorching sun, and many other hard menial jobs. So they perceived that combining stressful jobs and performing them under the scorching sun makes a person to be susceptibile to malaria. The exisiting evidence has only reported the perception that malaria is caused by evil spirits, but my study has specifically found another aspect of perceived susceptibility to malaria which is the perception that susceptibility to malaria is associated with stress, and has as well highlighted exposure to hot sunlight as a misperception associated with susceptibility to malaria. Therefore, this study suggests that having the right understanding of the perceived susceptibility to malaria is an important factor to encourage the right health-seeking behaviour and decisions.

Perceived benefit

This section presents the fourth of the five key themes of the HBM. One key theme is discussed below belonging to this fourth construct – perceived benefit.

No unique benefit in medical treatment when compared to traditional medicines

This theme links to perceived benefit which is the fourth construct in the Health Belief Model (HBM). According to the HBM, the perceived benefit is an important component that determines the health-related behaviour of a person (Marriner and Raile, 2005; Champion and Skinner, 2008; Roberts and Marvin, 2010). However, in the context of malaria treatment, this construct refers to an individual's belief in the efficacy of the biomedical treatment of malaria, which the person perceives would reduce

the severity of the condition or the perceived threat (Champion and Skinner, 2008; Hahm, Speliotis and Bachman, 2008; Mitiku and Assefa, 2017). In other words, an individual is willing to engage in particular health behaviour (such as treatment-seeking) only if the person perceives that the treatment will provide the intended healing and reduce the perceived threat caused by the health condition or disease (Strecher and Rosenstock, 1997). This theme which is linked to perceived benefit has revealed that participants perceived that there is no unique benefit in utilising the biomedical treatment. Some of the reasons presented for their argument were based on the fact that they perceived that the biomedical treatment does not provide longer immunity against re-infection or new infection. It can therefore be inferred that this perception could contribute to the delay in seeking the appropriate treatment services for malaria.

The finding from this study reported that the adult Nigerian participants who do not perceive any unique benefits in seeking medical treatment for malaria provided reasons for their claims. A range of evidence bases has been reported about participants' perceptions regarding the benefits of seeking medical treatment on time (Getahun, Deribew and Deribew, 2010; Mitiku and Assefa, 2017). For example, the result of a cross-sectional study by Mitiku and Assefa (2017) reported that the majority of the caregivers reported being late to the hospital because they first utilised the traditional treatment, with the perception that herbal medicines were considered more effective. However, the findings from my study specifically found that some of the participants perceived that there is no unique benefit in accessing health service treatment for malaria. Discussions on this are presented in subsequent paragraphs.

Some of the adult Nigerian participants who did not perceive that biomedical treatment for malaria was effective also argued that seeking medical treatment for malaria, and especially visiting health facilities to only treat malaria is not more beneficial than using the traditional/herbal treatment. When they were asked the reason for their perception, they explained that the biomedical treatment of malaria does not provide longer immunity/protection against a re-infection. They further argued that the treatment for malaria involving the use of traditional herbs provides longer protection against experiencing another new malaria episode too early and is safe, thus, they view treatment which involves the use of biomedical medicines for malaria as not uniquely beneficial in preventing a perceived seriousness. This view from the adult Nigerian participants also aligns with the traditional healers' perspectives in that they do not view any benefit in seeking treatment for malaria at the hospital or a health facility because they claimed that a lot of patients who present to a healthcare centre for treatment end up coming to them for treatment mostly it is so because their condition does not get better, and so they visit them because they trust their herbal treatment and it is safe and effective. This finding is contrary to the results of a cross-sectional in southwest Nigeria study by Tola et al. (2017) which shows that the majority (60%) recognised the benefit of using Sulphadoxine-Pyrimethamine (a type of antimalarial drug) presented to them at the health facility by doctors, and they also willing to take it again.

Perceived barrier

This section presents the fifth key theme of the HBM. Three key themes are discussed below belonging to this construct – perceived barrier.

A study by Mitiku and Assefa (2017) reported a significant relationship between perceived barriers to effective malaria treatment and health-seeking behaviour. Mitiku and Assefa (2017) reported that the participants in their study who had high perceived barriers were less likely to have higher odds of treatment-seeking for under-five children. However, another debate by Dida, Darega and Abebe (2015) argued that perceived barrier is not associated with health-seeking behaviour. Mitiku and Assefa (2017) opined that it is possible of the discrepancy in the socio-cultural variations/differences of the respondents. Therefore, in this study some reported perceived barriers that could be contributing to encouraging delay in effective treatment-seeking for malaria. These are discussed below. More so, it is noteworthy that, the perceived barriers discussed below are not limited to it, as Mitiku and Assefa (2017) suggested that 'perceived susceptibility' and 'perceived severity' also combine to forms 'perceived barrier'. Therefore, the discussions above on the various misperceptions about the susceptibility and severity of malaria also form part of the perceived barrier.

Perceived high cost of biomedical treatment from health facilities

This theme links to the perceived barrier which is the fifth construct in the Health Belief Model (HBM). According to the HBM, perceived barriers refer to the perception of the cost that is associated with utilising a recommended treatment or a health-related behaviour that is beneficial in eliminating the perceived threat or in reducing the perceived severity of a condition (Strecher and Rosenstock, 1997). Specifically, for malaria treatment perceived barriers refer to the cost which a person will incur when he/she utilises the biomedical treatment for malaria which is perceived as beneficial in reducing or eliminating the severity and/or threat of further complications resulting from malaria (Becker and Maiman, 1975; Becker et al., 1977; Hahm, Speliotis and Bachman, 2008; Mitiku and Assefa, 2017). This theme is linked to the perceived barrier in the manner that participants perceived that the cost of utilising and accessing biomedical treatment services is high and expensive when compared to the cost of utilising herbal/traditional treatment. Therefore, based on this perceived high cost of biomedical treatment, participants revealed that they engage in home remedies such as the purchase of drugs from private patent medicine vendors and the use of herbal concoctions.

Some previous studies have also reported that the cost of obtaining biomedical treatment was a key barrier identified among their respondents which influenced their choice of seeking alternative treatment (Chukwuocha et al., 2014 and 2015; Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018). This present study has reported from the triangulated perspectives of participants (including adult Nigerians, healthcare professionals, ministry of health policymakers and traditional healers). Detail discussion from the participants' perspectives is presented in subsequent paragraphs.

From the perspectives of the adult participants, the majority reported perceived high cost of accessing and utilising the medical treatment as a barrier, which encourages their attitude toward seeking treatment from alternative sources, earlier discussed in chapter two such as traditional treatment (including visiting herbalists, spiritualists or patronising the herbal medicine hawkers) or purchasing drugs from over the counter from private medicine vendors (PMVs). Similar perspectives were reported from the views of the traditional healers in that they perceived that biomedical treatment is expensive. However, they justified their claim by re-emphasising that based on their interactions with the adults (patients) who come to them for traditional treatment, they explained that the medical treatment is expensive. Also, the traditional healers argued that, despite the high cost of receiving treatment from health facilities, people still feel unwell which explains the reason many Nigerians visit the herbalists to receive herbal treatment, which is perceived to be capable of flushing out the remnant of malaria from their system. The key MOH policymakers' perspective is not different from the above as they reported also that majority of adult Nigerians perceive that the cost of accessing and utilising medical treatment from a healthcare facility is expensive; this could be a major reason for most patients delaying seeking treatment. The views above are similar to some previous studies (Chuma, Okungu and Molyneux, 2010; Chukwuocha et al., 2014 and 2015; Abdukadir, Ibraheem and Johnson, 2015; Hennessee et al., 2017; Dave-Agboola and Raji, 2018; Nkwenti et al., 2019) which reported that cost of treatment is a barrier to effective treatment-seeking for malaria. They suggest that cost of accessing effective treatment for malaria involves both the cost of transportation to the health facility and the cost of paying for consultation and medications. Therefore, previous evidence suggests that poorer communities remain unlikely to seek prompt and effective treatment, and the perceived high cost of treatment remains one of the perceived barriers that prevent them. For example, a cross-sectional study conducted in southwest Nigeria by Dave-Agboola and Raji (2018) which assessed the health-seeking behaviours of malaria patients in Lagos reported that the costs of visiting health facilities were found to be a significant contributing factor which encourages delay in seeking effective medical service among malaria patients as 3.9% visited traditional healer and 84.1% practised self-medication by either using leftover drugs or purchasing drugs from street patent stores.

However, the healthcare professionals which are among the first point of call directly involved in the treatment of patients in Nigeria, their views were dissimilar from the above participants' perspectives in that they explained that the majority of the patients currently admitted to the hospital are severe and this is due to complications resulting from intake of herbal concoctions and other traditional products, intake of fake drugs purchased from non-medical personnel such chemist shops. They claimed that the majority of Nigerians have the attitude of visiting and seeking care from all forms of informal care providers first before turning up at the hospital, and at this time their cases are either severe resulting from the intake of the harmful substance or generally as a result delay in presenting to the appropriate services, which would then increase the cost of treatment. So, based on this, they also revealed that the

total cost incurred in patronising the informal care services could be more than if they had visited the health centre on time. They, therefore, argued that the perception that treatment from healthcare facilities is expensive is an important misperception that contributes to the delay in effective treatment-seeking for malaria. The view of the healthcare professionals' is a specific finding from this study, as they reported that the cost of utilising effective treatment from a health facility for malaria is not necessarily expensive, it is a perceived cost because the total cost of patronising other informal routes could be more when compared.

Fear of being diagnosed with a different ailment

This important theme is linked to the perceived barrier as participants reported that fear of being diagnosed with a different ailment encourages delay in presenting to a healthcare facility. It was argued that based on the fact some medical tests are being conducted on patients that presents to a health facility for treatment, participants reported that the fear they could be misdiagnosed with a different ailment discourages them from presenting to a health facility, instead, they prefer to self manage their condition and use other traditional forms of treatment.

Only the adult Nigerian participants' perspectives reported this perception as one of the likely barriers contributing to negatively influencing seeking effective treatment for malaria on time, particularly from healthcare facilities. Therefore, one of the findings from this study reported that participants argued that they perceived that because healthcare facilities focus primarily on making profit, they tend to conduct diverse diagnoses on patients so they can be billed higher at the end. When they were asked to give reasons for their views, they explained that it is from their personal experience, that when a patient present to a hospital/health facility for treatment of a disease that the patient may already know for example that it could be malaria (because they are familiar with its signs), the health facility will go ahead and conduct further unnecessary prognosis and they perceive that this is to increase the hospital charges and treatment cost of patients. Unfortunately, according to participants, they perceived also that the result of the diagnosis conducted could be false which could put their lives in danger. For instance, a participant narrated from a personal experience how she was diagnosed wrongly to be positive for a disease, and this experience almost cost her life. This study, therefore, suggest that perceived fear of being diagnosed with a different ailment could as well discourage prompt and effective health-seeking for malaria treatment in a healthcare service, thus, presenting as a perceived barrier. In line with this finding, qualitative research conducted in Kenya, Nigeria and Niger by Bedford and Sharkey (2014) determined the barriers caregivers encounter in accessing treatment for malaria, diarrhoea and pneumonia in other to identify a local solution and facilitate timely treatment. Bedford and Sharkey (2014) reported health facility deterrents as a barrier and one of the deterrents among others was that caregivers had fears of being tested for HIV when they take their children to the hospital, therefore, this perceived barrier discouraged them from presenting to a healthcare facility for treatment. Another

qualitative study by Bello and Rehal (2014) conducted in southwest Nigeria also reported that mothers of under-five children expressed fear of presenting their children to the hospital for malaria treatment because of the fear of using injection to treat them which they perceive could lead to contacting different infection from the injection. The findings of Bello and Rehal (2014) reported that this perceived fear influenced their health-seeking behaviours and decisions. This study, therefore, suggests that one of the perceived barriers contributing to delay in presenting to a health facility for malaria treatment could be patients' perceived fear of being diagnosed with a different disease which could cause them emotional and/or psychological trauma and so they would prefer to patronise the patent medicine vendors, and or seek help from traditional healers or spiritualists which are all informal/inappropriate care pathways, hence, delaying to seek effective treatment.

Health workers' negative behaviour toward patients

This theme is linked to the perceived barrier as participant reported that the negative behaviours of some of the healthcare workers act as a hindrance and discourages them from presenting to a healthcare facility for treatment, and rather prefer the traditional treatment method. Some of such negative behaviours included the lack of empathy, they shout at patients and long waiting queues at the hospital without being attended to for hours. Hence, they reported that this attitude acts as a barrier which contributes to encouraging delay in effective health-seeking behaviours for malaria treatment.

Some previous studies have reported this factor as a barrier that contributes to delay to prompt health-seeking (Chuma, Okungu and Molyneux, 2010; Afolabi et al., 2013; Diala et al., 2013; Bedford and Sharkey, 2014; Lungu et al., 2016). However, this present study further provides an in-depth understanding into discussing how it is a perceived barrier by triangulating the views of adult Nigerians, healthcare professionals, policymakers and traditional healers. In discussing this perceived barrier, this study has specifically reported the existing cordial relationship between patients (adult Nigerians) and the traditional healers which could also be viewed as an opposing perception to health workers' behaviour, hence, supporting and encouraging patients to seek herbal treatment as opposing the biomedical treatment. The explanation in subsequent paragraphs details this.

The views of adult Nigerians reported the negative attitudes of healthcare workers as a perceived barrier. They argued that some health workers are rude to patients, shout, scream, yell out at them, they lack empathy, and also they keep them waiting for a very long time without being attended to regardless of the condition of the patient, and so, such attitude is what discourages them from visiting a health facility for treatment, rather they emphasised that they preferred to purchase the drugs from over the counter and using traditional remedies. Further explanation revealed that the attitude of the healthcare workers was a direct opposite of the traditional healers, as they explained that they are treated always nicely and with compassion. The views of the traditional healers' were also similar to the adult Nigerian's as they

claimed that patients who patronise them also mentioned names of hospitals that their staff are rude and uncaring, but they said that they have a very good relationship with patients generally; they even offer free services and treatment on credit which they perceived are very cheap. More so, they regard their services as more of a community-based service rather than a profit venture unlike the medical treatment (as they compared). Therefore, they revealed that such attitudes make their patients always feel comfortable accessing their services. They also confirmed that most patients that come to them for treatment discuss how they were badly treated at the health centre by a health worker. Similar views were discussed by both the policymakers and healthcare professionals as they also confirmed some of the unpleasant experiences of some adults when they visited a health facility. The healthcare professionals, however, explained that the health workers could have reacted out of stress and probably because he/she was fatigued, and related this stress to the fact that the ratio of doctors and nurses to patients is extremely poor in Nigeria, and this is far below the WHO acceptable standard. The finding of this study is consistent with the finding of Chuma, Okungu and Molyneux (2010) who reported health workers' negative behaviours toward clients as a perceived barrier. Also, Lungu et al. (2016) reported that negative attitudes of healthcare workers as a key perceived barrier to effective utilisation of health services for the treatment of under-five children. Afolabi et al. (2013) also reported in their cross-sectional survey conducted in southwest Nigeria, that the poor attitude of healthcare personnel was an important barrier suggested in contributing to discouraging prompt and effective treatment-seeking for malaria. Though previous studies have reported this finding, they, however my study have specifically provided insight into this perceived by reporting that there is a cordial existing relationship between traditional healers and patient which could also be acting as a perceived barrier that contributes to discouraging prompt access to biomedical treatment for malaria treatment in Makurdi, and in Nigeria.

6.3 Participants' recommendations

This section presented triangulated perspectives of participants' recommendations on the promotion of health-seeking behaviours for effective malaria treatment in Makurdi and Nigeria. The recommendations presented below are in relation to extant studies.

6.3.1 Government regulations (policies) on free malaria treatment

Three participants' groups (adult Nigerians, healthcare professionals and key health stakeholders (MOH policymakers) suggested the need for the introduction of a free malaria treatment programme for all citizens to benefit. Some adult Nigerians argued that considering the cost of accessing and utilising effective treatment services for malaria from healthcare facilities, a free malaria treatment policy on a disease that is prevalent in the country is very crucial, as this will encourage people who perceive that it is expensive, and overall, it will promote effective treatment-seeking behaviour among people. Especially because in sub-Sahara Africa, including Nigeria approximately between 46 - 70% of the population live below the World Bank poverty line of $1.25 per day (Okeke, 2012; Anyanwu et al.,

2017; Abanyam, 2019), people who live in rural areas and have poor socioeconomic status have higher risk factors with a greater burden of malaria (Holtz et al., 2002; Breman et al., 2004). A similar recommendation was presented by policymakers and healthcare professionals. Moreover, the health professionals presented a specific suggestion that the introduction of a free malaria scheme should importantly prioritise those considered as the most vulnerable groups in society which are pregnant women and under-five children. They explained also that a free malaria treatment programme will eliminate the perceived barrier of cost and the challenge associated with the out-of-pocket payment for malaria treatment in Nigeria. This recommendation is similar to the recommendations by previous studies (Onwujekwe et al., 2009 and 2013; Aregbesola, 2016). The existing literature argued that particularly because malaria remains one of the major causes of mortality in Nigeria, the need to make treatment affordable and accessible is key, hence, the need for the introduction of a free policy on malaria treatment in Nigeria.

6.3.2 Expansion of the National Health Insurance Scheme (NHIS) coverage

Related to the above, participants suggested the need for expanded coverage of the NHIS in Nigeria. As discussed in chapter two which presented Nigeria's healthcare organisation and delivery system, the NHIS coverage in Nigeria has only less than 5% registered to leave the rest 90% of the population (who are uninsured) who are majorly the unemployed at the mercy of a non-performing health system (Aregbeshola, 2016; Koce, Randhawa and Ochieng, 2019; Raji et al., 2019), thus, defeating its sole aim of establishment which is to enable access to medical care, and thus, eliminating the socio-economic obstacles towards accessing quality and effective healthcare services (Daramola et al., 2019b; Raheem et al., 2019). Consequently, it is based on this that participants recommended expansion of its coverage to all Nigerians regardless of socioeconomic or occupational status or class in the society. Both the healthcare professionals and policymakers voiced similar recommendations as the adult Nigerians. A previous study by Oyibo (2011) also presented a similar recommendation. The study reported that the NHIS service should be expanded to capture the entire Nigerian population, as this could contribute to encouraging prompt access to effective treatment for all diseases (Oyibo, 2011).

6.3.3 Extensive health promotional campaign

This is a crucial recommendation as it involves improving individuals' knowledge about the treatment of malaria as well as the disease to inform health-seeking behaviour. The need for an extensive promotional campaign has been suggested by some previous evidence base (Adeneye et al., 2013; Mitiku and Assefa, 2017; Tola et al., 2017). For instance, Mitiku and Assefa (2017) recommended the need for a targeted promotional campaign and awareness on the prevention and treatment of malaria to address the various misconceptions and overall promote effective health-seeking behaviour. Likewise, in this study three participants' sample groups recommended an extensive health promotional campaign. Some of the adult Nigerian participants explained that this suggestion is important because

they asserted it will help to promote and enlighten people about the implications of the delay in effective health-seeking for malaria treatment as well as educate the public on the benefits of prompt and appropriate treatment-seeking for malaria. The key health stakeholder (policymakers) and healthcare professionals explained that the centre and target of the health promotional campaign should be the rural regions as they bear the heaviest brunt of the disease burden. They also suggested the need for an implementation of a door-to-door campaign strategy, which they claim would help to answer any specific question, and overall promote and encourage prompt and effective health-seeking behaviours for malaria treatment.

6.3.4 Recognising all traditional healers as part of national health providers

Several previous evidence base has also recommended the need to involve the traditional treatment practice as part of national treatment service for malaria in other increase the choice of care providers and sectors in which people may feel comfortable, they argued that this could encourage the traditional healers to incorporate the use of evidence-based antimalarial into their practice (Okeke and Okafor, 2008; Maslove et al., 2009; Mitiku and Assefa, 2017; Mwaka et al., 2018; Wada et al., 2019). In this study, though the traditional healers did not recommend that the treatment to health facilities is effective, they recommendation that the services of the traditional healers should be acknowledged and approved and licenced by the government as part of the national treatment providers similar to their medical counterparts. The reason they gave for this recommendation was that they argued that they also contribute to providing treatment within the communities to Nigerians either through direct treatment or indirect (purchasing herbs from street hawkers) services.

6.3.5 Disseminating research findings with all sector providers (formal and informal)

Only a very few of the adult Nigerian participants recommended the need for the distribution of key findings from malaria research conducted such as this present study, thereby increasing people's knowledge and creating awareness. One of the participants further explained that the findings from studies such as this should be published and made available in the public domains and distributed to both the informal and formal providers, as it would demonstrate inclusiveness in the effort to promote health-seeking.

6.4 Using and applying the Health Belief Model (HBM) to malaria and Makurdi context

Chapter three (in sections 3.2.6 – 3.3.2) presented a detailed critique of the HBM. Learning from applying the HBM to the context of malaria treatment-seeking behaviour and in Makurdi highlights that:

A useful element of the HBM was its adaptability as with other malaria studies conducted across the globe that have applied it to conceptualise people's health-seeking behaviours. For example, Dembo

(2012) in Malawi and Mitiku and Assefa (2017) in Ethiopia. Consequently, the HBM can help to provide specific interventions for different cultural groups (as it exists in Makurdi) targeting the barriers that contribute to delays in effective treatment and care-seeking (Henshaw and Freedman-Doan, 2009), as is evident in its application to other country settings, as it takes into account the different other alternative treatments (informal routes) that could be contributing to influence the people's health behaviours (Mechanic, 1979; Subedi, 1989).

There is very little research on perceptions and attitudes to health-seeking delays for malaria treatment in Nigeria, specifically in the North-Central region. This is one of the first studies that has used and applied the HBM to understand the perceptions and attitudes contributing to delay in health-seeking behaviours for malaria treatment in the Nigeria context and provides essential insights on how to encourage prompt and effective treatment-seeking behaviour for malaria in Nigeria (outlined more in detail in chapter 7, section 7.4.3). The findings from this study, therefore, extend knowledge into understanding how perception and attitudes contribute to delay in effective health-seeking behaviour for malaria treatment in the Nigeria context.

This study provides the opportunity for similar research to be carried out in other geographical regions of Nigeria considering the vast social and cultural variations that exist in the six geopolitical regions of Nigeria. Also, an opportunity is provided for a similar study to be conducted in other malaria-endemic countries, with the caution that subsequent researches follow the same application of the model to ensure that research can be compared.

6.5 Chapter summary

This chapter has discussed the findings of the research from the triangulated perspectives of the participants, which included the adult Nigerians, healthcare professionals, key stakeholders (from the MOH policymakers) and traditional healers on percpetions and attitudes that contribute to delay in seeking effective treatment for malaria in Makurdi. This discussion chapter primarily focused on objectives two and three, it, however, referred to chapter two where the findings of the review of literature on the care pathways for malaria treatment are presented (objective one, stage one). The rationale for presenting the findings from the literature review on the care pathways for malaria earlier in the structure of this thesis was also emphasised in this current chapter and has also been emphasised in chapters five and two. Furthermore, stage two of the first objective was met as a consequence of answering objectives two and three. However, in discussing the findings of objectives two and three, references were made to the various care pathways (earlier identified in the review conducted) accessed and utilised by participants while discussing their perceptions of their treatment choices and decisions.

The presentation of the discussion was made with reference to previous studies that existed, and areas of similarities and dissimilarities were pointed out.

By identifying the emerging themes, it is observed that many of the adult Nigerian participants' views overlapped with the perspectives of the health providers' (policymakers, health professionals and traditional healers). Also, it was observed that importantly, the majority of the adult Nigerians' perspectives were consistent with the traditional healers' and this could have been so because of their common perceptions and probably also because of the cordial relationship that exists between the adult Nigerians and traditional healers, which was reported as a perceived barrier that could be contributing to delay in seeking the effective treatment services for malaria from a health facility.

Chapter seven: Reflections, study limitations, recommendations and conclusion

7.1 Introduction

This is the final chapter of the thesis, and it presents my reflections, the limitations of the research, contribution to the field, the recommendations/suggestions for future research, and finally the conclusion.

7.2 Reflections

A few reflections on my PhD journey are documented in this section, which has largely developed me as an individual as well as broadened my understanding of the subject matter. For two key reasons, I began the journey with great passion and enthusiasm. Firstly, it was because I have the opportunity to study a disease that killed my elder sister in the year 2009, and not just because she died of malaria but because ignorantly, she consumed a lot of herbal concoctions which result in complications. Secondly, which is the most important, it was because, upon completion of my study, it could become an important evidence base used by various health stakeholders in formulating policies that will promote prompt and effective health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Specifically, as an individual and from a personal experience and culminating with the evidence base, this study empowers me to become an advocate for prompt and effective health-seeking behaviours to save the lives of many from malaria-related complications and likely death. However, despite starting with great passion, enthusiasm and a clear direction of where I anticipated my research to go, there were some unexpected junctures which slowed the pace of the research, and generally shifted the course of the PhD journey through areas that I did not expect.

Firstly, starting from the most recent is the impact of the pandemic on the study. I remembered vividly when the World Health Organisation announced the outbreak of a novel disease, and my supervisors advised that I should plan and write up a detailed alternative data collection protocol and approach (plan B) should it become impossible to travel to the study site, which is Makurdi in Nigeria due to the outbreak. Shortly after, flights and travelling became impossible as various countries closed their borders including Nigeria and the United Kingdom. After completing the alternative data collection protocol, and having it thoroughly reviewed by my supervisors and the Research Ethics Committee, I progressed and applied to gain ethics approval from the University of Bedfordshire, Research Ethics Committee (UoB, REC) which also took some time, as corrections and amendments where needed. I must concede the extent to which I underestimated the preparation required to gain ethics approval, especially after developing a new data collection protocol with the focus to conduct interviews remotely using a well-secured end-to-end encrypted platform among four cohorts. Even following the data

collection process I made sure the processes complies strictly with the recently published General Data Protection Regulation (GDPR) guidance. During the process of the online data collection, I underestimated the effort that it would require to successfully gather the various data needed for the research. I assumed the process would be much easier because I felt that being an insider who lived in Makurdi, and also with the fact that the efforts of recruiters were employed, it would afford me the opportunity to carry out the data gathering process without any serious challenge, but this was not the experience. In the course of the process, there was a lockdown in Nigeria and movements in public places were prohibited. However, there were movements around neighbourhoods, and even though the recruiters were known persons within the community, people refused to approach them because they felt they might contract the coronavirus although the recruiters were well kitted in their protective gears. I will also acknowledge the fact that each sample group had its unique challenges. A detailed explanation of the various challenges encountered during the data gathering process is presented in chapter 4. Overall, the process took a much longer time than I had expected to be completed.

More so, as part of the challenge faced during the COVID-19 lockdown era, libraries were also closed, and I became seriously challenged with sourcing online resources. At a point also, the internet service in my apartment suddenly went off without a trace of knowing where the fault might have come from. Due to the restricted movement that was in place during the first lockdown, several calls for repairs became futile. I had to switch to using my mobile data and connected the hotspot with my laptop just to enable me to access the internet; that was a very challenging period through my PhD journey.

Secondly, I understand better now the importance of saving documents on different devices, though I learned the lesson from an unpleasant experience of losing a large volume of the document in my second year. This experience also contributed to set me back regarding my study timeframe. The experience of re-writing it all over, however, I perceive it as both useful and painful. The positive side of it was that I became more thorough as I developed another critical thinking skill and the unpleasant experience of setting me back and spending more time i to meet up with the already scheduled date for submission to my supervisors; ahead of the supervision meeting. After the experience, I have developed the attitude of saving my documents in multiple places as backups.

Thirdly, I sincerely want to use this opportunity to thank all the individuals who gave me their time and attention, particularly my director at the Ministry of Science and Technology who made sure he linked me to other key directors at the Ministry of Health, because I could not directly reach out to them. Therefore, my director enabled the connection between myself and the key MOH policymakers. By extension, I am deeply grateful to the recruiters for putting extra efforts into recruiting participants despite the problems faced. The views and opinions of all the individuals that participated are deeply appreciated. The healthcare professionals were very kind to me in responding on time by willingly declaring their interest to take part despite their very busy schedule, especially during the period when the COVID-19 pandemic was developing. Special thanks also to the key MOH policymakers who

despite the stress of completing their professional examination they went ahead to participate willingly. My sincere thanks to the traditional healers as well who cheerfully shared their views and opinions and sacrificed their time also for this study. It would be very impossible to have answered the research question without their various contributions. However, this realisation can only be sincerely made at the end of the journey.

7.3 Study limitations

This study provides some important information on the perceptions and attitudes contributing to delays in effective health-seeking behaviours for malaria treatment in Makurdi, Nigeria. There are however several limitations to the study which have to be reflected upon and declared. Suggestions for future research in this area are proposed as well.

- Scarcity of information in the public domain: there is a dearth of information available in the public domain and on the government websites searched, on the care pathways for malaria treatment in Nigeria. The organisation and presentation of information on government websites are generally poor. Though these websites are operational there is no useful and up-to-date information available on the care pathways for malaria treatment in Nigeria provided on these websites. Overall, the websites lack up-to-date information and it was difficult to navigate through to extract relevant information including details on the care pathways for malaria treatment in Nigeria. More so, personal communication with the key MOH policymakers (the researcher also works for the Federal Government of Nigeria) confirmed that record keeping and particularly online updates from Ministries, Department and Agencies (MDAs) are scarcely available, and it was revealed that most information available is in hard copy formats which are filed and archived. Thus, if this interview was conducted face-to-face in Nigeria, it would have been possible to retrieve the available hardcopy and obtain useful information. Some key research articles which discussed the care pathways for malaria treatment in Nigeria are (Uzochukwu et al., 2010; Ajala and Wilson, 2013; Ngwum, 2016), and this has been discussed and presented in chapter two.
- Though a total of ten healthcare professionals were interviewed, and they consisted of four doctors and six nurses. More doctors initially indicated interest to participate but due to their very busy schedules that resulted from increased hospital admissions of coronavirus patients, they could not take part in the process, likewise also some nurses. Having a larger sample of doctors, and generally, healthcare professionals would probably be useful in generating more in-depth and contextual information. Therefore, future research would benefit from increasing the sample size of healthcare professionals.
- All the healthcare professionals interviewed were recruited from only four hospitals, and this included three government-owned and one private hospitals. The reason for this was because at the time of the pandemic healthcare professionals were very busy attending to more people who were

infected with coronavirus also during this time there was the restriction on movement and lockdown was still in place, so it was not possible for the recruiters to approach other facilities. Therefore, in the future researchers would benefit more also by increasing the number of healthcare facilities and also ensuring the increased number of private hospitals are recruited to also generate a broader understanding and view because having a larger number of healthcare facilities would also allow generating some useful contextual information that may not have been captured in this present study.

- Despite understanding that there are several traditional healers practising in Makurdi, only seven of them were interviewed, and this is because due to the restriction on public movement, recruiters could not travel to meet with the various traditional healers and therefore I got the contact detail (phone number) of the traditional healers (at their permission and approval) from the adult Nigerians participants because they know them. Therefore, it was a snowballing approach. However, some participants knew about some more traditional healers but they do not have their contact detail, so it was not possible to have a larger sample of the traditional healers. Hence, I suggest that future research should be carried out face-to-face to be able to recruit more traditional healers because having a larger sample of the traditional healers would generate some more important and in-depth information that may not have been captured in this present study.
- As earlier discussed in chapter 4, Makurdi is naturally divided into two halves by the River Benue. These halves are the north and south banks. Therefore, as a result of the lockdown and restricted movement that was in place at the time, the majority of the adult Nigerian participants interviewed were recruited from the southern region of Makurdi, and only a few were from the northern region, and this was so because the recruiters reside at the southern region of Makurdi and so they were able to recruit more of the people around their neighbourhood. Future research would benefit from broadening this category by recruiting more and equal size of participants from both regions, as there might be some in-depth information that may be generated that this present study may have not been able to capture sufficiently.
- Physical observation of participants is also very important to take note of while conducting the interview, however, this is another limitation of this study. There may have been more information that would have been generated in this study was conducted physically (face-to-face) through participant observation. Therefore, future research would benefit by generating more useful information through the observation of participants if they conduct a face-to-face in-depth interview rather than remotely (online).
- In the course of carrying out the online interviews, there were many instances when there were network and internet interferences, which prompted the call to end and I would call back again but sometimes the participant may not respond to the call until after several minutes, he/she would explain that they were interrupted by other external factors before returning to continue the process.

These interruptions could have distracted participants and made them lose the direction of thought, and in the process, vital contextual information might have been missed and not captured. Therefore, conducting a face-to-face interview could mitigate this challenge and help to generate more in-depth information by capturing other aspects that might have been missed out by this study.

- This study was carried out in Makurdi, located in the North-Central region of Nigeria. Thus, it would as well be important to further extend this field of research which focuses on perceptions and attitudes contributing to delay in effective treatment-seeking behaviour for malaria in the other five geopolitical regions in Nigeria (South-West, South-South, South-East, North-West and North-East); this is because of the population diversity in the country. This will be very important to explore any social, cultural and geographical differences, and thus help the government to direct their guidelines accordingly if indicated.

7.4 Contribution to the field

This study has made empirical, theoretical and policy-related contributions to the field in the following ways:

7.4.1 Empirical

- This study contributes to existing health behaviour research (HBR), by exploring the perceptions and attitudes that contribute to delays in health-seeking behaviours for malaria treatment through the adaption of qualitative method design. Thus, it adds to the limited literature on qualitative methods in this field.
- This presented some important methodological discussions of working in a pandemic era; conducting online in-depth interviews and the implications this has on the research process.
- The combined perspectives of the traditional healers, key MOH policymakers and the healthcare professionals gained from this study also helped to advance our knowledge from the scarcely available studies on this subject among the healthcare providers.
- This study provides the opportunity for future research to be conducted in other regions and states of Nigeria and in other malarious countries in Africa and beyond to ensure comparisons of studies; with the caution that research follows the same repetition of the model.

7.4.2 Theoretical

- Adopting the Health Belief Model (HBM) helped to provide a theoretical framework for this research, thus, this extends the use of this theory and provides new knowledge on how the components of perceived efficacy, perceived severity, perceived susceptibility, perceived benefit and perceived barrier shape the concepts in the field to emerge a new subject matter in the context of health behaviour research.

- Adopting the HBM to the Makurdi context allowed for a more inclusive approach (understanding how perception and attitude as it relates to health-seeking behaviour are influenced by a wide range of factors such as family and community views) to understanding the perceptions and attitudes contributing to delays in effective health-seeking behaviours for malaria treatment in Makurdi.
- There is very little research available on the perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Thus, this is one of the first studies that have used the HBM to understand the concepts within the Makurdi context and provide key insights on how to promote prompt and effective health-seeking behaviours for malaria treatment in the Nigerian context, thereby advancing knowledge in this area.

7.4.3 Policy-related implications and recommendations

The following policy-related implications and recommendations are presented based on the review of the main study findings from this present research:

- The existing evidence in the literatures reveals that over 80% of Nigerians access and utilises traditional medicines, thereby delaying seeking appropriate and effective treatment. Thus, delay in effective health-seeking behaviour is one of the major reasons for the proliferation of malaria-related morbidity and mortality rates in Nigeria and findings from this study suggest that there is limited and outdated approach to health education using only the public media-based approach, and this strategy is perceived to be ineffective lately.

Recommendation: extensive health education to promote prompt and effective health-seeking behaviours for malaria treatment should be a top priority of the Ministry of Health through the combined efforts of electronic public media and the introduction of a door-to-door campaign approach. More so, the findings from this study suggest that the health promotional campaign should be targeted at a specific population group rather than a general/broad approach campaign that targets no specific population group.

- Findings from this study showed that patients could present to a healthcare facility after a doctor's consultation and medical examination, and then be referred to purchase drugs form over the counter from a private patent medicine vendor because of a shortage of drugs; thereby exposing them to the danger of fake and adulterated drugs. This could discourage them eventually and defeat their perceived reason for presenting to a health facility.

Recommendation: there is, therefore, the need for a direct supply link between healthcare facilities and pharmaceutical manufacturing industries (if there is none yet) to eliminate the problem of medication shortages at health centres, and if there are existing links there is an urgent need for it to be strengthened and supervised by the drug regulatory agency in Nigeria, called National Agency for Food and Drug Administration and Control. (NAFDAC).

- Findings from this study highlight that government-manned healthcare facilities appear to be poorly resourced in terms of equipment, manpower and buildings/structures. Specifically, due to inadequate manpower, patients who present to the hospital spend prolonged waiting hours at the facility before they will be attended to by a health professional. One of the reasons for the inadequate manpower is because poor salary structures of healthcare workers and limited medical equipment; this, therefore, prompts a lot of Nigerian healthcare professionals to travel out of the country for greener pastures. Thus, as a result of the prolong waiting hours before patients are attended to encourage patients to seek alternative treatment approaches, and overall delay in effective health-seeking.

Recommendation: The Ministry of Health should take a proactive step towards improving healthcare professionals' welfare including their salaries, to encourage them to remain, recruit more manpower (including doctors, nurses and pharmacists) to work in the country and thereby improve serviceability and meet patients' demand. Also, there should be a parallel approach and continue to resource and improve the supplies of medical equipment and building/structures.

- There is little existing evidence available on the views of traditional healers, key MOH policy maker and healthcare professionals (service providers) from the Nigeria context. Findings from this study have highlighted the need for triangulated views of lay participants (adult Nigerians), MOH policymakers, traditional healers and healthcare professionals.

Recommendation: it is, therefore, important to include the views of healthcare professionals, traditional healers, lay participants and MOH policymakers to obtain a holistic understanding of the perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment to understand how to channel targeted efforts to promote prompt and effective treatment-seeking behaviours for malaria.

- The MOH should request that all complaints which are written/verbally reported and is focussed on patient dissatisfaction should be managed by an organised panel of enquiry set to address issues of professional misconduct between healthcare workers and patients. Findings from this study show that the negative attitude of healthcare workers towards patients contributes to discouraging patients from presenting to a healthcare facility, and rather encourage self-medication and alternative routes for treatment.

Recommendation: it is therefore important that patients' public complaints concerning healthcare workers' negative attitudes towards them should be reviewed and addressed with assurance for a behaviour change to help encourage prompt and effective health-seeking behaviours for malaria treatment, and this extends for other diseases/health conditions. This should also include patient satisfaction with the healthcare facility.

- Although there is currently a national health insurance scheme in Nigeria, its coverage is limited only to government employees and members of their families below the age of 18 years and certain workers. Thus, this scheme does not cover the entire Nigerian population which majority are unemployed and lack the finance to pay out-of-pocket as practised in the country; this, therefore, encourages access and utilisation of alternative treatments such as traditional treatment which involves the use of herbs and spiritualists.

Recommendation: it is important to have the current national health insurance scheme coverage extended to include the general population to reduce the out-of-pocket payment system and thus, promote effective and prompt health-seeking behaviours in Nigeria.

- Findings from this study show that despite the thousands of traditional healers practising in Nigeria, only a very few are officially licenced to practice from the MOH, and this is despite understanding that majority of Nigerians access and utilise traditional treatment. This, therefore, explains that the others traditional healers who are not licenced and are widely spread all over the country and practising are operating illegally. All respondents who utilise the traditional treatment services testified that it is effective and safe yet they are not legal herbal providers.

Recommendation: the MOH should extend the screening of other traditional healers in the country and provide them with operational licences to practice if they meet the underlined criteria set by the screening body in the department of traditional, complementary and alternative medicine of the MOH. This would increase the number of available treatment services in which people can access and utilise treatment for malaria in the country.

- Findings from this study show that traditional healers are important providers of care in the community and they have explained that if the government include them as part of the national healthcare delivery system/providers just as their biomedical counterparts (examples, doctors, nurses, pharmacists and physiotherapists) they will work together and ensure that they also refer patients to the hospitals, as well the hospital would recommend certain cases to them. In other words, collaboration in the healthcare sector could promote health-seeking behaviours of people.

Recommendation: the government through the MOH policmakers should consider policy formulation to facilitate the incorporation of traditional healers, and this policy should clarify the terms and conditions for incorporation.

7.5 Conclusion

This study has presented some important information on perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria, which has empirical, theoretical and policy-related implications and contributions to help promote and encourage prompt and effective health-seeking behaviours for malaria treatment in Makurdi. This study contributes to the existing

literature on health-seeking behaviour research by adopting a qualitative method design, it adds to the scarce evidence on qualitative methods in this field within the context of Makurdi and has further extended knowledge on health-seeking behaviour in the North-central region of Nigeria. Furthermore, the Health Belief Model which helped to frame this research and provide theoretical background further expands the knowledge on how the various components of perceived efficacy, perceived severity, perceived susceptibility, perceived benefit and perceived barrier shaped the concepts studied within the Makurdi setting. The triangulated perspectives of all participant groups (adult Nigerians, traditional healers, key MOH policymakers and healthcare professionals) helped to provide in-depth understanding and presented a broader picture, hence, has advanced knowledge of the subject area in Nigeria. Overall, this study has presented a small contribution to an important and scarce area of health behaviour research in Nigeria for malaria treatment by answering the research question and meeting the research aim and objectives.

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Appendix 1: A summary characteristics of interviewees

Participants name (initials)	Sample group/Gender	Recruitment date	Consent status	Scheduled interview date	Reasons for declining/withdrawer	Comments/feedback from the interview
PILOTING THE TOPIC GUIDE						
P.I	Adult Nigerian (M)	20/08/2020	Agreed (audio consent)	23/08/2020	Not applicable	The questions were okay, but when you started I felt you were too serious and that made me uneased. It appeared like I was in an examination setting. But later I became comfortable. The time for the interview was too long for me. Some people may not have the patience to sit for that long to attend to all the questions. So please consider this too. Otherwise, I didn't notice anything else.
M.I	Adult Nigerian (M)	24/08/2020	Agreed (audio consent)	28/08/2020	Not applicable	Some repetitive questions, the time was too long, some questions were not very straightforward. I don't see the need to repeat explaining the information sheet again when I have already gone through the one which you sent to me. So all these can help to reduce the time spent/interview/participant.
F.J	Adult Nigerian (F)	27/08/2020	Declined	Initially booked for: 31/08/2020	Agreed initially to participate, but called to cancel few hours to the start off time. No reason was provided by the intended respondent.	Not applicable.
H.O	Adult Nigerian (M)	27/08/2020	Agreed (audio consent)	30/08/2020	Not applicable	Considered the entire process okay. He was of the opinion that the timing was okay as well.

A.J	Adult Nigerian (M)	29/08/2020	Agreed (audio consent)	1/09/2020	Not applicable	Suggested that he would have preferred if it was a face-to-face interview so he can as well be seeing my response, but understood that it was because of the developing pandemic. Complained about the timing being too long. Expressed interest to have the transcript of his interview. He said the questions were clear and understandable.
F.V	Adult Nigerian (M)	02/09/2020	Declined	Initially booked for: 05/09/2020	Has had medical appointment at the Dunstable hospital. Declined re-booking a new date.	Not applicable
C.O	Adult Nigerian (F)	04/09/2020	Declined	No date was fixed.	Refused to answer to her calls even after confirming with the family relative to share her phone number with me. Messages were sent, yet did not respond to it either.	Not applicable
M.A	Adult Nigerian (M)	04/09/2020	Agreed (audio consent)	07/09/2020	Not applicable	Questions were clear and no challenge in understanding it. Timing was a bit long. No further comments made.
J.O	Adult Nigerian (M)	04/09/2020	Declined	Initially booked for: 07/09/2020	Placed a call to me on 6/09/2020 (a day before the interview scheduled date). Without pressing further to request for explanation, he related his inability to participate to ill-health.	Not applicable

MAIN STUDY INTERVIEW						
Healthcare professionals						
Dr J.O.H	Medical doctor Hospital A	16/09/2020	Agreed (audio consent)	18/09/2020	Not applicable	All the questions asked where understandable. He kindly demands that the findings of this would be greatly relevant and appreciated in Makurdi, following the high prevalence rate of the disease. He also said he would be pleased to have a copy of the research findings when the study is completed.
Dr A.D	Medical doctor Hospital B	22/09/2020	Agreed (audio consent)	25/09/2020	Not applicable	He felt re-reading the information sheet was a form of delay because he has read a copy already and if had a question he would have asked me. Questions were straightforward with no form of ambiguity. Declared interest in having a copy of the final findings upon completion.
Dr P.T	Medical doctor Hospital D	05/10/2020	Agreed (audio consent)	06/10/2020	Not applicable	No comment/feedback was given.
Dr C.U	Medical doctor Hospital C	04/10/2020	Agreed (audio consent)	06/10/2020	Not applicable	Requested for a copy of the final research findings and also suggested that a copy of the published research be submitted to the Benue State ministry of health. She commended that all the questions asked were relevant and understandable.

Mrs I.S	Nurse Hospital B	13/10/2020	Agreed (audio consent)	Re-booked for: 23/10/2020	Not applicable. Provided reason for re-booking, and it was due to much work at the hospital and was re-scheduled on day-off.	Considered questions straightforward. She asked an important question if it was ever going to be possible to have a malaria-free world? Applauded the objectives of the study.
Mr J.A	Nurse Hospital C	19/10/2020	Agreed (audio consent)	21/10/2020	Not applicable	No comment/feedback was made.
Mrs J.O.S	Nurse Hospital B	27/10/2020	Agreed (audio consent)	3/11/2020	Not applicable	No comment/feedback gotten.
Mr M.M	Nurse Hospital C	10/11/2020	Agreed (audio consent)	12/11/2020	Not applicable	Commended the research and the interview questions as been direct to the point. Although suggested that the timing be reduced especially for the health workers who are very busy at the moment especially during this COVID-19 era. Requested to have a copy of the final result of the research.
Mr N.O	Nurse Hospital D	16/11/2020	Agreed (audio consent)	19/11/2020	Not applicable	No comment/feedback was made.
Mr A.M	Nurse Hospital D	18/11/2020	Agreed (audio consent)	20/11/2020	Not applicable	No comment, but accepted to have a copy of the final result of the research upon completion.

Adult Nigerian						
E.I	Adult Nigerian (M)	11/09/2020	Agreed (audio consent)	14/09/2020	Not applicable	Straightforward and clear questions. The timing also was okay for this respondent. Demanded to have a copy of the final result of the research.
M.U	Adult Nigerian (M)	9/09/2020	Agreed (audio consent)	15/09/2020	Not applicable	No comment. Accept to have a copy of the final findings of the study when it is completed.
C.O	Adult Nigerian (M)	12/09/2020	Agreed (audio consent)	14/09/2020	Not applicable	The questions are too many and made me tired. It would have been better if done face-to-face. Do not have an email address to enable him have the findings. So he do not necessarily need it.
A.E	Adult Nigerian (F)	12/09/2020	Agreed (audio consent)	Date was re-scheduled for: 22/09/2020	Not applicable	Not comment. Interview was okay and smooth. She felt there was no need to have the findings because she would not have the time to read it even when sent to her.
R.T.A	Adult Nigerian (M)	14/09/2020	Agreed (audio consent)	16/09/2020	Not applicable	Confirmed the questions to be okay and clear. Demanded for a copy of the final copy of the research result when completed.
A.N	Adult Nigerian (M)	12/11/2020	Agreed (audio consent)	17/11/2020	Not applicable	No comment/feedback gotten.

N.C	Adult Nigerian (M)	23/11/2020	Agreed (audio consent)	26/11/2020	Not applicable	No question, comment and feedback.
A.O	Adult Nigerian (M)	30/11/2020	Agreed (audio consent)	4/12/2020	Not applicable	Complained about the timing, as it was long to him. Agreed to have a copy of the research findings.
M.E.G	Adult Nigerian (M)	5/12/2020	Agreed (audio consent)	12/12/2020	Not applicable	No comment/feedback.
K.A	Adult Nigerian (M)	7/12/2020	Agreed (audio consent)	10/12/2020	Not applicable	Showed his appreciation for conducting such study in Makurdi and for remembering Makurdi to think of a solution. Accepted to have a copy of the study findings.
J.A	Adult Nigerian (F)	15/12/2020	Agreed (audio consent)	17/12/2020	Not applicable	No comment/feedback.
S.A	Adult Nigerian (M)	21/12/2020	Agreed (audio consent)	23/12/2020	Not applicable	No comment/feedback.
F.A	Adult Nigerian (M)	18/12/2020	Agreed (audio consent)	Interview date was re-scheduled 30/12/2020	Not applicable	Interviews questions were understandable and clear. All questions were relevant. Demanded for a copy of research findings.

H.A	Adult Nigerian (M)	20/12/2020	Agreed (audio consent)	24/12/2020	Not applicable	Suggested that the research outcome should be shared with the government of the state for implementation, also demanded for a personal copy of the study outcome.
I.A	Adult Nigerian (M)	25/12/2020	Agreed (audio consent)	28/12/2020	Not applicable	Attention was drawn to the time taken to complete the interview and suggested that there was no need of reading through the participant information sheet again because he already knew what the study was all about and that is why he has agreed to participate. So going straight to the interview question would save time.
B.I	Adult Nigerian (F)	30/12/2020	Agreed (audio consent)	2/01/2021	Not applicable	No comment/feedback
M.D	Adult Nigerian (M)	02/01/2021	Agreed (audio consent)	5/01/2021	Not applicable	No comment/feedback
J.T	Adult Nigerian (M)	3/01/2021	Agreed (audio consent)	6/01/2021	Not applicable	Felt okay with the interview questions and was not offensive in anyway.
Traditional healers						
Mr M.T	Traditional healer (M)	07/01/2021	Agreed (audio consent)	10/01/2021	Not applicable	No comment/feedback

Mrs E.O	Traditional healer (F)	09/01/2021	Agreed (audio consent)	13/01/2021	Not applicable	No comment/feedback
Mr T.O	Traditional healer (M)	11/12/2020	Agreed (audio consent)	8/01/2021	Not applicable	Requested that more publicity should be made to promote the traditional treatment as they are effective.
Mr T.A	Traditional healer (M)	2/12/2020	Agreed (audio consent)	Delayed because he travelled and was not in Makurdi at the time. 2/01/2021	Not applicable	No comment/feedback
Mrs M.A	Traditional healer (F)	4/12/2020	Agreed (audio consent)	15/12/2020	Not applicable	When asked, she confirmed that the interview took a long time but she was okay. no further comment/feedback.
Alhaji. S.Y	Traditional healer (M)	18/11/2020	Agreed (audio consent)	27/11/2020	Not applicable	No comment/feedback
Mr P.O	Traditional healer (M)	13/10/2020	Agreed (audio consent)	16/10/2020	Not applicable	No comment/feedback. Appreciated the fact that he was selected to take part.

Ministry of Health Policy Maker						
Pharm. (Mrs) Z.S	(TC & AM)	2/11/2020	Agreed (audio consent)	Delayed because of official duties (preparing for promotional exams). So it has to been booked when convenient. 7/01/2021	Not applicable	Commended the interview questions as been clear and elaborate to understand. Suggested that the final findings and a copy of the published research be forwarded to her so she can present it during the Heads of Establishment meeting.
Dr (Mr) N.N	NCDC	6/11/2020	Agreed (audio consent)	Similar reason as above. So has to be booked on a later date. 14/01/2021	Not applicable	Appreciated the research. no further comment. Demanded for a copy of the result when completed.
Dr (Mrs) N.E	NMEP	10/12/2020	Agreed (audio consent)	Similar reason as above. Has to be scheduled on a later date. 11/01/2021	Not applicable	Words of appreciation for embarking on such important research. Demanded for a copy of the final result of the research.
Dr (Mr) A.D	PHC & TD	22/11/2020	Agreed (audio consent)	Similar reason as above. 5/01/2021	Not applicable	Vote of thanks, but no specific comment about the interview questions and the interview process. Demanded also for a copy of the result of the study when completed.

Appendix 2: Information sheet for adult Nigerians

University of Bedfordshire
Institute for Health Research

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

Introduction

My name is Peter Ochepo and I am a PhD research student at the University of Bedfordshire, UK. My PhD degree is sponsored by the Petroleum Technology Development Fund (PTDF) in Nigeria. I am conducting a research entitled "perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria". Malaria is a well-known disease, and its prevention and treatment is available. Delays in seeking treatment, however, contributes to the high prevalence of the disease recorded in Nigeria. This research will explore how perceptions and attitudes to the various ways of obtaining Malaria treatment influences its successful treatment.

You are being invited, as an adult Nigerian living in Makurdi, to participate in this research project. You would have received this information sheet at least 24 hours before the interview date. Please read the information below carefully to understand what it will involve and I will be going through this information with you at the beginning of the interview in case you have any questions. Please take time to read carefully the following information and discuss it with your friends and family before making the decision to participate. Please do not hesitate to ask if anything is not clear or if additional information is required in the meantime, contact details are available at the end of this sheet.

What is the purpose of the research?

The purpose of this research is to explore how perceptions and attitudes contributes to delay in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Hence, I am interested in undertaking a study of the population of Makurdi, which will involve me interviewing the lay participants (adult Nigerians), healthcare professionals (doctors and nurses), key stakeholders (policy makers from the ministry of health) and the traditional health practitioners. Their views are important because so little is currently known about this and the findings of the study will help inform policy makers that will lead to the development of a health-seeking promotional framework for malaria treatment in Nigeria.

Why have I been invited?

You have been invited to participate in this research because you are an adult Nigerian (to be an adult you must be 18 years or over), who is resident in Makurdi and have had episode(s) of malaria. Please if you are outside of this category, let the researcher know.

Do I have to take part?

It is completely up to you to choose whether you take part in the interview. You are free to withdraw at any time, without giving any reasons and I will destroy all the data you provided. If you decide to take part, you will be asked to provide audio/oral consent indicating that you have agreed to take part.

What will I have to do?

If after reading this sheet and asking any questions you agree to participate in this research, you will be asked to provide an audio/oral consent indicating your willingness to take part. From the day of receiving this sheet or beginning from the day you indicate interest to take part, you will be given up to a minimum of 24 hours to make your decisions. Only once you have confirmed your consent to participate, will your involvement in the research begin.

The research will involve about an hour semi-structured interview carried out online, and if you do not wish to answer a question, you will be able to miss it and move onto the next question. The interviews will be audio recorded. If you do not agree to the audio recording of your interview, then it will not be possible for you to participate. Audio recording of the interviews is essential to ensure that your answers are noted accurately. I will be asking questions about how the perceptions and attitudes of adults contributes to delay in health-seeking for malaria treatment. I would request that you answer all the questions as truthfully as you can. There are no right or wrong answers and I will not judge your answers in any way.

Will my taking part in the study be kept confidential?

The in-depth interview discussions will be audio-recorded using a recording App and transcribed. The researcher will transcribe all the data and all the recordings of the interview will be deleted on successful completion of my studies and transcripts will be stored according to UK General Data Protection Regulation (GDPR) on the University's password protected computer available to the researcher for the entire study purpose. Transcripts will be kept for 10 years due to academic policy. All data will be anonymised. There is no risk of confidentiality being breached as any information you provide will not be released to other parties apart from my supervisory team, Research Graduate School (RGS), and the Research Ethics Committee (REC) without your written permission, unless compelled to by law. The researcher has the obligation to disclose personal information to the appropriate party if perceived to be at risk of harm has conducted illegal activity or if there was a form of professional misconduct.

What will happen if I don't want to carry on with the study?

If you want to withdraw from the interview, you can stop at any point by alerting the interviewer that you are going to leave and you will be asked whether you would like your data to be removed. If you would like your data removed, I will remove the transcripts of your data as best as possible.

What will happen to the results of the research study?

The results of this study will be analysed by the researcher and published in an academic thesis, international academic journals and given to the Nigeria Federal Ministry of Health through the Petroleum Technology Development Fund (PTDF), and a local "Findings feedback" report will be given to the local population and interested people. I may provide verbatim quotes in the journal articles and reports produced but all data is anonymous and something which you have said will not be able to be linked to you in any way in these publications and reports.

Who is funding the research?

The research is funded by the Petroleum Technology Development Fund (PTDF) with the intention of exploring how perceptions and attitudes contributes to delayed treatment-seeking for malaria.

Does this study have ethical approval?

This study was reviewed and given a favourable opinion by the University of Bedfordshire (UoB) Research Ethics Committee (REC).

Contact detail

If there are any issues regarding this research that you would like to discuss further, please do not hesitate to contact one of the members of the research team listed below.

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Appendix 3: Information sheet for healthcare professionals

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

Introduction

My name is Peter Ochepo and I am a PhD research student at the University of Bedfordshire, UK. My PhD degree is sponsored by the Petroleum Technology Development Fund (PTDF) of Nigeria. I am conducting research on perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Malaria is a well-known disease and the prevention and treatment of this disease is available. Delays in seeking treatment, however, contributes to the high prevalence of the disease recorded in Nigeria. This research will explore how perceptions and attitudes to the various ways of obtaining Malaria treatment influences its successful treatment.

You are being invited, as a healthcare professional living in Makurdi, to participate in this research project. You will have received this information sheet at least 24 hours before being asked to take part in the interview. Please read the information below carefully to understand what it will involve and I will be going through this information with you at the beginning of the interview in case you have any questions. Please take time to read carefully the following information and discuss it with your friends and family before making the decision to participate. Please do not hesitate to ask if anything is not clear or if additional information is required in the meantime, contact details are available at the end.

What is the purpose of the research?

The purpose of this research is to explore how perceptions and attitudes contributes to delay in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Hence, I am interested in undertaking a study of the population of Makurdi, which will involve interviewing the lay participants (adult Nigerians), healthcare professionals (doctors and nurses), key stakeholders (policy makers from the ministry of health) and the traditional health practitioners. Their views are important because so little is currently known about this and the findings of the study will help inform policy makers that will lead to the development of a health-seeking promotional framework for malaria in Nigeria.

Why have I been invited?

You have been invited to participate in this research because you are either a Nigerian medical doctor or a nurse, resident in Makurdi, currently working in a health service/facility in Makurdi, and also have had practice experience(s) with treating malaria patients.

Do I have to take part?

It is completely up to you to choose whether you take part in the interview. You are free to withdraw at any time, without giving any reasons and I will destroy all the data you provided. If you decide to take part, you will be asked to sign a consent form indicating that you have agreed to take part.

What will I have to do?

If after reading this sheet and asking any questions you agree to participate in this research, you will be asked to provide audio/oral consent shortly before the interview commence, indicating your willingness to take part. After declaring interest to participate in the research, you will be given up to a week in which to make your final decision. Only once you have confirmed your consent to participate, will your involvement in the research begin.

The research will involve about 60 minutes semi-structured interviews conducted virtually, and if you do not wish to answer a question, you will be able to miss it and move onto the next question. The interviews will be audio recorded. If you do not agree to the audio recording of your interview, then it will not be possible for you to participate. Audio recording of the interviews is essential to ensure that your answers are noted accurately. I will be asking questions about how the perceptions and attitudes of adults contributes to delay in health-seeking for malaria treatment. I would request that you answer all the questions as truthfully as you can. There are no right or wrong answers and we will not judge your answers in any way.

Will my taking part in the study be kept confidential?

The in-depth interview discussions will be audio-recorded using a recording App and transcribed. The researcher will transcribe all the data and the recordings of the interview will be deleted on successful completion of my studies and transcripts will be stored according to UK General Data Protection Regulation (GDPR) on the University's password protected computer available to the researcher for the entire study purpose. Transcripts will be kept for 10 years due to academic policy. All data will be anonymised. There is no risk of confidentiality being breached as any information you provide will not be released to other parties apart from my supervisory team, Research Graduate School (RGS), and the Research Ethics Committee (REC) without your written permission, unless compelled to by law. The researcher has the obligation to disclose personal information to the appropriate party if perceived to be at risk of harm has conducted illegal activity or if there was a form of professional misconduct.

What will happen if I don't want to carry on with the study*?*

If you want to withdraw from the interview, you can stop at any point by alerting the interviewer that you are going to leave and you will be asked whether you would like your data to be removed. If you would like your data removed, I will remove the transcripts of your data as best as possible.

What will happen to the results of the research study?

The results of this study will be analysed by the researcher and published in an academic thesis, international academic journals and given to the Nigeria Federal Ministry of Health through the Petroleum Technology Development Fund (PTDF), and a local "Findings feedback" report will be given to the local population and interested people. I may provide verbatim quotes in the journal articles and reports produced but all data is anonymous and something you said will not be able to be linked to you in any way in these publications and reports.

Who is funding the research?

The research is funded by the Petroleum Technology Development Fund (PTDF) with the intention of exploring how perceptions and attitudes contributes to delayed treatment-seeking for malaria.

Does this study have ethical approval?

This study was reviewed and given a favourable opinion by the University of Bedfordshire (UoB) Research Ethics Committee (REC).

Contact detail

If there are any issues regarding this research that you would like to discuss further, please do not hesitate to contact one of the members of the research team listed below.

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Appendix 4: Information sheet for MOH policy makers

University of Bedfordshire
Institute for Health Research

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

Introduction

My name is Peter Ochepo and I am a PhD research student at the University of Bedfordshire, in the United Kingdom. My PhD degree is sponsored by the Petroleum Technology Development Fund (PTDF) of Nigeria. I am conducting research on perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Malaria is a well-known disease and the prevention and treatment of this disease is available. Delays in seeking treatment, however, contributes to the high prevalence of the disease recorded in Nigeria. This research will explore how perceptions and attitudes to the various ways of obtaining Malaria treatment influences its successful treatment.

You are being invited, as a key health stakeholder (MOH policy maker) working as a director with the Ministry of Health to participate in this research project. You will have received this information sheet at least 24 hours before finally deciding to take part in the interview. Please read the information below carefully to understand what it will involve and I will be going through this information with you at the beginning of the interview in case you have any questions. Please take time to read carefully the following information and discuss it with your friends and family before making the decision to participate. Please do not hesitate to ask if anything is not clear or if additional information is required in the meantime, contact details are available at the end.

What is the purpose of the research?

The purpose of this research is to explore how perceptions and attitudes contributes to delay in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Hence, I am interested in undertaking a study of the population of Makurdi, which will involve interviewing the lay participants (adult Nigerians), healthcare professionals (doctors and nurses), key health stakeholders (ministry of health policy makers) and traditional healers. Their views are important because very little is currently known about this and the findings of the study will help inform policy makers that will lead to the development of a health-seeking promotional framework for malaria in Nigeria.

Why have I been invited?

You have been invited to participate in this research because you are a director working with the Ministry of Health (MoH).

Do I have to take part?

It is completely up to you to choose whether you take part in the interview. You are free to withdraw at any time, without giving any reasons and I will destroy all the data you provided. If you decide to take part, you will be asked to sign a consent form indicating that you have agreed to take part.

What will I have to do?

If after reading this sheet and asking any questions you agree to participate in this research, you will be asked to provide audio/oral consent, indicating your wiliness to participate. You will be given up to a week in which to make your final decision regarding your participation. Only once you have confirmed your consent to participate, will your involvement in the research begin.

The research will involve about 60 minutes semi-structured interviews conducted virtually, and if you do not wish to answer a question, you will be able to miss it and move onto the next question. The interviews will be audio recorded. If you do not agree to the audio recording of your interview, then it will not be possible for you to participate. Audio recording of the interviews is essential to ensure that your answers are noted accurately. I will be asking questions about how the perceptions and attitudes of adults contributes to delay in health-seeking for malaria treatment. I would request that you answer all the questions as truthfully as you can. There are no right or wrong answers and we will not judge your answers in any way.

Will my taking part in the study be kept confidential?

The in-depth interview discussions will be audio-recorded using a recording App and transcribed. The researcher will transcribe all the data and the recordings of the interview will be deleted on successful completion of my studies and transcripts will be stored according to UK General Data Protection Regulation (GDPR) on the University's password protected computer available to the researcher for the entire study purpose. Transcripts will be kept for 10 years due to academic policy. All data will be anonymised. There is no risk of confidentiality being breached as any information you provide will not be released to other parties apart from my supervisory team, Research Graduate School (RGS), and the Research Ethics Committee (REC) without your written permission, unless compelled to by law. The researcher has the obligation to disclose personal information to the appropriate party if perceived to be at risk of harm has conducted illegal activity or if there was a form of professional misconduct.

What will happen if I don't want to carry on with the study?

If you want to withdraw from the interview, you can stop at any point by alerting the interviewer that you are going to leave and you will be asked whether you would like your data to be removed. If you would like your data removed, I will remove the transcripts of your data as best as possible.

What will happen to the results of the research study?

The results of this study will be analysed by the researcher and published in an academic thesis, international academic journals and given to the Nigeria Federal Ministry of Health through the Petroleum Technology Development Fund (PTDF), and a local "Findings feedback" report will be given to the local population and interested people. I may provide verbatim quotes in the journal articles and reports produced but all data is anonymous and something you said will not be able to be linked to you in any way in these publications and reports.

Who is funding the research?

The research is funded by the Petroleum Technology Development Fund (PTDF) with the intention of exploring how perceptions and attitudes contributes to delayed treatment-seeking for malaria.

Does this study have ethical approval?

This study was reviewed and given a favourable opinion by the University of Bedfordshire (UoB) Research Ethics Committee (REC).

Contact detail

If there are any issues regarding this research that you would like to discuss further, please do not hesitate to contact one of the members of the research team listed below.

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The supervisory team

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Appendix 5: Information sheet for traditional healers

University of Bedfordshire
Institute for Health Research

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

Introduction

My name is Peter Ochepo and I am a PhD research student at the University of Bedfordshire, in the United Kingdom. My PhD degree is sponsored by the Petroleum Technology Development Fund (PTDF) of Nigeria. I am conducting research on perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Malaria is a well-known disease and the prevention and treatment of this disease is available. Delays in seeking treatment, however, contributes to the high prevalence of the disease recorded in Nigeria. This research will explore how perceptions and attitudes to the various ways of obtaining Malaria treatment influences its successful treatment.

You are being invited, as a traditional healer and/or a complementary and alternative medicine practitioner to participate in this research project. You would have been called by the researcher and informed about the research at least 24 hours before being asked about your willingness to take part in the interview. I will also be going through this information sheet with you at the beginning of the interview in case you have any questions. Please take time to discuss it with your friends and family before making the decision to participate. Please do not hesitate to ask if anything is not clear or if additional information is required in the meantime, contact details are available at the end.

What is the purpose of the research?

The purpose of this research is to explore how perceptions and attitudes contributes to delay in health-seeking behaviours for malaria treatment in Makurdi, Nigeria. Hence, I am interested in undertaking a study of the population of Makurdi, which will involve interviewing the lay participants (adult Nigerians), healthcare professionals (doctors and nurses), key stakeholders (policy makers from the ministry of health) and the traditional health practitioners. Their views are important because so little is currently known about this and the findings of the study will help inform policy makers that will lead to the development of a health-seeking promotional framework for malaria in Nigeria.

Why have I been invited?

You have been invited to participate in this research because you are a traditional herbal practitioner or someone who is regarded as a complementary and alternative medicine practitioner, living in Makurdi and currently treating people using the herbal medicine, and have experience in the practice.

Do I have to take part?

It is completely up to you to choose whether you take part in the interview. You are free to withdraw at any time, without giving any reasons and I will destroy all the data you provided. If you decide to take part, you will be asked to sign a consent form indicating that you have agreed to take part.

What will I have to do?

If after calling you and discussing this research with you and you agree to take part in the interview, you will be asked to provide audio/oral consent indicating your voluntary participation. You will be given up to a week in which to make your final decision to take part. Only once you have confirmed your consent to participate, will your involvement in the research begin.

The research will involve about 60 minutes semi-structured interviews conducted remotely (online), and if you do not wish to answer a question, you will be able to miss it and move onto the next question. The interviews will be audio recorded. If you do not agree to the audio recording of your interview, then it will not be possible for you to participate. Audio recording of the interviews is essential to ensure that your answers are noted accurately. I will be asking questions about how the perceptions and attitudes of adults contributes to delay in health-seeking for malaria treatment. I would request that you answer all the questions as truthfully as you can. There are no right or wrong answers and we will not judge your answers in any way.

Will my taking part in the study be kept confidential?

The in-depth interview discussions will be audio-recorded using an MP3 recorder and transcribed. The researcher will transcribe all the data and the MP3 recordings of the interview will be deleted on successful completion of my studies and transcripts will be stored according to UK General Data Protection Regulation (GDPR) on the University's password protected computer available to the researcher for the entire study purpose. Transcripts will be kept for 10 years due to academic policy. All data will be anonymised. There is no risk of confidentiality being breached as any information you provide will not be released to other parties apart from my supervisory team, Research Graduate School (RGS), and the Research Ethics Committee (REC) without your written permission, unless compelled to by law. The researcher has the obligation to disclose personal information to the appropriate party if perceived to be at risk of harm has conducted illegal activity or if there was a form of professional misconduct.

What will happen if I don't want to carry on with the study?

If you want to withdraw from the interview, you can stop at any point by alerting the interviewer that you are going to leave and you will be asked whether you would like your data to be removed. If you would like your data removed, I will remove the transcripts of your data as best as possible.

What will happen to the results of the research study*?*

The results of this study will be analysed by the researcher and published in an academic thesis, international academic journals and given to the Nigeria Federal Ministry of Health through the Petroleum Technology Development Fund (PTDF), and a local "Findings feedback" report will be given to the local population and interested people. I may provide verbatim quotes in the journal articles and reports produced but all data is anonymous and something you said will not be able to be linked to you in any way in these publications and reports.

Who is funding the research?

The research is funded by the Petroleum Technology Development Fund (PTDF) with the intention of exploring how perceptions and attitudes contributes to delayed treatment-seeking for malaria.

Does this study have ethical approval?

This study was reviewed and given a favourable opinion by the University of Bedfordshire (UoB) Research Ethics Committee (REC).

Contact detail

If there are any issues regarding this research that you would like to discuss further, please do not hesitate to contact one of the members of the research team listed below.

Peter Ochepo
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The supervisory team:

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Appendix 6: Informed consent form

University of Bedfordshire
Institute for Health Research

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

The Researcher: **Peter Ochepo**

The Supervisory teams:

Dr Anthony Farrant

Dr Nasreen Ali

	Please tick the box
1. I confirm that I have read and understood the Information Sheet regarding the above study and I have had the opportunity to consider this and ask questions which have been fully answered to my satisfaction.	☐
2. I understand that taking part is voluntary and that I am free to withdraw at any time, without giving a reason and without my legal rights being affected. I am aware that if I do decide to withdraw, any data obtained up to that point will be destroyed.	☐
3. I understand that the researcher Mr Peter Ochepo, his supervisory team: Dr Anthony Farrant and Dr Nasreen Ali and the Research Ethics Committee (REC) and whoever looks at the data, it will remain confidential.	☐
4. I understand that all data will be stored securely in a password protected file on the researcher's password protected computer and/or in the university online storage.	☐
5. I understand and I give my consent for the interview to be audio-recorded, transcribed and the findings which arise from this study to be anonymised by disguising my identity: no names will be mentioned and the data will be coded and used in thesis and any subsequent publications.	☐
6. I give my consent to take part in this study about the perceptions and attitudes to health-seeking delays for malaria treatment.	☐

Name of Participant (print)	Date	Signature
Peter Ochepo Name of Researcher (print)	Date	Signature

I confirm that the participant has not been coerced into giving consent, and the consent has been given freely and voluntarily. A copy of the Informed Consent Form (ICF) and the Information Sheet has been provided to the participant.

Appendix 7: Topic guide for adult Nigerians

University of Bedfordshire
Institute for Health Research

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

Section 1: Introduction

- Thank you for taking the time to take part in this interview.
- My name is Peter Ochepo. I would like to explore your perceptions and attitudes in relation to delay in health-seeking behaviours for malaria treatment among adults within the context of Makurdi. This will help to identify areas to provide recommendations to improve prompt health-seeking for malaria treatment in the future.
- I am interviewing a cross-section of purposively selected participants including, adult Nigerians (lay participants), healthcare professionals, traditional health practitioners and policy makers in the Ministry of Health.
- This research is funded by the Petroleum Technology Development Fund (PTDF).
- I would like to reassure you that this interview is confidential. This means that your responses will be shared only with the research team members. We will ensure that any information included in our report does not identify you as the respondent.
- You have provided audio/oral consent about your willingness to take part. I want to remind you that you may withdraw from this research at any time. My contact information is provided on the participant information sheet if you have any questions or concerns do not hesitate to ask me.
- I have also requested your permission to audio-record this interview so that your responses can be transcribed later. The interview may last for approximately 60 minutes and recording it will provide a more accurate representation of your responses to the questions. Recording will also facilitate my analysis of the data during the course of this project.
- Please feel free to discuss your views openly during the interview. From time to time, I may ask for further clarification to assist me in understanding your response. Please remember, all responses are confidential.
- If you do not have any further questions, I would like to briefly introduce you to the subject of this interview. Thank you for sharing your thoughts with me. Let us begin.

Section 2: Interview questions

1. Experience of malaria

I would like to ask about your experience of malaria.

- *Tell me about one of your experience with malaria? (Probe for: action taken* (Dave-Agboola and Raji, 2018)*; and why* (Dembo, 2012; Latunji and Akinyemi, 2018); *what other action would you have taken* (Chukwuocha et al., 2014, 2015)*; Frequency of malaria attack?* (Bello and Rehal, 2014; Chukwurah et al., 2016; Mitiku and Assefa, 2017)*; why do you think it is so?* (Mitiku and Assefa, 2017); *prevalence of malaria in Makurdi* (Jombo et al., 2010), and *why is it so?*
- *How do you know you have malaria (signs and symptoms) (probing for: How severe can malaria be? (Explain more)* (Dembo, 2012; Mafuleka, 2017; Udenweze, 2019) *description of causes and transmission* (Agu and Nwojiji, 2005; Das et al., 2018).

2. Perceptions about malaria and influence on effective care-seeking

I would like to talk about your/people's perceptions of malaria.

- *How is malaria perceived by people in Makurdi (probe for preventive* (Laar, Laar and Dalinjong, 2013; Oladimeji et al., 2018)*; cure* (Mwaka et al., 2018; Ghazali, Bello and Kola-Mustapha, 2019)*; seriousness* (Asante et al., 2010; Adewoye et al., 2019)*; susceptibility* (Dembo, 2012; Mpimbaza et al., 2018).
- *How can these perceptions influence attitude to health-seeking (probe for delayed care-seeking* (Dembo, 2012; Watanabe, 2014; Mitiku and Assefa, 2017)*; influence alternative treatment-seeking* (Millar et al., 2014; Adekannbi, 2018; Mwaka et al., 2018); *increased prevalence and mortality rate* (Dembo, 2012).
- *How can perceptions about malaria be improved to encourage prompt care-seeking in Makurdi (probe for health advocacy programmes* (Adigun, 2013; Adhikari et al., 2019)*; increased health talks at health centres* (Mafuleka, 2017; Udenweze, 2019).

3. Perceived efficacy to malaria treatment

I would like you to discuss about your perceptions on effectiveness to malaria treatment

- *How has your perceptions influence your choice of treatment (probe for: treatment options in Makurdi* - (Chukwuocha et al., 2014, 2015; Dalaba et al., 2018), *herbal* (Egharevba et al., 2015; Adekannbi, 2018), health facilities (Anthony, 2018; Uzochukwu et al., 2018), *religious centres* (Abubakar et al., 2013); *differentiate between traditional and formal health services* (Dembo, 2012).
- *Why do you think people should be encouraged to seek timely treatment (probe for: complication and subsequent death* (Mafuleka, 2017; Dave-Agboola and Raji, 2018; Udenweze et al., 2019)*; reduce treatment cost* (Okeke and Okafor, 2008; Getahun, Deribe and Deribew, 2010).

- *How you can explain delay to health-seeking (Dembo, 2012; Dave-Agboola and Raji, 2018)* (*probe for: What are the various perceptions of people causing treatment delays in Makurdi* (Okeke and Okafor, 2008).
- *In your view, what is effective treatment for malaria* (Dembo, 2012; Watanabe, 2014; Latunji and Akinyemi, 2018).

4. Perceived benefits of effective treatment-seeking for malaria

I would like to ask your opinions on the benefits of accessing effective malaria treatment

- *In your own view what do you perceive as some of the benefits of effective health-seeking for malaria (probe for: reduced treatment cost* (Onwujekwe et al., 2008; Dembo, 2012); *reduced complications* (relief) *and death* (Jombo et al., 2010).
- *How do you think combining traditional and formal health services is beneficial for malaria treatment (probe for: faster healing* (Abubakar et al., 2013); *saves money* (Uzochukwu and Onwujekwe, 2004; Okeke and Okeibunor, 2010); *cultural/religious stance (How do you think culture influences people's perceptions and in turn their HSB)* (Dembo, 2012; Abubakar et al., 2013).
- *Why do you think a person will prefer traditional treatment over formal health service (probe for confidence/trust* (Dembo, 2012; Abubakar et al., 2013; Dave-Agboola and Raji, 2018); *knowledge and perceptions about its effectiveness* (Beer et al., 2012; Latunji and Akinyemi, 2018).
- *How can the concern of the side-effect of utilizing formal health sector service influence delay to seeking treatment (probe for: in pregnancy* (Iriemenam et al., 2011)*; in children under-five* (Chukwuocha et al., 2014, 2015); *amongst the elderly* (Than, Min and Aung, 2019); *complications – ask for e.gs. stillbirth, blindness* (Dawaki et al., 2016).

5. Perceived barriers to effective malaria treatment

I would like to ask your views on the barriers to prompt and effective health-seeking for malaria treatment in Makurdi

- *Barriers challenging effective health-seeking behaviours for malaria in Makurdi (probe for inadequate knowledge* (Gobir, Sambo and Hadejia, 2014)*; Getting used to the signs and symptoms makes people to treat the wrong disease thinking it was malaria (drug resistance); socio-economic status* (Onwujekwe et al., 2008)*; community/cultural beliefs and perceptions* (Dembo, 2012)*; geographical/proximity issues* (Chinweuba et al., 2017); *healthcare professional's attitudes* (Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018; Udenweze, 2019); *medication stock-out* (Uzochukwu and Onwujekwe, 2004)*; lack of health workers* (Laar , Laar and Dalinjong, 2010).
- *Can you explain to me how perceptions about malaria treatment can influence a person's attitudes towards health-seeking* (Chukwuocha et al., 2014, 2015)?

Section 3: Closure.

- We have been able to cover a deal of ground. I am very grateful to you for being patient with me. Your views are very important to us.
- Do you think there is anything we have missed out?
- Do you have any other comments, suggestions or questions about what we have discussed or about the research as a whole?
- We will send your interview transcript to you so you can confirm your accuracy.
- We will send you a summary of the research findings sometime in the year, 2020 to review and make any changes you thought would be necessary.
- You are welcome to have a full copy of the final report too after I finish with my study.

Thank participant for their contribution, stress confidentiality.

Appendix 8: Topic guide for healthcare professionals

University of Bedfordshire
Institute for Health Research

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

Section 1: Introduction

- Thank you for taking the time to meet with me today.
- My name is Peter Ochepo. I would like to explore your perceptions and attitudes in relation to delay in health-seeking behaviours for malaria treatment among adults within the context of Makurdi. This will help to identify areas to provide recommendations to improve prompt health-seeking for malaria treatment in the future.
- I am interviewing a cross-section of purposively selected participants including, adult Nigerians (lay participants), healthcare professionals, traditional health practitioners and policy makers in the Ministry of Health.
- This research is funded by the Petroleum Technology Development Fund (PTDF).
- I would like to reassure you that this interview is confidential. This means that your responses will be shared only with research team members. We will ensure that any information included in our report does not identify you as the respondent.
- You have signed a consent form (electronically) which outlines your rights as a study participant, and have also provided audio consent indicating also your willingness to take part. I want to remind you that you may withdraw from this research at any time. My contact information is provided on both the participants information sheet and informed consent sheet if you have any questions or concerns.
- I have requested your permission to audio-record this interview so that your responses can be transcribed later. The interview should last for approximately 60-90 minutes and recording it will provide a more accurate representation of your responses to the questions. Recording will also facilitate my analysis of the data during the course of this project.
- Please feel free to discuss your views openly during the interview. From time to time, I may ask for further clarification to assist me in understanding your response. Please remember, all responses are confidential.
- If you do not have any further questions, I would like to briefly introduce you to the subject of this interview. Thank you for sharing your thoughts with me. Let us begin.

Section 2: Interview questions

1. Care pathways for malaria treatment in Nigeria

a. *I would like to ask you about the care pathways for malaria treatment in Nigeria.*

- *How have the Nigeria care system evolved over years (probe for: developmental stages (Egharevba et al., 2015); historical records (Egharevba et al., 2015); describe the progress so far (Daramola, Adesina and Akande, 2019; innocent, 2019); projections for malaria treatment (Adepoju, Opafunso and Ajayi, 2018; Raji et al., 2019); challenges faced/facing (Egharevba et al., 2015; Benson and Egbwole, 2018; Onyima, 2018).*
- *How can you explain the different care pathways available in Nigeria for malaria treatment (probe for: formal and informal pathways – ask for e.gs such as traditional, spiritualists, healthcare facilities (Egharevba et al., 2015; Oseni, Robinson and Fong, 2018; Awojobi, 2019; Raji et al., 2019)*
- *How are these services rendered in Nigeria (probe for: home remedies/services (Egharevba et al., 2015; Akande, 2019); self-care (Innocent, 2019); hospital/clinic services (Egharevba et al., 2015; Innocent, 2019); traditional services (Akande, 2019; Awojobi, 2019).*
- *How do you think these care pathways associate with each other in their provision of care (probe for: identify the care providers (Egharevba et al., 2015; Raji et al., 2019); nationally recognised – ask for reason(s) (Egharevba et al., 2015); the role you play (Egharevba et al., 2015).*
- *How can the informal care pathways influence an individual's perceptions and attitudes toward effective health-seeking (probe for: delayed effective treatment (Benson and Egbwole, 2018; Onyima, 2018); burden on health providers (Dave-Agboola and Raji, 2018); resultant complications to hospitals (Chukwuocha et al., 2015); often deaths (Dembo, 2012; Watanabe, 2014, Deressa and Hailemariam, 2018); financial burden caused by delay (Onwujekwe et al., 2008)*
- *What is the reaction of the government about these informal care providers (probe for: available regulations/policies (Egharevba et al., 2015; Daramola, Adesina and Akande, 2019; Innocent, 2019; Raji et al., 2019); private hospital efforts (Egharevba et al., 2015).*
- *From your view what needs to be done to bring to an end (if at all possible) the menace caused by these existing informal sector providers in Makurdi (probe for: increased health advocacy (Anthony, 2018; Onyima, 2018); encouraging frequent health checks (Anthony, 2018); reduced treatment cost (Innocent, 2019); improve manpower (Egharevba et al., 2015); improve proximity (Egharevba et al., 2015).*

b.

- *I would like to request your assistance on any health document that could be of help to me in obtaining more information on the care pathways for malaria treatment in Nigeria?*
- *Can you as well direct me to any relevant material that provides information on the care pathways for malaria treatment in Nigeria?*

2. Experience of malaria

I would like to ask about your experience of malaria.

- *Tell me about one of your experience with malaria? (Probe for: action taken* (Dave-Agboola and Raji, 2018)*; and why* (Dembo, 2012; Latunji and Akinyemi, 2018); *what other action would you have taken* (Chukwuocha et al., 2014, 2015)*; Frequency of malaria attack?* (Bello and Rehal, 2014; Chukwurah et al., 2016; Mitiku and Assefa, 2017)*; why do you think it is so?* (Mitiku and Assefa, 2017); *prevalence of malaria in Makurdi* (Jombo et al., 2010), and *why is it so?*
- *How do you know you have malaria (signs and symptoms) (probing for: How severe can malaria be? (Explain more)* (Dembo, 2012; Mafuleka, 2017; Udenweze, 2019) *description of causes and transmission* (Agu and Nwojiji, 2005; Das et al., 2018).

3. Perceptions about malaria and influence on effective care-seeking

I would like to talk about your/people's perceptions of malaria.

- *How is malaria perceived by people in Makurdi (probe for preventive* (Laar, Laar and Dalinjong, 2013; Oladimeji et al., 2018)*; cure* (Mwaka et al., 2018; Ghazali, Bello and Kola-Mustapha, 2019)*; seriousness* (Asante et al., 2010; Adewoye et al., 2019)*; susceptibility* (Dembo, 2012; Mpimbaza et al., 2018).
- *How can these perceptions influence attitude to health-seeking (probe for delayed care-seeking* (Dembo, 2012; Watanabe, 2014; Mitiku and Assefa, 2017)*; influence alternative treatment-seeking* (Millar et al., 2014; Adekannbi, 2018; Mwaka et al., 2018); *increased prevalence and mortality rate* (Dembo, 2012).
- *How can perceptions about malaria be improved to encourage prompt care-seeking in Makurdi (probe for health advocacy programmes* (Adigun, 2013; Adhikari et al., 2019)*; increased health talks at health centres* (Mafuleka, 2017; Udenweze, 2019).

4. Perceived efficacy to malaria treatment

I would like you to discuss about your perceptions on effectiveness to malaria treatment

- *How has your perceptions influence your choice of treatment (probe for: treatment options in Makurdi* - (Chukwuocha et al., 2014, 2015; Dalaba et al., 2018), *herbal* (Egharevba et al., 2015; Adekannbi, 2018), health facilities (Anthony, 2018; Uzochukwu et al., 2018), *religious centres* (Abubakar et al., 2013); *differentiate between traditional and formal health services* (Dembo, 2012).
- *Why do you think people should be encouraged to seek timely treatment (probe for: complication and subsequent death* (Mafuleka, 2017; Dave-Agboola and Raji, 2018; Udenweze et al., 2019)*; reduce treatment cost* (Okeke and Okafor, 2008; Getahun, Deribe and Deribew, 2010).

- *How you can explain delay to health-seeking (Dembo, 2012; Dave-Agboola and Raji, 2018)* (*probe for: What are the various perceptions of people causing treatment delays in Makurdi* (Okeke and Okafor, 2008).
- *In your view, what is effective treatment for malaria* (Dembo, 2012; Watanabe, 2014; Latunji and Akinyemi, 2018).

5. Perceived benefits of effective treatment-seeking for malaria

I would like to ask your opinions on the benefits of accessing effective malaria treatment

- *In your own view what do you perceive as some of the benefits of effective health-seeking for malaria (probe for: reduced treatment cost* (Onwujekwe et al., 2008; Dembo, 2012); *reduced complications* (relief) *and death* (Jombo et al., 2010).
- *How do you think combining traditional and formal health services is beneficial for malaria treatment (probe for: faster healing* (Abubakar et al., 2013); *saves money* (Uzochukwu and Onwujekwe, 2004; Okeke and Okeibunor, 2010); *cultural/religious stance (How do you think culture influences people's perceptions and in turn their HSB)* (Dembo, 2012; Abubakar et al., 2013).
- *Why do you think a person will prefer traditional treatment over formal health service (probe for confidence/trust* (Dembo, 2012; Abubakar et al., 2013; Dave-Agboola and Raji, 2018); *knowledge and perceptions about its effectiveness* (Beer et al., 2012; Latunji and Akinyemi, 2018).
- *How can the concern of the side-effect of utilizing formal health sector service influence delay to seeking treatment (probe for: in pregnancy* (Iriemenam et al., 2011)*; in children under-five* (Chukwuocha et al., 2014, 2015); *amongst the elderly* (Than, Min and Aung, 2019); *complications – ask for e.gs. stillbirth, blindness* (Dawaki et al., 2016).

6. Perceived barriers to effective malaria treatment

I would like to ask your views on the barriers to prompt and effective health-seeking for malaria treatment in Makurdi

- *Barriers challenging effective health-seeking behaviours for malaria in Makurdi (probe for inadequate knowledge* (Gobir, Sambo and Hadejia, 2014)*; Getting used to the signs and symptoms makes people to treat the wrong disease thinking it was malaria (drug resistance); socio-economic status* (Onwujekwe et al., 2008)*; community/cultural beliefs and perceptions* (Dembo, 2012)*; geographical/proximity issues* (Chinweuba et al., 2017); *healthcare professional's attitudes* (Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018; Udenweze, 2019); *medication stock-out* (Uzochukwu and Onwujekwe, 2004)*; lack of health workers* (Laar , Laar and Dalinjong, 2010).
- *Can you explain to me how perceptions about malaria treatment can influence a person's attitudes towards health-seeking* (Chukwuocha et al., 2014, 2015)?

Section 3: Closure.

- We have been able to cover a deal of ground. I am very grateful to you for being patient with me. Your views are very important to us.
- Do you think there is anything we have missed out?
- Do you have any other comments, suggestions or questions about what we have discussed or about the research as a whole?
- We will send your interview transcript to you so you can confirm your accuracy.
- We will send you a summary of the research findings sometime in the year, 2020 to review and make any changes you thought would be necessary.
- You are welcome to have a full copy of the final report too after I finish with my study.

Thank participant for their contribution, stress confidentiality.

Appendix 9: Topic guide for MOH policy makers

University of Bedfordshire
Institute for Health Research

Research title:

Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria

Section 1: Introduction

- Thank you for taking the time to meet with me today.
- My name is Peter Ochepo. I would like to explore your perceptions and attitudes in relation to delay in health-seeking behaviours for malaria treatment among adults within the context of Makurdi. This will help to identify areas to provide recommendations to improve prompt health-seeking for malaria treatment in the future.
- I am interviewing a cross-section of purposively selected participants including, adult Nigerians (lay participants), healthcare professionals, traditional health practitioners and policy makers in the Ministry of Health.
- This research is funded by the Petroleum Technology Development Fund (PTDF).
- I would like to reassure you that this interview is confidential. This means that your responses will be shared only with research team members. We will ensure that any information included in our report does not identify you as the respondent.
- You have signed a consent form (electronically) which outlines your rights as a study participant, and have also provided audio consent indicating your willingness to take apart. I want to remind you that you may withdraw from this research at any time. My contact information is provided on both the participants information sheet and informed consent sheet if you have any questions or concerns.
- I have requested your permission to audio-record this interview so that your responses can be transcribed later. The interview should last for approximately 60-90 minutes and recording it will provide a more accurate representation of your responses to the questions. Recording will also facilitate my analysis of the data during the course of this project.
- Please feel free to discuss your views openly during the interview. From time to time, I may ask for further clarification to assist me in understanding your response. Please remember, all responses are confidential.
- If you do not have any further questions, I would like to briefly introduce you to the subject of this interview. Thank you for sharing your thoughts with me. Let us begin.

Section 2: Interview questions

1. Care pathways for malaria treatment in Nigeria

a. *I would like to ask you about the care pathways for malaria treatment in Nigeria.*

- *How have the Nigeria care system evolved over years (probe for: developmental stages (Egharevba et al., 2015); historical records (Egharevba et al., 2015); describe the progress so far (Daramola, Adesina and Akande, 2019; innocent, 2019); projections for malaria treatment (Adepoju, Opafunso and Ajayi, 2018; Raji et al., 2019); challenges faced/facing (Egharevba et al., 2015; Benson and Egbwole, 2018; Onyima, 2018).*
- *How can you explain the different care pathways available in Nigeria for malaria treatment (probe for: formal and informal pathways – ask for e.gs such as traditional, spiritusalists, home remedies healthcare facilities (Egharevba et al., 2015; Oseni, Robinson and Fong, 2018; Awojobi, 2019; Raji et al., 2019)*
- *How are these services rendered in Nigeria (probe for: home remedies/services (Egharevba et al., 2015; Akande, 2019); self-care (Innocent, 2019); hospital/clinic services (Egharevba et al., 2015; Innocent, 2019); effectiveness of services (Akande, 2019; Awojobi, 2019).*
- *How do you think these care pathways associate with each other in their provision of care (probe for: identify the care providers (Egharevba et al., 2015; Raji et al., 2019); nationally recognised – ask for reason(s) (Egharevba et al., 2015); the role you play (Egharevba et al., 2015).*
- *How have the various informal care pathways influenced an individual's perceptions and attitudes toward health-seeking (probe for: delayed effective treatment (Benson and Egbwole, 2018; Onyima, 2018); burden on health providers (Dave-Agboola and Raji, 2018); resultant complications to hospitals (Chukwuocha et al., 2015); often deaths (Dembo, 2012; Watanabe, 2014, Deressa and Hailemariam, 2018); financial burden caused by delay (Onwujekwe et al., 2008)*
- *What is the government's reactions to these other informal care provisions (probe for: available regulations/policies (Egharevba et al., 2015; Daramola, Adesina and Akande, 2019; Innocent, 2019; Raji et al., 2019); private hospital efforts (Egharevba et al., 2015).*
- *From your view what needs to be done to bring to an end (if at all possible) the menace caused by these existing informal sector providers in Makurdi (probe for: increased health advocacy (Anthony, 2018; Onyima, 2018); encouraging frequent health checks (Anthony, 2018); reduced treatment cost (Innocent, 2019); improve manpower (Egharevba et al., 2015); improve proximity (Egharevba et al., 2015).*

b.

- *I would like to request your assistance on any health document that could be of help to me in obtaining more information on the care pathways for malaria treatment in Nigeria?*
- *Can you as well direct me to any relevant material that provides information on the care pathways for malaria treatment in Nigeria?*

2. Experience of malaria

I would like to ask about your experience of malaria.

- *Tell me about one of your experience with malaria? (Probe for: action taken* (Dave-Agboola and Raji, 2018)*; and why* (Dembo, 2012; Latunji and Akinyemi, 2018); *what other action would you have taken* (Chukwuocha et al., 2014, 2015)*; Frequency of malaria attack?* (Bello and Rehal, 2014; Chukwurah et al., 2016; Mitiku and Assefa, 2017)*; why do you think it is so?* (Mitiku and Assefa, 2017); *prevalence of malaria in Makurdi* (Jombo et al., 2010), and *why is it so?*
- *How do you know you have malaria (signs and symptoms) (probing for: How severe can malaria be? (Explain more)* (Dembo, 2012; Mafuleka, 2017; Udenweze, 2019) *description of causes and transmission* (Agu and Nwojiji, 2005; Das et al., 2018).

3. Perceptions about malaria and influence on effective care-seeking

I would like to talk about your/people's perceptions of malaria.

- *How is malaria perceived by people in Makurdi (probe for preventive* (Laar, Laar and Dalinjong, 2013; Oladimeji et al., 2018)*; cure* (Mwaka et al., 2018; Ghazali, Bello and Kola-Mustapha, 2019)*; seriousness* (Asante et al., 2010; Adewoye et al., 2019)*; susceptibility* (Dembo, 2012; Mpimbaza et al., 2018).
- *How can these perceptions influence attitude to health-seeking (probe for delayed care-seeking* (Dembo, 2012; Watanabe, 2014; Mitiku and Assefa, 2017)*; influence alternative treatment-seeking* (Millar et al., 2014; Adekannbi, 2018; Mwaka et al., 2018); *increased prevalence and mortality rate* (Dembo, 2012).
- *How can perceptions about malaria be improved to encourage prompt care-seeking in Makurdi (probe for health advocacy programmes* (Adigun, 2013; Adhikari et al., 2019)*; increased health talks at health centres* (Mafuleka, 2017; Udenweze, 2019).

4. Perceived efficacy to malaria treatment

I would like you to discuss about your perceptions on effectiveness to malaria treatment

- *How has your perceptions influence your choice of treatment (probe for: treatment options in Makurdi* - (Chukwuocha et al., 2014, 2015; Dalaba et al., 2018), *herbal* (Egharevba et al., 2015; Adekannbi, 2018), health facilities (Anthony, 2018; Uzochukwu et al., 2018), *religious centres* (Abubakar et al., 2013); *differentiate between traditional and formal health services* (Dembo, 2012).
- *Why do you think people should be encouraged to seek timely treatment (probe for: complication and subsequent death* (Mafuleka, 2017; Dave-Agboola and Raji, 2018; Udenweze et al., 2019)*; reduce treatment cost* (Okeke and Okafor, 2008; Getahun, Deribe and Deribew, 2010).

- *How you can explain delay to health-seeking (Dembo, 2012; Dave-Agboola and Raji, 2018)* (*probe for: What are the various perceptions of people causing treatment delays in Makurdi* (Okeke and Okafor, 2008).
- *In your view, what is effective treatment for malaria* (Dembo, 2012; Watanabe, 2014; Latunji and Akinyemi, 2018).

5. Perceived benefits of effective treatment-seeking for malaria

I would like to ask your opinions on the benefits of accessing effective malaria treatment

- *In your own view what do you perceive as some of the benefits of effective health-seeking for malaria (probe for: reduced treatment cost* (Onwujekwe et al., 2008; Dembo, 2012); *reduced complications* (relief) *and death* (Jombo et al., 2010).
- *How do you think combining traditional and formal health services is beneficial for malaria treatment (probe for: faster healing* (Abubakar et al., 2013); *saves money* (Uzochukwu and Onwujekwe, 2004; Okeke and Okeibunor, 2010); *cultural/religious stance (How do you think culture influences people's perceptions and in turn their HSB)* (Dembo, 2012; Abubakar et al., 2013).
- *Why do you think a person will prefer traditional treatment over formal health service (probe for confidence/trust* (Dembo, 2012; Abubakar et al., 2013; Dave-Agboola and Raji, 2018); *knowledge and perceptions about its effectiveness* (Beer et al., 2012; Latunji and Akinyemi, 2018).
- *How can the concern of the side-effect of utilizing formal health sector service influence delay to seeking treatment (probe for: in pregnancy* (Iriemenam et al., 2011)*; in children under-five* (Chukwuocha et al., 2014, 2015); *amongst the elderly* (Than, Min and Aung, 2019); *complications – ask for e.gs. stillbirth, blindness* (Dawaki et al., 2016).

6. Perceived barriers to effective malaria treatment

I would like to ask your views on the barriers to prompt and effective health-seeking for malaria treatment in Makurdi

- *Barriers challenging effective health-seeking behaviours for malaria in Makurdi (probe for inadequate knowledge* (Gobir, Sambo and Hadejia, 2014)*; Getting used to the signs and symptoms makes people to treat the wrong disease thinking it was malaria (drug resistance); socio-economic status* (Onwujekwe et al., 2008)*; community/cultural beliefs and perceptions* (Dembo, 2012)*; geographical/proximity issues* (Chinweuba et al., 2017); *healthcare professional's attitudes* (Dave-Agboola and Raji, 2018; Latunji and Akinyemi, 2018; Udenweze, 2019); *medication stock-out* (Uzochukwu and Onwujekwe, 2004)*; lack of health workers* (Laar , Laar and Dalinjong, 2010).
- *Can you explain to me how perceptions about malaria treatment can influence a person's attitudes towards health-seeking* (Chukwuocha et al., 2014, 2015)?

Section 3: Closure.

- We have been able to cover a deal of ground. I am very grateful to you for being patient with me. Your views are very important to us.
- Do you think there is anything we have missed out?
- Do you have any other comments, suggestions or questions about what we have discussed or about the research as a whole?
- We will send your interview transcript to you so you can confirm your accuracy.
- We will send you a summary of the research findings sometime in the year, 2020 to review and make any changes you thought would be necessary.
- You are welcome to have a full copy of the final report too after I finish with my study.

Thank participant for their contribution, stress confidentiality.

Appendix 10: Recruitment form

University of Bedfordshire
Institute for Health Research

DD/MM/YYYY

Demographic information	Response
Participant initials:	
Age:	Years
Gender:	Male Female
Highest qualification attained:	
Occupation:	
Duration of practice:	
Name of Health facility:	
Location of facility:	
Date you were contacted:	
How long have you worked in your current facility:	
Email address:	
Mobile number:	

Thank participant for completing the recruitment form, stress confidentiality

Appendix 11: UOB research ethics approval

University of Bedfordshire
Institute for Health Research
Putteridge Bury
Hitchin Road
Luton
Beds LU2 8LE

13 July 2020

Peter Ochepo Adebo
Student number: 1514723

Dear Peter Ochepo Adebo

Re: IHREC Application No: IHREC941

Project Title:

Study Protocol: Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria.

The Ethics Committee of the Institute for Health Research has considered your application and has decided that the proposed research project should be approved with no amendments.

Please note that if it becomes necessary to make any substantive change to the research design, the sampling approach or the data collection methods a further application will be required.

Yours sincerely

Dr Yannis Pappas
Head of PhD School, Institute for Health Research
Chair of Institute for Health Research Ethics Committee

Appendix 12: UOB second ethics approval

University of Bedfordshire
Institute for Health Research
Putteridge Bury
Hitchin Road
Luton
Beds LU2 8LE

24 December 2020

Peter Ochepo Adebo
Student number: 1514723

Dear Peter Ochepo Adebo

Re: IHREC Application No: IHREC941

Project Title: Study Protocol: Perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria.

The Ethics Committee of the Institute for Health Research has considered your amended application and has decided that the proposed research project should be approved with no further changes.

Please note that if it becomes necessary to make any substantive change to the research design, the sampling approach or the data collection methods a further application will be required.

Yours sincerely

Dr Yannis Pappas
Head of PhD School, Institute for Health Research
Chair of Institute for Health Research Ethics Committee

Appendix 13a: Adult Nigerian's coding frame (perceived efficacy)

Adult Nigerian's coding frame developed and applied to the transcripts

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Effectiveness and safety
Sub-Theme	Fear of drug resistance, fakery and potential side-effects
Sub-Theme	Lack of trust and confidence in medical treatment
Sub-Theme	Comparison of health service treatment with herbal treatment
Theme	Family views and treatment pattern
Sub-Theme	Community perception and treatment pattern
Sub-Theme	Preserving cultural values/heritage
Sub-Theme	Upbringing
Theme	Convenience
Theme	People's treatment experience
Theme	Health facilities are profit ventures

Appendix 13b: Adult Nigerian's coding frame (perceived severity)

Adult Nigerian's coding frame developed and applied to the transcripts

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Commonalization of malaria
Sub-Theme	Easy to treat
Theme	Undermine the severity of malaria
Sub-Theme	Comparison with other disease
Sub-Theme	Familiarization with the signs and symptoms
Theme	Develop body immunity

Appendix 13c: Adult Nigerian's coding frame (perceived benefit)

Adult Nigerian's coding frame developed and applied to the transcripts

Themes	Description of the Themes and Sub-Themes
Theme	Prevents further complications and death
Theme	Save money
Theme	No benefit
Theme	Comparison with traditional treatment

Appendix 13d: Adult Nigerian's coding frame (perceived barriers)

Adult Nigerian's coding frame developed and applied to the transcripts

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Fear of being misdiagnosed of a different ailment
Theme	Perceived high cost of treatment at the health facility
Theme	Stories of unpleasant experiences of others who accessed health facility
Sub-Theme	Media and publicity
Sub-Theme	Health workers' behaviours towards patients
Theme	Social lifestyle and peer pressure
Sub-Theme	Adherence to previously adopted treatment pattern

Appendix 13e: Adult Nigerian's coding frame (perceived susceptibility)

Adult Nigerian's coding frame developed and applied to the transcripts

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Impossible to live without malaria
Sub-Theme	Congenital/inherited disease
Sub-Theme	Exposure to hot sunlight
Sub-Theme	Susceptibility related to stress
Sub-Theme	Susceptibility related to evil spirit
Theme	Susceptibility associated with age
Theme	Malaria is an African disease

Appendix 13f: Adult Nigerian participant's recommendations coding frame

Coding frame for adult Nigerian's recommendations developed and applied to the transcripts

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Government regulations (policies) on free malaria treatment
Sub-Theme	Health insurance for all citizens and malaria treatment subsidy
Sub-Theme	Massive health promotional campaign
Theme	Religious leaders participation as stakeholders for promoting health-seeking towards effective treatment
Theme	Recognising traditional healers as national treatment providers
Theme	disseminating research findings with all sector providers (formal and informal)

Appendix 14a: Traditional healer participant's coding frame (perceived efficacy)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Effectiveness and safety
Theme	Lack of trust and confidence in medical treatment
Theme	Family views and treatment pattern
Sub-Theme	Community perceptions and treatment pattern
Sub-Theme	Preservation of ancestral cultural practice

Appendix 14b: Traditional healer participant's coding frame (perceived severity)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Easy to treat
Sub-Theme	Severity depends on sacrilege committed
Sub-Theme	Severity depends on time taken to seek traditional help
Theme	Undermine the severity of malaria
Sub-Theme	Severity depends on gender
Sub-Theme	Severity depends on patient's pre-existing health condition

Appendix 14c: Traditional healer participant's coding frame (perceived susceptibility)

Themes	Description of the Themes
Theme	Susceptibility associated with spiritual/evil spirit
Theme	Susceptibility associated with stress

Appendix 14d: Traditional healer participant's coding frame (perceived barriers)

Themes	Description of the Themes
Theme	Fear of potential effects of using medical treatment
Theme	Good patient relationship with traditional healers
Theme	Community and cultural views of healthcare services
Theme	Behaviours of healthcare workers' towards patients
Theme	High cost of affording treatment from a health facility

Appendix 14e: Traditional healer participant's coding frame (perceived benefits)

Themes	Description of the Themes
Theme	No benefit for seeking medical treatment
Theme	Prompt herbal treatment to prevent complication and death

Appendix 14f: MOH policy maker's coding frame (perceived efficacy)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Effectiveness and safety
Sub-Theme	Fear of drug resistance and fake malaria medication
Theme	Family views and treatment pattern
Sub-Theme	Community perception and treatment pattern
Sub-Theme	Preserving cultural practices
Theme	Medical medicines are manufactured for profit purposes

Appendix 14g: MOH policy maker's coding frame (perceived severity)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Commonalization of malaria
Theme	Undermine the severity of malaria
Theme	Develop body immunity

Appendix 14h: MOH policy maker's coding frame (perceived susceptibility)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Part of human living and existence
Sub-Theme	Congenital/inherited
Sub-Theme	Susceptibility associated with genotype
Sub-Theme	Susceptibility related to spiritual attacks

Appendix 14i: MOH policy maker's coding frame (perceived barriers)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Prolong waiting hours before patients are attended to
Theme	Requesting patients to purchase medication over the counter due to shortage at the facility
Theme	Perceived high cost of treatment at the health facility
Theme	Decision of family members to either seek treatment or not
Theme	Health workers' behaviours towards patients

Appendix 14j: MOH policy maker's coding frame (perceived benefit)

Themes	Description of the Themes and Sub-Themes
Theme	Prevents further complications and death
Theme	No unique benefit when compared with traditional treatment

Appendix 14k: Healthcare professional's coding frame (perceived efficacy)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Effectiveness and safety
Sub-Theme	Lack of trust and confidence in medical treatment
Sub-Theme	Combining herbs and allopathic medicine for effective treatment
Theme	Family views and treatment pattern
Sub-Theme	Community perception and treatment pattern
Sub-Theme	Preserving cultural values/heritage

Appendix 14l: Healthcare professional's coding frame (perceived severity)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Commonalization of malaria
Sub-Theme	Familiarization with the signs and symptoms of malaria
Theme	Undermine the severity of malaria
Sub-Theme	Comparison of malaria with other disease

Appendix 14m: Healthcare professional's coding frame (perceived susceptibility)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Malaria is part of human living and existence
Sub-Theme	Congenital/inherited disease
Sub-Theme	Susceptibility associated with exposure to hot sunlight
Sub-Theme	Susceptibility related to stress
Sub-Theme	Susceptibility related to evil spirit

Appendix 14n: Healthcare professional's coding frame (perceived barriers)

Themes and Sub-Themes	Description of the Themes and Sub-Themes
Theme	Prolong waiting hours spent before patients' are attended to
Theme	Perceived high cost of treatment at the health facility
Theme	Head of family's decision to either seek treatment or not
Theme	Health workers' behaviours towards patients

Appendix 15: Recruitment letter for FMC.

The GMD

Dr P.I.

Re: Permission to undertake PhD research on the topic: *"Perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment amongst adults: A case study of Makurdi, Nigeria."*

My name is Peter Ochepo and I am currently a PhD student at the Institute for Health Research at the University of Bedfordshire, United Kingdom. My doctoral research explores perceptions and attitudes to health-sekeing delays for malaria treatment in Makurdi, Nigeria. The study has been granted ethical approval by the Institute for Health Research Ethics Committee at the University of Bedfordshire. It is funded by the Petroleum Technology Development Fund (PTDF) in Nigeria.

The study will involve undertaking semi-structured interviews conducted virtually with adult Nigerians in Makurdi, healthcare professionals, ministry of health policy makers and traditional healers. I am writing to you, as the General Medical Director to request your permission to recruit medical doctors and nurses from your facility.

I include with this letter a copy of the participant information sheet, ethics approval letter and a recruitment form (detailing your demographic profile) to be completed and emailed back to me, indicating their willingness to be contacted.

Your assistance, co-operation and time with this matter will be greatly appreciated by me and my supervisory team, as it will allow me to conduct my study and furthermore, to develop and improve scientific research in the Nigeria state.

If you have any further questions or require any additional information, please do not hesitate to contact me or my supervisors through the contact details provided at the end of this letter.

Thank you for your time and consideration.

Yours sincerely,

Mr. Peter Ochepo
PhD student
Institute for Health Research
http://www.beds.ac.uk/research/ihr
Email: peter.ochepo@study.beds.ac.uk; peterochepo15@gmail.com
M: +44 7535 625 737

The supervisory team:

Dr Anthony Farrant

Faculty Head of Quality and Practice (Acting)

Faculty of Health and Social Science (HSS)

University of Bedfordshire

Room B216, Luton Park Square

LU1 3JU

Email: Anthony.farrant@beds.ac.uk

Dr Nasreen Ali

Reader in Public Health Equality

MSc Public Health Coordinator

University of Bedfordshire

Room C206, Park Square Campus

LU1 3JU

Email: Nasreen.ali@beds.ac.uk

Appendix 16: Recruitment letter for MH

The GMD
Dr. A.I.

Re: Permission to undertake PhD research on the topic: *"Perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment amongst adults: A case study of Makurdi, Nigeria."*

My name is Peter Ochepo and I am currently a PhD student at the Institute for Health Research at the University of Bedfordshire, United Kingdom. My doctoral research explores perceptions and attitudes health-seeking delays for malaria treatment in Makurdi, Nigeria. The study has been granted ethical approval by the Institute for Health Research Ethics Committee at the University of Bedfordshire. It is funded by the Petroleum Technology Development Fund (PTDF) in Nigeria.

The study will involve undertaking semi-structured interviews conducted virtually with adult Nigerians in Makurdi, healthcare professionals, policy makers and traditional healers. I am writing to you, as the General Medical Director to request your permission to recruit medical doctors and nurses from your facility.

I include with this letter a copy of the participant information sheet, ethics approval, and recruitment form (detailing your demographic profile) which would be emailed back to me, indicating your interest to be contacted.

Your assistance, co-operation and time with this matter will be greatly appreciated by me and my supervisory team, as it will allow me to conduct my study and furthermore, to develop and improve scientific research in the Nigeria state.

If you have any further questions or require any additional information, please do not hesitate to contact me or my supervisors through the contact details provided at the end of this letter.

Thank you for your time and consideration.

Yours sincerely,

Mr. Peter Ochepo
PhD student
Institute for Health Research
http://www.beds.ac.uk/research/ihr
Email: peter.ochepo@study.beds.ac.uk
M: +44 7535 625 737

The supervisory team:

Dr Anthony Farrant

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Dr Nasreen Ali

Reader in Public Health Equality

MSc Public Health Coordinator

University of Bedfordshire

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Email: Nasreen.ali@beds.ac.uk

Appendix 17: Recruitment letter for GHM.

The GMD,

Sir/Ma,

Re: Permission to undertake PhD research on the topic: *"Perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment amongst adults: A case study of Makurdi, Nigeria."*

My name is Peter Ochepo and I am currently a PhD student at the Institute for Health Research at the University of Bedfordshire, United Kingdom. My doctoral research explores perceptions and attitudes to health-seeking delays for malaria treatment in Makurdi, Nigeria. The study has been granted ethical approval by the Institute for Health Research Ethics Committee at the University of Bedfordshire. It is funded by the Petroleum Technology Development Fund (PTDF) in Nigeria.

The study will involve undertaking semi-structured interviews conducted virtually with adult Nigerians in Makurdi, healthcare professionals, policy makers and traditional healers. I am writing to you, as the General Medical Director to request your permission to recruit medical doctors and nurses from your facility and to also undertake the interview within the hospital premises.

I include with this letter a copy of the Participant Information Sheet, ethics approval and recruitment form (detailing your demographic form, indicating to their interest to be contacted.

Your assistance, co-operation and time with this matter will be greatly appreciated by me and my supervisory team, as it will allow me to conduct my study and furthermore, to develop and improve scientific research in the Nigeria state.

If you have any further questions or require any additional information, please do not hesitate to contact me or my supervisors through the contact details provided at the end of this letter.

Thank you for your time and consideration.

Yours sincerely,

Mr. Peter Ochepo
PhD student
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The supervisory team:

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Reader in Public Health Equality
MSc Public Health Coordinator
University of Bedfordshire
Room C206, Park Square Campus
LU1 3JU
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Appendix 18: Recruitment letter for Directors at Ministry of Health

The Director,

Re: Permission to undertake PhD research on the topic: *"Perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment amongst adults: A case study of Makurdi, Nigeria."*

My name is Peter Ochepo and I am currently a PhD student at the Institute for Health Research at the University of Bedfordshire, United Kingdom. My doctoral research explores perceptions and attitudes ot health-seeking delay for malaria treatment in Makurdi, Nigeria. The study has been granted ethical approval by the Institute for Health Research Ethics Committee at the University of Bedfordshire. It is funded by the Petroleum Technology Development Fund (PTDF) in Nigeria.

The study will involve undertaking semi-structured interviews with adult Nigerians in Makurdi, healthcare professionals, policy makers and traditional healers. I am writing to you, a director working with the Ministry of Health to request your permission to recruit directors who have been recognised as policy makers from the ministry, and are directly involved in malaria treatment policy creation in Nigeria. These directors are from the following departments: National Malaria Control Programme (NMCP); Nigeria Centre for Disease Control and Prevention (NCDC), Traditional, Complementary and Alternative Medicine (TC & AM) and Primary Healthcare and Tropical Disease (PHTD).

I include with this letter a copy of the participant information sheet and ethics approval.

Your assistance, co-operation and time with this matter will be greatly appreciated by me and my supervisory team, as it will allow me to conduct my study and furthermore, to develop and improve scientific research in the Nigeria state.

If you have any further questions or require any additional information, please do not hesitate to contact me or my supervisors through the contact details provided at the end of this letter.

Thank you for your time and consideration.

Yours sincerely,

Mr. Peter Ochepo
PhD student
Institute for Health Research

http://www.beds.ac.uk/research/ihr
Email: peter.ochepo@study.beds.ac.uk
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The supervisory team:

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MSc Public Health Coordinator
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Appendix 19: Letter to The Honourable Chairman, MLG

Re: Permission to undertake PhD research on the topic: *"Perceptions and attitudes contributing to delays in health-seeking behaviours for malaria treatment amongst adults: A case study of Makurdi, Nigeria."*

My name is Peter Ochepo and I am currently a PhD student at the Institute for Health Research at the University of Bedfordshire, United Kingdom. My doctoral research explores perceptions and attitudes health-seeking delay for malaria treatment in Makurdi, Nigeria. The study has been granted ethical approval by the Institute for Health Research Ethics Committee at the University of Bedfordshire. It is funded by the Petroleum Technology Development Fund (PTDF) in Nigeria.

The study will involve undertaking face-to-face in-depth interviews with adult Nigerians in Makurdi, healthcare professionals, policy makers and traditional healers. I am writing to you, the Chairman Makurdi Local Government Council to seek for your approval to enable me recruit participants (adult Nigerians) from the town centre halls during weekly town hall meetings. Also your permission is required to undertake the interviews in the private room attached to the hall.

I include with this letter a copy of the participant information sheet, ethics approval, consent form and interview schedule.

Your assistance, co-operation and time with this matter will be greatly appreciated by me and my supervisory team, as it will allow me to conduct my study and furthermore, to develop and improve scientific research in the Nigeria state.

If you have any further questions or require any additional information, please do not hesitate to contact me or my supervisors through the contact details provided at the end of this letter.

Thank you for your time and consideration.

Yours sincerely,

Mr. Peter Ochepo
PhD student
Institute for Health Research
http://www.beds.ac.uk/research/ihr
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The supervisory team:

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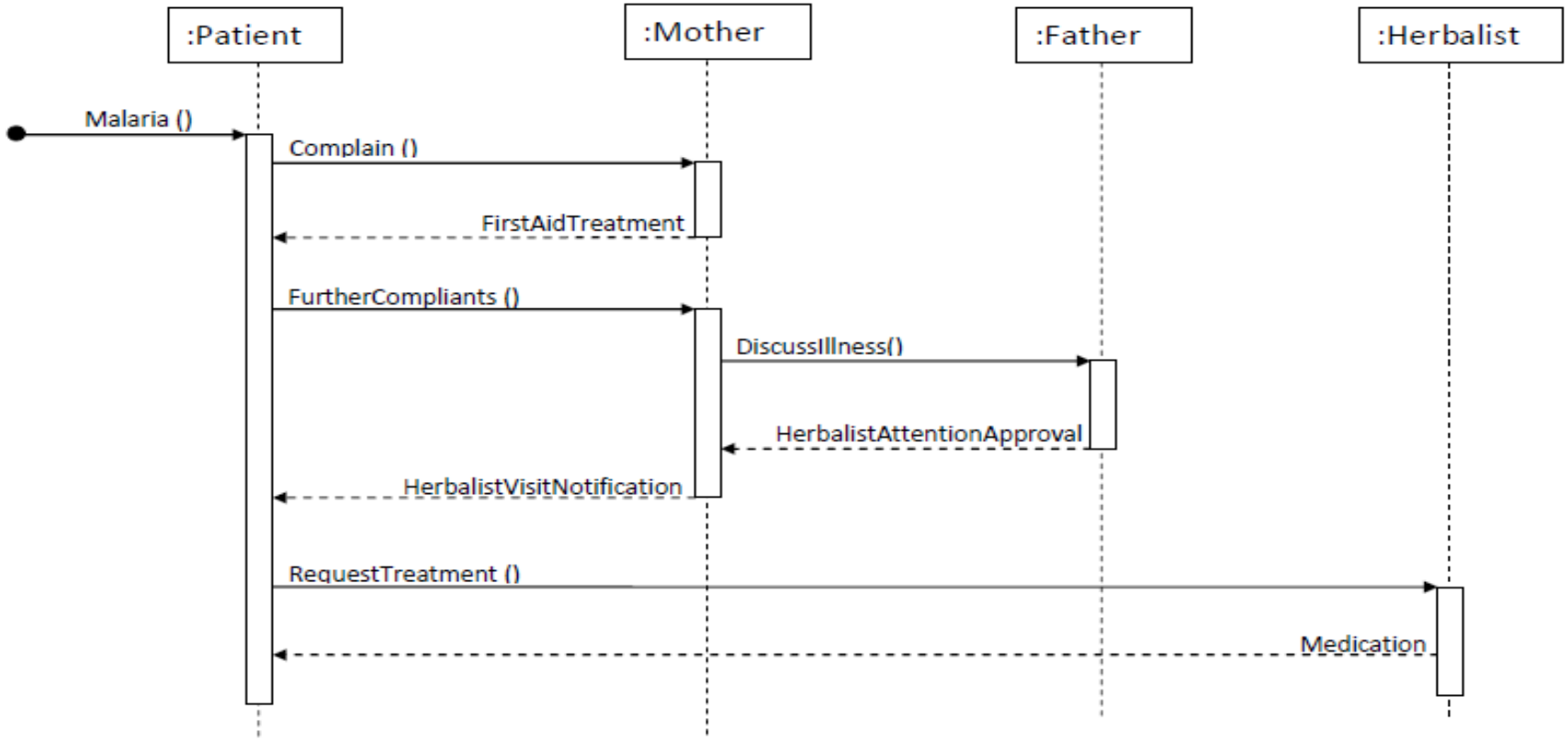
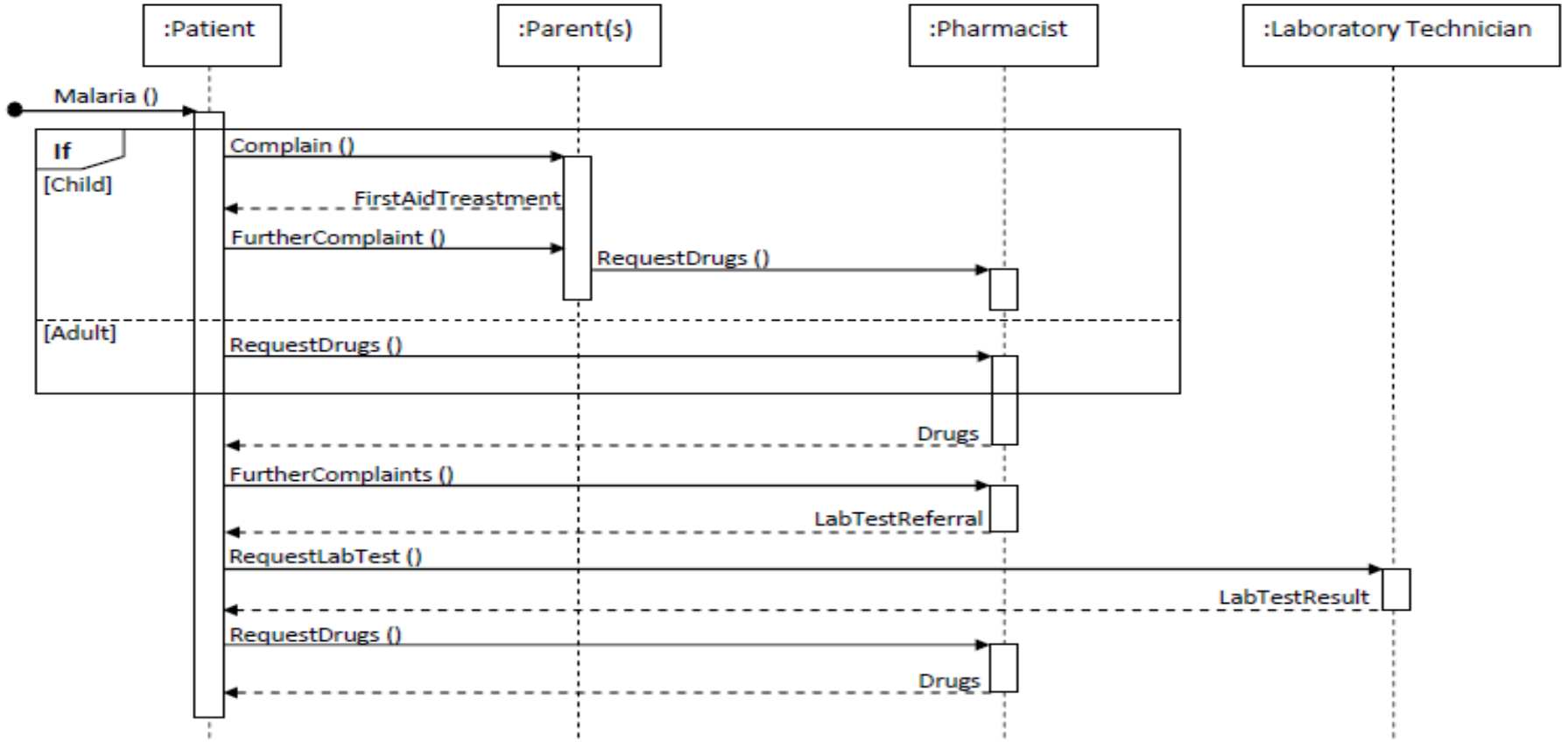
Appendix 20: Time sequence of activities in the traditional pathway for malaria treatment in Nigeria



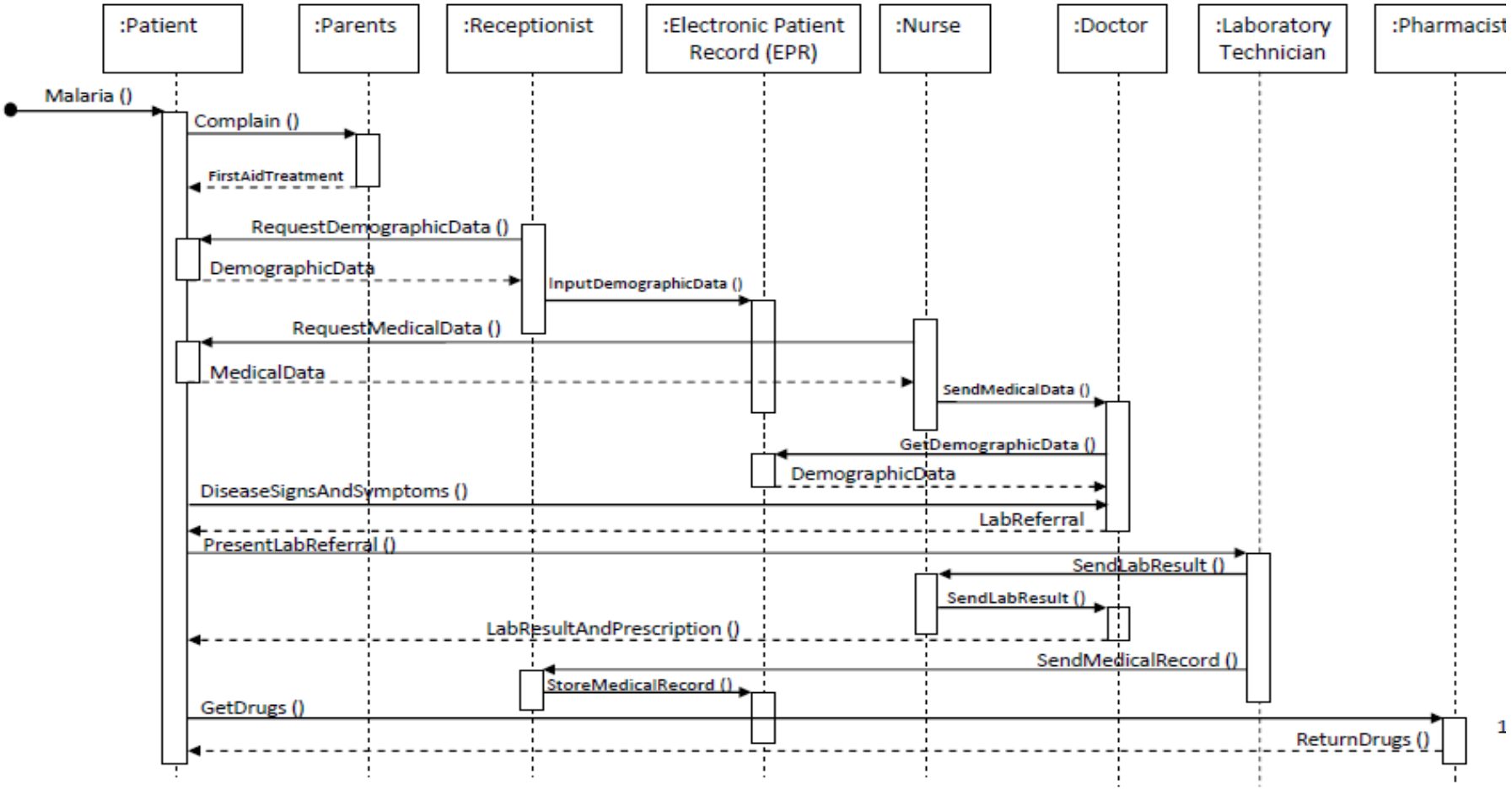
Source: Ngwum, N. (2016) Malaria Treatment Pathways (Nigeria, Uganda, Malaysia, UK)

Appendix 21: Time sequence of activities in the self-medication pathway for malaria treatment



Source: Ngwum, N. (2016) Malaria Treatment Pathways (Nigeria, Uganda, Malaysia, UK)

Appendix 22: A sequence diagram illustrating malaria treatment pathway in Nigeria.



Source: Ngwum, N. (2016) Malaria Treatment Pathways (Nigeria, Uganda, Malaysia, UK)

Appendix 23: Keywords searched for the literature review

Attitudes	**AND**	Perceptions OR belief OR thought	**AND**	Health-seeking OR treatment-seeking OR care-seeking OR help-seeking OR health behaviour OR health-seeking behaviour OR delay to health-seeking	**AND**	Healthcare service OR healthcare delivery	**AND**	Barriers OR patient-related factors OR patient delay

AND	Care pathway OR clinical pathway OR treatment pathway	**AND**	Nigeria OR Makurdi OR Africa OR sub-Sahara Africa	**AND**	Home based management	**AND**	Malaria treatment OR malaria interventions OR Intermittent Preventive Treatment