Factors Affecting Health Workforce Retention Following an In-service Training Programme in Malawi and Tanzania

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By

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Dedications

To my children

Lunyamadzo-Comfort, Moses, Jesse and Jessica.

My true inspiration.

Abstract

Mselenge Mdegela

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Background: The shortage and inequitable distribution of the health workforce in low resource settings is a barrier to attaining Universal Health Coverage. Measures to improve health workforce retention will improve availability and distribution of the health workforce, especially if healthcare workers' expectations are addressed. It is, therefore, imperative to determine patterns and factors affecting retention among healthcare workers, in relation to interventions such as in-service training, and explore perspectives of healthcare workers and policy makers to help inform policies and interventions.

Methods: A mixed-methods approach was used. A quantitative five-year longitudinal observational study of 127 healthcare workers, who had received a special in-service training course (ETATMBA), was undertaken, 46 from Malawi and 81 from Tanzania. Retrospective tracking was done for two years (2012-2014) and prospectively for three years (2015-2017) to determine retention rates. Interviews were conducted with healthcare workers and key informants from the Ministry of Health to explore their perceptions of mobility and retention. The Socio-Ecological Model was used as a framework for analysing the qualitative data. The retention pattern of healthcare workers from four facilities (case studies), two in each country was studied in-depth to provide an understanding of the study context.

Results: The retention of healthcare workers in target facilities at the end of follow-up was 46.5%(59/127). 13.4%(17/127) of participants had left the health system permanently due to death, retirement or being disqualified from practice. The remaining 51 participants left target facilities to various destinations; majority of them, (44/51) did so after graduating from the in-service training course. Three characteristics of participants were significantly associated with retention; participant's age, the age group 31-40 showing a higher retention than the rest ($p=0.003$), growing-up in a rural rather than urban setting ($p<0.001$), and duration in the job of 11 to 15 years compared to less than 10 or more than 15 ($p=0.03$). Participants from rural areas were more likely to remain in post longer, regardless of whether they were posted to a rural or urban facility. Two other aspects of retention were measured; the retention in government employment and the retention in the provision of clinical care which was 76.1%(35/46) and 69.5%(32/46) in Malawi and 72.8%(59/81) and 76.5%(62/81) in Tanzania respectively. Perspectives on factors affecting healthcare worker retention focused mainly on three aspects: individual, family and surrounding community. Whereas, the focus by key informants was mainly on two factors: individual and the national policies on human resources for health.

Conclusion: There is no standard definition for retention nor its indicators, these are needed to improve the understanding of health workforce retention. Exposure of healthcare workers to a rural setting has a strong influence on retention. In-service training improves healthcare worker's capabilities through improved competency and autonomy on the one hand, but on the other, it increases the likelihood of attrition through increased mobility as healthcare workers become eligible to more job opportunities. Although the resulting mobility can worsen workforce imbalance, it can improve it as well. An in-depth understanding of the forces at play and a clear response via policy is critical for addressing health workforce challenges in low- and-middle-income countries. There is recognition of individual factors affecting mobility and retention from the perspectives of the healthcare workers and policymakers. However, incorporating wider aspects such as family, community and societal factors at policy level may be necessary to bring about the desired changes in the human resources for health in line with the global agenda.

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Declaration

This thesis is the result of my work. The material contained in the thesis has not been presented nor it is currently being presented, either wholly or as part of any other degree or other qualification.

List of Acronyms

Acronym	Meaning
AAAQ	Availability, Accessibility, Acceptability, Quality
AIDS	Acquired Immune Deficiency Syndrome
AMO	Assistant Medical officer
CA	Clinical Assistants
CHAM	Christian Health Association of Malawi
CO	Clinical Officer
CPD	Continuous Professional Development
EmONC	Emergency Obstetric and Newborn Care
ETATMBA	Enhanced Training and Appropriate Technologies for Mothers and Babies in Africa
GHWA	Global Health Workforce Alliance
GHWN	Global Health Workforce Network
HAF	Health Action Framework
HCW	Healthcare Worker
HIV	Human Immunodeficiency Virus
HR	Human Resources
HRH	Human Resources for Health
IHI	Ifakara Health Institute
KII	Key Informant Interview
LMIC	Low- and Middle-Income Countries
LSTM	Liverpool School of Tropical Medicine
MA	Medical Attendant
MAOCO	Malawi Association of Clinical Officers

MCHA	Maternal and Child Health Aides
MCS	Malawi Case Study
MDG	Millennium Development Goals
MO	Medical Officer
MOH	Ministry of Health
NA	Nurse Attendant
NGO	Non-Governmental Organisation
NMW	Nurse-Midwife
NPC	Non-Physician Clinician
SDG	Sustainable Development Goal
SEM	Socio-Ecological Model
TB	Tuberculosis
TCS	Tanzania Case Study
UHC	Universal Health Coverage
UNFPA	United Nations Population Fund
WHO	World Health Organization
WLF	World Lung Foundation

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CHAPTER ONE: INTRODUCTION

1.0 Overview

This chapter introduces the study in five sections. The first section gives the background to the study. It states the problem and its magnitude, highlighting key issues underpinning the lack and inequitable distribution of the health workforce. It also provides a snap-shot of global initiatives that have been implemented to mitigate the health workforce deficit and inequitable distribution. The second section provides a brief description of the health workforce situation in Malawi and Tanzania. The third section presents the conceptual framework for the study. It does this by drawing on concepts from three key documents; (1) increasing access to health workers in remote and rural areas through improved retention, (2) the Health Action Framework (HAF) and (3) the Socio-Ecological Model (SEM). Section four states the rationale for the study and section five presents the research question and study objectives. The chapter ends by presenting a sketch structure of the thesis and how the six chapters interlink to convey the message of the study.

1.1 Background

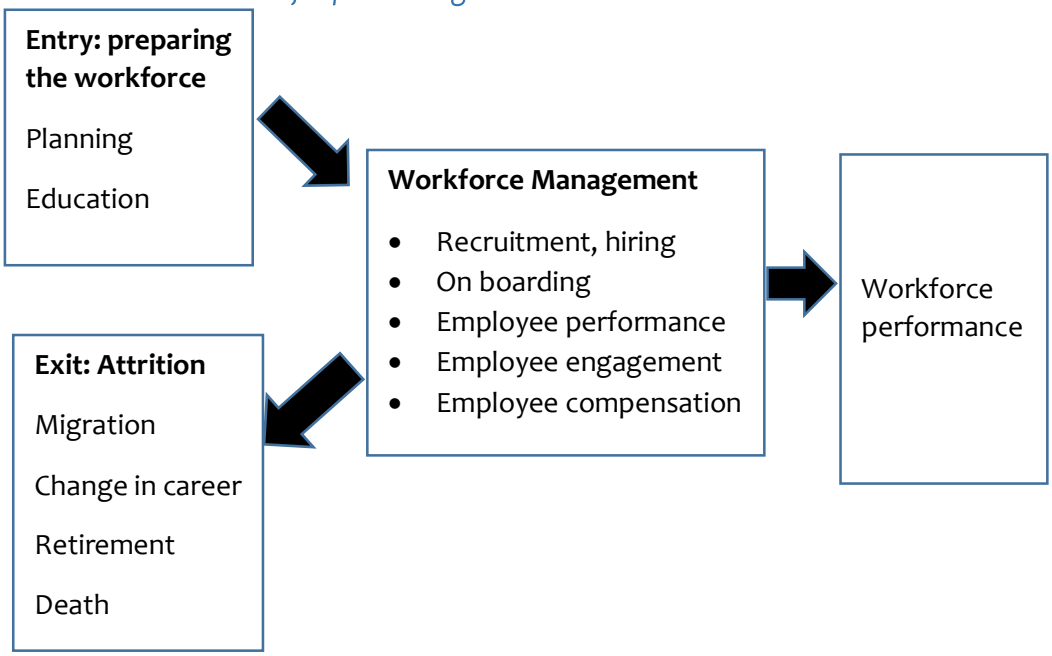
1.1.1 Introduction

The World Health Organization (WHO) considers Universal Health Coverage (UHC) central to attaining Sustainable Development Goal (SDG) three. The UHC involves provision of equitable access to all essential health care services that are of good quality without encountering financial barriers.

The health workforce is central to the functioning of health systems, and improving the health workforce leads to strengthened health systems and consequently, improved service delivery (Tangcharoensathien *et al.*, 2013, WHO, 2006).

However, health workforce is dynamic, with a constant entry and exit of healthcare workers into and out of the health system. *Figure 1.1* below illustrates healthcare worker's life-span in three key stages; entry, working and exit. Suggesting that interventions at each stage impacts the duration a healthcare worker remains in the health system (WHO, 2006).

Figure 1.1: Healthcare worker life-span strategies



Source: Working together for health, WHO 2006 (page xxi).

1.1.2 Health workforce deficit

When the World Health Organisation released the first comprehensive report on the global health workforce in 2006 the global healthcare worker deficit was estimated at 4 million (WHO 2006). The estimated deficit increased to about 7.2 million in 2013 and the projected deficit is 13 million by 2035 (Campbell, *et al.*, 2013).

Recent estimates based on the health workforce required to attain UHC shows a predicted deficit of more than 14 million by 2030, after taking into account the current human resources for health interventions in the various countries (WHO 2016a).

The availability and distribution of the health workforce obeys the inverse care law (Hart, 1971); whereby, the health workforce is more accessible and better distributed among urban and wealthy communities than rural and poor communities despite the fact that the disease burden is higher in rural and poor settings.

The lack of a qualified health workforce in sub-Saharan Africa is disproportionately higher than in other regions although it is the region with the highest burden of disease (WHO 2016a). In addition, a fast-growing population and a shift in disease pattern with the increasing incidence of non-communicable diseases and occasional epidemics often offset the gains in human resources for health achieved in this region (Campbell, *et al.*, 2013).

The long-standing human resources for health shortage in sub-Saharan Africa is further compounded by external migration of healthcare workers, and the increased likelihood of these healthcare workers suffering from diseases such as TB and HIV/AIDS often acquired from occupational exposure. Healthcare workers also work in resource poor non-enabling environment which often leads to gross inefficiency (Chen, 2010; Lehmann *et al.*, 2008).

The number of physicians, midwives and other healthcare professionals trained in most countries is inadequate to keep up with losses. A study conducted in 2011 across 47 nations in sub-Saharan Africa revealed that only 168 medical schools existed. Eleven countries had no medical school at all and 24 had only one each (Chen *et al.*, 2012). Furthermore, deployment systems are poor which means that a significant proportion of graduates are not sufficiently absorbed into the health system even when there is a critical need. Sirili et *al.* (2014) describes a "loss in transition syndrome" observed in Tanzania in which 38.1% of medical doctors who graduated from medical schools during a four-year period, (2007 to 2011), could not be deployed (Sirili *et al.*, 2014).

In addition, the inequitable distribution of the health workforce exacerbates the problem. The majority of graduating healthcare workers remain and work in urban areas leaving rural settings deprived of a qualified health workforce (Kwesigabo *et al.*, 2012; Mkoka *et al.*, 2015; Nyamtema *et al.*, 2011). External migration of healthcare workers to developed countries is not uncommon, exerting an additional strain to the heath workforce crisis in these countries (Africa Health Workforce Observatory 2009; Goodell *et al.*, 2016).

The inability to retain healthcare workers places an additional burden on the health system as it adds to expenditure such as recruiting new staff or paying overtime (*Zurn et al.*, 2005).

1.1.3 Global initiatives to improve human resources for health

This section highlights key initiatives in the human resources for health agenda at the global level from the year 2000 onwards, relevant to this study.

1.1.3.1 The Millennium Development Goals (2000 – 2015)

Of the eight Millennium Development Goals (MDGs) implemented between 2000 and 2015, MDG4 and MDG5 focused on promoting health (United Nations 2015). None of the targets for the two goals however explicitly focused on human resources for health improvement. Consequently, human resources for health was not directly addressed by

the MDGs (*Table 1.1*). This is believed to partly explain the sub-optimal achievement of MDG 4 & 5 (Victora et *al.*, 2015).

Table 1.1: Millennium Development Goals 4&5 and Indicators

Goal/Target	**Indicators**
Goal 4: Reduce child mortality	
Target 4.A: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	4.1 Under-five mortality rate 4.2 Infant mortality rate 4.3 Proportion of 1 year-old children immunised against measles
Goal 5: Improve maternal health	
Target 5.A: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio	5.1 Maternal mortality ratio 5.2 Proportion of births attended by skilled health personnel
Target 5.B: Achieve, by 2015, universal access to reproductive health	5.3 Contraceptive prevalence rate 5.4 Adolescent birth rate 5.5 Antenatal care coverage (at least one visit and at least four visits) 5.6 Unmet need for family planning

Source: https://www.who.int/topics/millennium_development_goals/en

1.1.3.2 Joint Learning Initiative Report (2004 report)

In 2004, the Joint Learning Initiative published the first comprehensive report on the global crisis of human resources for health. For the first time, the report provided global estimates of the health workforce deficit, and the inequitable distribution along with recommendations to governments on how to mobilise and strengthen human resources for health in a sustainable manner. A key problem identified in the report was healthcare migration from low- to high-income countries and from the public to the private sector within low-income countries.

A 'decade of action' was called for (2005 to 2015) to match the remaining years for the MDGs. One of the proposed actions was for governments to develop and implement strategies to improve health workforce retention and reduce the rural-urban imbalances (Joint Learning Initiative 2004).

1.1.3.3 The World Health Report and the Global Health Workforce Alliance (2006)

In 2006, the WHO published a comprehensive report on the global status of the human resources for health in the World Health Report – 2006. The report tasked countries to develop and sustain measures to ensure there was adequate health workforce to meet the MDGs. Health workforce retention was recognised as one of the key strategies. More importantly the report emphasised that interventions proposed could only be sustainable if uniquely tailored to a country's health system and the available resources (WHO 2006a).

In the same year, the WHO launched the Global Health Workforce Alliance (GHWA) to catalyse international and country efforts for improving human resources for health. The alliance was tasked to focus on the 57 countries which were in a health workforce crisis, 36 of which were in sub-Saharan Africa (WHO 2006).

The GHWA provided technical support to countries and from time to time brought together the international community to advance the human resources for health agenda at different fronts. Some of these events are mentioned below.

The Kampala Declaration in 2008 urged governments to develop realistic health workforce strategic plans. Twelve recommendations were agreed, recommendation six focused on staff retention and stated, "governments to assure adequate incentives and an enabling and safe working environment for effective retention and equitable distribution of the health workforce" (WHO 2008).

Equally, the GHWA advocated for world leaders in the G8 summit of 2008, 2009 and 2011 to commit enough resources to develop and strengthen health workforce and improve working environment for healthcare workers globally (GHWA 2009).

However, poor health workforce retention and inequitable distribution remained a concern in subsequent GHWA global forums in Bangkok 2011 and Recife 2013. Countries were urged to strengthen leadership and governance for an improved health workforce. One outcome statement from the conference in Bangkok affirms "to bolster the supply, training, retention and management of health workers, for improved availability, quality and performance" (GHWA 2012, GHWA 2013). This shows the importance with which the WHO and the global community at large place on health workforce retention. In 2016, GHWA became Global Health Workforce Network (GHWN) and retained the role of catalysing and supporting health workforce interventions to assist countries attain the UHC (WHO 2016).

1.1.3.4 WHO Global Code of Practice on international recruitment of health personnel

A key intervention proposed by the GHWA in 2010, was the development of the WHO Global Code of Practice on International Recruitment of Health Personnel which aimed to limit health workforce migration from low-to-high income countries. However, due to the lack of collective enforcement, the code has had no effect in reducing international migration of the health workforce (Bourgeault *et al.*, 2016). Active movement of healthcare workers from low-to-high income countries is still occurring, and, in some countries, at a faster rate than before the code was published (GHWA, WHO 2015).

The code was poorly publicised in most countries leading to a lack of action from donor countries, for example, to negotiate for the return of investment on the health workforce trained or ethical recruitment procedures to be followed. For example, in Sudan, where more than 50% of physicians work abroad, there is lack of incorporation of the code into national laws and medical regulatory body by-laws (Abuagla and Badr, 2016).

1.1.3.5 The WHO recommendations on increasing access to healthcare workers in remote and rural areas through improved retention (2010)

In addition to the Global Code of Practice on International Recruitment, in 2010, WHO also released evidence-based policy recommendations towards increasing access to healthcare workers in remote and rural areas through improved retention (WHO, 2010b). These recommendations are summarised in *Table 1.2* below.

The recommendations fall into four major categories; (1) education, (2) regulation, (3) financial incentives and (4) professional and personal support. The recommendations have been adopted and implemented in different countries, and have guided countries in reviewing and restructuring health workforce policies and interventions (Buchan, *et al.*, 2013, *Honda, et al.*, 2015).

These recommendations feature in health workforce polices on staff retention in Malawi and Tanzania (Ministry of Health-Malawi, 2011; Ministry of Health and Social Welfare-Tanzania, 2015).

Table 1.2: Recommendations for retention of HCW in underserved areas

Category	Recommended interventions
Education	Selecting students from rural backgrounds Establishing health professional schools outside of major cities Organise clinical rotations in rural areas during studies Develop curricula that reflect issues of rural health relevance Continuous professional development for rural health workers
Regulatory	Enhanced scope of practice Train cadres of health workers that are more retained Compulsory service (Bonding) Subsidised education for return of service
Financial Incentives	Providing appropriate financial incentives
Personal and professional support	Better living conditions Create safe and supportive working environment Outreach support Implement fair career development programmes Develop and/or strengthen professional networks Institute public recognition measures

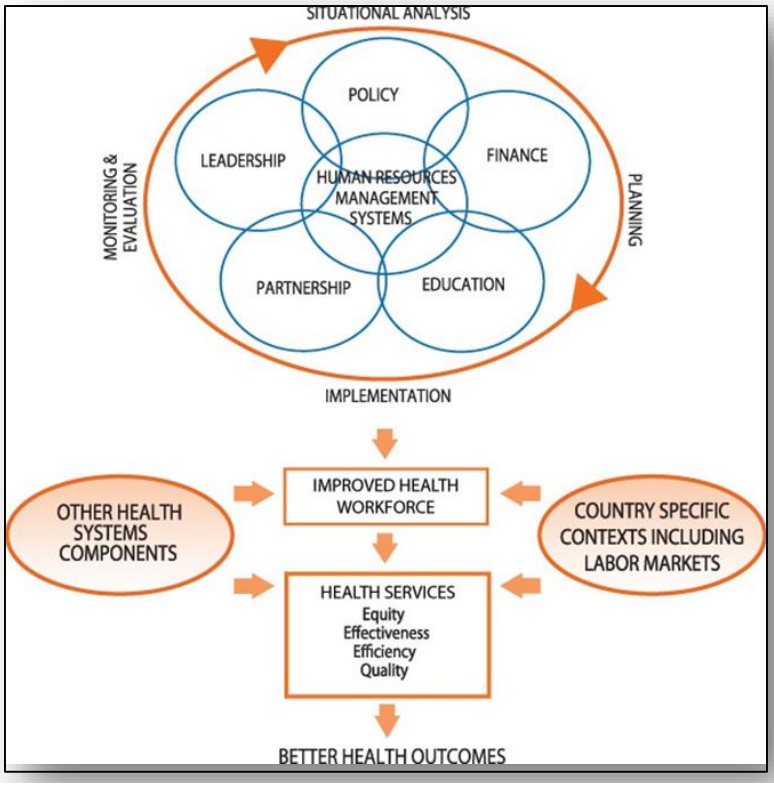
Source: Increasing access to health workers in remote and rural areas through improved retention. Global Policy Recommendations. Pages 3 & 4 (WHO, 2010b).

1.1.3.6 The Human Resources for Health Action Framework (HAF) (2010)

The Global Health Workforce Alliance (GHWA) spearheaded development of the Human Resources for Health Action Framework (HAF) together with USAID and the WHO (*Figure 1.2* below). The HAF was launched in 2010. This was an important milestone and provided a practical guide to all countries to develop (or strengthen) and implement strategies for effective and sustainable health workforce.

The framework identifies four phases of implementing any chosen action to improve the human resources for health situation; (1) situational analysis, (2) planning, (3) implementation and (4) monitoring & evaluation and recommends six main areas of action; (1) policy, (2) finance, (3) leadership, (4) partnership, (5) education, and (6) HRH management systems.

Figure 1.2: The Human Resources for Health Action Framework (HAF)



Source: www.who.int/workforcealliance/knowledge/resources/haf/en/.

The end result would be better health outcomes for all citizens by increasing the availability of health services that are equitable, effective, efficient and of good quality. The strength of this model is that it takes into consideration the existing country's context and the state of the other health system building blocks in the country and more importantly includes the aspect of partnership across all stakeholders (WHO, 2010c).

More recently WHO has incorporated the HAF into a web-based tool making it easier to use by countries in developing, implementing and evaluating country's human resources for health strategies. The tool helps to point out key areas for accountability by comparing inputs, outputs and processes.

The framework has successfully been used to analyse HRH interventions and provide tailored recommendations in several countries (Bailey *et al.*, 2015; Huicho *et al.*, 2010).

1.1.3.7 Sustainable Development Goals (SDGs) (2015 - 2030)

Health workforce retention is a key factor towards attaining UHC and achieving SDG 3. SDG3(b) is focused on "Substantially increasing health financing and the recruitment, development, training and retention of the health workforce in developing countries,

especially in least developed countries and small island developing states" (Osborn *et al.*, 2015).

UHC coverage is the index used to track progress of SDG 3 attainment. The index is formed by four tracer indicators; (1) reproductive, maternal, newborn and child health, (2) Infectious diseases, (3) non-communicable diseases, (4) service capacity and access. The fourth indicator, service capacity and access, has health workforce density as its measurement. Health workforce retention affects health workers availability and distribution and this affects health workforce density (WHO, 2016b).

1.1.3.8 Global Strategy on Human Resources for Health: Workforce 2030 (2016)

To further catalyse and guide global attainment of SDG 3 and UHC, GHWN launched Workforce 2030 in 2016.

Workforce 2030 outlines four strategic objectives: (1) to optimise performance, quality and impact of the available health workforce through evidence informed policies to meet coverage requirements, (2) to improve health workforce distribution internationally and nationally, through increased health financing, recruitment, development, training and retention, (3) to improve health workforce governance and leadership through building capacity of health workforce institutions and (4) to strengthen data on human resources for effective monitoring and accountability at national and global level (WHO, 2016a).

The second objective has a focus on training and retention. These are two key attributes in this study. The Workforce 2030 also describes the interdependence between health workforce availability, distribution (accessibility), acceptability and quality. These four dimensions of the health workforce forms the AAAQ Model of the health workforce (Campbell, *et al.*, 2013). The AAAQ Model was considered in the formulation of the conceptual framework of this study and is described further in Section 1.3.

This section has presented the magnitude of the health workforce crisis in sub-Saharan Africa and highlighted notable historical perspectives of interventions to improve health work force availability and distribution. The next section explains further the situation in Malawi and Tanzania.

1.2 Health Workforce Situation in Malawi and Tanzania and the ETATMBA programme

This section presents the status of the health workforce in Malawi and Tanzania and provides an introduction to the Enhanced Training and Appropriate Technologies for Mothers and Babies in Africa (ETATMBA) programme, the in-service training programme which was delivered to the participants who took part in this study.

1.2.1 Malawi

Malawi is a land-locked country in sub-Saharan African bordered to the north and northeast by the United Republic of Tanzania; to the east, south, and southwest by the People's Republic of Mozambique and to the west and north-west by the Republic of Zambia.

The latest census conducted in 2018 shows a population of 17.5 million (Malawi Population and Housing Census Report, 2018). With a population growth rate of 2.9, it is one of the nations with the fastest population growth rate in sub-Saharan Africa. This high population growth rate is cited a major challenge towards attaining the UHC (Malawi DHS 2015).

The country is divided into three regions; the Northern, Central, and Southern, with 28 districts. Six districts are in northern region, nine in central and 13 are in southern region. As in many other sub-Saharan African countries, the skilled health workforce is concentrated in urban rather than rural areas. The southern region is more urbanised and has a higher development index compared to the central and northern and relatively higher health workforce density. The central and northern regions bear the largest burden of disease with a relatively higher mortality rates especially maternal and newborn deaths but has a relatively lower health workforce density (Malawi DHS 2015). Therefore, the ETATMBA programme selected participants from the northern and central regions only.

In Malawi, healthcare services are provided by three main agencies; The Ministry of Health which provides about 60% of the services; the Christian Health Association of Malawi (CHAM) about 37% and the Ministry of Local Government provides about 3%. Health services are provided at three levels: primary, secondary and tertiary. At primary level, services are delivered through rural hospitals, health centres, health posts, outreach clinics and through community health workers. District hospitals and CHAM hospitals

have some specialist functions and provide some of the secondary level healthcare services. The secondary level facilities are the next referral point from primary level facilities and provide services such as minor surgeries, obstetric emergencies, general medical and paediatric in-patient care for common acute conditions. All participants who took part in this study from Malawi were clinical officers working in district hospitals. The tertiary level provides services similar to those at the secondary level along with a small range of specialist surgical and medical services (Malawi HSSP 2011-16).

The health workforce availability in Malawi is low. The physician density is 0.2 per 10,000 population while the Africa average is 2.7 per 10,000 population. Similarly, the density of midwives in Malawi is 3.4 per 10,000 population while the Africa average is 12.4 per 10,000 population (WHO 2016a).

Estimates by the United Nations Population Fund (UNFPA) in the State of the World's Midwifery Report 2014 show the following health workforce to be available: 3,037 nurse midwives, 1,033 clinical officers, 125 general physicians and 25 obstetricians; making a total of 4,220 which is only 20% of the required health workforce in Malawi (UNFPA Malawi 2014). It is evident from this data that there is critical shortage of a qualified health workforce in Malawi.

Clinical officers are also referred to as *Non-Physician Clinicians* or *Assistant Physicians.* In Malawi, clinical officers are trained for a shorter time of four years for a college diploma compared to six years for medical officers and trained to perform skills such as caesarean section, that are ordinarily performed by medical officers, a practice usually referred as task-shifting. In contrast nurses in Malawi are trained and qualify with a university BSc degree.

Task-shifting is a recognised strategy by the Ministry of Health (MOH) to alleviate physician deficit.

1.2.2 Tanzania

Tanzania is located in East Africa, boarded by the Indian Ocean in the east, by Kenya and Uganda in the north, by Rwanda, Burundi, DRC Congo, Zambia and Malawi in the west and Mozambique in the south. The population is approximately 55 million (Projection from Tanzania National Census Bureau 2012). The rural areas are huge and there are often large distances between rural communities and the towns with district hospital facilities.

Tanzania has a decentralised health services system. The Ministry of Local Government, under the President's office oversees provision of primary health care (community, dispensary and health centre level). The first referral point for primary health care is the district hospital. The MOH bears responsibility for delivery of healthcare at regional, referral and national levels.

A dispensary is the lowest level of healthcare delivery at a village level providing basic preventive and curative services. The next level is a health centre. A health centre has more equipment and staff than a dispensary and typically serves several villages. The next level is the district hospital which is the referral level for all dispensaries and health centres within the district. A region is formed by several districts and has a regional hospital which provide specialised care services. The tertiary level of health care is a referral hospital offering a full range of specialised services. There are four referral hospitals in the country, Mbeya Referral Hospital located in the south-west, Kilimanjaro Christian Medical Centre (KCMC) located in the north-east, Bugando Medical Centre (BMC) located in the northern part of the country and Muhimbili National Hospital (MNH) located within the commercial capital Dar es Salaam in the eastern part of the country (Tanzania HSSP 2016-25).

Tanzania has a health workforce density of 0.1 and 2.4 for per 10,000 population for physicians and nurses-midwives respectively. This is lower than the Africa average of 2.7 physicians and 12.4 nurses-midwives per 10,000 population respectively (WHO, 2016b). The country's target was to achieve a physician density of 10.1 per 10,000 population and a 12 per 10,000 population for nurse-midwives by December 2015 (Sirili *et al.*, 2014). However, this target was not reached.

Medical cadres include Specialist Doctors, Medical Officers (MO), Assistant Medical Officers (AMO), Clinical Officers (CO) and Clinical Assistants (CA) generally referred to as Physicians. Nurse-Midwives cadre include Specialist Nurses, Nursing Officers, Enrolled Midwives/Nurses, Maternal and Child Health Aides (MCHA) and Medical/Nurse Attendants (MA or NA). Most births are attended by nurse-midwives who form majority the health workforce.

UNFPA estimates done in 2014 for Tanzania were as follows: Nurse-Midwives 20,800, Clinical Officers 8,787, Physicians, 1135, Obstetricians, 122. A total of 30,844 healthcare workers. This was 75% of the required health workforce (UNFPA Tanzania 2016). Effective deployment of the available health workforce is a challenge and most health healthcare facilities particularly in remote settings such as in the Kigoma region from where some of

the participants for ETATMBA were selected, there is persistent staff shortage (Sirili *et al.*, 2014).

AMOs and Clinical Officers, also referred to as Non-Physician Clinicians (NPCs), provide care in most rural dispensaries and Health Centres.

1.2.3 The Intervention: ETATMBA programme

ETATMBA programme was implemented from 2011 to 2014 in Malawi and Tanzania. Five institutions were involved in implementing this programme; the University of Warwick in the United Kingdom, Karolinska University in Sweden, Malawi College of Health Sciences in Malawi, Ifakara Health Institute (IHI) in Tanzania and the MOH in Malawi. The programme recruited Clinical Officers, AMOs and Nurse-Midwives from selected facilities located in rural and remote, hard-to-serve areas in the two countries.

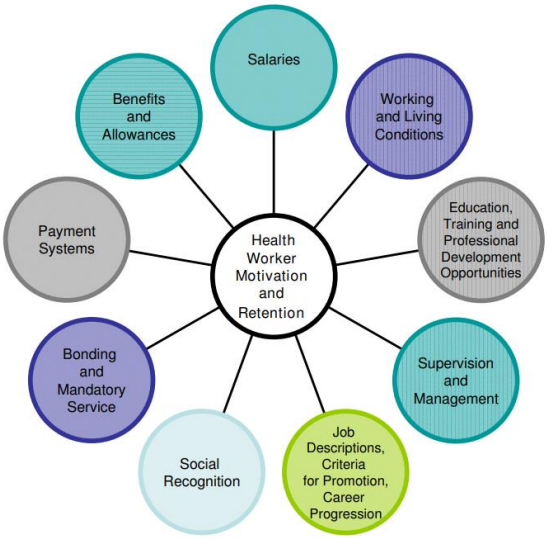
Through the programme, participants received training in emergency obstetric and newborn care, leadership skills and supportive supervision. In Tanzania, the intention of the programme was to upgrade rural facilities to allow operative delivery particularly caesarean section to be performed and to train staff to run these. However, the upgrading of facilities was not successful in most target facilities and some staff were redeployed. The overall objective of ETATMBA was to improve health outcomes through the improved functionality of facilities from which these healthcare workers were recruited (Ellard *et al.*, 2012).

This study tracks these healthcare workers for a period of five years to determine their retention within, and mobility across the local health system and explores their experiences and opinions on retention through qualitative methods. Detailed information on ETATMBA programme is given in the methodology chapter Section 3.2.

1.3. The Conceptual Framework

Health workforce retention is a commonly discussed subject, yet it lacks an internationally agreed definition. Retention is usually linked to motivation and generally refers to a longer duration in the job by employees when their skills and expertise are still needed (Henderson and Tulloch, 2008). Retention is linked to a stronger job engagement, higher efficiency and productivity and can be influenced by many factors that are within an individual or the surrounding environment. Some possible factors that may influence employee's retention are illustrated in *Figure 1.3* below.

Figure 1.3: Factors affecting healthcare worker motivation and retention



Source: Henderson and Tulloch, 2008.

To better define health workforce retention and relate this to in-service training, the study draws concepts from four key documents; (1) Increasing access to healthcare workers in remote and rural areas through improved retention (WHO, 2010b), (2) Human Resources for Health Action Framework (HAF), a live-web document developed collaboratively by USAID and the WHO through GHWA (www.capacityproject.org/framework/), (3) The AAAQ Model (Campbell, *et al.*, 2013), and (4) the Socio-Ecological Model (SEM) (Bronfenbrenner, 1994).

The first two documents are highlighted earlier in this chapter in section 1.1.3, and are expounded in more detail below. The AAAQ Model and the SEM are described thereafter.

1.3.1 Increasing access to healthcare workers in remote and rural areas through improved retention

This section presents the WHO's global policy recommendations which focus on four distinct category of interventions; (1) education, (2) regulation, (3) financial incentives and (4) support (personal and professional). The WHO critically appraises each intervention based on quality and robustness of available evidence and provides recommendations accordingly. Wilson et *al.* (2009) adds "selection" and "location" categories to the recommendations. However, the WHO recommendations regards these two categories - selection and location, as part of the education strategy (Wilson *et al.*, 2009).

A key recommendation was for countries to encompass a bundle of approaches by choosing at least one approach from each category. The choice of interventions was to be guided by the available resources and the country's context (WHO 2010b).

The recommendations have been adapted and adopted by several countries and used to stimulate discussion on human resources for health, as a framework for policy formulation, policy analysis and evaluation of interventions (Buchan *et al.*, 2013; Rawal *et al.*, 2015).

The interventions with ETATMBA programme included some of the education, regulation and support strategies. Regarding education, most participants were chosen from rural facilities and the content of the in-service training was tailored to rural population health needs. Regarding regulation, in Tanzania, Nurses and Midwives received training on skills to provide anaesthesia, which is not part of their basic training and some participants in both countries received training on leadership skills. In terms of support, ETATMBA course facilitators visited participants in their workplaces to provide personal and professional support.

Apart from contributing to the conceptual framework of the study, these WHO recommendations provided basis for literature search and gave insights into data analysis, interpretation, and in the discussion.

1.3.2 The Human Resources for Health Action Framework (HAF)

This framework provides a basis for planning and evaluation of human resources for health (HRH) interventions by countries. The framework was developed in 2005 to address staff shortages, uneven distribution, low retention, high attrition and poor motivation among other HRH challenges (WHO, 2010a).

The framework proposes interventions that are expected to result into an effective and sustainable workforce which will lead to improved healthcare delivery and better health outcomes. The framework encompasses four phases and six actions, each with several areas of interventions and suggested indicators as described earlier in section 1.1.3.5.

The framework suggests that, at any phase of the HAF cycle, for any intervention to be effective, action(s) needs to take place in each of the six areas identified in the framework (Figure 1.2) - human resources for health, policy, finance, education, partnerships, and leadership. The sequence is not as important, as long as each action is addressed adequately (WHO, 2010a).

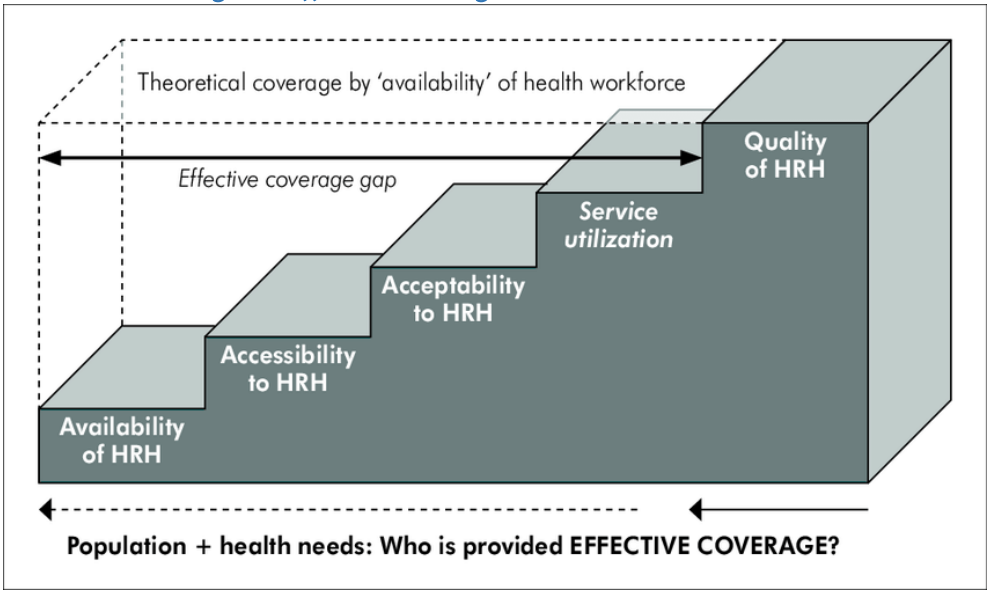
The lack of success with majority of HRH strategies in most countries results from ineffective application of a comprehensive framework, not for lack of funding or other resources (WHO, 2010a, Adhikari, 2015).

The HAF framework helps to understanding how the six actions influence retention and how they interrelate to affect health outcomes.

1.3.3 The four dimensions of the health workforce (The AAAQ Model)

Campbell et al (2013) describe a model of four attributes of a health workforce necessary to achieve UHC; availability, accessibility, acceptability, and good quality (AAAQ) (Campbell, *et al.*, 2013), Refer to *Figure 1.4* below. The model proposes that the availability of healthcare workers does not guarantee accessibility, acceptability or good quality services. Campbell et *al.*'s description of these four attributes of health workforce is based on the concept of *theoretical* against *effective* coverage. Health workforce availability is presented as density, that is the number of healthcare workers per one thousand or ten thousand population. In this regard, density helps to understand only the first attribute of the health workforce – availability (Campbell, *et al.*, 2013).

Figure 1.4 Theoretical against effective coverage



Source: Campbell, et al., 2013

However, the four attributes of the health workforce are intertwined. A higher retention rate of healthcare workers improves accessibility (Dillip *et al.*, 2012) and acceptability (Hayes and Barraclough, 2012) whereas sub-optimal quality of care has shown to impact

negatively on accessibility and acceptability of healthcare workers (Arah *et al.*, 2003; Laurant *et al.*, 2009; Mselle *et al.*, 2013; Musgrove *et al.*, 2000).

The AAAQ model is also used to appraise strategies for improving the human resources for health. In countries with low health workforce availability, the priority is often to improve the health workforce density with little or no attention to health workforce accessibility, acceptability and quality. Some reports show that implementation of isolated strategies towards improving health workforce availability such as constructing more health training institutions and increasing student's intake in health institutions results in a higher health workforce attrition and a vicious cycle of health workforce shortage (Cailhol *et al.*, 2013).

A sustained implementation of integrated AAAQ approaches has seen countries like Thailand improve health systems at all levels of care and reach UHC (Tangcharoensathien *et al.*, 2013).

The success of HRH interventions also depends on the recipients of such interventions, the healthcare workers. The next section explores factors for retention related to healthcare workers and their surrounding environment.

1.3.4 The Socio-Ecological Model

The Socio-Ecological Model (SEM) provides a conceptual framework for understanding human development and behaviour described for the first time by Bronfenbrenner in 1974. Although the SEM concept has evolved over time, the core elements of its first version have not changed (Bronfenbrenner, 1994; Bronfenbrenner 2005).

The SEM proposes that an individual's behaviour is a result of a dynamic interrelation between the person and their surroundings (ecological factors). Bronfenbrenner points to the existence of a complex reciprocal interaction between the active biopsychosocial human being and the persons, objects and circumstances in the surroundings. The entities in the immediate environment are referred to as proximal processes. If this interaction occurs regular enough and for a prolonged period, a change in behaviour happens. Permitting or inhibiting expression of those proximal processes in a person causes behaviour change. The alternation in expression of proximal processes may occur at any one of five different levels; (1) Individual (2) microsystems (3) mesosystems (4) exosystems and (5) macrosystems. Refer to Figure 1.5 below.

In recent years, the Socio-Ecological Model (SEM) has increasingly been applied in research and implementation of programmes as a model for understanding issues around human behaviour in relation to public health problems such as HIV/AIDS, violence, diet, exercise, accessibility of care, etc. (Caperon *et al.*, 2019; Dahlberg *et al.*, 2011; Essiet *et al.*, 2017; Ma *et al.*, 2017; Onono *et al.*, 2015; White, 2015). Below is a brief explanation of each of the five levels.

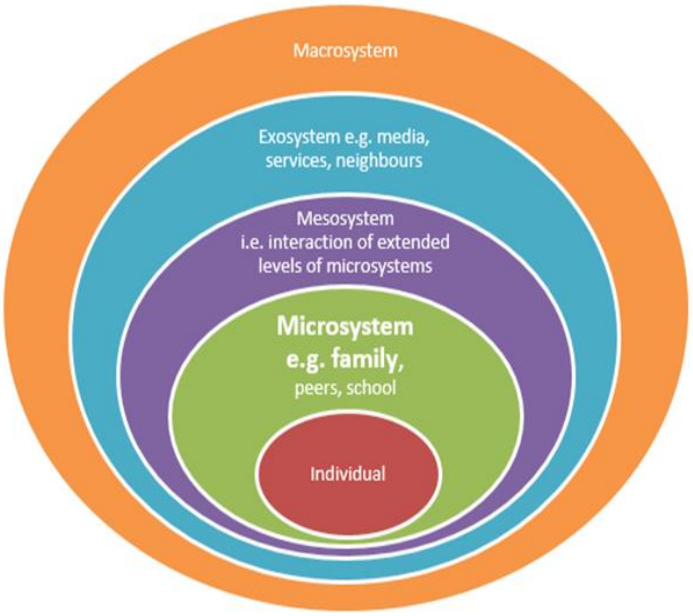
1.3.1.1 Individual factors

Individual factors, also referred to as biological or personal factors and include personal attributes such as the genetic make-up of an individual, natural abilities, age, gender, beliefs, attitude, life history and wealth status (Bronfenbrenner, 1994). Possible intervention targets at this level include promoting positive attitudes, beliefs and behaviours (White, 2015).

1.3.1.2 Microsystem

The microsystem constitutes proximal processes which allow a face-to-face interaction at the family level such as parents, children, partners, friends and peers. This interaction occurs in the person's immediate environment, usually within a family. Outcomes of interactions at this level affects the individual's response to interactions at all other levels. Intervention targets at this level include mentoring, peer programs and promoting healthy relationships (White, 2015).

Figure 1.5: The Socio-Ecological Model



Source: Adapted from Bronfenbrenner (1994) and White (2015)

1.3.1.3 Mesosystem

The mesosystem constitutes interactions, linkages and processes of multiple microsystems and happens at the community level such as neighbours, schools, place of worship or the workplace. Possible intervention targets at this level include carefully designed public health programmes (White, 2015).

1.3.1.4 Exosystem

The exosystem occurs at the societal level and constitutes one or more mesosystems one of which must not have a direct interaction with the individual such as spouse's interactions at workplace or children's interactions at school affecting the individual's behaviour indirectly (Bronfenbrenner, 2005).

Cultural norms, national or local laws and regulations, security issues, social policies, politics influence the exosystem. Possible intervention targets at this level include advocacy for policy change including policies on how other sectors apart from health, such as education, transport, infrastructure, legal institutions, interact with the health sector to promote positive health outcomes (White, 2015).

1.3.1.5 Macrosystem

The macrosystem constitutes a complex interaction of individual, micro-, meso- and exosystems. The existing body of knowledge, material resources, customs and guidelines are examples of macrosystems. Macrosystems are embedded in and influence broader systems which forms the blueprint for a culture or sub-culture. These include the various national and international conventions and guidelines, multinational agreements and treaties. Possible intervention targets at this dimension include advocacy and lobbying at the national and international levels.

1.3.1.6 Chronosystem

One more dimension, chronosystems, has been described. This was not in the original description of SEM by Bronfenbrenner. Chronosystems helps to explain the constant change that happen to the biopsychosocial characteristics of an individual and the environment making it possible for an individual to exhibit different behaviours when exposed to the same proximal process overtime, or the same behaviour when exposed to different proximal processes. Examples of biopsychosocial characteristics of a healthcare worker that have potential to change over time include age, marital status, family size, health, income, workplace environment, amenities and occurrence of violence or peace.

The change in the needs of healthcare workers during the different stages of the life span as shown in *Figure 1.1*, can be explained by the concept of the chronosystem. For example, individual needs, choices and priorities of the health workforce at the beginning of a career tend to be different from those at the end of the career.

The dynamic nature of job characteristic preferences among healthcare workers is best explained through Discrete Choice Experiments (Mangham *et al.*, 2009; WHO, 2012) the detail of which is not within the scope of this study.

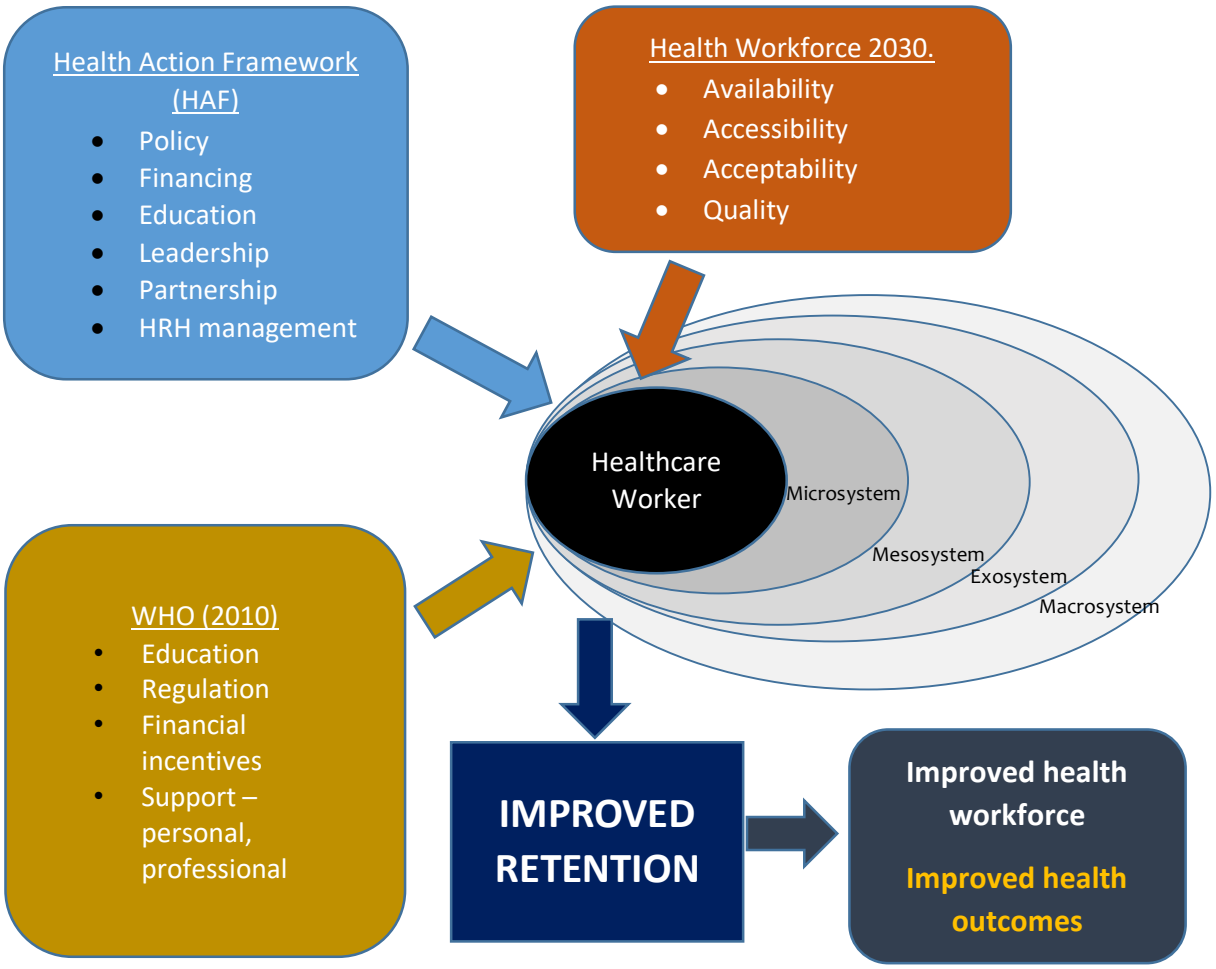
In addition to being a method of understanding human behaviour, SEM provides a comprehensive analytical framework by which health programmes are designed, implemented, monitored and evaluated. Examples include designing and evaluating effectiveness of nutrition promotion programmes (Quinn *et al.*, 2005), designing intervention programmes for obesity (Krug *et al.*, 2002) and interventions against violence (CDC, 2012).

The SEM concept is applied to the design of policy framework for the promotion, prevention and control of various disease conditions. Evidence has shown that programmes designed with all five SEM levels embodied in them succeed more frequently than those that are focused on fewer levels (White, 2015).

1.3.5 Comparison of the frameworks used in the conceptual framework

A sketch of how the four frameworks interrelate is presented in *Figure 1.6* below.

Figure 1.6: The conceptual Framework



Source: Adapted from the HAF, WHO 2010 recommendations, AAAQ Model and the SEM.

Parallels across the four frameworks

The overarching theme across all four frameworks is the need for a comprehensive approach towards implementing HRH interventions. The WHO recommends that a bundle of interventions drawn from all four categories is needed, while the HAF emphasizes that for interventions to take effect, all actions need to be taken in each of the six areas identified by the framework. The AAAQ model recommends that, apart from addressing the health workforce availability, interventions need to address health

workforce accessibility, acceptability and quality. In the same way, SEM alludes the importance of considering factors surrounding the healthcare worker instead of focusing only at the individual factors.

The other similarity is that all four frameworks recognise how context can affect the implementation of interventions. Further, the four frameworks acknowledge that external factors other than those itemized in the frameworks play an important part in influencing outcome of interventions.

Education is a component considered in all four frameworks. While the HAF and the WHO recommendations explicitly mention education as a strategy, the AAAQ and SEM highlight that training is needed to integrate the different components for the models to work. Hence, the choice of SEM was based on the fact that the healthcare workers is central to whatever intervention is chosen. In-service training is a common intervention in healthcare and is implemented in response to specific needs of the health workforce (Bluestone, 2013).

Differences across the four frameworks

While the scope for HAF and Health Workforce 2030 is for improving the entire HRH in a given country, the WHO recommendations focus more on remote and rural (underserved) areas. The SEM concentrates at the healthcare worker and how the surrounding environment shapes their choices and behaviour. Apart from the WHO recommendations, the other three frameworks are applicable in urban areas and in high resource settings as well.

The HAF is primarily aimed for use by countries to appraise HRH interventions and highlight areas that a programme needs to take or board to make it successful, it is advocated as a tool for programming. The SEM aims at exploring the reasons behind decisions and behaviours exhibited by individuals. Understanding the basis for such decisions would inform programmes and policies on how interventions need to be conducted. While considerations for HAF centres around a programme or an intervention, the SEM centres around an individual.

The AAAQ model focuses more on the quality aspect of the health workforce. Apart from the availability of the health workforce the model puts emphasis on accessibility, acceptability and the quality of the service provided. In so doing, this model highlights a critical difference regarding health workforce coverage; the actual coverage (theoretical

coverage) versus the effective coverage (content of service provided). This provides an added layer of consideration across the other three frameworks. For example, the AAAQ model can help explain why areas with similar health workforce coverage may have different health outcome indicators.

The parallels and differences between the four frameworks emphasises the fact that no single framework is adequate in itself to explain all facets related to health workforce retention or other interventions. It is critical that a consideration is made of how other frameworks can contribute to improve the robustness of a chosen framework.

In this study the SEM was chosen because the study focuses on retention in relation to in-service training both of which revolve around the healthcare worker. The other three frameworks provide additional insights on how health workforce retention and in-service training are related.

1.4. Rationale for the study

This study examines in detail what health workforce retention is and, using the ETATMBA programme, determines its patterns among healthcare workers in Malawi and Tanzania and explores perceptions on retention among healthcare workers and policy makers.

Although shortage and inequitable distribution of healthcare workers is a global problem, it is more pronounced in remote, rural, hard-to-reach (underserved) areas in low-resource countries (Campbell, *et al.*, 2013; WHO, 2006).

A wide body of knowledge exists on factors affecting retention of healthcare workers in remote, hard-to-reach areas. However, most of these studies address the situation in high-income countries; mainly the USA, Canada and Australia. Little work has been done to assess whether similar interventions may be applicable in low-income settings (Wilson *et al.*, 2009; Mbemba *et al.*, 2016).

There is evidence to suggest that a high rate of attrition (turnover) among healthcare workers leads to low productivity, increase in health system running costs and low quality of healthcare (Dieleman *et al.*, 2006; WHO 2006). However, the definition of health workforce retention is still ambiguous and little is known of the effect of context to patterns of retention, attrition or mobility of healthcare workers. In addition the relationship between retention and other health workforce parameters such as workforce performance, job satisfaction and health outcomes needs explaining.

It is equally critical that the relationship between interventions such as in-service training and patterns of retention, attrition and mobility is explored. Findings from this study will inform HRH interventions in sub-Saharan Africa and similar low-income settings to contribute in alleviating the health workforce crisis.

1.5. Study objectives and the research questions

To summarise from the previous sections, the concept of health workforce retention lacks clarity, there is little understanding of what retention actually entails. This makes difficult to explore the factors influencing retention, attrition and mobility within countries and outside borders. It is also unclear how interventions such as in-service training can influence retention. Studies show that factors affecting health workforce retention vary across countries and sometimes even between different locations within a country. Understanding context-specific factors affecting retention is key to designing effective interventions (Campbell *et al.*, 2013; GHWA, 2013; Joint Learning Initiative 2004).

This study follows and examines 127 participants recruited under the ETATMBA programme implemented in Malawi and Tanzania between 2011 and 2014 (Ellard *et al.*, 2012). The study utilises the ETATMBA programme and the in-service training provided as a canvas to explore the interrelations between the health workforce, the context and the interventions and how such interaction affects retention, attrition and mobility of healthcare workers in the two countries. The study maps out changes in participants' locations, roles and employment over a period of five years between 2012 and 2017 and explores their experiences and opinions and that of policy makers on retention.

Thus the study aims to:

(1) define retention and determine retention patterns of the health workforce in Malawi and Tanzania after in-service training.
(2) to explore experiences of and perspectives on retention among healthcare workers and those of policy makers in Malawi and Tanzania.

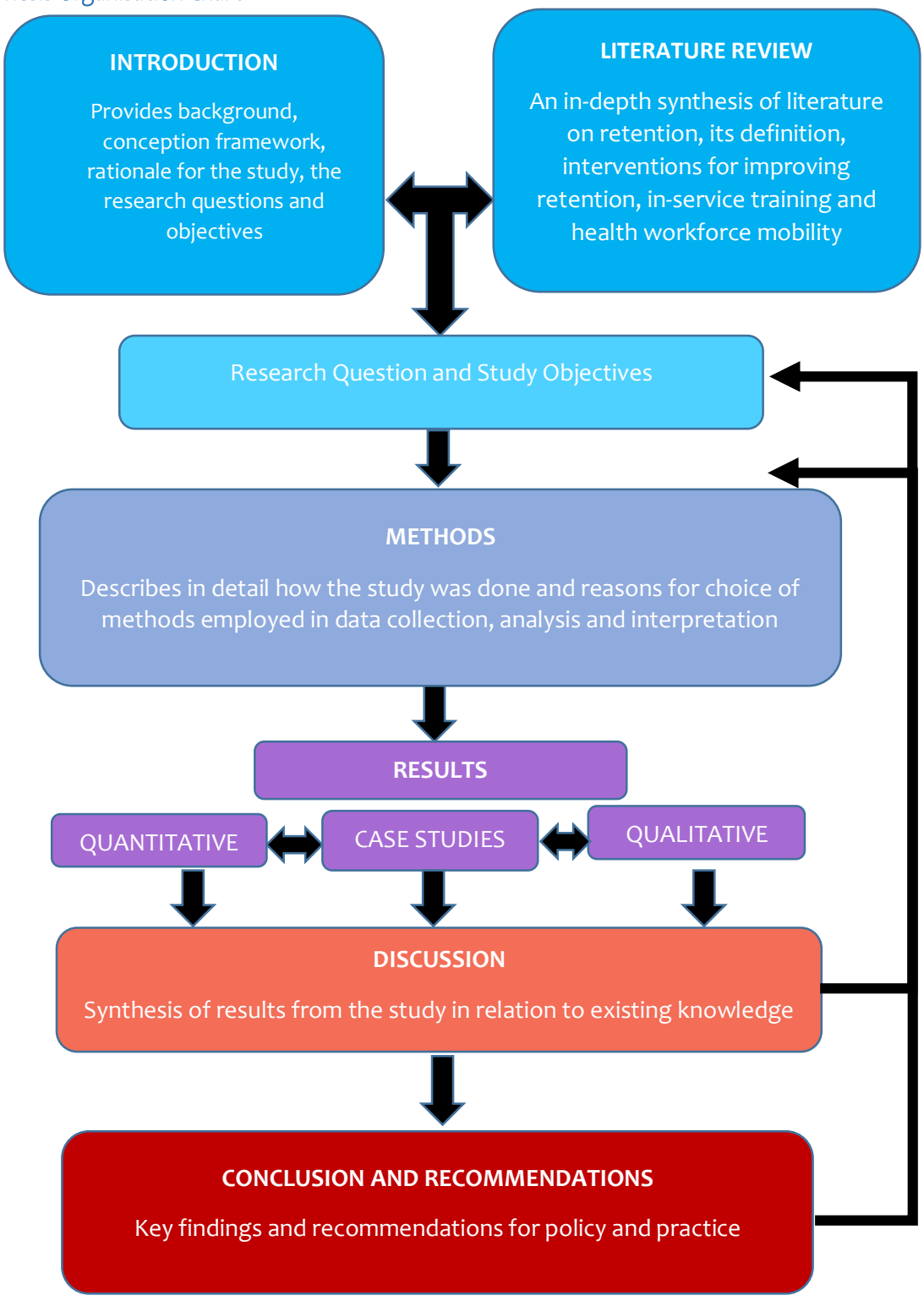
The study specifically seeks to answer the following two questions:

(1) What is health workforce retention and what are patterns of health workforce retention in Malawi and Tanzania after in-service training?
(2) What are experiences and perceptions of healthcare workers and policy makers on health workforce retention in Malawi and Tanzania?

1.6. Organisation of the Thesis

The thesis is organised into six sections as shown in *Figure 1.6* below.

Figure 1.7 Thesis Organisation Chart



CHAPTER 2: LITERATURE REVIEW

2.0 Overview

This chapter presents findings from the review of literature. A rapid scoping review of literature was conducted. The conceptual framework for the study provided the basis for the literature search, appraisal and presentation.

The chapter is divided into three main parts; part one describes the aim of the review, part two describes the literature search process and the data extraction plan and part three presents the scoping review.

2.1 The aim of the literature review

The review had three aims, firstly to determine how the concept of health workforce "retention" is defined, measured, and reported in literature. Secondly, to determine how in-service training is related to health workforce retention in low-and-middle income countries. Thirdly, to appraise the other interventions for improving health workforce retention in low-and-middle-income countries apart from in-service training.

In appraising the interventions for retention, this study did not critique the author's definition of retention, it discussed the intervention and its effect on retention as defined in the article.

2.2 Literature search process

A rapid scoping review of literature was undertaken to identify and appraise studies on health workforce retention in low-and-middle-income countries between the year 2000 and 2017. The process involved identifying search terms, choosing which search engines to use, defining inclusion and exclusion criteria, performing the search, selecting relevant articles and appraising the studies. A summary table of selected articles is presented for quick reference in *Appendix I*. The table outlines the author's name, year of publication, the country or countries where the study was conducted, the title, study design and sample size.

2.2.1 Search terms

In generating search terms, the study's conceptual framework, the research questions and study objectives were considered. The study identified four main categories to guide in generating the search terms: (1) retention (2) health workforce (3) in-service training,

and (4) location. Additional terms including MeSH terms and other commonly used terminologies and antonyms for each aspect were used as described below.

Category one – search terms related to retention. These included: *retention, retain, attrition, turn-over, turn-over intention, intention to leave.*

Category two – search terms related to the health workforce. The terms used included: *Healthcare workers, Health workforce, Clinical Officers, Assistant Medical Officers, Non-Physician Clinicians, Physician Assistants, Medical professionals, Nurse OR Nurses, Midwife OR Midwives, Health manpower, Health employees and Health personnel*. Three cadres of healthcare workers who were involved as participants in the ETATMBA programme; clinical officers, assistant Medical officers and nurse-midwives.

Category three – search terms related to in-service training. The search terms included: *in-service training, on-the-job training, training, coaching, and capacity building.*

Category four– search terms related to the geographical location. The terms included: *Malawi, Tanzania, low-income countries, middle-income countries, Low-and-Middle Income Countries (LMIC), developing countries, rural, remote, underserved, hard-to-reach and sub-Saharan Africa.*

Category one search terms were used either singly or in combination with search terms in category two OR three OR four or from category two AND three, three AND four and two AND four.

Grey literature from MOH in Malawi and Tanzania was obtained through direct contact with relevant HRH officials or through the government website. A secondary search of articles was undertaken using the reference lists in key articles for any articles or sources that may have been missed in the electronic search.

2.2.2 Search engines

The following search engines were used; DISCOVER, EBSCOhost, CINAHL Plus, Scopus, The Cochrane Library, Web of science, MEDLINE, ScienceDirect and Social Sciences Citation Index.

2.2.3 Inclusion and exclusion criteria

The search was limited to articles published in English language from low-and-middle-income countries. Published between January 2000 to September 2017.

Articles published in language other than English were excluded and those older than 2000 were excluded, unless considered essential to the study.

The cut-off year 2000 was chosen based on; first, the implementation of Millennium Development Goals (MDGs) started in the year 2000, with a growing momentum to address the lack of a skilled health workforce; secondly, the first comprehensive document on human resources for health was published by the WHO in 2006.

2.2.4 Approach to analysing and presenting review findings

This chapter presents findings from the literature in light of the conceptual framework described in chapter one. The conceptual framework as summarised in *Figure 1.6,* results from considerations of: (1) the four interventions proposed by the WHO for improving access to the health workforce in remote areas; education, regulation, incentives and support, (2) the four phases and six actions in the Human Resources for Health Action Framework (HAF), (3) the four attributes of health workforce in the AAAQ model, and (4) the five levels in the Social Ecological Model (SEM). The conceptual framework provided a format for presenting the literature review but did not limit the scope of intuitions generated. Additional headings or subheadings were added to provide more clarity on ideas presented.

The Prisma diagram below in *Figure 2.1* provides a summary of the search process and how the articles were identified.

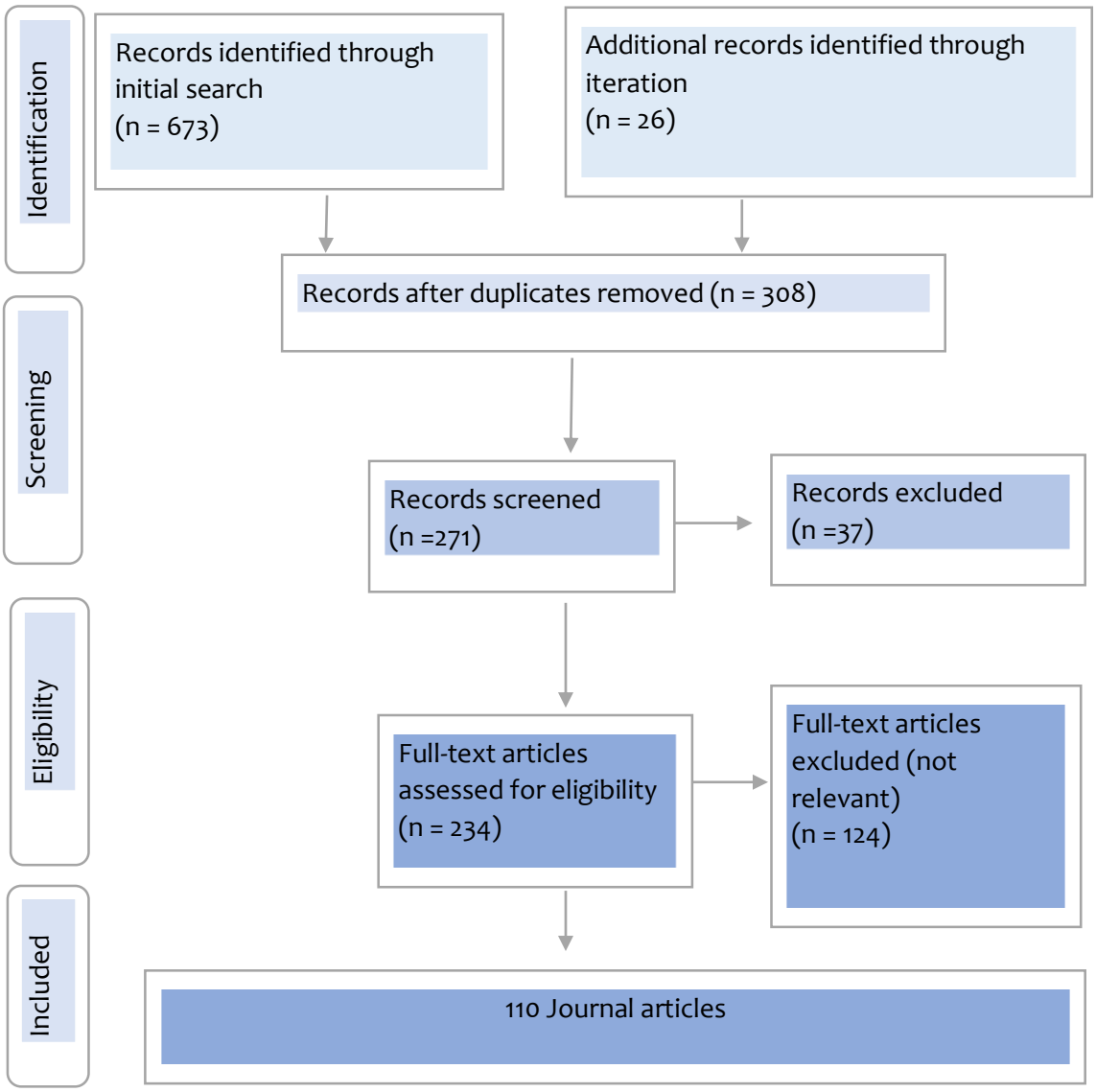
2.3 A rapid scoping review of literature

The review starts by presenting and discussing the various attempts at defining measuring, and reporting health workforce retention. It then discusses seven HRH interventions, including in-service training. After this, it presents a review of health interventions that have applied the SEM before presenting a summary of the chapter.

2.3.1 Defining and measuring health workforce retention

Retention of the health workforce is a recognised strategy for improving the availability and distribution of the health workforce at both global and country levels. It was a key strategy discussed during the first global conference on human resources for health held in Kampala in 2008 (WHO, 2008) and subsequently in other global platforms including the Workforce 2030 - the current global strategy on human resources for health (WHO, 2016).

Figure 2.1: Prisma diagram of the search process and studies identified



Health workforce retention is also mentioned in the national health policies of Malawi (Malawi HSSP 2011-16) and Tanzania (Tanzania HSSP 2016-25). However, there is a lack of clarity and standardisation in the way retention and attrition are presented in these key documents. Adding to the problem is the lack of standardised indicators for health workforce retention and attrition. Similarly, there is a lack of standardised definition for the terms "rural" and "remote" (Ricketts, 2005; Dolea *et al.*, 2010). This poses a challenge in describing, and assessing interventions for improving health workforce retention in rural and remote locations (Humphreys *et al.*, 2009; Castro Lopes et al., 2017).

For example, Wilson (2009) defined retention as a stay of more than five years in total in a healthcare facility, or of more than two years beyond termination of a contractual agreement (Wilson *et al.*, 2009), while Humphreys et al. (2009) defined health workforce retention as "the length of time between commencement and termination of employment" (Humphreys *et al.*, 2009). This "length of time" referred to by Humphreys (2009) does not quantify retention but describes it in arbitrary terms. specify what length of time will amount to retention.

Armstrong (2017) defines attrition, broadly, as the rate at which people leave the organisation (Armstrong, 2017). Castro Lopes et *al*. (2017) delineates voluntary from involuntary causes of attrition and defines voluntary attrition as, "exits from the workforce for reasons other than death or retirement" (Castro Lopes et *al*., 2017).

Castro Lopes et al. (2017) further noted that words and terms such as "brain–drain", "turnover", "drop-outs", "losses", "separation" and "premature departure" were used instead of the word "attrition". Some authorities include health workforce migration, retirement, death, resignation or dismissal as part of attrition while others do not.

Some authorities regard attrition to mean migration of the healthcare workers outside borders and consider internal movements as health workforce mobility (Castro Lopes et al., 2017). Thus, there is no international consensus on how to define health workforce retention, attrition or mobility.

Most research and intervention programmes usually report retention and attrition in terms of the proportion of healthcare workers available at two or more points in time in a specific setting. More often than not, retention is stated in arbitrary terms without any specific parameter.

Russell (2012) describes five parameters of measuring health workforce retention; the turnover rate, stability rate, survival probability, median survival years and Cox proportional hazard ratio (Russell et al., 2012). The 'stability rate' which measures the proportion of employees present at the start and end of a set interval is a preferred measure applied in most studies. However, different studies choose numerators and denominators of this indicator differently (Chisholm et *al*., 2011; Russell et *al.*, 2013).

The WHO proposes seven parameters of measuring health workforce market flows; graduates starting practice within a year, replenishment rate from domestic sources, entry rate of foreign health workforce, voluntary exits, involuntary exits, vacancy rate and

health care worker's unemployment rate. It proposes the numerator and denominator in each parameter and suggests the potential sources of data and the reporting frequency (WHO, 2017).

The data on the health workforce, routinely collected from LMIC is inconsistent, inadequate and usually of poor quality, making it challenging to calculate health workforce parameters – suggested by Russell et *al*. (2012) and the WHO (2017) a challenge. This limits the application of those indicators in research work and programmatic activities (Russell et *al*., 2012; WHO, 2016).

Also, there is often an overlap in reporting between "motivation", "job satisfaction", "intention to stay" and "retention" in studies. This has sometimes caused confusion (Mbemba, et *al*., 2016). For example, Taderera et *al*. (2016) reports that an intervention to improve retention in one location in Zimbabwe resulted in improved retention while what improved was job satisfaction (Taderera *et al*., 2016).

Standardising the definitions and variables for measuring health workforce retention is crucial as it will streamline research, human resource intervention approaches and enable in-country and international comparisons.

Despite the challenges with measuring the health workforce retention, some interventions have proved successful in increasing availability and distribution of the health workforce and are discussed below. Since "retention" was defined and measured differently in different studies, in appraising the interventions, the meaning of retention was taken at the authors' intended meaning. Most studies report retention as the duration a healthcare worker stays in a particular job.

2.3.2 In-service training and health workforce retention

Three interventions related to in-service training were identified. These includes, provision of career progression opportunities to staff, enhancing the scope of practice among healthcare workers (task shifting), and in-service training tied to an incentive (bonding).

2.3.2.1 Availing career progression opportunities

Continuous Professional Development (CPD), in the form of in-service training improves quality, efficiency and motivation among healthcare workers (Wilson *et al*., 2009; Shah *et al*., 2016). In low resource settings however, CPD is generally less structured and less regulated (Feldacker *et al*., 2017).

A structured CPD programme usually aims at equipping a healthcare worker to specialize in a skill or to broaden scope of practice (Willis-Shattuck *et al.*, 2008). This is expounded in *Section 2.3.2.1* below. Healthcare workers in all professions invariably indicate the need for career progression opportunities at every stage in their life span from recruitment to retirement (Marinucci *et al.*, 2013; Adegoke *et al.*, 2015; Mbemba *et al.*, 2016).

A study conducted among medical laboratory staff in sub-Saharan Africa revealed that the lack of professional development was a major reason for external migration (Marinucci *et al.*, 2013).

The lack of career progression, or the lack of a clear structure of the same, demotivates healthcare workers and affects retention. Rural and remote vacancies are filled quicker if the job is attached to career progression opportunities (Kotzee and Couper, 2006).

CPD improves the competency and confidence of healthcare workers. This may lead to the acquisition of new skills or may encourage individuals to seek other higher level skills training opportunities. The flipside of this intervention is that the resulting improvement in the scope and quality of service delivery may increase the potential for attrition.

2.3.2.2 Enhanced scope of practice for health professionals

Task shifting or task sharing occurs when a cadre (usually lower level) of healthcare workers are trained on skills that would otherwise be performed by another cadre (usually higher level). On-the-job up-skilling or down-skilling of a task for the purpose of improving rural retention is common (Labhardt *et al.*, 2010; Schull *et al.*, 2010).

In Ghana and Zambia, nurses have successfully been trained to prescribe medications for mental health conditions. This has resulted in a dual advantage; improving clients' access to health services and improved job satisfaction and retention among nurses (Barrett *et al.*, 2009; Sikwese *et al.*, 2010). For years, Clinical Officers and Assistant Medical Officers have been trained to perform caesarean sections and other minor surgeries for decades in Malawi, Tanzania and Mozambique, a procedure that would otherwise be performed by qualified medical officers only (Barrett *et al.*, 2009; Bergström, 2015).

Sometimes concerns exist regarding safety of services after task shifting. For example, allowing Clinical Officers to perform caesarean sections in Malawi resulted in increased surgical related mortality by 1.3%; however, this mortality was believed to be less than if there had been no service at all (Fenton *et al.*, 2003).

Task shifting improves retention by increasing the autonomy and competency of healthcare workers and this leads to improved job satisfaction (Ryan and Deci, 2000). But robust evidence on the role of task shifting in improving health workforce retention in rural areas is lacking.

2.3.2.3 Implementing coercive or bonding interventions

This intervention involves offering healthcare workers incentives such as education/training, offering better employment contract terms or provisions in exchange for their services and can take many forms. It is a common intervention practiced in high as well as low resource settings (Abdul-Rahim and Mwanri, 2012). Some examples of using financial incentives to improve health workforce retention are discussed below.

A mandatory public service requiring that doctors work for a minimum of two years in Bangladesh led to increased retention among rural doctors (Rawal *et al.*, 2015). In South Africa, a bonding scheme improved the retention of doctors in primary care facilities (Ross, 2007; Hatcher *et al.*, 2014). Similarly, a scholarship programme for nurses in Malawi significantly improved their retention in public facilities (Schmiedeknecht *et al.*, 2015).

In India and Nepal, compulsory rural service bonds have resulted in better job satisfaction, higher staff retention and improved quality and utilisation of health services in rural facilities (Sundararaman and Gupta, 2011; Zimmerman *et al.*, 2016).

Despite the observed positive results of bonding schemes, the evidence of the effectiveness of this intervention is inconclusive. A common challenge faced when employing these schemes is the inconsistency between the content of the curriculum and service delivery needs of hospitals (health institutions) which provide the funding to support the training. This makes some health authorities fail to appropriately utilise the skills and competencies acquired by the candidates (Ross *et al.*, 2004). Poor work environment such as the lack of, or substandard laboratories, theatres, medical equipment or communication facilities make enforcement of rural posting following a bonding scheme a challenge (Shankar, 2010; Shemdoe et al., 2016).

Evidence has suggested that bonding improves deployment of the health workforce but not the long-term retention. For example, the success of the programme observed in South Africa and Malawi after implementing a bonding scheme was short-term (Ross, 2007; Schmiedeknecht *et al.*, 2015). Ross (2007) and Schmiedeknecht et al. (2015) did not assess the long term impact of those schemes on health workforce retention.

Wilson et al. (2009) argue that bonding may have a negative effect on retention by reducing staff morale and is sometimes considered by healthcare workers as un-ethical, in that, it limits one's freedom to choose where to live and work (Wilson *et al.*, 2009).

In most countries compulsory schemes are difficult and expensive to enforce, easy to undermine, and most countries lack the administrative structures for carrying out the enforcement legally and ethically (Hongoro and McPake, 2004). Studies from South Africa, Zambia, Thailand and Indonesia have shown that even those who remain in service leave immediately at the end of the prescribed term (Frehywot *et al.*, 2010; Lehmann *et al.*, 2008; Wibulpolprasert and Pengpaibon, 2003).

The following section will discuss other interventions other than in-service training that may affect health workforce retention.

2.3.3 Other interventions to improve health workforce retention

Five other interventions for improving human resources for health were picked based on findings from the review in light of the conceptual framework.

2.3.3.1 Pre-service Education focused interventions

These interventions include preferential selection of students from rural settings, developing curricula that reflect rural health problems, establishing health training institutions in rural areas and organising clinical rotations in rural or remote facilities.

Wilson (2009) rates the evidence of education-based interventions to be strongest compared to others (Wilson *et al.*, 2009).

Preferential selection of students from rural backgrounds

Rural upbringing increase likelihood of compliance to rural posting and to remaining in the rural posting longer. This is consistent across many studies (Shankar, 2010; Sheikh *et al.*, 2012; Deressa *et al.*, 2012).

Early exposure to rural life leads to rural acclimatisation and the development of personal attributes leading to the desire to work in a rural location. The recognition and appreciation obtained from clients in the rural areas and positive experiences which result from successful provision of health care boosts intrinsic motivation. The formal and informal relationships that develop with the rural population during the time of exposure also strengthen the motive to stay and work in rural locations (Sheikh *et al.*, 2012).

The role of rural exposure in enhancing rural posting and retention is seen following both, pre-service and in-service health education programmes (Nagai *et al.*, 2017).

In Ethiopia, medical students with a rural background were 2.5 times more likely to agree with a rural posting (Deressa *et al.*, 2012). Similarly, medical students from rural areas in Nepal were more willing to work in rural facilities than their urban colleagues (Sapkota and Amatya, 2015).

Recruitment of students from a rural background for medical training improves health workforce distribution as well. Rawal et *al.* (2015) observed that targeted recruitment which was done in the form of a quota system with each geographical location being allocated a specific number of candidates per intake, improved the geographical distribution of rural doctors in Bangladesh (Rawal *et al.*, 2015).

Cosgrave et al. (2019) describes this rural exposure as composed of "place-based processes" and the longer a candidate is exposed to the place based social processes the higher the likelihood of desiring to work in a rural setting (Cosgrave et al., 2019).

Evidence from a systematic review by Verma et *al.* (2016) corroborates this observation; selective recruitment of candidates from rural areas improves retention and distribution significantly (Verma *et al.*, 2016).

Despite a clear and consistent association between recruiting and training healthcare personnel from rural backgrounds and improved health workforce retention in rural areas (Strasser et al., 2010; Sundararaman, 2011; Deressa et al., 2012; Verma et al., 2016) little is known of the exact mechanism, how much of it and when the exposure to the rural environment actually impacts on the candidate's decision making ethos, and it is still a subject of contemporary research.

The modalities of student selection like the quota system used in Bangladesh, however, may jeopardise the quality of training and competencies acquired by graduates. In South Africa, there was a mismatch between the criteria used by the community to select preferred candidates and the criteria set by training institutions. The community selected candidates based on their potential to return and serve the community whereas training institutions selected candidates based on academic merit (Ross and Couper, 2004).

Developing curricula that reflect rural health problems

To improve rural retention, the content of education programmes needs to reflect health problems prevalent in rural areas and what response needs to be taken by primary

healthcare workers. Development of such programmes needs to be informed by carefully choosing and analysing health problems prevalent in a setting. Such analysis includes gathering ideas from the rural population in question (Awofeso, 2010; Bangdiwala *et al.*, 2010; El-Jardali *et al.*, 2013).

Nevertheless, sometimes such curriculum re-orientation does not translate into improved rural retention. This could result either from the negative influences of other contextual factors such as the language used, or if a longer duration is needed to observe the effect (Shankar, 2010).

Establishing health training institutions in rural areas and organising clinical rotations in rural or remote facilities

Although this intervention is ideal for students not exposed to rural life when growing up, it improves rural posting and rural retention in students from all backgrounds (Rawal *et al.*, 2015). Establishing a health institution in a rural location leads to the increased availability of the health workforce for facilities in the vicinity (Mackintosh, 2003; Kinfu *et al.*, 2009; Pagaiya *et al.*, 2015).

A systematic review by Verma et *al.* (2016) establishes that the posting of doctors to remote and underserved areas for a period of time during training or internship improves retention (Verma *et al.*, 2016).

A downside of this approach is the high costs of building and running an institution in a rural location. This may be too expensive for health systems in low resource countries. One suggested alternative is to build smaller satellite campuses to accommodate fewer students at intervals. This has been successful in some locations (Wilson *et al.*, 2009).

A key challenge to evaluating the success of these education-based interventions is lack of a standardised definition of the "rural setting" (Dolea *et al.*, 2010). For example, Ricketts (2005) demonstrated that the number of physicians in rural health facilities declined with both, the population of the town or city closest to the health facility and the distance from it (Ricketts, 2005).

To summarise, education focused interventions improve rural posting and retention in two key ways (1) by increasing rural exposure – either harnessing the rural exposure of students from rural backgrounds acquired before training or exposing students to rural locations during training, and (2) by modulating the content of the training to match rural health needs.

However, most studies that reported this intervention are limited to medical, nursing and midwifery students. Little is known whether similar observations would apply to students of other health cadres such as laboratory, physiotherapy, radiology, pharmacy, etc.

2.2.2.3 Training cadres of health professionals known to have higher retention

Training cadres that are less likely to migrate externally is one of the effective interventions to improve retention (Hongoro *et al.*, 2004).

Clinical Officers and Assistant Medical Officers in Malawi and Tanzania and other mid-level healthcare workers are rarely recruited abroad, hence they are highly retained in their countries and in rural settings (Bergström, 2015; Manafa *et al.*, 2009). Some countries have devised and branded new cadres to deter external migration. Examples include midwives called "State Enrolled Community Health Nurses" in Sierra Leone and "Community Health Extension Workers" in Nigeria (Obembe et *al*, 2014; Olujimi *et al.*, 2014; MOHS, 2016).

What has not been reported however, is the mobility patterns of these cadres within country. With a change in disease profile in low resource settings, for example, a rising incidence of non-communicable diseases, the skills mix required at the different levels of health care have changed (Bangdiwala *et al.*, 2010; Hatcher *et al.*, 2014; Katende and Donnelly, 2016, Kinfu *et al.*, 2009) and may increase the need for mid-level healthcare workers in urban as well as rural areas.

Shemdoe et *al*. (2016) noted that even midlevel cadres such as Clinical Officers and Nurse-Midwives can be difficult to retain in rural areas and their attrition causes even more serious disruption to the continuity of services than when doctors or specialist doctors leave (Shemdoe *et al.*, 2016).

A critical question regarding this approach is whether midlevel healthcare workers stay in rural and remote locations out of their own volition or are forced to stay due to the lack of options. In future, if it happens that the labour market favours these cadres then sustainability will be in question. There is also a question of the effect of this type of intervention on healthcare performance and the quality of services offered.

2.3.3.2 Leveraging support from colleagues, facility leadership and professional associations

The presence of supportive colleagues and involvement in professional association activities provides healthcare workers with a sense of belonging and improves job satisfaction (van Dormael, 2008).

A respectful relationship between healthcare workers and their managers is a strong factor encouraging retention. Healthcare workers appreciate desirable attributes such as; respect, recognition, team work, openness, feedback, communication, autonomy, support, appreciation and rewards (Okello and Gilson, 2015). The role of a respectful relationship between healthcare workers and managers in improving retention is consistently demonstrated in studies conducted in several settings including South Africa (Mokoka *et al.*, 2010; Coetzee and Pauw, 2013), Papua New Guinea (Jayasuriya *et al.*, 2012), Ghana (Jack *et al.*, 2013; Bonenberger et al, 2014), and Kenya (Eliah *et al.*, 2014; Goetz *et al.*, 2015).

In Malawi, nurses who were involved in a bonding scholarship scheme stated that their decision to stay in the agreed facilities was a result of a supportive facility management, good relationship with peers and the appreciation from patients rather than the legal requirement to do so (Schmiedeknecht *et al.*, 2015).

Blaauw et al (2013) observed that inadequate staffing levels and the lack of skills among healthcare workers in Malawi, Tanzania and South Africa, made them feel unsupported and incompetent. This caused low morale and dissatisfaction with the job (Blaauw *et al.*, 2013).

A study conducted in Tanzania, Malawi and Mozambique showed that a structured supervision with clear goals and a right approach resulted in increased rate of job satisfaction and a reduced rate of intention to leave. A higher job satisfaction score and less proportion of staff with intention to leave was still strongly associated with supportive supervision even after controlling for the type of healthcare facility, location and country-specific factors (McAuliffe *et al.*, 2013).

To further support this, Huicho et *al*. (2010) demonstrated that a poor working relationship with colleagues or facility managers is a strong predictor of attrition (Huicho *et al.*, 2010).

This section has explained the role of personal and professional support in health workforce motivation, satisfaction, and retention. All studies on this intervention unanimously report improved retention and reduced rate of intention to leave.

The support received by a healthcare worker depends on the quality of the management in charge of the facility or district. This is discussed in the next section.

2.3.3.3 Improvement in health workforce management

Good governance is one of the six building blocks of a health system (WHO, 2010c). Olafsdottir et *al.* (2011) pointed out that performance of a health system is a reflection of the quality of its governance (Olafsdottir *et al.*, 2011).

In low resource settings, HRH is usually managed at three levels; facility, district/sub-national level and national level. Each level takes on different roles and decisions depending on the HRH function in question.

Typically, the facility management is in direct contact with the healthcare worker, provides guidance and deals with day-to-day issues and it reports to the district management. The district level translates policy from the national level and oversees issues of deployment, transfer and performance and reports to the national management. The national level is responsible for formulating, reviewing and analysing HR policies. It also oversees the HRH management function at the national level (Munga *et al.*, 2009; Maher *et al.*, 2010). This section presents these three levels plus a fourth level on international policies.

Management at the healthcare facility (implementation)

In-service training for healthcare facility managers on management skills reduces staff absenteeism and attrition (Alameddine *et al.*, 2012; Zimmerman *et al.*, 2016).

Effective supportive supervision improves intrinsic motivation and improves retention. When healthcare workers are not involved in making decisions on issues that matter to them they get demotivated (Akintola *et al.*, 2016).

Shemdoe (2016) highlights that the lack of transparency, lack of talent finding, poor competency-task matching, the absence of a centralised HR monitoring system, misallocation of in-service training opportunities and lack of health workforce data for monitoring affects implementation of good HR management practices (Shemdoe *et al.*, 2016).

Management at sub-national level (governance)

Poor retention and engagement of the health workforce occurs when the management at sub-national level such as at district level fails to perform crucial tasks during recruitment and induction. Poor management including unnecessarily long and slow, bureaucratic procedures for the recruitment of staff, lack of a job induction plan, lack of accommodation, delay in salaries and other benefits, lack of mentoring and lack of a clear

career progression structure are common. These practices sometimes lead to what Sirili et *al.* (2014) described as "loss in transition" syndrome whereby healthcare workers exit the system before deployment is complete (Adegoke *et al.*, 2015; Manafa *et al.*, 2009; Purohit and Martineau, 2016; Sirili *et al.*, 2014).

In line with the conceptual framework (*Section 1.3.2*), Adhikari (2015) observed that resources are misappropriated or wasted if interventions to improve human resources for health are not based on a comprehensive and reliable framework. For example, an intervention to reduce shortage of nurses in Nepal resulted in a significant increase in graduates who, unfortunately, could not be absorbed in the health system. The resulting situation was overproduction of nurses while at the same time there was still shortage of nurses in the health system (Adhikari, 2015).

Cabral (2013) noticed a similar problem when reviewing a pre-service training policy in Timor-Leste. He observed that a strategy to increase the intake of medical students was not mirrored with future employment. He proposed that the expansion of student intake should be done after a comprehensive financial consideration focussing not only on the additional training costs incurred, but on costs for recruitment, employment, deployment and motivation of graduates along with finances to improve their working conditions (Cabral *et al.*, 2013).

Such uncoordinated health workforce planning is likely to occur in many other low-resource settings which respond to the lack of health workforce by increasing the intake of students in health training institutions without a long-term view of mechanisms to effectively absorb, motivate and avail an optimal enabling work environment.

Management at national (policy) level

Management of HR at the national level is of prime importance and it gives both direction and a model for managers at the national and sub-national levels to adopt.

Innovation and better allocation of resources improves health workforce retention. A reduction in health workforce attrition was observed in Iran after a focused health policy was developed and implemented (Amiresmaili *et al.*, 2014). Evidence from Thailand shows that a careful review of HR health policy, taking into account the country's context leads to the identification of HR intervention approaches that are effective. Improvements in HR transforms and improves the functioning of the rest of the health system building blocks leading to improved health indicators (Tangcharoensathien *et al.*, 2013).

The experience in Thailand explained above is similar to comments from Senkubuge (2014) who suggested that regular health sector reforms are important and need to be comprehensive. The reforms needs to involve HRH as one pivotal issue which, if addressed well, will have a catalytic effect to improving other aspects of healthcare (Senkubuge *et al.*, 2014).

In Mozambique, this form of policy review resulted in better understanding of country's policies that influence the health labour market and identified areas where policies could be changed to result in improved HRH practice and consequently improve healthcare workforce retention (Verani *et al.*, 2016).

In a bid to reduce the high deployment costs, some countries have reverted to leveraging donor funding for posting. This is done to help governments buy more time before they takeover paying the employees. In Kenya an "emergency hiring plan" successfully increased the supply of Nurse-Midwives by 15% in dispensaries and by 7% in hospitals in a span of four years (Gross *et al.*, 2010).

Efforts directed towards limiting external migration of the health workforce have also proven fruitful. In South Africa, an initiative which involved policy change to addressing limitations in recruitment and tighter migration rules coupled with improvements in training health workers resulted in declining health worker shortages due to improved retention (Labonté *et al.*, 2015).

When inconsistencies occur between the policy at national level and practices at sub-national level, the quality of HRH management is affected. For example, in Ghana, a loop-hole for negotiations between healthcare workers and HR managers at the district level regarding transfers and postings increased the inequitable distribution and absenteeism of healthcare workers (Kwamie *et al.*, 2017).

Good management decisions rely on availability of comprehensive HR data. The lack of reliable and timely data is a huge challenge in low-resource settings (WHO 2016b). Experience from Kenya shows that improvement in HRH data management helps to make HRH interventions more focused and allows for robust HR monitoring including a better understanding of factors associated with attrition (Gross *et al.*, 2010b; Waters *et al.*, 2013).

International HR policies

Retention of the health workforce can be affected by HR policies and practices at the international level. The best example of this is the international recruitment of healthcare workers from low-income to high-income countries.

A study by Hagander et *al.* (2013) on the migration of healthcare workers between developing and developed countries revealed that most workers emigrate for reasons such as inadequate professional development opportunities, poor working environment and unclear career progression pathway (Hagander *et al.*, 2013). The same reasons which affect health workforce morale and productivity in LMICs.

Review and/or enforcement of policies and laws that govern international migration of healthcare workers is key (Abdul Rahim *et al.*, 2012). Policies that bring to action both source and recipient countries have a positive effect on retention and distribution of the health workforce. Such policies may include among other things, payment by the recipient countries of the training expenses of healthcare workers to donor countries. However, this has proved difficult to implement (Kanchanachitra *et al.*, 2011; Ozgediz *et al.*, 2008; Troy *et al.*, 2007).

Similarly, the WHO Code of practice was published to help regulate the international migration of the health workforce (WHO, 2010). However, its implementation has lagged behind and, to date, the international migration of healthcare workers from low-income to high income countries is still high (Abuagla *et al.*, 2016; Bourgeault *et al.*, 2016; Buchan and Campbell, 2013; Cometto *et al.*, 2013; Tangcharoensathien *et al.*, 2013).

Effective HRH systems are important in establishing HR functions that will result in higher retention and less attrition of healthcare workers. These systems become more focused if developed in the context of the county's past and prevailing HR situation.

Financial management is an important aspect of managing HRH. The next section discusses the application of financial incentives to improve health workforce retention.

2.3.3.4 Use of financial incentives

Financial incentives are a well-documented intervention for improving health workforce retention (Mbemba *et al.*, 2013). Financial and material incentives are a proven source of extrinsic motivation which impacts on health workforce retention (Chandler *et al.*, 2009; Bärnighausen *et al.*, 2009). The common modalities of financial incentives include provision of higher salaries or special allowances to healthcare workers on rural posting,

pay for performance schemes, providing staff with housing and free transport, hiring on fixed contracts, low rate mortgages, low interest car loans, bursary schemes or lucrative terminal benefits (Darkwa *et al.*, 2015; Schmiedeknecht *et al.*, 2015).

Carefully planned, financial incentives have shown to improve posting and retention of the health workforce. In Ghana, a 10% increase in salary for public healthcare workers reduced significantly the external migration rate by 1.5 percentage points. This effect, however, was observed only among young healthcare workers in the 20 – 35 age group (Antwi and Phillips, 2013).

In South Africa and Vietnam, a salary increment reduced both, movement of healthcare workers from public to private sector and external migration (Witter *et al.*, 2011; George *et al.*, 2013). Similarly, the introduction of a hardship allowance has led to improved retention of rural doctors in Thailand and Bangladesh (Wibulpolprasert and Pengpaibon, 2003; Rawal *et al.*, 2015).

Designing effective remuneration packages for healthcare workers is complex because healthcare workers differ in terms of wealth, source of income and their circumstances. Labour market forces and the surrounding economy dynamics shape healthcare worker's behaviour preferences including finance decisions (McPake *et al.*, 2013). Effective remuneration packages needs to take into account all those variables (Bertone and Witter, 2015).

Using financial incentives to encourage staff retention, therefore, requires careful short-term and long-term planning and a consideration of how financial incentives will work best together with other extrinsic motivators (Huicho *et al.*, 2012).

Effective planning and implementation of focused interventions may lead to improved retention. Although financial incentive schemes take different modalities, they have successfully been implemented in South Africa and Vietnam as stated earlier, the same was achieved in Zimbabwe and Malawi with improved retention and job satisfaction (Schmiedeknecht *et al.*, 2015; Taderera *et al.*, 2016) while in neighbouring Zambia outcome of financial schemes was different. The schemes neither reduced attrition nor improved job satisfaction (Goma, *et al.*, 2008; Gow *et al.*, 2013).

The main challenge with financial incentives is the failure to sustain them. In low resource countries with limited finances, reliance in financial incentive schemes to improve HRH is

risky (Delobelle *et al.*, 2011; Ibeziako *et al.*, 2013; Munyewende *et al.*, 2014; Selebi *et al.*, 2007; Soc *et al.*, 2004).

This section has explained the complexity encountered in using financial incentives to improve healthcare worker retention. Careful consideration of contextual factors and long-term planning are necessary to ensure that improvement in retention and other human resources for health aspects is sustained. One way of considering context to ensure success when using financial incentives or other interventions to improve retention, is to consider the healthcare worker's circumstances in totality, the Social Ecological Model (SEM) provides one such comprehensive approach and is presented below.

2.3.3.5 Interventions to improve health workforce retention in relation to the Socio-Ecological Model

Few studies have applied the Socio-Ecological Model (SEM) in health research, even fewer have used the framework in HR research.

A systematic review by Liu (2015) examined studies on HR interventions taking into consideration contextual factors which were grouped into micro, meso and macro levels. The review highlighted that factors at the different levels of the SEM can play independent roles in influencing HRH. Each factor and each SEM level is to be considered separately in designing, implementing and evaluating HR interventions (Liu *et al.*, 2015).

Healthcare workers like other people, behave differently depending on their personal attributes and the influence of the environment they are exposed to. This helps to understand findings from studies done in Papua New Guinea, South Africa and Lebanon described below.

A study done in Papua New Guinea showed a significant difference in job satisfaction by age and years in the profession among nurses (Jayasuriya *et al.*, 2012). On the contrary, individual (personal) factors such age, gender and education level had no influence on job satisfaction and the retention of paramedics in South Africa (Iwu, 2013). However, the two studies agree on two parameters to have improved the retention - improved working environment and good relationship with colleagues and supervisors at the workplace.

In the year 2012, a national HRH survey was conducted in Lebanon and showed that a lower education level reduced health workforce retention. Age, duration in job and marital status did not affect retention significantly (Alameddine *et al.*, 2012). However, a

year later, another survey was conducted and revealed that the young and unmarried had lower attrition rate (El-Jardali *et al.*, 2013). Both were nationwide surveys. The difference in findings from the two studies, suggest the influence of contextual factors in determining retention.

In the study from Papua New Guinea reported above, healthcare workers who worked in church-owned facilities were more likely to remain in their jobs than those who worked in public facilities based on the healthcare worker's faith in God. Similarly, improved retention among healthcare workers in Sierra Leone was attributed to faith in God (Jayasuriya *et al.*, 2012; Wurie *et al.*, 2016).

Poor social amenities, emotional and financial costs of separation from families, longer working hours due to staff shortages and the inability to earn from other sources are strong demotivating factors. Similarly, poor delegation, favouritism and lack of autonomy have the same effect (Wurie *et al.*, 2016).

The key finding in this section is that it is difficult to predict how different interventions at individual and management levels affect retention of healthcare workers. Healthcare workers exposed to similar conditions in the different SEM levels may perceive and behave towards retention interventions differently. This underscores the importance of designing and implementing tailored interventions for specific groups of healthcare workers at a particular time.

2.3 Chapter Summary

The chapter has presented a rapid scoping review of the literature.

The lack of standardised definitions and indicators for health workforce retention and attrition and of the terms 'rural' and 'remote' poses a challenge to the understanding, reporting, comparing and analysing findings from studies.

In-service training, which may be conducted in several ways, such as CPD, task-shifting, and bonding, may improve retention (length of stay in the job), motivation and job-satisfaction. Similarly, in-service training may increase chances of attrition by equipping healthcare workers with more skills and knowledge increasing their eligibility to more job opportunities.

Other interventions apart from in-service training includes exposing candidates to rural settings, financial incentives and personal and professional support.

Different results may be obtained when the same HRH intervention and the same approach is used towards improving retention among healthcare workers in different settings. Context plays a pivotal role in designing, implementing and evaluating interventions, the SEM provides a possible alternative towards a comprehensive towards an intervention.

It is crucial that more context specific evidence is generated on effectiveness of in-service training and other HR interventions to inform policy and practice on HRH. This study sought to generate more of such contextual information from Malawi and Tanzania.

A summary table of the articles included in the review in given Appendix I.

CHAPTER THREE: METHODOLOGY

3.0 Overview

This chapter describes the methods used in this study and has eleven (11) sections. The first section gives a brief introduction to the study by re-stating the research questions. The second section describes the study context by highlighting relevant aspects of the ETATMBA programme, as participants who took part in this study were part of this programme. It is followed by section three, a description of the study design and its justification. Section four describes the process of data collection.

Section five is a brief discussion of the positionality of the researcher in the study while section six provides a description of research assistants, their training and role in the study. Section seven provides a description of validity and reliability considerations of the methods used.

Section eight gives information on data management, storage and transport. Section nine is a description of data analysis, explaining the approach used in analysing both quantitative and qualitative data and the triangulation of data.

Information on ethical approval for the study and ethical considerations is given in section ten. Section eleven is a description of strengths and limitations of the methods used in the study.

3.1 Introduction

This section provides an explanation of methods used to conduct the study aimed at providing answers to the two research questions for this study as mentioned in the introduction chapter.

(1) What is the pattern of health workforce retention in Malawi and Tanzania after an in-service training course? and (2) What are the experiences and perceptions of healthcare workers who received in-service training and policy makers in Malawi and Tanzania on retention?

This study follows-up of participants who took part in the ETATMBA programme which is elaborated in detail below.

3.2 The ETATMBA programme

Enhancing Training and Appropriate Technologies for Mothers and Babies in Africa (ETATMBA) project was an European Commission (EC) funded programme implemented in Malawi and Tanzania between 2011 and 2014.

3.2.1 Participants and facilitators

The programme recruited 127 healthcare workers from selected facilities in 30 districts; 14 districts in Malawi and 16 districts in Tanzania.

All participants from Malawi were Clinical Officers. In Tanzania, two cadres of healthcare workers were chosen from each participating facility; an Assistant Medical Officer (AMO) and a Nurse-Midwife. The AMO was specially trained to perform caesarean sections and minor surgeries apart from general clinical patient care. The midwife was trained to provide anaesthesia during caesarean sections. Clinical Officers in Malawi are trained to perform similar roles as AMOs in Tanzania (Ellard *et al.*, 2012).

This study followed up all three cadres of staff, Clinical Officers in Malawi, Assistant Medical Officers and Nurse-Midwives in Tanzania. The study recognises that the three cadres are in no way representative of all other healthcare cadres in the two countries. However, since the participants in this study work in similar settings with the rest of other cadres, findings from this study may apply to other cadres as well.

The follow-up by this study started in 2014 and was done both retrospectively to 2011/12 when participants were recruited into the ETATMBA programme and prospectively to April 2017. Timelines for the study are provided in *Figure 3.1* below. The profile of participants in the three groups and the content of the programme received by each are summarised in *Table 3.1*.

ETATMBA did not place any restrictions (e.g. bonding) on staff trained under the programme but expected that they would return to their facilities for a period of time to help improve the quality of care.

The facilitators for the training came from the institutions that participated in the programme. In Malawi, the faculty from the University of Malawi worked together with staff from Warwick University to conduct the training. In Kigoma, staff from WLF and Ifakara Health Institute (IHI) conducted the training while in Ifakara, the staff in the institution conducted the training together with other trainers who got invited from other health institutions in Tanzania.

3.2.2 ETATMBA interventions

Interventions in the ETATMBA programme included facility renovation, emergency obstetric and newborn care (EmONC) training, training in leadership skills, clinical audit, and obstetric anaesthesia. The Ministry of Health validated the content of each training in each country. The participants received interventions in three distinct clusters as explained in the preceding section. Each cluster received a selected set of interventions, none of the groups received all programme interventions.

In each country, the allocation of interventions to clusters was done by the Ministries of Health, local district council authorities and the implementing stakeholders. Each cluster received interventions at different times; however, all interventions were delivered within the programme timeline. In Tanzania, ETATMBA programme aimed at renovating target facilities. WLF renovated target facilities in Kigoma region, patchy renovation of the rest of the target facilities was done by the government of Tanzania (*Table 3.1*).

The key intervention in the ETATMBA programme was training healthcare workers on managing EmONC care complications. The training was done using the EmONC training package developed by the Centre for Maternal and Newborn Health at the Liverpool School of Tropical Medicine (LSTM) (van den Broek N. 2006). The opportunity to conduct the study emanated from this relationship since the author was part of EmONC international trainers.

The mode of training across all three clusters was similar. For each session, there was a short lecture which was followed by a seminar, a discussion or a hands-on practical session (*Appendix VII*). Participants were trained on, and asked to keep a learning journal. Participants recorded in their journals during the training and when putting the skills learnt into practice at their facilities.

Despite the differences in the course content across the three clusters, the course organization was similar. An example of how the course was organised in Malawi is provided in *Table 3.3* below, which shows the course schedule, and *Appendix VII* shows the course curriculum in Malawi.

3.2.3 Training logistics

The Warwick University was lead implementer of ETATMBA, it had one administrator for the programme based at the university. Warwick University received funding from the European Commission (EC) for implementing the programme in Malawi and for one

cluster of participants in Tanzania - those trained in Ifakara. The World Lung Foundation (WLF) provided the funding for participants in Tanzania who were trained in Kigoma.

The training was organised into six modules. Each module was taught for two weeks. Then there was a two months' gap before the next training. Each training cycle lasted three months. The entire training took 18 months to complete (*Table 3.3*).

In Malawi, at the start of the programme there were 48 participants, these were divided into 4 groups of 12. The groups attended the training in alternate periods. The training venue was in Lilongwe. In the periods in between training participants went back to their target facilities, they were asked to put the skills they had learned into practice and bring feedback during the next training.

For participants in Kigoma, the training venue was in Kigoma Regional Hospital (Maweni hospital) and the rest of the participants in Tanzania had their training conducted at Ifakara Health Institute. The training in Kigoma was organised in two groups, one composed of 16 and the other had 18 participants. In Ifakara there were two groups of 18 participants each. The schedule of training was similar for all three clusters.

Each time participants attended the training they received subsistence allowance to cover the living costs. The allowance was much less than the per-diem rates at the time in both countries. Participants also received transport allowance to and from the training venue.

3.2.4 Programme dissemination

The programme information and its results are published in University of Warwick website: www2.warwick.ac.uk/fac/med/about/global/etatmba/.

The results from programme are published in the following peer reviewed articles; Ellard *et al.*, 2012, 2014, 2016; Nyamtema *et al.*, 2011; Shemdoe, *et al.*, 2016.

The information from these sources provided insights in conceptualising this study.

Table 3.1: Profile of participants and interventions implemented under the ETATMBA programme

Information		Malawi	Tanzania - Kigoma	Tanzania - Ifakara
Participants number and location				
Main stakeholder		University of Warwick	World Lung Foundation	Ifakara Health Institute
Healthcare workers trained		Four batches of 12 each. Total of 48	First batch =18, Second batch = 16 Total of 34	Two batches of 18 each. Total of 36
Districts		**14 in North and central** Lilongwe, Karonga, Nkhotakota, Chitipa, Rumphi, Mzimba, Nkata bay, Kasungu, Nchisi, Ntcheu, Dowa, Mchinji, Salima and Dedza	**6 in Northwest and south east** Ulanga, Kilombero, Rufiji, Kigoma, Kasulu and Kibondo	**10 in South east, north and South west** Sumbawanga, Nkasi, Geita, Chato, Bukombe, Mpanda, Liwale, Meatu, Lindi and Ruangwa
Interventions	EmONC Training	Done	Done	Done
	Clinical audit training	Done	Not done	Done
	Obstetric anaesthesia	Not done	Done	Done
	Clinical leadership skills training	Done	Not done	Done
	Facility Renovation*	Not done	Renovation of; maternity ward, obstetric theatre, running water. Provision of electric generator and motorbike	Not done

*This was a major initiative for ETATMBA programme in Tanzania. However, it was partly met leading to much frustration and staff re-deployment (Shemdoe *et al*, 2016).

Characteristics of ETATMBA trainees, the training and award given are further summarized below in *Table 3.2*.

Figure 3.1: Timelines for ETATMBA programme and the study

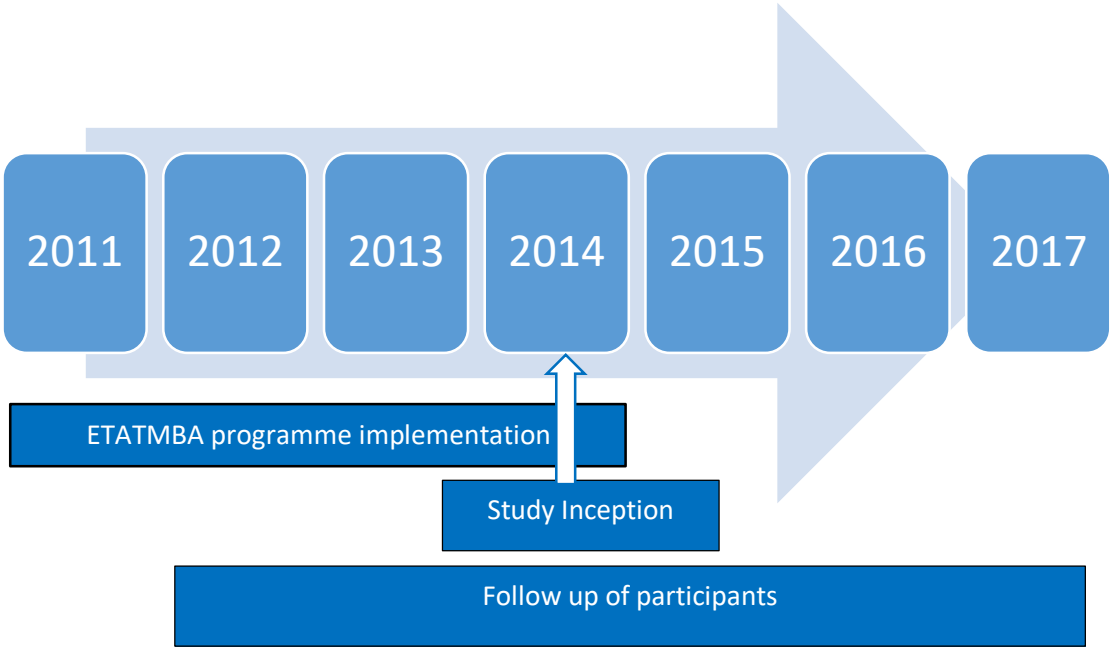


Table 3.2: Characteristics of ETATMBA Training in Malawi and Tanzania

Characteristic	Malawi	Tanzania
Authority responsible for recruitment, employment and deployment	Ministry of Health	District councils
Institution organising the training	Academic; University of Malawi	Research; Ifakara health Institute
Trainers base	University of Warwick and Malawi College of Medicine	Ifakara health Institute, World Lung foundation, Tanzania
Award given	BSc Advanced Obstetrics, Neonatal Care and Clinical Leadership Skills	No academic award given
Professional association in place and active with a leadership structure	Yes (Malawi Association of Clinical Officers, MAOCO)	None

Table 3.3: Training Schedule for Participants in Malawi.

Timeline	Modules & Research Activity	
Nov-Dec 2011	**Module 1: Clinical Officers as Advanced Leaders** This concentrated on the five major causes of maternal mortality in Malawi, hypertension/eclampsia, postpartum haemorrhage, post delivery sepsis, sepsis after unsafe abortion, obstructed labour.	Simulation and skill drills on emergency obstetrics included, external cephalic version, vaginal breech, postpartum haemorrhage, B Lynch suture, shoulder dystocia, eclamptic fit, vaccum extraction, obstructed labour (partograph)
April – May 2012	**1st interviews: N = 19 Trainees**	
May – June 2012	**Module 2: Clinical service improvement and leadership in emergency obstetric and neonatal care** Introduction to leadership Behaviours and leadership skills Leading and managing change Introduction to service improvement and problem identification Service improvement and values stream mapping Introduction to values based practice	Key concepts in values based practice Introduction to Clinical Leadership Compentency Framework (CLCF) (trainees expected to use new leadership skills on return to district) Quality improvement in obstetrics Audit workshop (assignments given and audits conducted on return to districts (completion Nov 2012) Neonatal care videos (eight training videos covering a variety of topics)
Oct – Nov 2012	**2nd Interviews: N = 12 Trainees, N = 10 Cascadees, N = 7 DMO/DNO**	
Nov – Dec 2012	**Module 3: Born too soon** Neonatal survival in Malawi Essential and extra newborn care Gestational age Preterm neonatal resuscitation	Special care of preterm babies Kangaroo mother care Evidence-based medicine Second and third trimester scanning technique Setting up the machine (ultrasound scanner)
Dec 2012 – Feb 2013	**Module 4 "Professional project" involving a literature review, audit and re-audit.**	
May – June 2013	**Module 5: Understanding research evidence and critical appraisal** Training NPCs Introduction to evidence-based medicine Evidence-based medicine overview Bias Interaction How to read an academic paper How to critically appraise an article Critical Appraisal Skills Programme	Helsinki Ethical Principles for Medical Research National Health Services Research Committee of Malawi: Guidelines National Health Services Research Committee of Malawi: Application form Revised guidelines and operational procedures Qualitative research appraisal Qualitative research data analysis Statistics
	Module 6: Essentials of clinical training in obstetric and neonatal care in a low-resource setting Introduction to clinical education Clinical teacher briefing Learning styles and strategies	How to teach practical skills Teaching practical skills On-the-job teaching Small group mentoring Interprofessional education
	3rd interviews: N =39 trainees, N = 2 Registrars	

3.3 Study Design

A mixed-methods approach with both quantitative and qualitative components was employed. This approach was used to capture both the retention and attrition of participants over time and gain deeper insights into the underlying reasons for retention or attrition (Lisle, 2011), triangulation was done to reduce bias and improve the trustworthiness of the findings (Creswell, 2013; Shenton, 2004).

3.3.1 Quantitative design: Longitudinal observational study

A longitudinal design, with both, retrospective and prospective arms was chosen aiming to capture the change in the location, role or employment of study subjects from the time of recruitment into ETATMBA programme to the end of the follow-up period (April 2017). Follow-up was terminated at this time as the desired follow-up period of five years was completed. There was a clear indication of saturation with the follow-up interviews.

Longitudinal observational studies involve observing study subject(s) with an exposure of interest over time to measure the occurrence of outcomes of interest (Hassett and Paavilainen-Mäntymäki, 2013). Longitudinal prospective studies are particularly recommended when comparing outcomes of interest at two or more points in time and when it is not in the power of the researcher to maintain the cohort (Grossoehme and Lipstein, 2016).

Prospective longitudinal studies have the advantage of measuring outcome of interest even in a relatively smaller sample (Webb and Bain, 2005). In this study, ETATMBA interventions constitute the exposure, while the outcome of interest is change in facility locations; retention or attrition.

In this study, three aspects of "retention" were considered; (1) duration a healthcare worker remained in a facility, (2) duration a healthcare worker remained employed in the same employment – government/private or a non-governmental organization (NGO), and (3) duration a healthcare worker remained in the role of providing clinical services. Whereas "attrition" occurred when a healthcare worker moved from a target facility to a non-target facility, changed roles - from a clinical to a public health or an administrative role, or changed employers – from government to a non-government employment.

In both countries, a setting was considered urban if it was classified as a district or regional headquarter town. Any other location was classified as rural. A healthcare worker was

considered of rural origin if they stayed in a rural setting from their childhood up until the completion of primary or secondary school (Vries and Reid, 2003; Wilson *et al.*, 2009).

Follow-up of participants started immediately after the researcher established contact with the study participants. The early commencement of data collection was deemed necessary to avoid the potential risk of loss to follow-up, the main disadvantage of longitudinal studies (Grossoehme *et al.*, 2016).

A key potential disadvantage of longitudinal studies is selection bias (Grossoehme *et al.*, 2016). However, this study involved observing a group of healthcare workers who took part in a programme for which the researcher did not influence inclusion or exclusion. Participants in the ETATMBA programme were selected by the Ministries of Health in Malawi and Tanzania and came from public facilities in both urban and rural areas, with both high- and low-case load. The variation of characteristics of facilities from which participants came helped reduce the selection/recruitment bias and ensure greater representativeness, that is, a variety of healthcare facilities that are representative of the larger health system.

A longitudinal observational study design was chosen to help with mapping of healthcare workers' location over time which involved tracing healthcare workers every three months and recording their location and roles. A longitudinal study design is stronger than a cross-sectional design as the outcomes of interest can be measured over time to establish causality (Gayle and Lambert 2018). Longitudinal studies also enable the researcher to remove the effect of seasonality in occurrence of a behaviour being observed (Grossoehme *et al.*, 2016; Webb *et al.*, 2005).

The researcher maintained contact with participants for three years prospectively and traced back their location for two years retrospectively, a total of five years to assess changes in both location and role. The prospective follow-up involved contacting each participant at least once every three months (quarterly). To our knowledge, there are no previous studies that has followed up healthcare workers for up to five years to determine their retention, it is unique to this study and one of its strengths.

Findings from a quantitative study design are better explained by conducting a complimentary qualitative study which helps to explore reasons behind findings obtained from the quantitative data.

3.3.2 Qualitative design: semi-structured Interviews

Semi-structured interviews were conducted to answer the second research question "*What are the experiences and perceptions of healthcare workers and policy makers in Malawi and Tanzania on health workforce retention following an in-service training?*"

Exploring opinions from participants on a subject for which participants are likely to have differing opinions is best done using participant interviews. Interviews that are semi-structured are a preferred method of data collection in an area that has been well-defined and the researcher is trying to establish how much of the "known" factors apply to the study in question. Retention of the health workforce is an area which has been extensively explored, factors that have been found to affect healthcare worker retention in other studies were helpful in structuring the interview guide. As in all types of interviews, the interviewer needs to take an active rather than passive role to use the interview topic guide effectively to ask the right questions to attain the desired breadth and depth of information (Ritchie and Lewis, 2014).

The first interviews were conducted nine months after the quarterly follow-up had begun. At this time, the researcher had developed a good rapport with participants to enable smooth interaction. Interviews were then done iteratively every time contact with a participant was made during the quarterly follow-up.

Deciding whether or not to change jobs or location is often stressful and relocating is expensive and affects the healthcare worker, the family and community (Abimbola *et al.*, 2016). Hence, exploring thoughts, ideas, opinions and attitudes on the subject using qualitative methods was necessary.

Ideas from participants expressed during interviews, at least in part, came from their day-to-day interactions with other healthcare workers, friends, family members and other members in the community (Gentles et *al.*, 2015). Thus, ideas from these three cadres of healthcare workers will help to understand what healthcare workers in the two countries think are promoters and inhibitors of retention.

In order to contextualize the study in more detail, and explain possible reasons for the quantitative and qualitative study findings, the study used case studies from four target facilities. The benefits of using case studies in research are outlined in the next section.

3.3.3 Case studies

Although the qualitative and quantitative results provide elaborate data regarding participants' mobility over the five years of follow up and a comprehensive analysis of their perceptions and experiences regarding retention, it was necessary to include case studies to portray snapshots of the situation on the ground in the four facilities chosen.

The information from case studies situate a study into context and help to explain findings in both qualitative and the quantitative data (Gillham, 2000). However, case studies were help in answering the second research question regarding participants' experiences and perceptions on retention.

Mehedi (2018) observes that case studies can provide a comprehensive research strategy that bridge the gap between quantitative and qualitative designs (Mehedi, 2018).

During the five years of follow up changes happened with regards to various aspects related to the participants and their surrounding environment, the possible effects of those changes to retention would better be appreciated through case studies. Some facilities that were regarded as remote at the beginning of the follow up were no longer remote at the end of the follow up as a tarmac road had been built. A case study is more suited to explain the effect of such a change, which would be obscured in the general data (Mehedi, 2018).

Case studies also helps to clarify on findings that would be difficult to explain when considering the whole group of participants. For example, the presence of influential personalities, social cultural background and the local socio-economic activities. Larrinaga (2017), asserts that case studies enrich quality and robustness of research in business and management (Larrinaga, 2017). Ambrosini (2018) agrees to this assertion and adds that case studies are contextually rich in detail and allows adapting and applying theoretical concepts to specific management situations specific to the case in question (Ambrosini, 2010).

The choice of case studies was done on a convenient basis. In each country two facilities were chosen; one located in a suburban area, and one in a remote rural location. Once these facilities were chosen, the study participants in those facilities were consulted to provide the required information, the same way qualitative data was collected. In cases where study participants did not have all the information requested, eg. Hospital capacity, they enquired this data from facility administration.

3.4 Data Collection

3.4.1 Establishing rapport with study participants

A list of healthcare workers from target facilities in both countries was obtained from the ETATMBA programme documents and used to make a table in Microsoft Excel.

It was deemed necessary that a good rapport is established with participants to establish trust and confidence which is key to collecting good quality data in qualitative studies (Mack and Woodsong, 2005). In Malawi, the researcher introduced the study to participants during a professional association's conference – Malawi Organisation of Clinical Officers (MAOCO) annual conference in 2014. The researcher made a brief presentation outlining the study background, aims and objectives followed by a question and answer session with clarifications provided.

Each participant was given the participant information sheet and the contact request sheet with a request to participate in the study and to provide contact details. The participant information sheet is presented in Appendix II and the contacts request sheet in Appendix III. The same information sheet was also used to introduce the study to key informants.

A simple excel sheet was prepared which included participant's demographic characteristics and slots to record whether they had changed the work station, role or employer for each quarter of tracking.

Participants were informed that all contact details shared with the researcher would be kept confidential and safe, accessed and used only by the researcher for the purpose of the study.

Participants were asked to indicate the most convenient means of contact them including an indication of time of day, or which day of the week they would wish to be contacted. Possible means of communication included; (i) mobile phone (ii) social media including Skype, Twitter, Facebook, Telegram, WhatsApp or other means of social media communication (iii) emails.

Developing rapport with participants in Tanzania involved visiting them in their facilities. The researcher visited all facilities where study subjects were posted. The researcher made sure the interaction with participants was friendly, objective and was done uniformly across all participants. The study background, aim and objectives were explained. The participant information sheets and contact request sheets were given.

It was regularly explained to participants that participation in the study is voluntary and they should not feel in any way coerced. Participants were also told that they could opt out of the study at any time they wish without any consequences whatsoever. Contact details of the researcher were shared and participants were encouraged to use them in case of any queries related to the study at any time.

3.4.2 The tracking process

The first contact with participants was used to collect participant information using contacts' request sheets. The facility where participants worked at the time of recruitment into the ETATMBA programme was noted. This was the reference point for the participant's retention or attrition in terms of participant's location. At the start of the ETATMBA programme all participants were stationed in the target facilities, all were providing clinical care to patients and all were government employees.

Each time a contact was made, the participant was asked if they still worked in the same facility and in the same role or whether they had changed roles or moved facility. Recording of participant's data was immediately followed by a semi-structured interview.

Participants were also asked to inform the researcher if there was a change to their work station or role(s). Each time this type of information was received, it was recorded in the appropriate column in the spreadsheet on the same day information was collected. In case of missing, unclear or inaccurate details, a participant was contacted the following day to clarify.

A participant was considered to be "retained" if they still worked in the facility they worked in at the start of the ETATMBA programme or "attrition" if there was a change in the facility they worked in, and that the new facility was not a target facility for ETATMBA programme. Change in roles within the facility did not alter their "retention" status. However, if there was a change in roles, this prompted and informed the interview that followed to find out the effect of the change in their perception on retention.

Each cluster of participants, Malawi, Tanzania – Kigoma and Tanzania – Ifakara had a group leader who was appointed at the time ETATMBA programme was running. This person was identified and assisted in situations where locating a participant was difficult due to, for example, residing in a place with no mobile phone signal or if their contact details had changed.

Following the initial contact, each participant was followed-up once every three months. The follow-up was purposefully staggered to allow the researcher to spread the follow-up contacts evenly across each quarter. The data was recorded on a spreadsheet accordingly.

The first set of tracking data was recorded in the first quarter of 2012 and the last observation was made during the second quarter of 2017, making a total of 22 observations. The information recorded include participant's workstation, role (clinical, administrative, public health, private clinic, non-governmental organisation (NGO) work etc) and employment (who the employer was). The researcher also advised participants to share other relevant information related to the study whenever they thought it was necessary. This would include, but not limited to moving to another workstation or a change in roles at their current station or any other information thought to be relevant for the study.

3.4.3 Developing the interview topic guide

The Socio-Ecological Model (SEM) (Bronfenbrenner 2005) and the Human Resources for Health Action Framework (HAF) (WHO 2009) were considered in developing the interview topic guide. The interview topic guide for participants is presented in Appendix IV and Appendix V is the topic guide for interviews with key informants.

The SEM was helpful in formulating questions to explore perspectives from participants on healthcare worker's retention at the different levels of the SEM (*section 1.4.1*). Additional questions were formulated to explore possible links between the different levels of perceptions in SEM to the four categories on interventions to improve retention recommended by the WHO in 2010 in the article, "Increasing access to health workers in remote and rural areas through improved retention". The four categories of interventions are: education, regulation, financial incentives and support – both personal and professional (WHO, 2010).

The researcher presented the interview topic guide at one of the department's academic meeting. The inputs received were used to refine the topic guide to improve focus of interviews and depth of probing.

3.4.4 Data collection through semi-structured interviews

The interviews were conducted each time a participant was contacted for follow-up. Conducting interviews face-to-face is the best approach as the interviewer can learn from

emotions expressed on the interviewee's face and steer the interview accordingly. However, face-to-face interviews were not feasible in each instance due to limitations on the length of fieldwork.

Face-to-face encounters between the researcher and participants help to develop rapport more quickly and makes for a long-lasting, respectful relationship between the researcher and participant which is key in ensuring data quality (Guillemin and Heggen, 2009). Non-face-to-face interviews have the disadvantage of not capturing the non-verbal information such as dress, mannerisms and body language which can provide rich information to complement the verbal information (Opdenakker, 2006).

However, it was possible to ensure that the first interview was always a face-to-face interview. Subsequent interviews were done via social media including Skype, WhatsApp, Facebook and Telegram or by phone. Use of social media in medical and social research is becoming increasingly popular and acceptable particularly in social science (Lafferty and Manca, 2015).

Subsequent interviews took an iterative format whereby the researcher, using the topic guide would go through the interview questions again checking if the participant perspectives had changed. More focus was placed on areas that the participant felt needed addressing or had some information to share. Follow-up interviews took less time than initial interviews.

Contacting the participants on a regular basis enabled the researcher to develop rapport with participants and this was helpful to enhance engagement during interviews. Regular and consistent communication between the researcher and participants leads to a stage where participants do not feel they are giving information for the study and discuss matters in a natural way. This helps improve the quality, validity and reliability of data collected (Silverman, 2016). An effort was made to keep to the agreed appointment and duration of interview.

Keeping in close contact with study participants is important in qualitative research as it helps to remove any doubts participants may have that may prevent free sharing of information. However, qualitative research experts warn that the engagement should not be excessive which may hamper objective judgement of the researcher (Ritchie and Lewis, 2014). To avoid this shortcoming, contacts were kept to a three monthly (quarterly) schedule unless there was a change to the participant's circumstances and a conversation

was initiated by a participant. When this happened, the conversation was kept short and focused.

The qualitative aspect of this study has the added advantage of the iteration that emerged from an on-going exploration of cause-effect details among participants and was helpful in obtaining a better understanding of their perspectives about retention and/or attrition.

All initial interviews took place at the participant's place of work. In order to enhance neutrality and a naturalist nature of responses, it is advised that interviews with participants are performed at their natural environment as far as possible (Sofaer, 2002).

The purpose of interviews was to explore perceptions, opinions, beliefs and suggestions around the factors affecting retention or attrition of healthcare workers. These perspectives were explored from the personal standpoint of the healthcare worker in consideration of the surrounding environment based on the Socio-Ecological Model.

Appropriate probing was done during interviews in order to obtain deeper insights into participant's thoughts, attitudes and beliefs regarding factors affecting health workforce retention. Each interview had lasted 45 to 60 minutes. The interviewer used a notebook and pen to capture points during the interview. A voice recorder (Olympus WS 832) was used to record the interviews.

Each day, the researcher reviewed notes made during the interview and listened to the recordings to ensure that clarity was sought if there was any unclear information. If there was any clarification needed, follow-up communication was made immediately with the participant. Two research assistants, one from each country helped conduct the initial face-to-face interviews.

3.5 Positionality in research

In qualitative research, characteristics of the researcher(s) plays a significant role in quality of data (Oltmann, 2016).

At the start of this study, the researcher realised that he needed knowledge and understanding of Human Resource Management and Human Resources for Health in particular. The researcher completed an online Human Resource Management from the University of Minnesota through a website called Coursera. The researcher also attended a module at the Liverpool School of Tropical Medicine on Human Resource Planning and Management, did reading of Human Resource Management resources including books

and journal articles and linked with Human Resource Management on-line forums e.g. LinkedIn to gain insights from experts in the field and the contemporary issues being discussed on the subject. This enabled the researcher to have a broader understanding of the subject of human resources for health which was key to designing and conducting the study efficiently.

Some characteristics of the researcher that had potential to influence interviews included the fact that the researcher, from Tanzania working in UK could be viewed by participants as having not been retained by the health system in Tanzania. However, this was mitigated by the researcher explaining plainly to participants who asked about this particular issue, the purpose of the relocation.

The researcher is an obstetrician who has extensive clinical experience of working in underserved areas in Tanzania. This had two potential impacts on the research. On the one hand, it made it easier for participants, who all worked in maternity units in their facilities to identify with the researcher and vice-versa but, on the other hand, it potentially caused the researcher to lose objectivity by reflecting on personal experience and steer the interviews to his own perceived thoughts on retention and attrition (Marshall and Roosman, 1990). The researcher overcame this through constant reminders to remain neutral.

Neither the researcher nor the Liverpool School of Tropical Medicine where the researcher was based had direct input or interest into implementation of the ETATMBA programme. This ensured objectivity of the study and any findings from the participants who took part in the programme.

3.6 Research assistants

Individuals involved in assisting each step of the research process may have a substantial impact on the quality of data collected and results reported (Creswell, 2013). Research assistants were carefully selected and trained to ensure consistency of approach.

The two research assistants were both midwives (one from Malawi and one from Tanzania). Both had experience in conducting qualitative interviews and were known to the researcher before the study. Both had been involved in implementing a programme to improve maternal and newborn health under the Centre for Maternal and Newborn Health at the Liverpool School of Tropical Medicine.

A one-day training for the research assistants was conducted by the researcher before the start of the study. Each research assistant was trained in their own country. The training involved an overview of the aims and objectives of the study and the methods involved, principles of data collection in qualitative research, basic principles of conducting interviews, ethical considerations including respecting participant's right to stop the interview at any point if they feel so, the different types of probing, how and when to probe.

The interview topic guide was discussed with the research assistants. The research assistants read the questions in the interview guide and clarifications were made to ensure a uniform understanding in using the tool as uniformity of approach is critical in qualitative research (Shenton, 2004).

Practice in the use of the recorder was also undertaken. Sample recordings were made to allow the research assistants familiarise themselves with the use of the device.

The idea of creating a free atmosphere in which the participant would feel free to express their views was emphasised. The research assistants were only involved in collecting qualitative data at the time of the first interviews. All other interviews were conducted by the researcher.

3.7 Reliability and validity of methods used

The selection of participants in this study was done purposefully at the time of implementation of the ETATMBA programme. The researcher did not influence study participant selection, selection of districts or the healthcare facilities where participants came from. All participants under the ETATMBA programme were eligible for inclusion in the study. The ETATMBA programme intended to target healthcare workers from hard-to-reach facilities located in rural districts and this had potential for selection bias; however, in reality, facilities were found to be in a variety of settings including urban, semi-urban and rural areas. Findings from the study could apply rural as well as urban situations.

For qualitative data collection, participants were interviewed at their usual place of work which enables participants to relate to the existing environment and promote reflection on issues deemed important among them and their job (Silverman, 2016).

Ensuring privacy, creating a relaxing environment and ensuring that the person being interviewed feels secure is key to obtaining reliable data (Ritchie and Lewis, 2014). Most

interviews were conducted at facility premises. The participant, being more familiar with the facility environment, was requested to identify a place suitable for the interview. Most interviews took place in consultation rooms after working hours.

Semi-structured interviews were done using a pre-designed interview topic guide. Flexibility was allowed and the participant was not interrupted when providing their views even if the order in which their ideas came did not follow order in which the topic guide is written. Participants could explain in detail their views on the subject freely without any interruption. Participants names were not used; however, facility codes were used to help in triangulating information but was anonymised once data analysis was completed.

There was no language barrier during interviews. All interviews in Malawi were done in English and all participants were comfortable to use English in the discussion. In Tanzania, while questions were posed in English participants would sometimes use Swahili words e.g. when emphasizing an important point. The researcher and the research assistant who assisted in data collection in Tanzania are native Swahili speakers and have a good command of English.

Research assistants were healthcare workers, both midwives involved in providing clinical care. Having similar characteristics between interviewer and interviewee helps in enhancing study validity and reliability (Oltmann, 2016).

3.8 Data management, transport and storage

All data collected in paper form from the field including participant contact request sheets and notes made during interviews were transported to the Liverpool School of Tropical Medicine (LSTM) by the researcher and stored in a locked cupboard. Only the researcher had access to the data and only removed the data forms when needed for the purpose of the study. They were then promptly returned to the cupboard after the intended purpose was over. The data will be destroyed after five years as per the institution's data retention policy.

Participant contact information such as phone numbers, profile information for social media such as Skype, WhatsApp, Telegram, Facebook and email addresses were kept on a separate electronic device not in regular use by the researcher and the information was only used when making contact with participants. In between contacts, the device was

switched off in order to avoid potential leaks of contact information to the researcher's other contacts which would have resulted in a breach of confidentiality and anonymity.

The voice recorders containing interview data were transported to the Liverpool School of Tropical Medicine and stored in a locked cupboard to which only the researcher had access. The information was then copied to the researcher's personal computer and deleted from the voice recorders.

The Excel spreadsheet which contained data from quarterly tracing of participant's location and roles was stored in the researcher's personal computer. Both the computer and the spreadsheet were password protected with only the researcher having access to the data.

3.9 Data analysis

Data analysis was done in two parts, the first involved analysis of the quantitative data collected through the quarterly tracing of participant locations and the second involved analysis of the semi-structure interviews.

The data was anonymised by keeping participant personal information in a separate file and using unique participant's codes. Only the researcher was able to link the participant information to the data being analysed.

3.9.1 Quantitative data analysis

The information from the spreadsheet was made into frequency tables of chosen variables. The association between participant's retention/attrition and variables such as sociodemographic data, duration in employment, place of birth, place where participants spent the early years of life, spouse's origin, spouse's job, number and age of children, etc. was determined through simple non-parametric tests. The data was presented using line graphs and histograms for the two countries showing attrition and retention patterns for selected participants.

In determining the association between participant's socio-demographic variables and retention, a series of Chi-square tests were performed for each independent variable. The ideal approach to determine this association would be the Stratified (Cochran-) Mantel-Haenszel tests which is available in SPSS. However, because not all variables were binary, and with the limited sample size, it was not possible to perform the test to provide

estimates for all variables simultaneously. Even when the test was applied to the values, the output was Pearson Chi-Square Tests and not Mantel-Haenszel tests.

In examining the quantitative follow up data in detail over time the study identified three aspects related to retention. These were length of stay in the employment with regard to the location/facility, the employment/employer and the key role played by the participants, clinical/administrative/public health. Calculations of the rate of retention were done in the three aspects. Many other aspects related to retention were identified, but these three were considered useful in determining the retention observed in the three cadres of healthcare workers followed up. The three aspects of retention chosen were helpful in clarifying the definition of retention provided in this study in *Section 5.2.1.1.*

3.9.2 Qualitative data analysis

Data analysis started during data collection by recording participant's expressions and comments given. These were used to add details to the data after transcription.

Transcription was done immediately after each interview while memory was still fresh to enhance quality and richness of data. Transcription was completed through listening to the recorded interviews and referring to notes made during interviews. Listening of each interview was done three times at minimum to capture and confirm verbatim information and non-verbal information which would also be helpful in interpretation of results.

Before the next round of interviews, the researcher read the transcription notes written in the previous interview to remind himself of important issues raised by the participant. This informed the questioning during the interview and made the iteration possible. Care was taken however for the previous interview not bias the current interview by staying neutral. Issues from the previous interview were only discussed in the interview if the participant spontaneously mentioned them.

Transcription of data was done in English. In the case of interviews with participants in Tanzania, phrases or words which were mentioned in Swahili were translated into English during transcription. These were back translated to ensure initial meaning was preserved. Through listening of the interviews and repeated readings of the transcribed information, the key themes emerging from the data were developed. The themes identified from initial interviews were considered for iteration in subsequent interviews.

Another layer of data analysis involved linking the emerging themes with the articles used in the formulating the conceptual framework; SEM, the HAF framework, the AAAQ model,

and the four WHO recommendations for improving retention in underserved areas. Emerging themes and cross linkages between different participant experiences and perceptions of retention were presented in light of the study's conceptual framework and key findings recorded. The experiences and perceptions were also compared and contrasted between participants in the two countries, across cadres, type of facility and location – rural, sub-urban or urban.

Although the data analysis did not link the opinions and perceptions of participants over time, it was possible to link these with participant's variables such as age, duration in employment and cadre immediately after interviews. These were useful during data presentation.

3.9.3 Data analysis for case studies

The information from case studies was used in explaining the findings obtained in the follow up of participants and from the interviews. Specific examples from each of the case studies are cited in the results and discussion chapters to provide more clarity or understanding of the context.

3.9.4 Triangulation of data

Triangulation of data was possible through exploring the linkage between findings from the quarterly mapping of staff and from the semi-structured interviews. Data analysis allowed examining data from the different categories of participants to find out any similarities or differences with regard to the retention or attrition patterns. The patterns identified were linked with the major themes emerging from the qualitative data to find out any divergence or convergence of findings.

New concepts or evidence emerging from the study were highlighted and linked to recommendations. Recommendations on how retention of staff could be improved were made based on how strong findings from the study were supported by both quantitative and qualitative data.

3.10 Ethical approval and ethical considerations

This study was conducted as a part of the ETATMBA programme. Ethics approval for the ETATMBA programme was granted by the Biomedical Research Ethics Committee (BREC), University of Warwick, Ifakara health Institute in Tanzania and the Ethics Committee from the University of Malawi. The ethics approval certificates from the three institutions can

be found in *Appendix VI*. The Principal Investigator (PI) of ETATMBA programme from the University of Warwick provided useful contributions and ideas to the study.

Interviews involving transfers sometimes lead to participants recalling unpleasant moments. Care was taken to make sure if this happened, the interview would stop and the participant would be linked to a healthcare provider from a nearby healthcare facility for psychological support. However, this did not occur during the data collection process.

Study participants from facilities used as case studies were informed and consented to the fact that even though the description in the case studies is anonymised, a person familiar with the facility might be able to link a particular story to an individual person.

3.11 Strengths and limitations of the study methodology

A longitudinal observational study design with both retrospective and prospective arms enabled a follow-up of participants for five years. This is a strong design which allows mapping of the outcome of interest for a period of time thus avoiding seasonality of some outcomes and establishing trends and facts. To strengthen the follow-up further, semi-structured interviews were conducted immediately after the quarterly mapping. The interviews were iterative, building upon the responses gathered from the participant from previous interviews. In this regard the researcher reviewed notes from previous interviews before embarking on the interview with a particular participant. This is another strength of the study.

The use of social media for quarterly tracing of healthcare workers was helpful, handy and enjoyable by most participants.

The researcher used the first three months to develop rapport with study participants and started the quarterly mapping within the first three months of study inception. An early follow-up of study participants in this case was necessary to avoid loss to follow-up. Semi-structured interviews were introduced later (after nine months) to allow for the researcher to establish familiarity with the subject. This time was also used to develop the interview topic guide.

There are potential drawbacks to the design that needs pointing out.

The health workers interviewed are busy people, their services are in high demand. Although interviews were planned in advance, sometimes interruptions occurred because

of an emergency or an urgent call to a meeting. The interviews resumed at a later time, but the continuity could have been affected.

The researcher made every effort to preserve participants' anonymity. However, maintaining perfect anonymity is a challenge in longitudinal study designs (Sheikh et al., 2012), hence, the risk that a reader familiar with the research settings may be able to identify a facility or a personality being referred to. Participants were made aware of this risk and had no problems to have some of their stories shared as examples in the thesis.

Due to the longitudinal design, some interview questions were repeated during follow-up interviews, especially for those who remained in the same facilities throughout the follow-up time. Although each time the researcher tried to put a different spin to the question, this was a source of boredom to some participants, with a loss of the initial momentum. The researcher remained positive and sometimes tried to change interview style to make it more interesting.

CHAPTER FOUR: RESULTS

4.0 Overview

This chapter presents the findings of this study. It is divided into four major sections. Section 4.1 provides results of tracking the healthcare workers. This is quantitative data which serves to address objective 1 - to determine retention patterns of healthcare workers in Tanzania and Malawi. Section 4.2 provides findings from the qualitative semi-structured interviews with healthcare workers and policy makers and serves to address objective 2 - to explore perspectives and experiences of healthcare workers and policy makers on health workforce retention. Section 4.3 presents findings from four case studies. The case studies provide thorough understanding of the contextual factors underpinning findings in section 4.1 and 4.2. Finally, Section 4.4 provides a summary of the results chapter.

4.1 Tracking of study participants

4.1.0 Overview

This section presents findings from the tracking (follow-up) of study participants. It first describes their sociodemographic variables and how these are associated with participant's retention. The findings from the tracking are then presented in three aspects; (1) remaining at target workstations, (2) remaining in government employment and (3) remaining in the provision of clinical services to patients. The findings from the tracking of healthcare workers to determine their retention in their workstations is presented first and includes a detailed description of the destination of those who left from healthcare facilities in which they were based. Tracking with regard to whether they remained in government employment or were employed by other organisations is presented next, finally, tracking with regard to their role of clinical care to patients is presented. At the end of the section, tracking regarding these three aspects is combined to present a collective view of how healthcare workers moved around.

As this study followed-up a specific group of healthcare workers, the information presented in this section is limited to that group only and it cannot provide a comprehensive view of what was happening with other employees. This limitation makes it difficult to present the net gain or net loss of healthcare workers in the target workstations during the specified follow-up period.

4.1.1 Socio-demographic variables of study participants

Table 4.1 below presents the socio-demographic variables of study participants. A total of 127 participants were included in the study. Of these, 46(36.2%) in Malawi and 81(63.8%) in Tanzania.

Table 4.1: Demographic variables of study participants at the start of the study (N=127)

Variable		Malawi (N=46) #(%)	Tanzania (N=81) #(%)	Total (N=127) #(%)
Gender	Male	44(95.7)	54(66.7)	98(77.2)
	Female	2(4.3)	27(33.3)	29(22.8)
Age	Up to 30	9(19.6)	5(6.2)	14(11)
	31 - 40	25(54.3)	23(28.4)	48(37.8)
	Above 40	12(26.1)	53(65.4)	65(51.2)
Cadre	AMO	0(0)	40(49.4)	40(31.5)
	CO	46(100)	0(0)	46(36.2)
	NMW	0(0)	41(50.6)	41(32.3)
Marital status	Single/others	9(19.6)	2(2.5)	11(8.7)
	Married	37(80.4)	79(97.5)	116(91.3)
Number of children	0 - 3	32(69.6)	24(19.4)	56(44.1)
	4 and above	14(30.4)	57(46.2)	71(55.9)
Place of birth + early years	Rural	28(60.9)	45(55.6)	73(57.5)
	Rural/Urban	11(23.9)	21(25.9)	32(25.2)
	Urban	7(15.2)	15(18.5)	22(17.3)
Years in service	5 - 10	17(37)	3(3.7)	20(15.7)
	11 - 15	18(39.1)	33(40.7)	51(40.2)
	Above 15 years	11(23.9)	45(55.6)	56(44.1)

The majority of participants 98(77%) were male. In Malawi, of the 46 participants, only two were female. Most participants in Malawi 34(73.9%) were aged below 40 years, whereas in Tanzania most of them 55(67.9%) were above 40 years. Notwithstanding, majority of participants in Tanzania 47(58%) had more than 15 years in service, whereas in Malawi, 31(67.4%) had 5 to 10 years in service. Hence, participants were generally older with more years in service in Tanzania compared to Malawi.

All participants in Malawi were Clinical Officers, in Tanzania half of them were Assistant Medical Officers (AMO) and half were nurse-midwives (NMW).

In both countries, the majority of participants were married with up to three children. Most participants in both countries were born, grew-up and attended primary and

secondary schools in a rural setting, 73(57.5%). Minority of them, 22(17.3%) were born, grew-up and attended both primary and secondary schools in an urban setting.

4.1.2 Retention, attrition and mobility of study participants

In this study retention was considered to have occurred if a healthcare worker's station, employer or the clinical care role was maintained as at the start of tracking. This supposition was shared by the ETATMBA programme. If healthcare workers moved to non-target facilities or assumed non-clinical roles, or if they exited completely out of the health system, attrition was considered to have happened.

Although the ETATMBA programme did not specify how long participants were required to remain at target workstations after the training, the expectation was that, following training, healthcare workers would be retained in target healthcare facilities for a considerable period of time to bring about positive change in the quality of care provided.

The next section presents findings from the tracking based on the three aspects; (1) remaining at the target workstation, or (2) remaining in government employment (even when workstation and key roles changed) or (3) remaining in the clinical patient care role (even when employer and workstation changed).

The data on retention presented in section 4.1.3 below refers to retention at the workstation and considers the baseline as the data recorded at the start of data collection process in December 2014 and the retention status at the end of the tracking process in April 2017. The data collected would allow for calculation of the retention status at each quarter (22 observations), however, presenting data at 5 observations 12 months apart was deemed feasible and adequate to answer the first research question.

4.1.3 Association between socio-demographic variables of study participants and retention

At the end of tracking, in April 2017, 59(46.5%) of the participants had been retained in target workstations; 22(47.8%) in Malawi and 37(45.7%) in Tanzania. This means these participants were still working in healthcare facilities where they were stationed at the start of the ETATMBA programme.

The association between the socio-demographic variables of study participants and retention was determined using a chi-square test. The test was performed using data from each country and again with data from the two countries combined. The findings are

presented in *Table 4.2* below. A *p*-value less than 0.05 was considered statistically significant at 95% Confidence Interval (CI) level. The null hypothesis was: the chance of being retained is not associated with the sociodemographic variables of study participants while the alternative hypothesis was: the chance of being retained is associated with the sociodemographic variables.

Three variables showed significant association with retention; a rural location where a participant was born and grew-up ($p<0.001$), the age group 31-40 years ($p=0.03$) and being in the job for 11 to 15 years ($p=0.03$).

Table 4.2: Association between socio-demographic variables and retention at the end of the follow-up (April 2017).

Variable		Malawi		Tanzania		Both Countries	
		Retained #(%)	*p-value*	Retained #(%)	*p-value*	Retained #(%)	*p-value*
Gender	Male	22(50.0)	p=0.18	23(52.3)	p=0.61	45(83.3)	p=0.88
	Female	0(0)		14(51.9)		14(51.9)	
Age	Up to 30	2(22.2)	**p=0.01**	1(20.0)	p=0.17	3(21.4)	**p=0.003**
	31 - 40	17(68.0)		14(60.9)		31(64.6)	
	Above 40	3(25.0)		22(41.5)		25(38.5)	
Cadre	AMO	-	-	16(40.0)	p=0.31	16(40.0)	p=0.65
	NMW	-		21(51.2)		21(51.2)	
	CO	22(47.8)		-		22(47.8)	
Marital status	Single/others	4(44.4)	p=0.82	0	p=0.19	4(36.4)	p=0.48
	Married	18(48.6)		37(46.8)		55(47.4)	
Number of children	Up to 3	19(59.4)	**p=0.02**	8(33.3)	p=0.15	27(48.2)	p=0.48
	Above 3	3(21.4)		29(50.9)		32(45.1)	
Place of birth + early years	Rural	14(50.0)	p=0.65	28(62.2)	p=0.07	42(57.5)	**p<0.001**
	Rural/Urban	7(63.6)		7(33.3)		14(43.7)	
	Urban	1(14.3)		2(13.3)		3(13.6)	
Years in service	5 - 10	9(52.9)	p=0.07	3(20.0)	p=0.11	10(50.0)	**p=0.03**
	11 to 15	11(61.1)		19(57.6)		30(58.8)	
	Above 15 years	2(18.2)		15(33.3)		19(33.9)	

The place of birth and the location where participants spent their early years i.e. up to when they completed secondary school, showed the strongest association with retention. The data shows that the strength of this association was incremental with the duration of exposure to a rural setting. From a retention of 13.6%(3/22) among those who grew-up exclusively in an urban setting to 43.8%(14/32) among those who spent their early life in both rural and urban settings to 57.5%(42/73) among participants who grew-up exclusively in a rural setting.

4.1.4 The tracking of study participants

Majority of participants, changed either the location, the employer, the key role or a combination of these. For some, the change was temporary and, after some time, they returned to the initial work station or role. Others experienced back-and-forth movements in the three respects; work station, employer and role.

For example, a participant would have a short-term opportunity to attend further studies and return to the same work station after completing their studies; or a participant working in a clinical area would assume a leadership role on a temporary basis, in most cases to cover a colleague's absence, and later resume their previous clinical duties. However, some participants changed employer alone, e.g. those who went into private practice but still did clinical work, others changed the employer and roles e.g. those who got employed by an NGO and did public health (non-clinical) work only.

It is not within the scope of this thesis to present detailed analysis of the change that occurred to participant characteristics in each of the 22 observations. Observations from only five quarters have been chosen and presented in detail. The six quarters are 12 months apart counting backwards from the last observation. These are quarter two (Q2) each of 2012, 2013, 2014, 2015, 2016 and 2017 as the excerpt from the spreadsheet shows in *Figure 4.1* below.

Figure 4.1: Sample spreadsheet (for Tanzania), showing the five points in which data was extracted for analysis.

B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG
					2014	2014	2014	2014	District	2012				2013				2014				2015				2016				2017	
ID NO	Name	Gender	arly year	Cadre	Age	Marital	hildre	Years		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
TZ001	XXX	Male	Urban	AMO	42	Married	4	15	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	TG	TG	TG	TG	TG	TG	TG	TG	TG
TZ002	XXX	Male	Rural	AMO	41	Married	3	17	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	TG	TG	TG	TG	TG	TG
TZ003	XXX	Male	U/R	AMO	38	Married	5	10	XXX	R	R	R	R	R	R	R	R	R	TG	TG	TG	TG	TG	TG	TG	TG	TG	TG	TG	TG	TG
TZ004	XXX	Male	Rural	AMO	60	Married	6	32	XXX	R	R	R	R	R	R	R	R	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD
TZ005	XXX	Female	Rural	NMW	37	Married	3	9	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ006	XXX	Male	Urban	NMW	33	Married	2	7	XXX	R	R	R	R	R	R	R	R	R	R	R	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS
TZ007	XXX	Female	Urban	NMW	41	Married	2	13	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ008	XXX	Female	U/R	NMW	38	Married	5	12	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ009	XXX	Male	Rural	AMO	46	Married	6	15	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		DI				DI
TZ010	XXX	Female	Rural	NMW	39	Married	3	12	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		DI				DI
TZ011	XXX	Female	Rural	NMW	44	Married	1	9	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ012	XXX	Male	Rural	NMW	60	Married	3	36	XXX	R	R	R	R	R	R	R	R	R	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD	RD
TZ013	XXX	Male	U/R	AMO	42	Married	2	16	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	TG	TG	TG	TG	TG	TG	TG
TZ014	XXX	Male	Rural	NMW	41	Married	2	13	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ015	XXX	Male	Rural	AMO	53	Married	5	25	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ016	XXX	Male	U/R	AMO	50	Married	6	17	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ017	XXX	Female	Rural	NMW	48	Married	7	21	XXX	R	R	R	R	R	R	R	R	R	D	D	D	D	D	D	D	D	D	D	D	D	D
TZ018	XXX	Male	U/R	NMW	29	Single	3	8	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	TG	TG	TG	TG	TG	TG	TG	TG	TG
TZ019	XXX	Male	Rural	AMO	46	Married	5	17	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ020	XXX	Female	Rural	NMW	36	Married	4	9	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
TZ021	XXX	Male	Rural	AMO	49	Married	4	22	XXX	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R

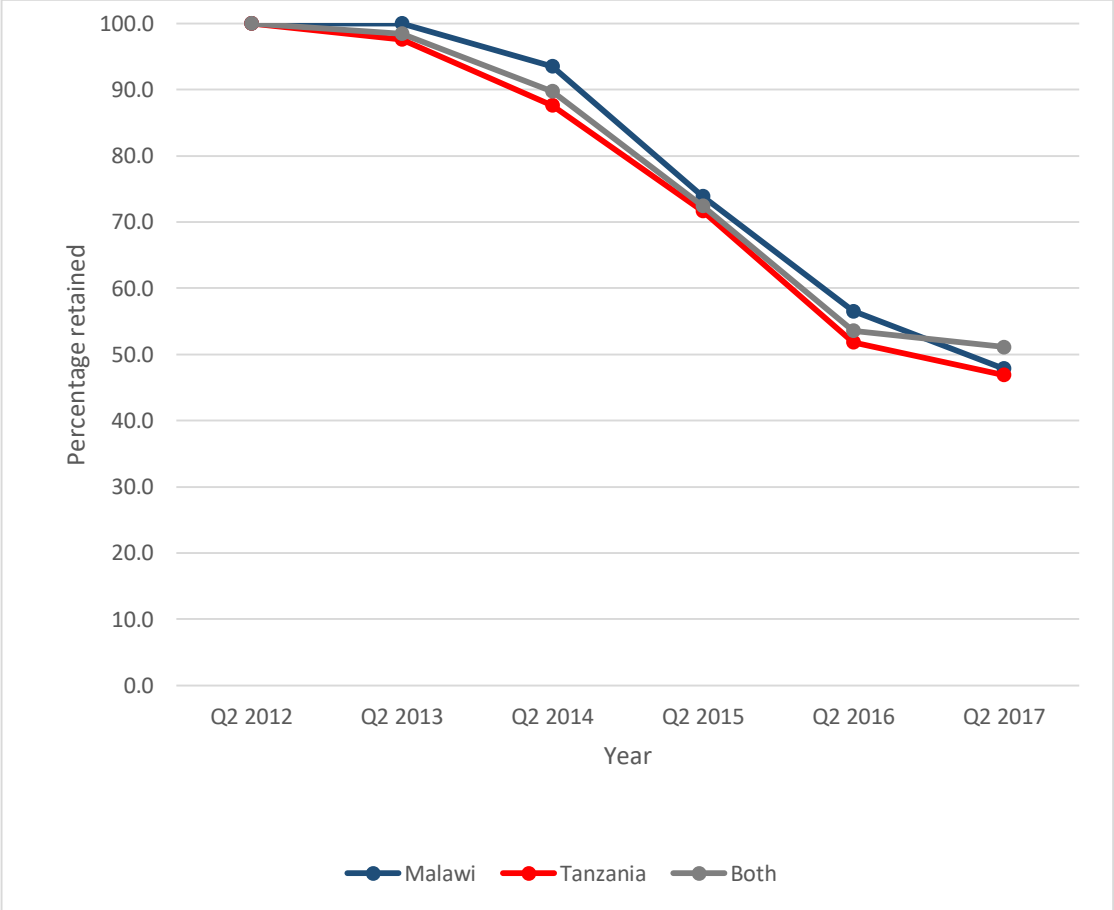
Key: DI=Disqualified, FS=Further Studies, R=Retained, RD= Retired, TG=Government Transfer

4.1.5 Retention and attrition of healthcare workers from workstations

This section describes retention and attrition of healthcare workers in the target healthcare facilities during the follow-up period.

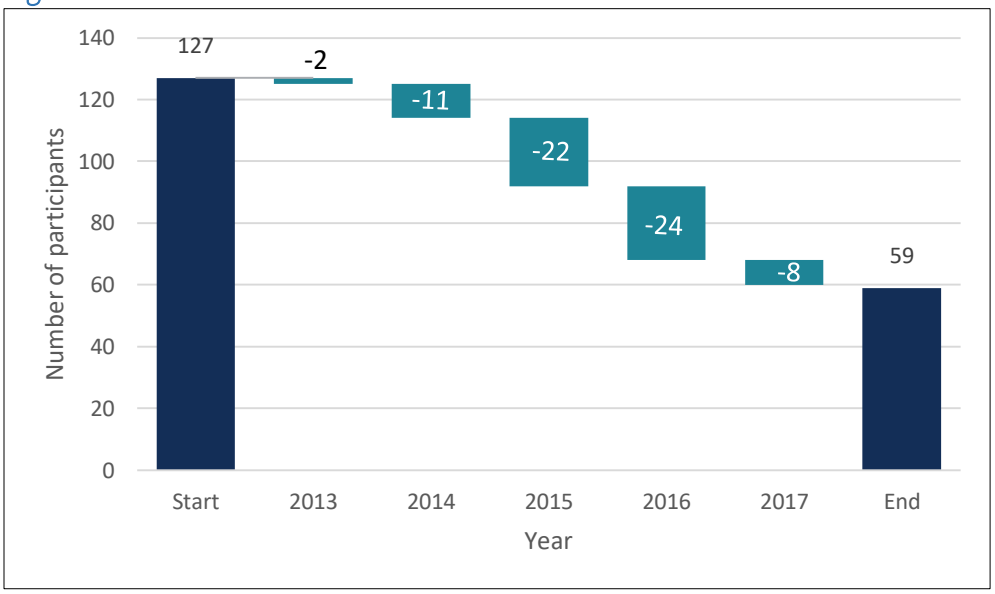
The retention declined steadily in both countries over the five-year period. *Figure 4.2* below shows the percentage of participants remaining in target facilities per year split per country and the total for both countries. The percentage of participants retained in both countries over the period of tracking was almost similar. Attrition rate was highest between Q2 of 2014 and Q2 of 2016.

Figure 4.2: Percentage of participants in target facilities in Malawi, Tanzania and in both countries.



A detailed breakdown of the attrition per year in absolute numbers is presented in *Figure 4.3* below.

Figure 4.3: Absolute number of participants leaving from target workstations per year with starting total and end total.



The attrition presented in this figure shows the total number of participants who left from the target facilities for any reason. This includes both voluntary reasons such as moving to a private practice and involuntary (inevitable) reasons such as death and retirement. The two main types of attrition are explained in more detail later in this chapter.

Three events between 2014 and 2016 could help explain the increased attrition in the period between these two years. These are: (1) in October 2014 the study participants graduated from the ETATMBA programme. This meant that, were they to leave from target workstations, they would not worry that their studying and participation in ETATMBA programme would be interrupted (2) in February 2015, the Ministry of Health in Malawi issued a transfer directive to 15 ETATMBA graduates. Most graduates were not happy of the decision and some decided to leave government employment altogether, (3) in Tanzania, the government set new criteria for civil servants which they were to meet in order to stay in the employment. As a result, five participants fell short of the criteria and were disqualified from practice.

Further details on the findings from the tracking process are presented in *Figure 4.4* and *Figure 4.5* below.

Figure 4.4 and Figure 4.5 shows reasons that led participants to leave their workstations. These reasons are divided into two major categories; voluntary/preventable and involuntary/inevitable reasons. Voluntary reasons involve factors that are within the capability of the healthcare worker or their employer to decide to leave or remain at the

workstation whereas for involuntary reasons, it is not within the capability of the healthcare worker or the employer to take that decision.

The most common reason for attrition was government transfers. This is presented in boxes with light blue colour. Government transfer was made either from a rural facility to another rural facility, from a rural to an urban facility, from an urban to a rural facility, or from an urban facility to another urban facility.

The other voluntary reasons for attrition include leaving government employment to start a private practice (green boxes), going for further studies (purple boxes), joining an NGO (light orange boxes) or joining military service (light brown box).

The most common involuntary reason for attrition was retirement (dark brown boxes), with two participants from Malawi and eight from Tanzania retiring from service, and unfortunately two participants in Tanzania died (red boxes) during the follow-up period.

A unique (unusual) involuntary reason was disqualification from practice. This happened to five participants from Tanzania. This may arguably be regarded as an avoidable cause of attrition, however since the researcher could not get detailed information on the grounds for their disqualification, it was regarded as involuntary, at least from the healthcare worker's point of view since healthcare workers did not have a say at the time the decision to disqualify them was taken.

The data shows that involuntary attrition of healthcare workers is inevitable and results from causes such as death and retirement which are beyond the control of the individual or the employer/organisation. However, attrition also happens voluntarily from causes such as decisions by individuals or the authorities, in which case interventions could be done to prevent it from happening. Health systems can influence voluntary attrition of healthcare workers by putting in place measures such as limiting unnecessary transfers of staff across healthcare facilities. This could be achieved through preventing staff from moving to private practice e.g. by managing better the public-private partnership or by a more careful consideration when changing a healthcare worker's role from clinical to an administrative etc.

Figure 4.4: Reasons for participants leaving target healthcare facilities during the tracking in Malawi.

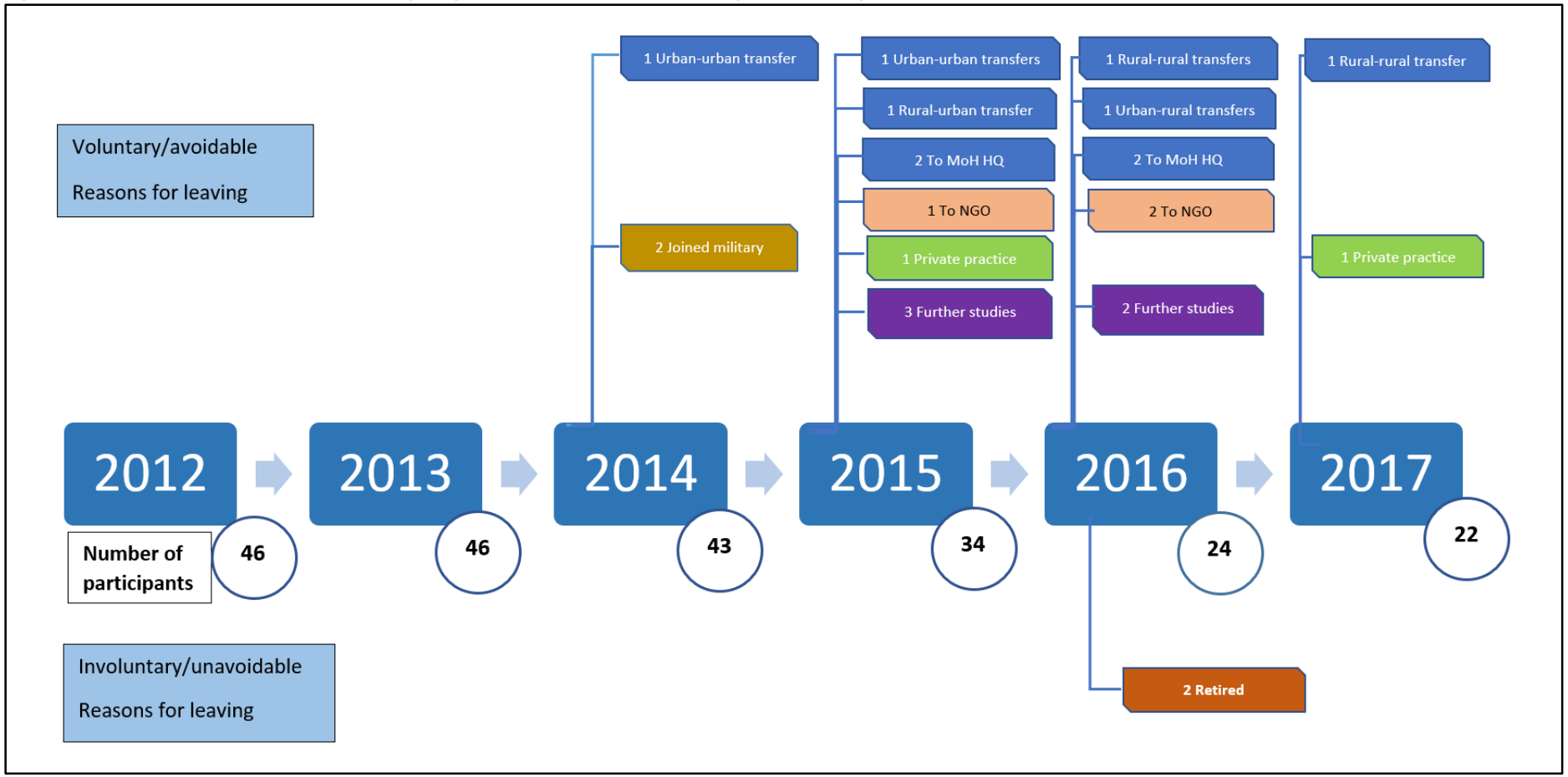
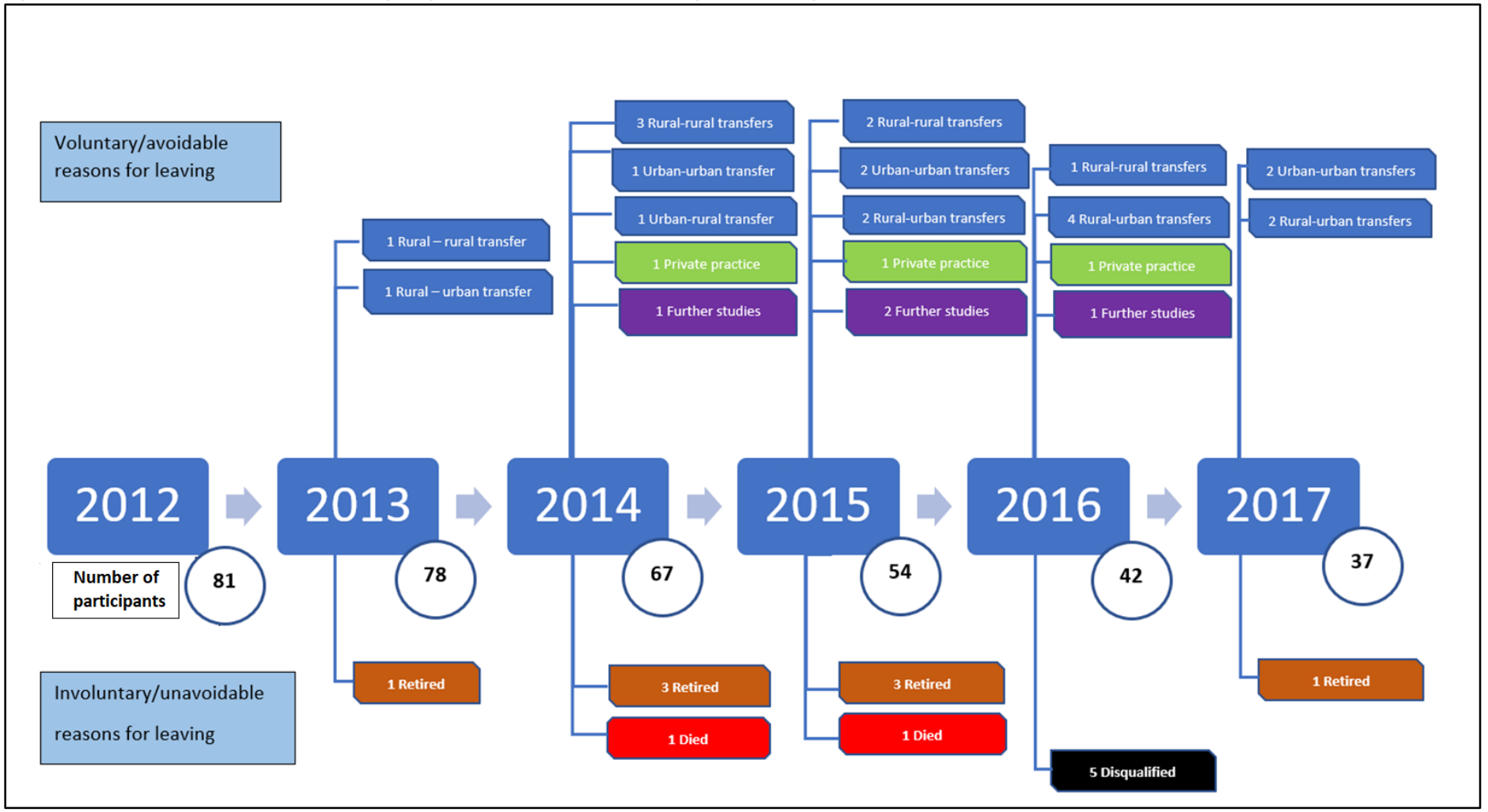


Figure 4.5: Reasons for participants leaving target healthcare facilities during the tracking in Tanzania.



Participants who retired from service or died while still in service were considered part of those retained in that particular year and were excluded from the calculation of the same in subsequent years.

The information on the destination of healthcare workers who left the target facilities is summarised in Table 4.3 and Table 4.4 below, which also show the proportion of those who left target facilities in each country.

Table 4.3: Attrition of healthcare workers from target healthcare facilities in Malawi

Reason for leaving	Number of healthcare workers who left their workstations during the period of follow-up					Total #(%)
	May 2012 to April 2013	May 2013 to April 2014	May 2014 to April 2015	May 2015 to April 2016	May 2016 to April 2017	
Transfers between government facilities	0	1	2	2	1	6(27.3)
Transfer from healthcare facilities to MOH Headquarters	0	0	2	2	0	4(22.7)
Joined military service	0	2	0	0	0	2(9.1)
Went to work with non-governmental organisations	0	0	1	2	0	3(13.6)
Transfers from government to private facilities	0	0	1	0	1	2(9.1)
Went for further studies	0	0	3	2	0	5(9.1)
Total	**0**	**3**	**9**	**8**	**2**	**22**

The main reason for healthcare workers leaving from target workstations in Malawi was transfer by the government, this accounted for 10(45.5%) of participants i.e. those transferred across facilities plus those who were transferred to MOH headquarters.

In Tanzania, the main reason for healthcare workers leaving target workstations was transfers made by the government. This was responsible for the voluntary attrition of 22 (64.7%) of healthcare workers, more than twice as many as in Malawi in this category.

Finally, five participants (14.7%) in Tanzania were disqualified from practice. This occurred in the first quarter of 2016. The researcher did not manage to contact them to obtain details of circumstances surrounding their disqualification.

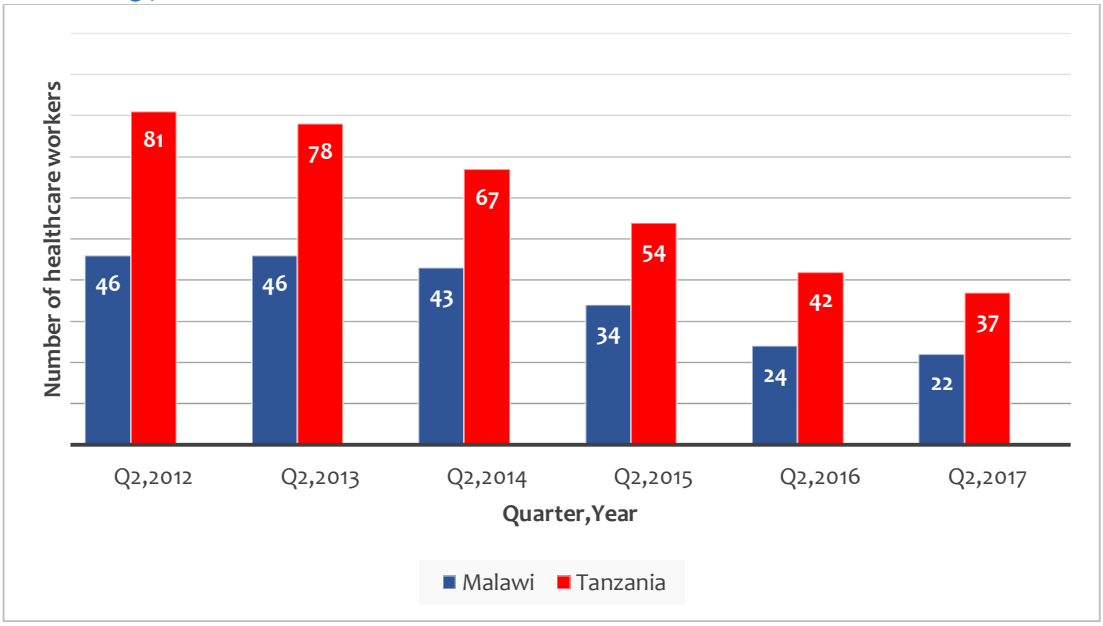
Table 4.4: Attrition of healthcare workers from target healthcare facilities in Tanzania

Reason for leaving	Number of healthcare workers who left their workstations during the period of follow-up					Total #(%)*
	May 2012 to April 2013	May 2013 to April 2014	May 2014 to April 2015	May 2015 to April 2016	May 2016 to April 2017	
Transfers between government owned healthcare facilities	2	5	6	5	4	22(64.7)
Transfer from government to private healthcare facilities	0	1	1	1	0	3(8.8)
Went for further studies	0	1	2	1	0	4(11.8)
Disqualified from practice	0	0	0	5	0	5(14.7)
Total	**2**	**7**	**9**	**12**	**4**	**34**

**Total excludes the two participants who died and one retired during the 1st quarter of 2017.*

The number of healthcare workers remaining in target workstations per year and per country is presented in *Figure 4.6* below.

Figure 4.6: Number of healthcare workers remaining in the target healthcare facilities during the tracking period



After five years of tracking, 59(46.5%) participants were still working in the target workstations, 22(47.8%) in Malawi, and 37(45.7%) in Tanzania.

The attrition rate was steady in both countries, with a relatively higher rate between May 2013 and April 2016 and seems to even-out between 2016 and 2017.

Retention in this aspect, i.e. remaining in target workstations is probably the easiest way to appreciate. This is sometimes referred as "stability rate", but this term could not be applied in this case because the study did not involve all healthcare workers in target workstations.

However, considering retention of healthcare workers in this respect alone is inadequate. It does not provide information on employment as some participants could have changed the employer and still remain at the same workstation, a practice not uncommon among healthcare workers working in not-for-profit healthcare facilities. Similarly, it does not provide information on whether or not, the participants who remained in target workstations carried on performing clinical duties or assumed other responsibilities such as administrative and/or leadership roles or public health duties. These two aspects of retention, i.e. employer and clinical role are explained in detail in the next two sections.

As stated in the Methodology Chapter, (*Section 3.2*), two organisations implemented the ETATMBA programme in Tanzania: the Ifakara Health Institute (IHI) and World Lung Foundation (WLF). The approach and content of delivery of the programme by the two organisations was different. IHI conducted training alone, whereas WLF undertook renovation of healthcare facilities including renovating staff quarters in addition to the training. *Table 4.5* below presents the proportion of participants retained in both categories.

Table 4.5: Proportion of healthcare workers in Tanzania under IHI and WLF programme who remained and who left facilities by April 2017

Retention status	**Facilities under WLF (Training +Facility Renovation)**		**Facilities under IHI (Training only)**	
	#	%	#	%
Retained in target facilities	20	46.5	17	44.7
Left target facilities	15	34.9	14	36.8
Retired or died	8	18.6	7	18.4
Total	**43**		**38**	

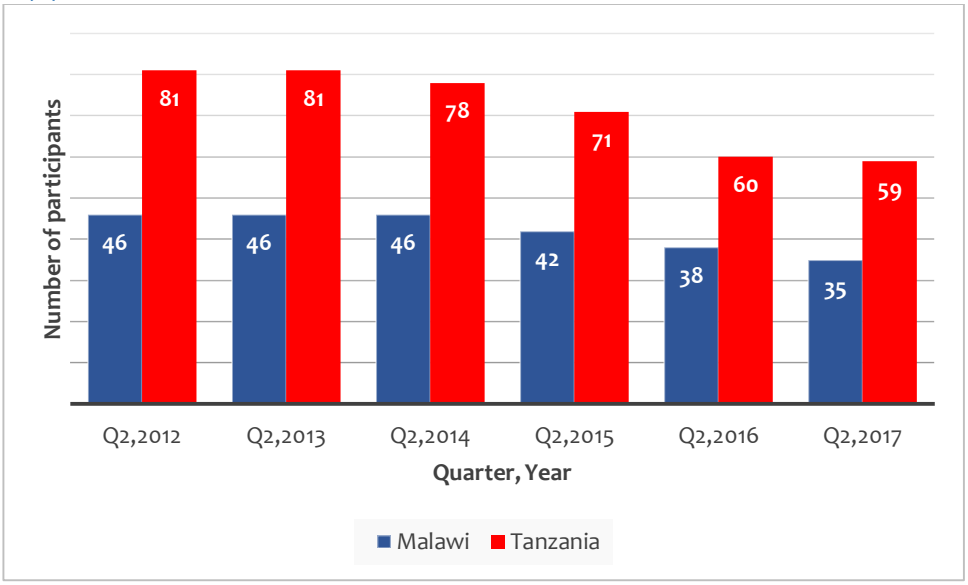
The retention rate in the two categories of healthcare facilities was almost similar.

4.1.6 Retention in government employment

This section presents retention of healthcare workers in government employment. This helps to show how healthcare workers changed employer from public to private and vice-versa. The two categories are mutually exclusive.

Figure 4.7 below shows the number of healthcare workers who remaining in government employment over the follow-up period. Healthcare workers who remained government employees but were transferred across facilities, promoted to leadership positions, changed roles to perform other duties e.g. administration, or coordination of specific programmes were considered as retained for the purposes of this section. *Figure 4.4* and *Figure 4.5* provide detailed information on how healthcare workers moved around the two categories of employment. Those who died or retired were not counted in the total for the subsequent year.

Figure 4.7: Number of healthcare workers remaining in government employment during the follow-up period



There was a steady attrition of healthcare workers employed by the government from 127 at the start of the follow-up to 94(74%) at the end of the follow-up. The attrition rate was higher between 2014 and 2016 in both countries and slightly higher in Tanzania, 22(27.2%) than in Malawi, 11(23.9%). Between 2014 and 2016, eight healthcare workers in Malawi and 18 in Tanzania went out of government employment. Note that, the total number of healthcare workers remaining in employment each year excludes those who had retired or died the year before.

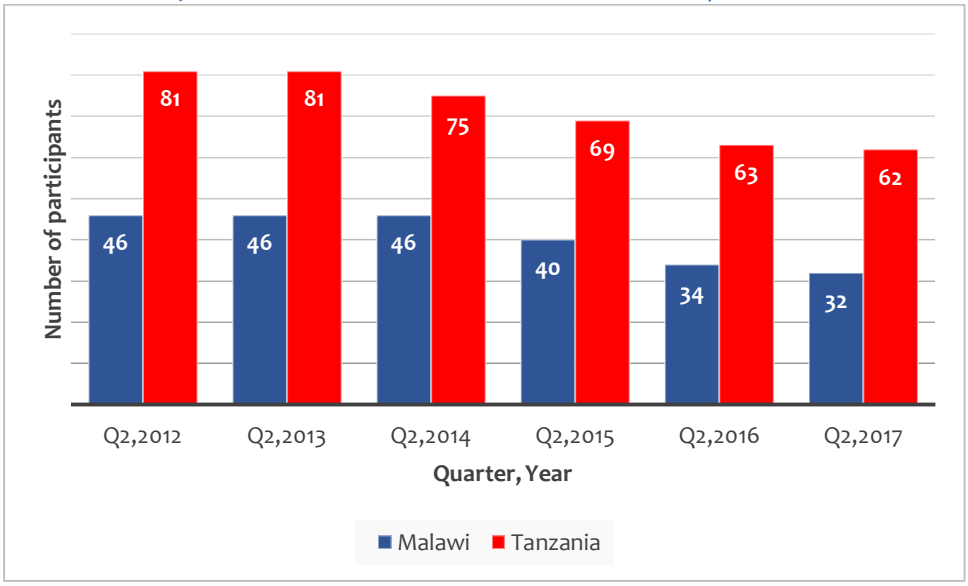
The Ministry of Health in Malawi seconded four participants to non-profit private healthcare facilities. In this study, these four healthcare workers were considered to have been retained in government employment.

Four healthcare workers undertook further studies in Tanzania, without having a study leave endorsed by the government and in so doing lost their employment with the government.

4.1.6 Retention in providing clinical services

This section presents findings on retention based on whether healthcare workers remained in clinical practice or not. All healthcare workers were involved in clinical patient care at the time of recruitment into the ETATMBA programme. This section assumes that retention occurred if the healthcare worker's main role remained to be clinical patient care regardless of a change in the workstation or employer. Refer to *Figure 4.8* below.

Figure 4.8: Number of healthcare workers who remained in clinical practice



The number of healthcare workers providing clinical services in both countries decreased from 127 at the start of the follow-up to 94(74%) at the end, the decrease being slightly higher in Malawi 14(30.4%) than Tanzania 19(23.5%).

In Malawi, 14 participants left clinical practice, two participants retired, these are taken off the denominator in subsequent data analysis in this section. The highest attrition happened between 2015 and 2016 with six participants leaving clinical practice. Of the remaining 12, five (41.6%) were enrolled in further studies, 4(33.3%) of participants had been given administrative posts at the central level (Ministry of Health), 3(25%) were employed by NGOs and were entirely involved in public health tasks. All 12 healthcare

workers' job roles were changed after the government's decision to transfer the graduates in February 2015 to different districts, both target and non-target for ETATMBA.

In Tanzania, 19(23.5%) of the healthcare workers had left clinical practice by the end of the follow-up period of which, eight retired and two died. Of the remaining nine, the majority 5(55.5%) left because they were disqualified from practice and 4(44.4%) got enrolled for further studies.

Having considered the retention of healthcare workers in the three categories; workstation, employment and clinical care, the following section presents retention comparing all the three categories combined.

4.1.7 Retention of healthcare workers at healthcare facilities, employer and clinical patient care in Malawi and Tanzania

Figure 4.10 and *Figure 4.11* below present the percentage of healthcare workers retained considering the three categories of retention mentioned earlier. In both countries, the percentage of healthcare workers retained in their healthcare facilities is relatively lower compared to the retention by employer and retention in the provision of clinical services.

In Malawi, retention in government employment was higher than retention in workstations or retention in clinical roles. Whereas, in Tanzania, retention in the clinical role was higher than the other two categories.

The retention pattern shown in *Figure 4.9* and *Figure 4.10* suggests that a more comprehensive consideration is needed in defining retention and attrition. Defining retention or attrition by virtue of the duration a healthcare worker spends in a particular workstation is not sufficient. Other factors such as change in roles, employer, policies etc. need to be taken into account.

Figure 4.9: Proportion of healthcare workers retained by workstation, employer and clinical role in Malawi

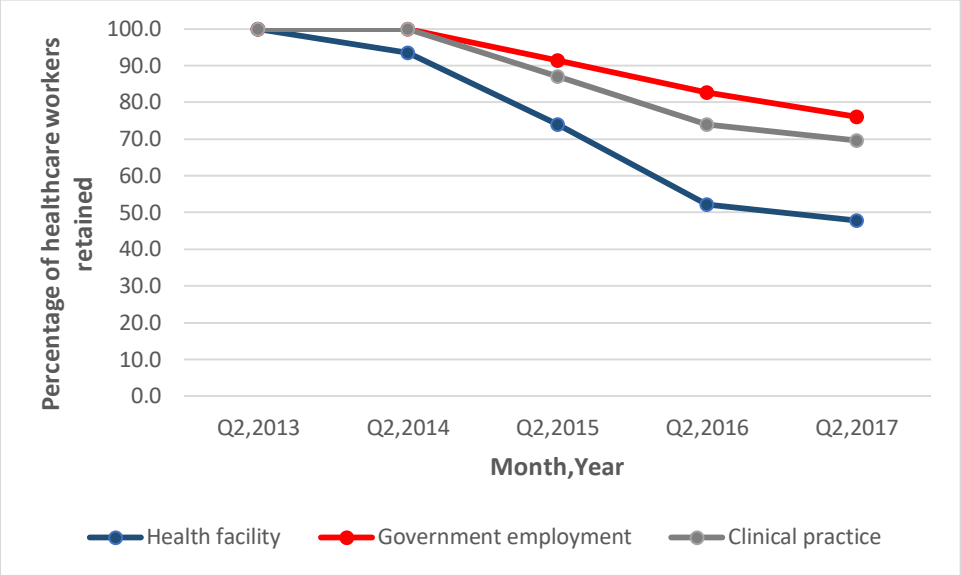
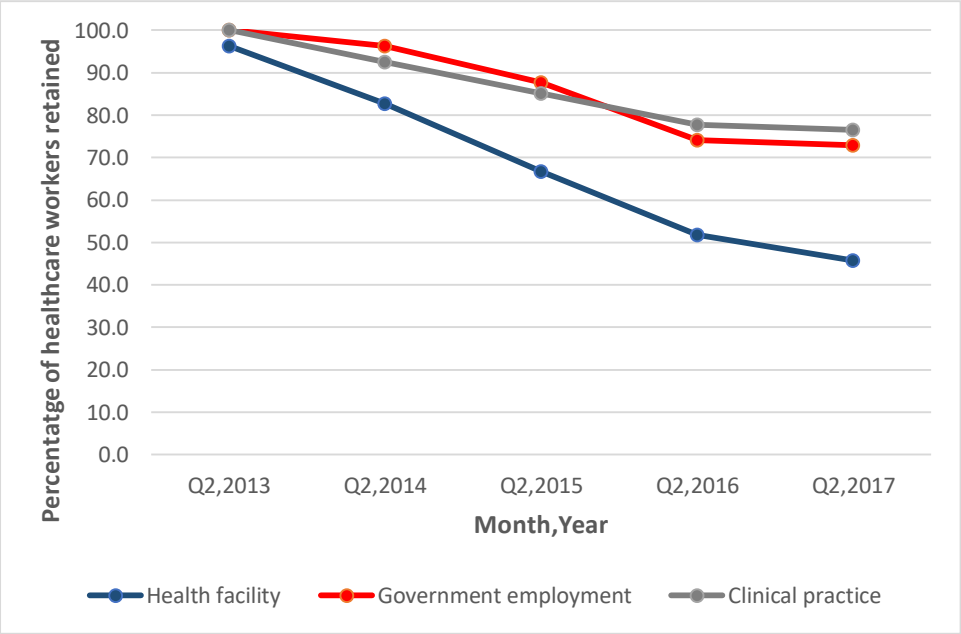


Figure 4.10: Proportion of healthcare workers retained by workstation, employer and clinical role in Tanzania



The quantitative data presented in this section helps to shed light on the concepts of retention and attrition. A description of retention or attrition needs to specify the person (or cadre etc.) it refers to and the event (e.g. transfer, retirement etc.) that happened to them in the course of their employment.

4.1.8 Summary on tracking of study participants

This section has presented findings from the tracking of healthcare workers over a five-year period and attempts to answer the first research question on patterns of retention among healthcare workers.

The main findings from this section are: (1) Healthcare workers from rural backgrounds, those in the age group between 31 – 40 and those who have been in the job for 11 to 15 years are more likely to be retained compared to their counterparts, (2) Attrition and mobility of healthcare workers are unavoidable. The causes of attrition could be involuntary such as death and retirement or voluntary such as transfers across healthcare facilities, private practice or working for NGOs. (3) The rate of attrition was almost similar in both countries. Also, in both countries, transfers directed by government authorities were the main reason for healthcare workers to relocate from their target workstations.

In this study, three categories of retention were examined, with regards to; workstation, employer and clinical role. The rate of attrition was different for each of these three categories.

The next section explores perspectives and experiences on retention among healthcare workers and policy makers which attempt to provide a deeper understanding of the reasons behind some of the findings from this quantitative data.

4.2 Perspectives on retention by healthcare workers and policy makers

4.2.0 Overview

This section presents the findings from the interviews on the perspectives of healthcare workers and officials from the Ministries of Health in Malawi and Tanzania on health workforce retention and examines the viewpoints expressed during interviews. The chapter starts with general considerations describing the overall findings from the interviews. It then presents specific perspectives on retention based on the Socio-Ecological Model, a framework which was chosen to analyse the qualitative data. The perspectives are illustrated through quotes which help clarify meanings and intentions of study participants. The chapter also seeks to present linkages between these perspectives in the five levels of the Socio-Ecological framework and how they relate to the main findings in the quantitative data.

A summary at the end of the chapter highlights the key findings from this section.

4.2.1 General considerations

Perspectives from healthcare workers provided insights into what 'health workforce retention' meant to them, based on their personal experiences. Some perspectives shared by healthcare workers came from personal experiences e.g. changing jobs or roles, while others provided their perspectives to explain their standpoint on this issue without necessarily relating it to their personal experiences.

Interviews with Ministry of Health officials aimed to explore two issues, first their perspectives on retention based on their understanding of the national health policy and secondly exploring their individual stand-point on health workforce retention which was compared with perspectives from healthcare workers when appropriate.

Interviews with healthcare workers occurred on multiple occasions. The first set of interviews occurred in December 2014, after which follow-up interviews were conducted during the quarterly contacts and at any other time when the employment circumstances of healthcare workers changed. Conversely, interviews with key informants from the Ministries of Health were conducted only once.

A total of 111 participants and 9 key informants were interviewed. *Table 4.6* below presents number of participants taking part in the interviews from the two countries.

Table 4.6: Number of study participants taking part in the interviews

Country	Participants taking part in interviews	
Malawi	Healthcare workers (Clinical Officers)	42
	Ministry of Health personnel (KII) • Principal Health Officer • Director of Human Resources • Principal, Clinical Training Services • Principal Coordinator, Programmes and Outreach services	4
Tanzania	Healthcare workers (Assistant Medical Officers and Nurse-Midwives)	69
	Ministry of Health personnel (KII) • Director of Training and Nursing Services • Director for Human resources and Development • Assistant Director for Preventive Services • Officer, The Office for Planning and Information • Officer, Human Resources and Development	5

Interviews with Ministry of Health officials revealed two major viewpoints. (1) Health workforce retention was not perceived as a priority matter. Even though staff-retention is mentioned in the health policy and health strategic plans in both countries, not much attention was given to it, rather priority was directed towards improving availability of the health workforce (increasing the number of healthcare workers). (2) Ministry officials felt enough was being done (by the government) to improve retention of healthcare workers, although they admitted that more could be done, an idea that was in stark contrast to what healthcare workers thought.

During interviews, both healthcare workers and key informants showed a keen interest in the subject. Key informants from the Ministry of Health referred to healthcare workers as 'clinicians' or 'our staff' showing respect; likewise, participants referred Ministry of Health officials as 'the ministry' acknowledging their authority. Generally, the tone of voice during discussions was calm with a great deal of attention. Participants occasionally

displayed emotions ranging from happiness and a sense of satisfaction to anger, frustration and discontentment.

Healthcare workers attached positivity (acceptance) to being retained, i.e. remaining at a healthcare facility or in government employment. In contrast, attrition was viewed negatively. Leaving government employment or relocating from a healthcare facility for reasons other than government transfer was perceived as disloyal. Words with a negative connotation were used in describing it like, "unfortunately…", "I couldn't resist but …", "sadly…".

The next section presents these perspectives using the five levels of the Socio-Ecological Model. The Socio-Ecological Model was introduced and described in detail in the introduction chapter.

4.2.2 Framework analysis using the Socio-Ecological Model to appraise perspectives from healthcare workers and the Ministry of Health officials

The Socio-Ecological Model (SEM) is described in the Introduction chapter (*section 1.4.1*). Perspectives from interviews with healthcare workers and Ministry of Health officials are arranged and analysed to reflect the five levels of the SEM: (1) the individual, (2) the immediate family (Microsystem), (3) the surrounding community (Mesosystem), (4) the society (Exosystem) and (5) the national/international level (Macrosystem).

In order to provide a clear discourse, sub-themes were applied to three levels of the model; Individual, Mesosystem and Macrosystem in order to further substantiate the perspectives.

In this study, 'participants' refers to both healthcare workers and policy makers. When referring to Ministry of Health officials only, 'key informants' is used.

4.2.3 Factors related to the individual healthcare worker

All healthcare workers mentioned factors affecting retention at the individual level. Perspectives on individual factors were mainly based on participants own experiences. Factors such as the need for recognition, promotion and higher income were mentioned as expected. However, other factors such as health (personal or close relative) and faith (religious beliefs), were mentioned in isolated cases by individuals based on their life and work experiences.

4.2.3.1 Health (personal or close relative's health status)

The health status of a healthcare worker or that of their close relative(s) was perceived to affect retention. Perspectives on retention based on the grounds of personal health were considered important if the health condition was life-long. One participant who was asthmatic, explained that he was would be willing to leave the job because of the harsh local weather that affected his health. Another participant had requested to be posted to a rural district, to enable him take care of his father who was terminally ill.

> *"Before posting was done I reported to the HR Manager at MOH that I am asthmatic and that I should be posted to* [*district with warm climate along Lake Malawi*] *and was promised so, but to my surprise I was posted to* [*district with cold climate*], *I will not stay here long."* **CO, Malawi**

> *"My father is sick. He has a terminal illness. I have requested transfer to go to [district name] to take care of him, this is the third year and I haven't heard any response from MOH. It's so frustrating."* **CO, Malawi**

These two perspectives illustrate an important point that sometimes reasons for attrition are temporary, while some are permanent. The latter is an isolated case and it is probably difficult to speculate if the intention to stay in that location would remain if the ailing relative got better or passed away. While personal health may have long lasting effects, that of a relative is probably short lived and the standpoint on retention might change once the situation has changed. This illustrates that the reasons causing retention or attrition can be individualized and very personal. While managers may be concerned with the long-term needs, the healthcare worker may be more concerned with the immediate pressing needs, which may also influence decisions that may have long-term consequences.

4.2.3.2 Being recognised

Recognition was perceived to encourage retention. Recognition was described to take place in different forms. For example, a formal letter of appreciation from a relevant authority or an informal comment from a member of the public. Recognition was described as a means of positive reinforcement. To some healthcare workers being recognised at the workplace was more important than being in a preferred location. Whether recognition happened in or out of the workplace, it appeared to have the same effect. Regardless of the form in which recognition was exhibited, healthcare worker's reaction towards it was similar in that it would encourage retention, satisfaction and performance at the workplace.

Some healthcare workers in Malawi who were clinical officers thought they would remain in a rural district hospital to avoid being overshadowed by senior cadres such as specialist doctors.

> *"If you work in the central hospital in Lilongwe or Blantyre you are nothing to both the surrounding community and the hospital management. Here [rural district hospital] the community recognises you and gives you respect."* **CO, Malawi**

Likewise, recognition was linked to the contribution a healthcare worker brings to the healthcare facility. Some participants thought a transfer from a lower healthcare facility

(district hospital) to a higher healthcare facility (central hospital) would make them less recognised.

> *"Given a choice between a central hospital and a district hospital, I would choose to work in a district hospital for the sake of better recognition because the difference I would make will be more obvious than if I worked in a central hospital."* **CO, Malawi**

Being recognised was perceived by healthcare workers to mean being more capable or validate their skills. Participants perceived to be better recognised if they stayed in the healthcare facilities they worked at prior to recruitment into the ETATMBA programme. The training organised by ETATMBA programme did not offer a different cadre in both countries, in Malawi, it offered an additional qualification (BSc in International Obstetrics and Leadership) but participants remained in the Clinical Officers Cadre. So, participants thought that if they moved to another healthcare facility, the additional qualification would not be recognised as people around them would not be aware of the additional qualification.

> *"The new qualification is recognised and makes me feel important before other members of staff at this facility and before the surrounding community. Fellow staff considers us [ETATMBA participants] as experts, that we know our stuff very well. But you know, it is still clinical officer level but with specialisation. Remaining at this facility people will realise that I am more than just an ordinary CO."* **CO Malawi**

Healthcare workers who would prefer to relocate to a higher-level healthcare facility thought that transfer from a lower to a higher-level facility was linked to recognition by the local government and/or Ministry of Health. This perceived recognition would be a considered a motivation had they been asked to relocate to another facility.

> *"As a Clinical Officer, I am specifically trained for health centres and rural hospitals, if I am told to go to a central hospital, it means I have been found to be over qualified and I will go."* **CO Malawi**

Contrary this argument was the perception that at a higher-level healthcare facility there would be senior people who would obscure recognition to staff of lower cadres. This idea is depicted by the quote below.

> *"In a central hospital, you will have a lot of seniors who will be the ones in-charge, however, at the district, I am the one in-charge and I talk to DMO [District Medical officer] or the RMO [Regional Medical Officer] straight away."* **AMO, Tanzania**

The perspectives on retention described here were based on healthcare worker's understanding of recognition, but also the perceived standpoint of the audience around them. This understanding could differ between healthcare worker with similar attributes. Similarly, the perceived standpoint of the people around them is something that none of them could substantiate objectively. The possible differences could be a result of the different social-cultural constructs on recognition among the participants. Although Malawi and Tanzania are neighbouring countries, the social cultural attributes shaping the importance people place recognition on retention could be different. However, the perceptions of participants from both countries on the role of recognition on willingness to stay or leave a health facility did not differ in this study.

Another view on recognition can be understood from how healthcare workers thought they would make junior colleagues feel recognised. One participant thought that formal recognition of junior colleagues could be more important to them than monetary incentive, which was not available anyway. This idea suggests that if the same appreciation was done to the participant, they would feel recognised.

> *"I have now learned, and I know in my capacity I cannot motivate my juniors by giving them money because I do not have it, but if I recognise the good work they do, they are simply motivated."* **CO, Malawi**

The other component of recognition was that of holding decision making powers at a healthcare facility. Being in a position of influence, such as being in-charge of a facility or a department was perceived to encourage retention. Regardless of the level of involvement in the decision-making process, the mere fact that a healthcare worker was part of the healthcare facility leadership was a factor to encourage retention. On the contrary, the lack of involvement in the facility leadership activities was considered to be lack of recognition.

> *"I have been appointed the chief of clinicians in the department of obstetrics and gynaecology, I organise rosters. This makes me feel important."* **AMO, Tanzania**

The need for autonomy, decision-making and recognition was probably the reason why the four participants in Malawi accepted posting from being Clinical Officers in district hospitals to MOH headquarters. Recognition was a factor regarded by participants in both countries and by all cadres to strongly affect retention.

4.2.3.3 Competency and confidence at work

Competency was perceived to influence retention in that, with the training, healthcare workers acquired more skills which allowed them to provide a wider variety of services. That made them feel more important and recognised by fellow staff and patients.

> *"I am a midwife but through this programme* [ETATMBA] *I was trained to give anaesthesia. My skills are needed during every procedure in the operating theatre, I feel more important and needed".* **NMW, Tanzania**

Similarly, working in a referral (or central) hospital together with healthcare workers of higher cadres was thought to have resulted from acquiring more competency and confidence in a wide range of procedures. However, other healthcare workers had a different view, they thought working in a higher-level healthcare facility would make them and their skills insignificant. The former notion was more common among junior healthcare workers while the latter was more common among the senior healthcare workers, the reason for this could be linked to recognition or other factors that could have a stronger influence. Being competent and confident at workplace was also linked to a sense of having autonomy. The autonomy they would have to carry out decisions at lower-level healthcare facilities would be lost if they got transferred to a higher-level facility. The notion of autonomy could as well be related to the ability to make decisions at the facility or institution.

> *"Not much you do in the central hospital. When I was at* [XXX Hospital] *I never managed a ruptured ectopic pregnancy, it was only for registrars and specialists, while here in [district name] I have done even hysterectomies* [an operation thought to be more complicated than an ectopic pregnancy]." **CO, Malawi**

Some participants mentioned competence and confidence in the job as strong factors that would encourage them to remain at a facility, and sometimes competence was perceived to be more important to them than promotion. Being confident at the workplace was another factor perceived to encourage retention. This could result from getting good patient outcomes or enjoying what they are doing.

> *"Following this training I feel more confident because I know more things. People rely on me and I am able to pass on the skills to junior staff this is another reason for me to stay."* **CO, Malawi**

Lower levels of confidence among healthcare workers is thought to discourage retention. This could result from fear of repeating mistakes done in the past or fear from reprimand by authorities.

Some healthcare workers related adverse patient outcomes due to a lack of competence and confidence and thought if they moved to a different location they would be thought of as incompetent for their lack of familiarity with the health problems that are common locally. That would affect their confidence and because of this they would prefer to stay in their current location.

> *"I have stayed in this facility for a long time, I know the* [health] *problems very well. If I went to another place, some conditions will be new, and I may not get successful patient outcomes, that will be demoralising."* **AMO, Tanzania**

Healthcare workers thought that the additional training they received helped them feel more confident in the job and enabled then earn trust from other staff members. The additional qualification they had received, was believed to attract trust on its own merit and would influence how others, including healthcare facility administration, perceive and treat them. Some healthcare workers in Malawi thought that the newly acquired qualification (BSc in International Obstetrics and Leadership) was protective of their reputation in that it would change the perspectives of others on them and that it would prevent them from being rotated to other departments in the hospital as frequently occurred before this training. A similar observation was linked to any in-service training activity that was thought to be part of continuous professional development. Linking retention to staying longer in the same department for a period of time would also be linked to a sense of belonging which is explained further in *Section 4.2.3.5* below. However, this perceived protection against being rotated into different departments within the facility would not influence decisions made at the central level.

> *"After acquiring the BSc qualification, there is an immunity, once you have a BSc, so now they can trust you …".* **CO, Malawi**

4.2.3.4 Promotion

The healthcare workers perceived promotion at the workplace as something that would encourage retention. In most instances, promotion was linked to recognition and higher pay. However, some healthcare workers thought promotion was a factor that encouraged retention on its own merit. ETATMBA trainees expected that they would be

promoted immediately after graduating from the course. While this occurred to some participants, others were not promoted.. Promotion was considered a pull factor (encouraging retention) even when it involved a transfer to a different location. However, partiality in the promotion and salary increment had an effect in the intrinsic motivation and job satisfaction.

> *"This is one year after graduation and nothing has changed, I have not been promoted, when I call the HR people at the ministry* [of health] *they tend to be emotional and not give me a definite response, so I have decided to keep quiet."* **CO, Malawi**

To some participants however, promotion would only encourage retention if it also comprised salary increment.

> *"I have been promoted but not yet on a new salary because I didn't comply with a government transfer to go to (…) hospital. This is a community hospital in (…) Island. It is a very remote place, the hospital is not yet fully functional, despite having a theatre and a radiographer. I stayed there for five months without any increase in my salary. What is the use if I am promoted by receiving the same salary as before the ETATMBA programme? I felt I wasn't meant for hard-to-reach areas."* **CO, Malawi**

> *"Salary scales are based on criteria put forward by the government and are reviewed regularly. It is true sometimes there is a delay between promotion and salary increase, but that happens across all sectors not only in health."* **KII MOH, Malawi**

A majority view among healthcare workers was that promotion would not be complete if it did not result in a salary increase, indicating that the two things must go together. The word 'paper promotion' was used to describe promotion without increase in salary. The perspectives on this issue varied considerably among healthcare workers. Sometimes healthcare workers from the same country had different experiences on salary increment following promotion. This would mean that income is just part of a bigger and more complex interplay of factors for retention.

> *"In theory, after the training [ETATMBA] we were promoted by the government, 'paper promotion' however there has been no increase in salary. So, what is the use?"* **CO, Malawi**

Officials from the Ministry of Health did not provide a clear explanation on the perceived partiality regarding salary increment. There was lack of clarity on how promotion and salary increase policies are implemented. The quote below from a Ministry of Health official in Malawi was more of a blanket statement on the matter.

> *"Staff promotion, reviews are done every year and eligible staff are promoted, salary increase depends on the facility own resources and budget approval by the parliament."* **KII MOH, Malawi**

4.2.3.5 A sense of belonging

Transfer from one healthcare facility to the other or transfer between departments in the same healthcare facility was perceived to cause annoyance. Staying at the same facility or in the same department within a facility was associated with a stronger sense of belonging, which would encourage retention.

> *"I go to work knowing whom I am going to work with and how they behave. This gives me peace of mind."* **AMO, Tanzania**
>
> *"It is better now… the fact that I am stationed at maternity, not being rotated around like before the training* [ETATMBA] *into different departments. I like working with people I am used to."* **CO, Malawi**

Other healthcare workers had a different view on this. They perceived that transfers to another facility or department would not affect retention. The understanding of the sense of belonging to some, resonated with a notion that Clinical Officers and Assistant Medical Officers are cadres of healthcare workers that are specifically trained to work in rural areas. Suggesting that such healthcare workers would not perceive transfer to another facility a deterrent to retention. However, this may not be the case and these cadres could be more retained in rural and remote areas due to the lack of options.

> *"I was trained as such, a health worker to work in rural areas, leave the central hospital for specialists, there won't be much there for me to do, so I will not be as useful if transferred there."* **AMO, Tanzania**

4.2.3.6 Income

When describing the link between income and retention, healthcare workers considered all sources of income not only the income from their job. Other sources of income considered included supplementary income from activities such as running a private clinic

or farming activities. In some cases, a spouse's income was also considered. Income was thought by some to be the central factor affecting retention and that other factors revolved around it, any other factor would amount to retention or attrition based on how it affected their income.

Benefits such as housing, medical insurance schemes and other incentives were perceived to encourage retention.

> *"A salary increase would help, but it has to be significant. Sometimes you are told [by authorities] that there is annual salary increase, but the difference is so small. With a higher salary you don't think of looking for greener pastures."* **AMO, Tanzania**
>
> *"In Malawi, clinicians [CO] are underpaid. So, sometimes people move to greener pastures like working with NGOs."* **CO, Malawi**

The observation that salary increment did result in significant changes to the net pay was also discussed. The opinion of most was that, however small the annual salary increment is, when it happens, staff are motivated as they link it to recognition. A higher salary increases the pension as well, providing another motivation to stay in the job. This point illustrates the link between intrinsic and extrinsic motivation. Although monetary compensation is a form of extrinsic motivation, it has the potential to modulate the intrinsic motivation.

> *"Salary increment is more of a token than anything else, the increment is just a few Kwachas. If you compare the salary in 2010 and 2015, in 2015 you receive a higher salary, but the* purchasing power of the Kwacha *reduced by almost 40% in the last five years. Although important, it is not a salary increase that makes you stay."* **CO, Malawi**

Low salary was perceived to cause attrition. Healthcare workers who had left government employment mentioned low salary as the strongest push factor. Participants' income was discussed in relation to individual financial circumstances. Although salary is a confidential matter in some instances participants aware of salary disparities with their colleagues and this was the cause for the lack of motivation and drive.

> *"Sadly, I have left the government job, I have a two-year's contract with an NGO, the pay is much better. I got the chance [opportunity] to work with this NGO because I have the new qualification [BSc]."* **CO, Malawi**

Supplementary income was sometimes thought to affect retention more than the income from the primary job. This perception was expressed more often by healthcare workers who had stayed for a considerable period of time at one location. Although availability of opportunities for a supplementary income was thought to encourage retention, the possible effects of reduced engagement with the job were not discussed.

> *"I have a* [private] *clinic in town, I get more money from this clinic than from my job. If told to relocate, the* [private] *clinic will be the first thing to consider in arriving at the decision."* **CO, Malawi**
>
> *"…personal investment. I do a lot of tobacco farming, commercial farming here in* [district name]. *I get enough money to sustain my kids' education, this makes me not think of moving to any other place."* **CO, Malawi**

4.2.3.7 Personal beliefs

Interviews allowed participants to express the personal beliefs which may affect retention. When expressed, beliefs emanated from healthcare worker's personal life experiences and were less influenced by the health system. One healthcare worker explained the intention to train as a clinical officer resulted from his belief in God and thought the best way to serve God would be to work in a needy and hard-to-reach area. Although one's faith and how it affects their preferences is probably a complex matter, this realization provides insights into factors that influence healthcare workers decision-making. Much as this is an individual stand which may have little or no influence on policy formulation, it is important to understand that such employees exist and would accept to work and stay in a hard-to-reach area seamlessly.

> *"I attended a seminary school, I have to help people in need, so I don't mind staying in a remote facility… the condition for me is people, if people live there, I have to be there to provide the service."* **CO, Malawi**

4.2.3.8 Career progression opportunities

The availability of opportunities to advance one's own career was perceived as a strong factor encouraging retention. Staying in a remote place was considered by some participants to be a necessity before being identified by the government authorities prior to going on to further study. This comment was echoed by the perspective of one of the Ministry of Health officials in Tanzania. However, when career opportunities were not available, this was perceived to be a strong push factor against retention.

> *"I want to stay in government employment because there is an opportunity to upgrade. I am hoping even after ETATMBA there will be another opportunity to upgrade."* **AMO, Tanzania**
>
> *"We try to balance selection for scholarships for further studies. Applicants from remote settings are given higher priority."* **KII, MOH Tanzania**

The perceived outcome of securing opportunities for further studies differed between healthcare workers and the Ministry of Health officials. Whereas, ministry officials thought opportunities for further studies should encourage healthcare workers to stay in the hard-to-reach facilities, healthcare workers thought opportunities for further study would create other opportunities and could help them transfer out of the hard-to-reach areas.

> *"I can't progress to be a medical doctor unless I start afresh, so it's like there are no opportunities. Some* [clinical officers] *have changed the field to do other courses, e.g. health management courses just to move away from the health field."* **CO, Malawi**
>
> *"Some abuse the system. Their stay in remote areas is a means to get scholarships, that is not our aim."* **KII, MOH, Malawi**

Uncertainty in retaining their posts was a concern among participants. Participants who had secured leadership positions within the healthcare facility could decide to postpone or forfeit altogether the opportunity for further studies to protect a leadership post. This notion is closely linked with the perception about recognition. In this case, fear of losing a recognised post at a facility appeared to encourage retention.

> *"When you go for further studies someone else is going to act in your position and you may not get to the same position after studies."* **AMO, Tanzania**

This point provides another illustration of the range of opinions among healthcare workers interviewed. Whereas some would accept any opportunity for further study without hesitation, others would evaluate first what they may lose or gain by going for further studies before taking a decision. Healthcare workers in Malawi who were younger than those in Tanzania appeared to be inclined more towards going for further study than their counterparts in Tanzania. Healthcare worker's age and family care responsibilities could have influenced such perceptions and decisions.

4.2.3.9 Need to experience a new location (adventure)

To some participants, transfer to another healthcare facility is seen as positive means of dealing with boredom.

> *"If asked to change the station, it will just be okay with me because I have stayed in this facility for quite a long time."* **AMO, Tanzania**
>
> *"I wish I was transferred to the southern region; it is more developed. I feel I have stayed here [northern region] for a very long time and need a change. I will have things to learn from there as well."* **CO, Malawi**

The desire to experience life in a new location was sometimes influenced by early life experiences. Participants whose parents were civil servants were already 'used' to transfers. This influence would make them more compliant when they were told to transfer compared to those whose parents were not. This highlights the importance of exploring the historical background of individuals as past events could have an important bearing into the decision-making process. As the quantitative data shows in *Section 4.1.1* most participants came from the rural areas and would find relocating to be a challenge and hence had a higher potential to be retained.

> *"My father worked for the Ministry of Agriculture while my mother was a primary school teacher. We got transferred on several occasions, so I will not be surprised to get a transfer."* **CO, Malawi**

4.2.3.10 Retirement plans

Healthcare workers who were approaching the age of retirement preferred with transfers that would allow them to settle closer to their home district or stay in the current location if it was their home district even if the location was in a hard-to-reach area. By the end of the study, ten healthcare workers (8%) had retired from practice, it was important that this demographic characteristic is considered in implementing the ETATMBA programme.

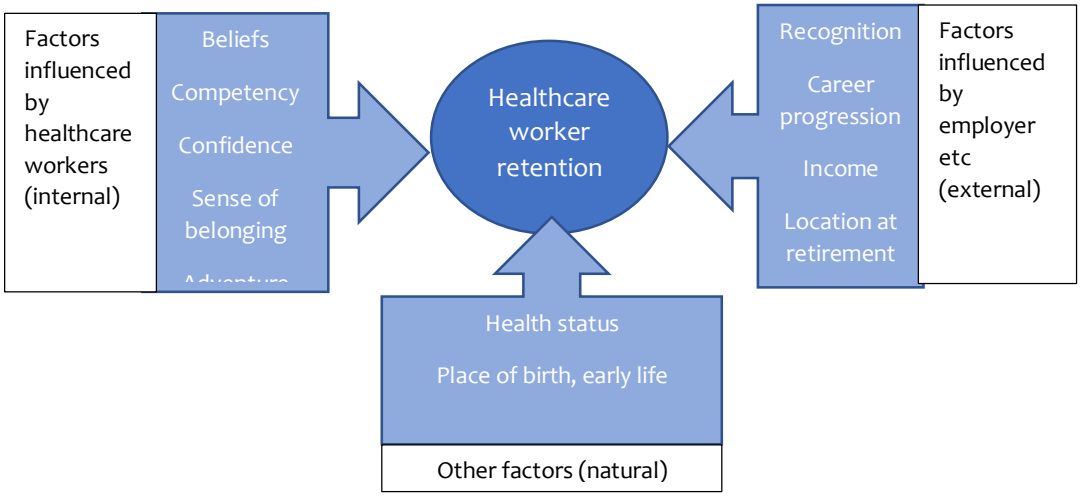
> *"At my age, I wouldn't want to still be wandering around, I would go to any district but shouldn't be very far from my home district."* **CO Malawi**

The definition of what a home district is, however, was different among healthcare workers. Some considered their parents' location while others considered it to be the place they grew up. The lack of a clear definition of a home district would make inclusion of such a consideration in the human resources for health policy challenging.

The preceding section has presented factors perceived to affect retention at the first level of the SEM - the individual factors. The categories of retention presented above can be summarised into three main categories as shown in *Figure 4.11* below; (1) Factors that are within the capability of a healthcare worker's decision making, (2) factors that can be influenced by the employer and (3) naturally occurring factors that neither the individual nor the employer have the capability to influence.

In addition to summarising the perceptions presented in this section, *Figure 4.11* shows the complexity with which perceptions can be categorised in the five SEM levels. There is potential for significant overlap between the perspectives in respect of the different SEM levels. It may be challenging to assign a particular factor to only one SEM level. One could argue that the factors with potential for external influence, e.g. by the employer, could as well be categorised as belonging to the third level i.e. the Mesosystem.

Figure 4.11. Categories of factors affecting the individual's perception on retention



4.2.4 Factors related to the immediate family members (Microsystem)

The welfare of close family members such as children, spouse and the extended family was perceived to be an important factor to be considered when deciding to change jobs or relocate. Healthcare workers were more likely to make decisions that would result in meeting the needs of their close family members.

Concerns over the welfare of family members was mentioned first by healthcare workers in most interviews indicating how important these factors were to them. This meant that it was more likely for a participant to relocate if by doing so it would improve the welfare of the family. It emerged during most interviews that healthcare workers believed they

had a primary responsibility of providing the necessary support to their spouses and children and the extended family. These responsibilities included meeting financial needs, attending family social events, taking care of a sick relative, etc. Both male and female healthcare workers appeared to have similar concerns. Spouse's job and children education were the most commonly mentioned reasons as illustrated by the quotes below.

> *"I don't mind being transferred to another facility but within the town, the biggest consideration now is my kids. I wouldn't want their education interrupted. As for myself, I wouldn't worry much."* **NMW, Tanzania**
>
> *"My wife is planning to go to University here in [name of a town] and children are used to their school, if we moved [transferred] they will be affected."* **CO, Malawi**
>
> *"All my children have completed secondary school, I wouldn't hesitate to go* [relocate] *to another facility, but when my children were young, I preferred to stay in one place."* **AMO, Tanzania**

Notwithstanding, some healthcare workers had an opposing view on this. They felt they should not work at a place where they had family connections as this might result in work being interfered by family matters.

> *"Some challenges of working at a home district is that you have relatives and friends who might expect some favours at work. This affects job performance."* **CO, Malawi**

Some healthcare workers placed the ability to meet family needs higher than any other factor. This was a common observation among participants who were married and had children. They thought that as long as they could meet family needs, the other factors were immaterial. This view resonated well with the expectations of the Ministry of Health officials in both countries. This means that for a healthcare worker with a family, it would be more difficult for them to make a decision for a transfer as such a decision would have to weight against the welfare of the family.

> *"Do I have a house? If I have a house enough for my family and a salary that enables me to meet my family needs, that is all I need, I can work anywhere."* **CO, Malawi**

> *"Once you are trained you can be posted anywhere in the country based on the existing need."* **KII MOH, Tanzania**

> *"Sometimes we give special considerations for cases like marriage, but a clinician can be posted to any facility, that is our policy."* **KII MOH, Malawi.**

This section presented the perspectives of healthcare workers and Ministry of Health officials regarding factors that can affect retention that are related to close family members. As there are no sub-categories of factors in this section no summary diagram is included.

4.2.5 Factors related to the surrounding community (Mesosystem)

This section highlights perspectives from healthcare workers on retention based on factors related to the different elements in surrounding community like workplace, schools, place of worship, recreation and other institutions in the community.

4.2.5.1 Workplace (supportive colleagues and facility leadership)

The presence of supportive friends and colleagues at the workplace was perceived to encourage retention, much as the sense of belonging would encourage retention as earlier described in *Section 4.2.3.5.* Healthcare workers thought the moral and professional support received from colleagues would strongly encourage retention even in presence of negative factors such as remote location, low pay or lack of opportunities for further training. Healthcare workers counted on this support so much that there was fear of missing it if they got transferred to another facility.

> *"Here we work as a team, we enjoy team spirit, we are respected by fellow members of staff, that gives me a reason to stay."* **NMW, Tanzania**

> *"Having helpful and supportive colleagues/friends who understand is important to me. If I moved* [to another facility] *what kind of people will I find there? You see here is a rural place and colleagues are the only people you can relate to comfortably; colleagues provide support which is so much needed."* **CO, Malawi**

A sense of belonging and support was perceived to strongly encourage retention. A sense of belonging is contributed by other factors including being recognised, accepted and valued.

Good facility leadership was perceived to encourage retention through providing a supportive work environment, creating a sense of belonging among healthcare workers.

Fear of unfair treatment of staff by the leadership in the destination facility was considered a deterrent to relocate.

> *"The district health management team is listening to our ideas and are responsive to our suggestions and requests, I hear that this is not the case in other districts."* **AMO, Tanzania**
>
> *"I also found out through friends who first came here and left. They encounter problems with the administration, so I think I better stay. I don't want to get into similar problems."* **CO, Malawi**
>
> *"I don't feel I am supported enough by the management, ideas discussed at morning reports, suggestions given are not taken seriously, no new ideas for improving quality of patient management. Given the opportunity, I would be happy to get a transfer."* **CO, Malawi**

Being a member of the facility leadership was perceived to further encourage retention. Taking on leadership responsibility was key to changing healthcare worker's perspective on retention. This notion is also highlighted in *section 4.3.3.3* where competency and confidence among healthcare workers is linked to autonomy and this was perceived to encourage retention as depicted by the quote below.

> *"I used to complain a lot about many things. But when I took up a leadership role, I came to realise that we are always working with a shortfall in resources. Last year our hospital needed 30 million* [Kwacha], *but we only received 7 million* [Kwacha] *from the government, we need to understand the economy level of our country. I am willing to stay in this facility and contribute ideas on how we can improve our services with what we have."* **CO, Malawi**
>
> *"The training helped change my thinking around motivation, my attitude and my relationship with managers. First, I need to be part of the solution and not the problem and that it's not all about money. Soon after that training, I am a changed person."* **CO, Malawi**

Such a shift in thinking indicates that the in-service training brought about a sense of maturity and ownership. Participants became more aware of the existing constraints and their role in mitigating them.

4.2.5.2 Availability of resources

Lack of the necessary equipment and consumables for providing patient care was perceived to reduce staff motivation and affect retention. Some healthcare workers thought that lack of resources would lead to misunderstandings between them and the facility leadership and would further impact negatively on retention. 'Inadequate resources' was perceived to lead to adverse patient outcomes, low staff morale and less retention.

> *"There is an individual with knowledge and skills but there are no resources to do the job, you see… you get discouraged, money is not everything."* **CO, Malawi**
>
> *"Lack of resources affects the relationship between healthcare workers and the management. Healthcare workers think management is not doing their best."* **NMW, Tanzania**
>
> *"Example CS [Caesarean section] which is a daily procedure, the theatre is not in good order, the [operating] table is not adjustable, and you have to do four to five CS in 24 hours using this kind of table. Again, no medication for patients, you feel the job you do is incomplete."* **CO, Malawi**
>
> *"Sometimes there is no fuel for [the operating] theatre generator, relatives have to buy fuel first. That causes delay. It is very disheartening to see a woman die just because there was no fuel in the generator… so sometimes people move out of government [employment] because of such things."* **CO, Malawi**

The lack of enough healthcare workers was also highlighted to reduce retention. Healthcare workers were aware of the effects of being overworked and burn-out and related this to poor retention.

> *"We are only two Clinical Officers in this hospital. If not me, it is him on duty, we don't have enough midwives, sometimes you get burn-out."* **CO, Malawi**
>
> *"There is only one person who gives anaesthesia. If she is not around, we struggle. Having adequate manpower would make work easy for us and that would encourage us to stay."* **AMO, Tanzania**

Commenting on the lack of healthcare workers, key informants from the Ministry of Health admitted the problem. While excessive workload was linked to low retention,

some healthcare workers thought that particularly low patient load was also demotivating suggesting that a balanced workload would encourage retention.

> *"I would never go to a central hospital, … there I will be used like a hoe, at the district [hospital] I have time for rest. At [XXX Hospital] or [XXX Hospital] the specialists leave all the hard work for you to do."* **CO, Malawi**
>
> *"This is a new facility, there is not much to do. I do not want to be getting money for nothing."* **AMO, Tanzania**
>
> *"At the moment we don't have adequate numbers of staff, but we have strategies in place to increase the number of healthcare workers, priority given to most deprived locations."* **KII MOH Tanzania**

Some participants cited the lack of resources as a challenge but recognised that moving to another workstation would probably not make any difference. Adequate resources within the context of an enabling environment was considered to override remoteness of a location.

> *"I do believe that every place has got its own problems, at times we tend to ask if this district has got this and that district has got that. All district hospitals have got the same main problem; lack of resources. This makes it difficult for one to discharge their duties effectively."* **CO, Malawi**

4.2.5.3 Additional responsibilities at the healthcare facility

Being assigned additional responsibilities at the facility e.g. coordinating a particular programme such as malaria, TB, HIV/AIDS, etc. was considered a positive reinforcement that would encourage retention. Four reasons emerged as an explanation for this; (1) additional responsibilities meant involvement in decision making, (2) getting some time off from clinical work, and as such, considered a break (3) if such activities involved travel, participants got paid and that meant a supplementary income, and (4) adding variety to the day-to-day tasks.

Being part of the facility leadership meant that participant's involvement in decision making. This was perceived strongly to encourage retention. It was not clear from the interviews if healthcare workers who became involved in decision making at the facility manage to make any changes. However, the fact that they were involved in the process was in itself a powerful motivation that encouraged retention.

Since I completed this training [ETATMBA], *I was asked to be a member of the planning and budgeting committee for this healthcare facility, I feel more a part and parcel of this hospital and will not be happy if asked to relocate."* **AMO, Tanzania**

"…My voice is heard since I am part of the facility administration, now I understand why certain administrative decisions are made so I cannot complain." **CO, Malawi**

"Last year, I never got time to take leave. There was no one to cover my duties. But since I started to coordinate the Male Circumcision programme, I get some time off from clinical duties to work on it." **AMO, Tanzania**

"After completing the ETATMBA programme, I am given responsibilities including antiretroviral therapy trainer and national supervisor, I would lose these responsibilities if I got transferred to another facility." **CO, Malawi**

"We receive nursing and clinical interns at this hospital every year. Since I completed the training [ETATMBA], *I was appointed a coordinator for training. I enjoy teaching and mentoring junior staff."* **CO, Malawi**

4.2.5.4 Attachment to and responsibilities given in the community

When participants were asked to take on responsibilities in the community other than their healthcare facility work, their interpretation was that such responsibilities indicated trust, respect and honour. For some, community responsibilities would make them decide to stay in a workstation regardless of the location and situation of the work environment. This also linked to the individual factors influencing retention as described in *Sections 4.2.3.2* – on recognition, *Section 4.2.3.5* – on the sense of belonging and *Section 4.2.3.7* – on personal beliefs.

"I am secretary of the elder's committee in our church. I am involved in overseeing all church projects including the construction of our new church building. If I left, there would be a huge gap." **CO, Malawi**

"I am the chairperson of the local secondary school governing committee. I feel my contribution is still needed in this role as well. The school is doing very good academically and I feel proud of it. Teachers and students alike would be very disappointed if I left now, so I would rather stay." **AMO, Tanzania**

The desire (and action) to help the community was mentioned to encourage retention. A positive relationship between healthcare workers and the community prompted the desire for retention.

The fact that extracurricular activities played an important role in how participants engaged with the community, and how they felt they were recognised, it may be helpful to include this aspect in training programmes for the cadres involved. It could be included in modules where candidates do community based research or go to the community and provide health education.

> *"The main thing pulling me back and making me decide to stay is my clients. I know them, and they know me. I have planned some research to put my facility on the [country's] map. I will not be happy to go any time soon because I haven't seen my output yet."* **CO, Malawi**
>
> *"I am in good terms with the people in the community here. During outreach clinics, we make diagnosis of conditions like hernias, lipomas, tropical ulcers and take their contacts and keep communicating. Even community health workers will call us directly if there is an emergency or will send patients to our hospital."* **CO, Malawi**

This desire to remain in post was more pronounced if linked to a prior relationship with the community. Participants who received support from the community at any point in their life felt that they needed to remain at the healthcare facility out of loyalty and to pay back to the community.

> *"Since the time I was a medical attendant, it was the health centre advisory committee that recommended me for further studies. I went to train as a clinical officer and now the ETATMBA training. So, I have a strong desire to give back to the community. For this reason, I will remain in this facility even if it is a remote facility."* **CO, Malawi**

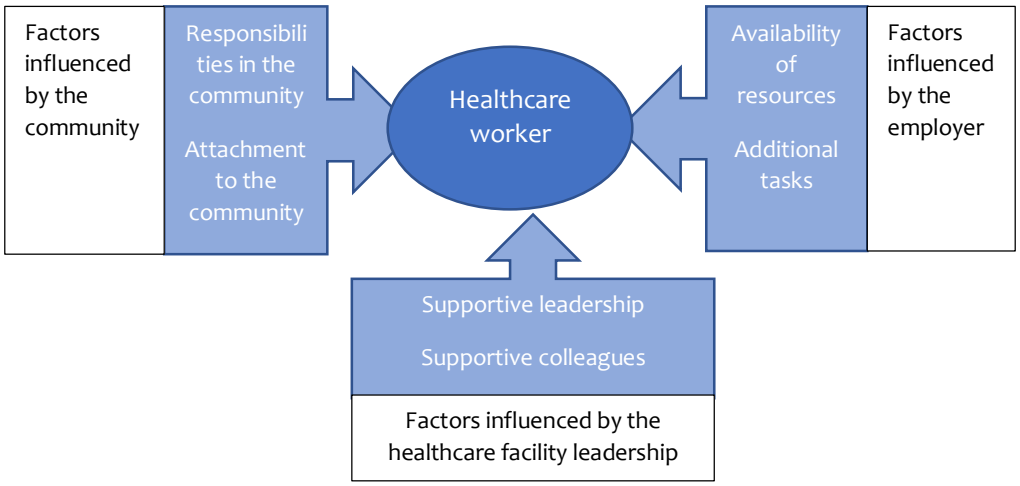
Similarly, healthcare workers would sometimes decide to stay to complete work or an unfinished project. It would seem that a sense of ownership had developed among healthcare workers. The sense of ownership seems to override other causes of attrition had they emerged. This is an indication of a strong intrinsic motivation.

> *"Would stay, I have put a lot of effort to improve this facility, I am worried about whether what I have developed will last, so I would rather stay a little longer."* **AMO, Tanzania**

> *"Another project we started was to initiate a nursery for KMC [Kangaroo Mother Care]. Under my leadership, we identified a nurse and one clinician, and they went to Queens [Queen Elizabeth Hospital] to benchmark. It's only 2 weeks since they came back. The infrastructure is adequate. I will be excited to see the outcomes of this project."* **CO, Malawi**

This section has presented perspectives of healthcare workers and Ministry of Health officials on factors related to the surrounding community that would affect retention. *Figure 4.12* below provides a summary of these factors grouping them into three categories, those that are within the control of a healthcare worker, those that are within the control of the employer (government) and those that are within the control of the surrounding community.

Figure 4.12. Categories of factors affecting the individual's perception on retention



There is an overlap between factors influenced by the local authorities at the facility level and the central authority at the ministry level. This would depend on the particular factor under consideration. For example, the provision of resources such as equipment and consumables is usually organised at the central level. However, managing the resources is the responsibility of the facility leadership. Regardless of the source of influence, the availability of resources will affect retention of healthcare workers at the facility in question.

4.2.6 Factors associated with the society (Exosystem)

The remoteness of a facility was perceived to reduce retention. Healthcare workers thought that the further a facility is located from the urban area the less the likelihood of retention. Some healthcare workers indicated that the lack of amenities was the problem and not the mere distance.

> *"People may give you other reasons, as to why they quit the job or don't stay in this facility, but it is the remoteness which drives them out."* **CO, Malawi**
>
> *When I came here [for the] first time more than 20 years ago, transport was a huge challenge. I was very concerned if we had an emergency that needed immediate referral. We always experienced delays. Now we have a tarmac road and you can get to town and back within a few hours.* **AMO, Tanzania**

Climate was also mentioned to affect retention. However, preferences for the kind of weather desired differed among participants. Whereas some preferred a warm climate, others would prefer to work in a cold climate.

Both countries have not experienced insecurity or civil unrest issues. None of these came up during the interviews indicating that healthcare workers would place emphasis on issues that are relevant to them at that point in time.

> *"I will consider climate to relocate, I have been at Mzimba for some time. It is cool and nice here and I will appreciate a change but not to the lake, it is uncomfortably warm there."* **CO, Malawi**

4.2.7 The Macrosystem; national policies, UN and multinational conventions

4.2.7.1 Human Resources for Health policies and guidelines

Ministry of Health officials perceived that strategies for staff retention were in place. Specifically, they mentioned the hardship allowance policy - a policy that provides additional payment to staff who work in remote locations. Ministry of Health officials in both countries thought that the existing policies on health workforce retention were comprehensive, adequate and the strategies stated in the policies included effective retention strategies. The health policies in both countries mention two cadres; Clinical Officers and Assistant Medical Officers as having higher retention rates especially in rural settings and relied on them for the bulk of medical care in those settings.

However, perceptions among healthcare workers were not congruent with views of government officials. Healthcare workers raised claims of partiality including nepotism in allocating transfers, allowances and allocating opportunities for career progression and promotions. As explained in *section 4.2.3.8*, lack of, or unfair allocation of career progression opportunities was perceived as a strong factor against retention.

> *"The HRH policy is clear, we have developed strategies to improve motivation and retention of all healthcare workers, we have special plans for those in remote areas including a remote allowance."* **KII MOH, Tanzania**
>
> *"I feel like on deployment, we were put in wrong hands, we are not treated equally, there is clear partiality."* **CO, Malawi**

Overall, retention strategies put forward by policy makers did not align with what healthcare workers thought was important. The thoughts from policy makers indicated that they were aware of the issues being raised by healthcare workers. However, they did not seem to put the same level of importance. This could be due to HRH not being a priority area or that policy makers are aware of resource constrains that would affect implementation of interventions suggested by healthcare workers.

> *"Partiality is very demotivating. Following completion of our studies, the Ministry of Health relocated most of us [Clinical Officers in the ETATMBA programme] to new facilities. Some of us complied with the transfer but like me, my salary has not changed while others just reported to their facilities, their salary got increased and they got a scholarship to go for further studies. It is unfair."* **CO, Malawi**
>
> *"Sometimes it is luck but sometimes it is whom you know. Some of our colleagues are now working for national [health] programmes. But they had someone to help them reach there."* **CO, Malawi**
>
> *"There needs to be a clear guideline on career progression. There is a rumour that if you go to school, they will take your name off the payroll. So, this discourages people from pursuing career progression."* **CO, Malawi**
>
> *"It works well for you if you are connected to the system, otherwise it is a struggle."* **AMO, Tanzania**

Healthcare workers were aware of the existence of policies on retention but reported that they were not being implemented. They also thought that there was lack of policies and systems to recognise exceptional achievement.

> *"Sometimes you hear people talking about hardship allowance, but I have never received any allowance for working in this remote facility, I have been here for the past 18 years."* **AMO, Tanzania**
>
> *"We have a policy in place for hardship allowance, if they have not received it means they have not claimed it, but it is there."* **KII MOH, Tanzania**
>
> *"The Ministry of Health gives special attention to staff working in remote, hard-to-reach areas, mostly in the northern region, we are committed to making them stay."* **KII MOH, Malawi**
>
> *"I think responsible authorities are not doing enough, not thinking hard enough about how to motivate workers. For example, between 2009 and 2012 in our facility we managed to reduce the number of maternal deaths by about 50% - not even congratulating some of the people who worked on this to say we have achieved it together. Then, between 2014 and 2015, maternal deaths have gone up again and immediately the administration is asking us why is the number of maternal deaths going high."* **CO, Malawi**

4.2.7.2 Conflicting directives from authorities

Sometimes participants received conflicting information from higher authorities. This was perceived to negatively affect motivation and retention.

In Malawi for example, the directives received by participants would either come from the District Health Officer (DHO) or from the Ministry of Health. When this happened and the directives were conflicting, healthcare workers were not clear of what to follow. The resulting confusion wold reduce morale and motivation.

> *"The District Health Officer (DHO) wants me to go to [name] district hospital while the Director for Primary Health at the Ministry of Health wants me to remain at [name of district] because of the high demand. Now I am confused not knowing whom to listen to."* **CO, Malawi**

> *"Unclear administrative path and bureaucracy. [The] MOH communicates directly to the hospital, but some orders will come from the DHO, which is at the district level. At times, the messages are conflicting and that is very demotivating."* **CO, Malawi**

4.2.7.3 International conventions

None of the participants or key informants spontaneously mentioned international or UN conventions as having an influence on retention. However, when asked if they would consider relocating to work abroad, healthcare workers were not supportive of the idea and did not appear to attach any importance to working abroad. The key informants from the Ministry of Health appreciated the problem of external migration of healthcare workers, although only doctors were mentioned, but thought there was little that the government could do about it.

> *"My brother, I have heard of the WHO code of practice, but we have never considered it in HR policy formulation here, doctors are leaving the country every day and it seems there is little you can do about it."* **KII MOH, Malawi**

> *"Given the opportunity, I wouldn't want to work abroad, South Africa, Botswana or England where medical doctors go. I hear that I will need years and years of training and I don't think I am ready for that."* **CO, Malawi**

> *"Go abroad? No, I need to stay and help my people, unless I go with my entire village… [laughter]."* **CO, Malawi**

4.2.8 The Chronosystem

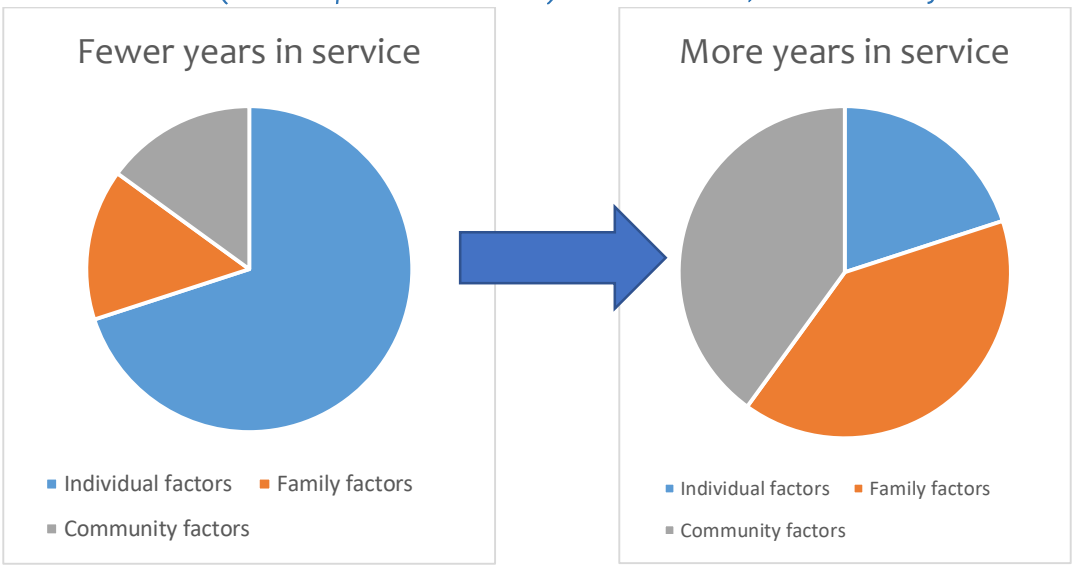
Although not a distinct level in the SEM framework, chronosystem upholds the idea that the factors expressed in the five SEM are not stagnant. Personal attributes of individuals such as age, marital status, income, etc. change over time and so the circumstances surrounding individuals. These changes to attributes and circumstance affect the importance attached to the different levels of the SEM as well.

For example, considering *section 4.2.3* factors related to the individual healthcare worker, *section 4.2.4* factors related to the immediate family members and *section 4.2.5* factors related to the surrounding community; factors perceived to affect retention differ in degree of importance to a healthcare worker over time. Whereas junior healthcare workers first mentioned and spent a great deal of time describing the first level factors

(individual), senior healthcare workers deliberated more on factors linked to the immediate family and the community, illustrating the difference in the level of importance the two groups attached these factors.

Figure 4.13 below illustrates this point. Healthcare workers at the beginning of their career deliberated more on factors related to them as individuals. However, the priorities for those who are advanced in their career seem to shift and focus more on the family and the community with less focus on them as individuals.

Figure 4.13: Perceived change in level of importance on factors affecting retention among healthcare workers (data not presented to scale). Not data based, illustrative only.



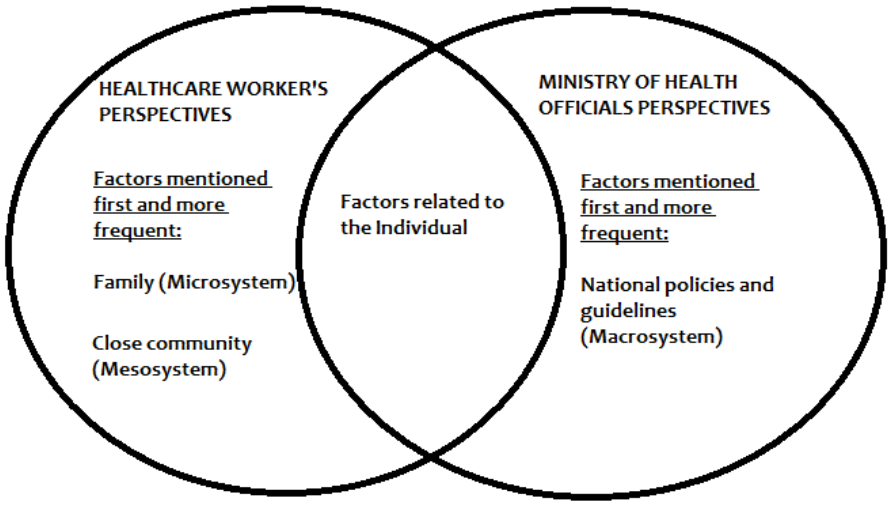
4.2.8 Summary on results from semi-structured interviews

This section presented perspectives on retention by healthcare workers and Ministry of Health officials in Malawi and Tanzania based on the SEM framework. There was a considerable overlap between the factors perceived to affect retention based on the first three levels of the SEM; individual, close family and surrounding community. This finding illustrates that the SEM levels are not discrete but overlap and the extend of overlap depends on the type of behaviour to which SEM is applied.

One key observation was that perspectives on retention by healthcare workers focused more on the first three levels of the SEM, while key informants from Ministry of Health focused more on the individual factors and the national policies (Macrosystem). This highlights a potential gap between what healthcare workers consider to be important and the priorities of policy makers. *Figure 4.14* below illustrates this point. The perspectives

from the two groups intersect at individual factors. Of note is that factors related to the social norms and processes (Exosystem) such as legal, political, security and economy were given little attention by both groups.

Figure 4.14: Summarising perspectives of participants and ministry of health official's SEM levels mentioned first and more frequent



The perspectives centred around factors that would encourage motivation and little consideration on how such factors would influence retention in the long run. For example, healthcare workers with young children who are in school mentioned that this would be the main consideration were they asked to relocate. However, there was no discussion on how or if their perception would change once the children had grown-up and were independent. This was probably the reason perceptions on factors affecting retention among junior healthcare workers differed from senior colleagues, a notion summarised in *Figure 4.14*. This finding is pertinent to retention policy formulation. Policies on retention need to be flexible to accommodate the dynamic nature of the expectations of healthcare workers at the different stages in their career and life.

Healthcare workers agreed on some factors that would encourage retention such as supportive leadership, the availability of appropriate accommodation, a rise in pay, availability of resources at the workplace, better working environment and a clear structure in career progression. However, other factors such as working in a district or central hospital, remote or urban location or for the criteria used for promotion, healthcare workers did not agree. For example, working in a remote facility was perceived

by some as possibly inviting opportunities for further study while others perceived that more such opportunities existed in urban areas. Similarly, promotion was perceived to be a positive factor if it was attached to a commensurate salary increase.

It is important to point out that although the study was able to capture the change in perspectives on retention among healthcare workers iteratively, this is not reflected in the results. The study setting was not designed to link the perspectives from an individual healthcare worker or healthcare workers in a health facility over time. This is presented in more detail in the limitations section.

Finally, it is important to emphasise that of the factors perceived to affect retention, some are within the control of the healthcare worker e.g. competency, personal beliefs, others are within the control of the employer such as work environment and salary increase, and others are not within the control of either e.g. age, personal health or place of birth (rural vs urban).

4.3 Case studies

4.3.0 Overview

This section presents four case studies. Each case contains information from one selected healthcare facility; two from Malawi and two from Tanzania. One facility in each country was considered hard-to-reach than the other, to ensure a broader representativeness of the cases. In Malawi, the facilities were district hospitals; whereas, in Tanzania, both were health centres.

The case studies were carried out in the last quarter of data collection. At that point, some of the participant's information had already been collected, however, participants were contacted again for iterative interviews, to clarify some details or information pertaining to the healthcare facility.

The findings from these case studies help to contextualise the findings from both the quantitative and qualitative data. The case studies provide a deeper understanding of the reasons behind the patterns of retention depicted by tracking healthcare workers as presented in *section 4.1* and the perceptions on factors that affect retention as presented in *section 4.3*.

The case studies bring into perspective the outcome of the interaction between healthcare workers and the environment that they were exposed to and whether this interaction resulted in retention or attrition. In this section, the Socio-Ecological Model (SEM) is applied at the level of a healthcare facility instead of the broader sense of the whole study (all participants) as in the preceding section.

Each case study starts with a brief background of the geography of the facility's location, followed by a detailed description of the healthcare facility and the study participants. The outcome of applying the (SEM) to each healthcare facility situation are presented.

A synthesis of the findings from all four case studies is presented at the end to highlight the main points from the section.

4.3.1 Malawi case study 1 (MCS1)

4.3.1.1 Background information

MCS1 is situated in the central region of Malawi. With a population of about 840,000 (Malawi National Statistical Office, 2018), it is home to tobacco workers and farmers. The district is the main producer of tobacco, the main agricultural export for the country (The World Bank in Malawi, 2018 report). The tobacco business makes this district headquarter town an active trading centre and the average economy of MCS1 residents is higher than all other 8 districts in the central region, except the capital, Lilongwe.

The main tarmac road running the north-south length of the country passes through the MCS1 town, which is 125km north of Lilongwe making it easily accessible and attractive to businesses and civil servants. Several private hospitals operate in the town.

The hospital

The hospital bed capacity is 270 and employs approximately 80 skilled healthcare workers. It conducts between 35 and 40 deliveries every 24 hours.

Maternity staff conduct clinical meetings every morning to handover information on patient care. These meetings are sometimes used as a platform for conducting Continuous Professional Development (CPD) sessions.

Study participants at MCS1

The ETATMBA programme recruited six Clinical Officers from this hospital, all of whom were male and worked in the maternity section. Their duties included providing care to outpatient and inpatients including antenatal care, labour and childbirth services and performing caesarean sections. One of participants was a member of the facility leadership team.

Only one of them, the member of the leadership team, was provided with a government house. The other five lived in rented accommodation. Four of them were family men with spouses and children. Two of the spouses were midwives working at the same hospital and one a primary school teacher. Two of them had young families (children in kindergarten or primary schools) and two with children at secondary school level and above. A wife to one of the participants died during the duration of this study. Two male healthcare workers were single. In addition to their jobs at the hospital, some were engaged in tobacco farming and petty business.

After graduation in October 2014, one was promoted and transferred to another district hospital where he became the facility head. This participant had a grown-up family with children who had already left home. Initially, he feared losing the income from his tobacco farming. However, once in the new district he got involved with sugarcane farming. He was given a government house in the new location. Apart from his job at the healthcare facility, he was also given other responsibilities including an influential position at a local church and a local secondary school. This made him feel more important in the new location than the previous.

One of the two single healthcare workers secured a job with a non-governmental organisation (NGO) six months after graduation. The new workstation was in a remote rural district in the south-western part of the country. Despite the remote location, he accepted the job, the major motivation being a higher salary. Four months later, the other single healthcare worker also followed suit and joined the same NGO in the same location.

4.3.1.2 MCS1 healthcare workers and the Socio-Ecological Model

Personal attributes

The personal attributes of healthcare workers at MCS1 were a heterogeneous group. Two were single, two with young families and two with older families. However, all of them had the same level of education, training and the 'new' BSc qualification.

The two participants who changed jobs had three things in common; they were younger than the other four, were single and MCS1 was their first posting.

Microsystem

The lack of institutional housing was the most demotivating factor for participants. For the staff member who was transferred to another facility, provision of an institutional house was a strong pull factor and the fact that he had a grown-up family made relocation less demanding.

Mesosystem

Healthcare workers pointed out that the presence of colleagues made them feel supported and encouraged. The person who was transferred to another facility and given other responsibilities in community (church and school) found the other responsibilities were a strong factor in encouraging retention. The act of the two single healthcare

workers to relocate to the same place and organisation can be interpreted as a pursuit for support from a colleague.

Exosystem

One would expect that good social amenities (tarmac road, electricity, piped water and good schools) and a relative better economy at MCS1 to be strong pull factors towards retention. However, on the contrary, two staff members relocated to a district with poor amenities (rough road, no piped water, no reliable electricity and no good schools). In this case, a higher salary outweighed other factors for a decision to relocate.

Macrosystem

The two healthcare workers who left MCS1 to work with an NGO in another district qualified for the new job partly due to the added BSc qualification acquired through the ETATMBA training. This can be regarded an unintended outcome of the training programme.

The potential for NGOs and other employers to recruit ETATMBA trainees was known by the government (Ministry of Health) beforehand. However, there was little the Ministry of Health could do to affect this result.

At the end of the follow-up, three of the six healthcare workers were still working at MCS1 a retention of 50%. However, if considered from a countrywide point of view, all of them were still working within the country and within the health system, a retention rate of 100%.

4.3.2 Malawi case study 2 (MCS2)

4.3.2.1 Background information

MCS2 is a rural district in the furthest north, 670km away from the capital Lilongwe. It is a relatively small district with a population of about 230,000 (Malawi National Statistics Office, 2018). MCS2 is essentially a dead end, with only one major road connecting it to the nearest town.

The district comprises rural communities inhabited mostly by subsistence farmers and it has the lowest per capita income in the country (The World Bank in Malawi, 2018 report).

The supply of electricity and water is erratic; tap water became available in 2017 and interruptions with electricity supply occur for several hours almost every day. The quality of education provided in schools around MCS2 is thought to be poor. The Ministry of Health categorises the district as a hard-to-reach and hard-to-serve area.

The hospital

MCS2 district hospital has a bed capacity of 194, conducts about 10 deliveries in 24 hours and employs approximately 70 skilled staff. It is the only hospital in the district capital.

The hospital provides general inpatient and outpatient care including maternity services antenatal, labour, childbirth and postnatal care. It also organises regular staff meetings and CPD sessions. Occasionally, the hospital receives patients from Tanzania and Zambia who reside around the border, resulting in an increased workload.

Study participants at MCS2

The ETATMBA programme recruited six male Clinical Officers from MCS2, all working in the maternity.

One of them was living in a government house, four of them were renting and one had built his own house. The lack of accommodation was perceived as a serious demotivation factor.

All of them were married men, five with young families, and one with older, independent children. Four had spouses working at the same hospital, three of them midwives and one telephone switchboard operator. The spouse of one was a primary school teacher and the other not a civil servant.

One of the study participants was a member of the facility leadership and the chairperson of Malawi Association of Obstetric Clinical Officers (MAOCO) and a leader of the ETATMBA course participants in Malawi. This participant used to organise meetings in which ETATMBA participants at the facility would meet to discuss various matters regarding work and wellbeing.

When the directive on transfers was issued by the Ministry of Health in 2015, two of the participants from MCS2 were transferred out. Upon receiving transfer letters, the six of them, collectively, wrote a letter to the MOH defying transfer of the two healthcare workers, demanding they should remain at MCS2 given the high workload in this hard-to-reach location. After further correspondence, their request was granted.

Later, the Ministry of Health appointed one for the study participants from MCS2 to work for an HIV/AIDS programme at the ministry headquarters in Lilongwe. After few months of working with the government, this person started his own practice and left government employment. In addition to a higher income from private practice being the motivation for the change in jobs, his wife was denied a transfer to Lilongwe and he thought that a private job would give him the freedom to travel back to MCS2 more often to see his family.

4.3.2.2 MCS2 healthcare workers and the Socio-Ecological Model

Personal attributes

The leadership, social mobilisation and charisma of the chairperson of MAOCO contributed to the cohesion of the participants and probably the reason for a higher retention at this hard-to-reach facility. The healthcare worker who was transferred from rural MCS2 to Lilongwe started his own practice which may have not happened had the participant stayed in MCS2.

Microsystem

All study participants from MCS2 were family men. In this case, their families might have contributed to the retention. The transfer to Lilongwe posed a challenge to the couple who had to look for another midwife to exchange stations. This led to a family disruption i.e. couple living in two different districts.

Mesosystem

Study participants at MCS2 had a supportive facility administration and having a representative in the facility leadership committee made them feel that their voice was being heard.

One study participant linked their commitment to work to the kind treatment received from members of the local church and from individuals in the community. The local church was also used as a platform to publicise health advocacy messages.

Exosystem

On occasion, attending patients from Tanzania and Zambia posed some challenges to the staff due to the language barrier and managing unanticipated expectations. However, the participants were accustomed to this challenge and could cope very well.

Macrosystem

The only person who left this facility was transferred by the government by way of promotion to the Ministry of Health headquarters. The transfer probably exposed the healthcare worker to a private practice in the urban area and he later left government employment.

The central government did not consider providing a transfer to the spouse of one of the participants to Lilongwe as well even though she worked as a midwife in the same facility. One of the reasons given for denying the transfer was that, by policy, she was required to look for her own exchange from Lilongwe, something she could not manage to do.

The unsuccessful transfer of two Clinical Officers from MCS2 (rural district) to a semi-urban district, highlights two issues; (1) possible lack of proper communication between different authorities within the Ministry of Health i.e. the HRH person at the MOH and the DHO for MCS2 and (2) lack of involvement of healthcare workers in making decisions that affect them.

Five of the six participants were still working at this facility at the end of the tracking, a retention rate of 83%.

4.3.3 Tanzania case study 1 (TCS1)

4.3.3.1 Background Information

TCS1 is a health centre situated in the north-western Tanzania, 800Km from the capital, Dodoma. The region is regarded by the government as a hard-to-reach and hard-to-serve area. There is no electricity supply or running tap water at TCS1.

The Health Centre

The facility has a bed capacity of 41, has 15 skilled staff, conducts five to six deliveries in 24 hours and about ten caesarean sections per month. The next referral point from TCS1 health centre is 180 Km away with half the stretch of the road being untarmacked.

World Lung Foundation (WLF), a US-based NGO, did extensive facility renovation of TCS1 between 2012 and 2013. The renovation included building a new operating theatre, new maternity (antenatal, labour and postnatal wards), construction of seven residential houses for staff, making water available from a drill-well and storage tanks and providing solar panels and a diesel generator to supply electricity.

Consequently, the facility was transformed from basic to a comprehensive facility able to perform emergency caesarean section. The facility renovation was done as part of the ETATMBA programme.

The number of maternal referrals from TCS1 to the referral hospital reduced from approximately 40 in 2014 to less than 5 in 2016. No maternal deaths were reported at this facility during the follow-up period for this study.

Study participants at TCS1

Six healthcare workers received training under ETATMBA programme, three women and three men. Three of them were Assistant Medical Officers (AMOs) and three Nurse-Midwives (NMW). AMOs received training on performing caesarean section and other minor surgeries while NMWs trained in providing anaesthesia.

All study participants at TCS1 were provided with government accommodation within the facility premises. Five out of six participants had families with grown-up, independent children (post-secondary school). One participant was single. Two of the participants were a couple, while one was married to another staff member at the facility. Two participants had spouses who were not civil servants.

One NMW (trained in anaesthesia) from TCS1 was transferred to a nearby health centre that had started performing caesarean sections.

In 2015, one year after graduation, one AMO retired from service but he remained in the same town and was, at times, consulted in case there was an emergency.

4.3.3.2 TC1 Health centre study participants and the Socio-Ecological Model

Personal attributes

The AMO in charge was posted to the TCS1 Health Centre in 1989. This was his first appointment and he has been there since then (30 years). He had integrated well into the community. As a result of being in charge of this facility for such a long period lead him to be regarded as one of the opinion leaders in the surrounding community and he felt to be very well respected.

The fact that one year after graduation one healthcare worker retired indicates that age was not considered during the recruitment of staff into ETATMBA programme. The ethical and other considerations on this are presented in the discussion chapter.

Microsystem

Family ties among facility staff, two being a couple and one being married to a fellow facility staff appear to have contributed their retention, and, similarly, the availability of government houses.

The Nurse-Midwife who was transferred was unmarried. She reported that the decision for her to relocate was easy to make as she did not have other (first degree) family members to consider before relocating. Her opinion was similar to the opinion of the healthcare worker who was also transferred to another facility in the first case in Malawi. However, in the case of the healthcare worker in Malawi, he had a family but the wife was not a civil servant, and the children had grown-up and were independent.

Mesosystem

The facility upgrade enabled the immediate use of skills learnt during the ETATMBA training such as providing anaesthesia, performing caesarean section and performing other minor operations. The availability of resources and good facility leadership promoted teamwork and probably encouraged retention.

Exosystem

TCS1 is the only health centre in the surrounding township. The facility serves as a single physical source of health information in the area, giving staff some degree of control over what information would benefit the public.

Macrosystem

Facility renovation encouraged staff to stay. The task shifting policy allowing AMOs to perform caesarean section sections and Nurse-Midwives to provide anaesthesia made staff feel useful, valued and competent, encouraging their retention. A facility upgrade so that it could start performing caesarean sections resulted in less patient referrals to regional hospital, saving costs (less use of ambulance), reducing delays and saving lives.

At the end of the tracking, four healthcare workers were still working at TCS1, a retention rate of 66.7%.

4.3.4 Tanzania case study 2 (TCS2)

4.3.4.1 Background Information

TCS2 is a health centre situated in the southeast of Lake Victoria. Most of the region's infrastructure is underdeveloped. The region is a less preferred destination for civil servants, hence, it suffers from a serious shortage of civil servants.

The TCS2 health centre serves a population of about 20,000 (Projections: Tanzania National Census 2012 data), the majority of whom engage in subsistence farming.

TCS2 is a rural location without any active business. The health centre receives referrals from 12 satellite dispensaries. The next referral facility, a district hospital is 60 km away via an unpaved rough road.

The health centre

The bed capacity is 28, number of deliveries per month is about 100, the facility has 15 skilled staff and provide comprehensive emergency obstetric care services 24 hours a day, seven days a week.

Between 2012 and 2013, the district council upgraded TCS2 health centre from a basic to a comprehensive facility. The upgrade involved renovating and refurbishing existing structures and construction of new ones. This transformed the dilapidated facility into a modern facility with a modern maternity wing, with antenatal, labour & delivery and postnatal wards, a well-equipped theatre, laboratory, five staff quarters and reliable source of water (drill well and storage tank) and electricity (diesel generator and solar panels).

The renovation coincided with training of staff through the ETATMBA programme. Since the upgrade, the health centre had performed 46 caesarean sections successfully to the end of the follow up in April 2017.

Study participants at TCS2 health centre

Training was undertaken by four members of staff; two Assistant Medical Officers (AMO) and two Nurse-Midwives, two male and two female. The AMOs received training in performing caesarean section and minor surgeries, whereas the NMWs trained to provide anaesthesia. One AMO was head of the facility.

All the four healthcare workers were married with children. Two of them had young children attending primary school while the other two had grown-up and were

independent children, beyond secondary school level. The spouse of one of the participants was a teacher in a local primary school.

4.3.4.2 TC2 participants and the Socio-Ecological Model

Personal attributes

TCS2 is a typical rural location inhabited by subsistence farming communities with no basic social amenities. Intrinsic motivation is more likely to have been the major factor for staff retention in this setting. Teamwork among staff was mentioned as contributing to staff morale and motivation.

During the interview, the District Medical Officer (DMO) praised staff at TCS2 health centre as committed and hard working.

Microsystem

All staff at TCS2 lived in government houses. Despite the difference in family circumstances with two staff having young children and two having older ones, a civil servant spouse, all staff were retained.

Mesosystem

The AMO who is in charge of the facility used to conduct training to impart skills to other staff members on caesarean section and anaesthesia, which suggests his high organisational capacity and ability to foresee (e.g. retirement, travel) and a strong team spirit.

The facility enjoys strong support from the district council. On several occasions, staff have received incentives including financial and formal recognition by the district and region authority.

Exosystem

The spouse to one of the participants was a respected teacher of the only primary school in the village and probably contributed to encourage retention.

Macrosystem

The council's decision to renovate the facility was an important step to initiating change that led to improved service provision. A renovated facility in turn enabled staff to utilise their skills, feel competent and encourage retention.

The success story of this facility received formal praise by the Deputy Minister for Health in August 2016.

All staff trained under ETATMBA programme are still in place, a 100% retention rate.

Table 4.7 below summarises the characteristics observed in the four case studies.

Table 4.7: Characteristics of healthcare workers and retention rate at the end of the study in the four case studies

Country	**Malawi**		**Tanzania**	
Cases	Case 1	Case 2	Case 1	Case 2
Location	Semi-urban	Rural	Rural	Rural
Bed capacity	270	194	41	28
Notable attributes observed	Semi-urban, good amenities	Excellent teamwork spirit	Facility renovation	Intrinsic motivation Facility renovation
Number of trainees	6	6	6	4
Retention rate (%)	50	83	66.7	100

4.3.5 Summary of the case studies

The four case studies presented in this section portray the context in which the study was undertaken. They highlight differences and similarities across healthcare facilities and individual participants.

Even when the circumstances to which healthcare workers were exposed to were similar, the resulting state of retention was sometimes different. This suggests that the SEM may not be equally applicable in all situations.

In Malawi, one would have expected a higher retention at MCS1 than MCS2 given that MCS1 is in a semi-urban location while MCS2 is in a rural and remote place. However, the opposite was true. Apart from the fact that the two healthcare workers in MCS1 who left clinical practice to work at NGO were both single, and so more liable to attrition. Additionally, living in a semi-urban setting probably exposed participants to labour market forces which resulted in securing a new job. The relocation of these two healthcare workers to a rural and remote place indicates that this was probably a positive move since they went to provide care to a remote rural place where their services were needed most.

In Tanzania, both facilities were rural health centres, served by staff with a range of individual characteristics. Staff retention in one facility was 100%, in the other 66.7%. One healthcare worker retired from service and the other was transferred to another rural facility. Both healthcare facilities underwent renovation and an upgrade from basic to comprehensive emergency obstetric care facilities which coincided with the training of staff on the ETATMBA programme. The staff had an opportunity to apply newly acquired skills immediately after the training, another factor which may explain the relatively higher retention.

The lessons learnt from these case studies include (1) a successful approach to managing human resources for health, that will result in suitable staff retention patterns need to be context specific and individualised, (2) Intrinsic motivation including personal commitment, taking pride in one's own work and team spirit seem to exert a stronger influence on decision making than extrinsic factors (remuneration, better social amenities) and (3) the importance of improving the work environment through facility renovation.

4.4 Chapter summary

The findings presented in the three sections in this chapter have outlined the retention patterns of healthcare workers, their perceptions on factors affecting retention and described the context in which the study was conducted through the four case studies.

Three socio-demographic variables were significantly associated with retention, being born and residing in a rural setting during the early years in life, age group 31 to 40 and having stayed in the job for 11 to 15 years.

Tracking of healthcare workers over five years identified three areas in which retention can be considered; (1) retention at the workstation, (2) retention with the employer and (3) retention in the provision of clinical patient care. In this study, the retention rate in the three areas had a different value in both countries.

Qualitative data analysis using the SEM revealed three major findings. First, most factors that healthcare workers perceive to affect retention are in the first three SEM levels; individual, close family members and the surrounding community and these factors overlap extensively. There is a shift in the perceived importance of the factors affecting retention as one moves from junior to senior status. Most junior healthcare workers attached more importance on factors related to the individual healthcare worker, while

senior healthcare workers considered factors related to the close family members (microsystem) and the surrounding community (mesosystem) to be more important. Thirdly, whereas healthcare workers regarded factors in the second and third levels to be the most important, Ministry of Health officials considered the factors in the first and fifth level to be more important in influencing retention. This difference could have a bearing on the acceptability and applicability of HR policies on health workforce retention in the two countries.

Finally, the four case studies presented provide more clarity on the contextual aspects of the study and illustrate the complexity with which factors affecting retention of healthcare workers operate and interact with each other over time to determine the patterns of retention as those observed among healthcare workers in this study.

CHAPTER FIVE: DISCUSSION

5.0 Overview

This chapter presents a discussion of the study findings and relates them to findings from previous studies on health workforce retention as highlighted in the review of literature in chapter two and relates the findings to the conceptual framework outlined in chapter one. It also presents a synthesis of the study findings and how they address the research questions and study objectives. In the course of the discussion, the contribution this study makes to the existing body of knowledge on health workforce retention in low-resource settings is stated.

The discussion starts by presenting a summary of key findings. It then analyses the findings from the tracking of healthcare workers - the quantitative aspect of the study, followed by exploration of findings on the qualitative aspect of the study - using the SEM to appraise perspectives on retention by study participants. This is followed by a discussion of how the study findings relate to the conceptual framework. Although the qualitative and quantitative aspects of the study are discussed in separate sections, cross-linking of ideas from both aspects is done throughout the chapter with the meanings derived from the qualitative data explaining some of the quantitative data findings.

The discussion then concentrates on how the study context explains the study findings based on the four case studies. Next is a discussion of how the study findings relate to the study's conceptual framework. Next is a discussion on issues around the study methodology followed by an outline of the strengths and limitations of the study and a list of possible ideas for future research, then a summary of the chapter is presented.

5.1 Summary of study findings

5.1.1 Tracking healthcare workers

Tracking of healthcare workers was done for five years; from 2012 to 2017. The retention of healthcare workers in target facilities at the end of follow-up was 46.5% (59/127); 47.8% (22/46) in Malawi and 45.7% (37/81) in Tanzania. Furthermore, 76.1% (35/46) of healthcare workers were still employed by the government and 69.6% (32/46) were still providing clinical services to patients in Malawi; whereas, in Tanzania, it was 72.8% (59/81) and 76.5% (62/81), respectively. The percentage drop per year in healthcare worker's retention in the

three categories; target facility, government employment, and clinical role was similar in both countries.

None of the healthcare workers migrated outside their country during the study period.

Healthcare workers who left from target facilities went to several destinations including non-target facilities, the MOH headquarters, NGOs, the military, further studies and private medical practice. These were regarded as voluntary causes of attrition. A note about those who joined the military service is that, these were chosen by the military to join the ETATMBA programme, receive the training and return to work as clinicians in the Malawi Defence Forces health service.

Notably, at the end of follow-up, 13.4% (17/127) of healthcare workers had permanently exited the system. Of these, ten participants had retired from practice, 4.3% (2/46) in Malawi and 9.9% (8/81) in Tanzania; 6.2% (5/81) were disqualified from practice in Tanzania and two participants, from Tanzania, had died 2.5% (2/81).

The healthcare workers in Malawi were younger and had fewer years of experience compared to those in Tanzania. Three variables showed significant association with retention; a rural location where a participant was born and grew-up ($p<0.001$), their age, the age group 31-40 years showing to be more retained ($p=0.03$) and being in the job for 11 to 15 years ($p=0.03$).

5.1.2 Perspectives on retention by study participants based on the Socio-Ecological Model

The perspectives on retention by participants focused mainly on the first three levels of the SEM; individual, family (Microsystem) and surrounding community (Mesosystem), while perspectives by key informants from the Ministry of Health, focused mainly on two levels; the individual and the national policies on HRH (Macrosystem). Perspectives from both groups had less prominence on the societal factors (Exosystem), the constancy in the economic, political, security and legal environment, factors that determine the societal fabric - the Exosystem, in the two countries was suggested to explain this observation.

A considerable overlap across factors perceived to affect retention in the five levels of the SEM was observed. For example, a change in salary might have resulted from a change in the government's policy on budget allocation (Macrosystem). However, this could affect the way an individual feel about their job (individual level), how that individual relates to

the family (Microsystem) or the surrounding community (Mesosystem). Conversely, these perspectives tended to differ between junior and senior healthcare workers. For example, while junior healthcare workers focused their perspectives more on individual factors, the focus for senior healthcare workers was on family and the surrounding community.

Sometimes, perspectives differed even among junior or senior healthcare workers. Factors that most healthcare workers agreed would encourage retention include; supportive facility leadership, availability of housing, a rise in salary, having adequate supplies at the workplace, transparency in the allocation of opportunities for further studies and a clear career progression structure. Factors in which disagreements were observed include working in a district against a central hospital, rural against urban location and on conditions attached to promotion.

Notably, the perspectives on retention expressed by healthcare workers did not necessarily result in them leaving or staying in the facilities, employment or roles as presented by the results from the tracking but should be viewed as part of a complex interplay of factors that would lead to a healthcare worker deciding to remain in or leave a facility, job or role.

The discussion on the patterns of retention and attrition from the findings of the tracking over a five-year period is presented in the next section. However, a deliberation on the definition of retention as stated in the literature and as defined in this study in presented first.

5.2 Retention and attrition of healthcare workers

This section focuses on considerations towards defining retention and discusses results from the tracking of healthcare workers. It starts by presenting challenges in defining retention, which were also encountered in this study. It then discusses the patterns of retention, attrition, and mobility from the study findings. This is followed by a discussion of the health workforce retention in relation to participants' demographic variables and in relation to in-service training.

5.2.1 Retention, attrition, location and mobility

5.2.1.1 Challenges in defining retention, attrition and rural location

The lack of standardised definitions and indicators for health workforce retention and attrition makes the appraisal of interventions challenging.

Migration of healthcare workers from one country to another also referred to as 'brain-drain' is probably the most common form of attrition studied. The movement is usually from a low- to a high-resource country (Cometto *et al.*, 2013; Deressa et al., 2012; Kaushik et al., 2008; Kollar and Buyx, 2013; Labonté et al., 2015; Mandeville et al., 2015; Poppe et al., 2014; Serour, 2009). However, the tendency to overemphasise the international migration of the health workforce diverts attention from the attrition of the health workforce within countries, the internal health workforce mobility or sometimes referred to as internal brain-drain (Evans, 2014), which not only affects health workforce availability and distribution, but the accessibility, acceptability and its quality as outlined by the AAAQ model in *Section 1.3.3*.

We define retention of the health workforce as the duration in months or years, a healthcare worker (employee) remains employed by the organization in a particular role. It is imperative that when retention is assessed, defined or measured, the aspect of retention in question is made clear as well as the numerator and the denominator and other parameters associated with the retention.

The three parameters used to assess retention in this study i.e. retention at the target healthcare facility, retention in clinical duties and retention in government employment emphasise the importance of stating the details each time retention is measured to improve clarity.

Considering health workforce retention by virtue of the time spent on a job is probably more useful from the employers' point-of-view, in this case, the government. The total number of employees influences HRH functions e.g. employee's compensation and development. This information is also critical in the planning and forecasting for HRH and for calculating the availability and distribution of the same. However, in terms of service provision, the duration of stay at a facility and the role played are probably more important.

The findings in this study show less than 50% of participants were retained in target facilities after the five-year follow-up. However, apart from the 13.4%(17/127) healthcare workers who left the health system permanently (retired, died or disqualified), the rest continued with duties of healthcare provision in a different capacity or at a different location within the country. For example, the four participants in Malawi who assumed administrative posts at the MOH were counted as part of the health workforce but were no longer providing frontline clinical patient care.

In the same way, participants who started in private practice or those who were employed by an NGO were still part of the country's health workforce. However, the tracking in this study categorised them to have undergone attrition since they were transferred to workstations that were not targeted by the ETATMBA programme. Those who started private practice most likely did so in response to a felt need within the community, which, if not addressed, would have affected the provision of health services to that part of the population. Similarly, the two participants in Malawi who went to work with an NGO, the NGO posted them to a very remote district and they continued to provide clinical care in that location. In effect, this could be considered to have alleviated the inequitable distribution and in no way considered a breach of the WHO Global Code of Practice.

Thus, what constitutes retention or attrition seems to rely on the viewpoint of the observer. A programme coordinator, a facility leader, a health manager at district, province or ministry/central level, a researcher, etc. will view health workforce retention or attrition differently based on their stance in the situation (Castro Lopes et al., 2017).

The other challenge encountered was that of connoting "rural" to a location. Although the ETATMBA programme was aimed at improving access to a qualified health workforce in rural areas, the MoH in Malawi posted some participants to health centres in the outskirts of Lilongwe – the capital. This location could arguably not be regarded as rural (Ricketts, 2005). Likewise, some locations where participants came from were undergoing rapid urbanization. For example, in 2011 at the inception of the ETATMBA programme, the town where *Malawi-Case 2* is located was not connected by a tarmac road with the capital Lilongwe. However, in 2014 at the end of the programme, there was a tarmac road. Although the location was still regarded as rural, it was now easily accessible. The "rural" based processes as stated by Cosgrave (2019) that would have operated at the start and at the end of the programme would be different and this could be a possible confounder (Cosgrave et al., 2019).

It is crucial that heath workforce is properly defined and the parameters involved in the definition are properly explained. The following section discusses how the workforce retention can be measured.

5.2.1.2 Challenges in measuring retention and attrition

Understanding the concepts and patterns of retention, attrition, and mobility of the health workforce is crucial in health workforce planning and monitoring at sub-national, national and international levels (Russell, 2013). In the absence of standard, internationally

agreed upon parameters to measure retention or attrition, there is a risk of under or overestimating the problem, missing key points, or being unable to properly monitor programmes or measure the effect of interventions properly (Humphreys et al, 2009).

In this study, the three aspects of retention mentioned above were considered; facility, role and employer. Attrition rate was determined by the proportion of healthcare workers who, for whatever reason, left target facilities, government employment or clinical practice during the follow-up period. The attrition rate was different in each aspect. For example, in Malawi, at the end of tracking, attrition from target facilities was 47.8%, attrition from government employment was 76.1% and attrition from the clinical patient care role was 69.5%; signifying the difficulty in defining and measuring attrition as stated above. Similarly, what involuntary and voluntary attrition connotes in literature is not uniform (Castro Lopes et al., 2017).

The lack of standardised numerators and denominators was encountered while calculating the retention of participants in this study. Although the duration of the programme was four years, the ETATMBA programme expected that, following the programme healthcare workers, who were government employees, would be retained in target facilities for a "considerable" period (Ellard et al., 2012), this "considerable" period was not specified, hence; it would be difficult to determined precisely what would constitute retention in the programme. The lack of a standardised duration in defining retention is a common challenge in HRH research (Humphreys, 2009).

In this study, the denominator was considered to be the total number of ETATMBA candidates who were still in the health system that year, participants who had retired, died or disqualified from practice were excluded in the denominator in the following year. Stability rate refers to the number of employees who are still in the employment between two set time points. The stability rate in this study only related to the three cadre of participants included in this study and did not represent the total number of healthcare workers in target facilities. Hence, the findings from this study cannot be directly inferred to all cadres of healthcare workers in the two countries, nevertheless it helps to understand the patterns of health workforce retention and attrition in the two countries.

Another challenge encountered was about grouping causes of attrition into voluntary or involuntary. *Figure 4.4* and *Figure 4.5* illustrate the difficulty which was encountered in attempting to categorise causes of attrition. Whereas it was straightforward to categorise some causes of attrition such as death and retirement as involuntary, a cause such as

disqualification from practice, which occurred to five healthcare workers in Tanzania was rather challenging. Although the disqualified healthcare workers left the health system permanently, and not out of their own volition, it was considered a cause of involuntary attrition, this agrees with the WHO categorization of involuntary attrition (WHO, 2017). However, it could as well be considered as a cause of voluntary attrition as it resulted from a decision made by the health authorities. Following this argument, resignation based on a decision by a healthcare worker would be considered a cause of voluntary attrition. Contrary to this notion, however, a study in Kenya categorised resignation as a cause of involuntary attrition (Chankova et al., 2009), in agreement with this is the WHO categorisation of early retirement as a cause of voluntary attrition (WHO, 2017). Such contradictions would be avoided if standardised international definitions and indicators of retention and attrition were in place.

In this study, when healthcare workers left facilities, their destination included other (non-target) healthcare facilities, the private sector including NGOs and faith-based organisations, administrative posts or public health-related roles (*Table 4.3* and *Table 4.4*). Much as these movements may be categorised as voluntary causes of attrition when they involve participants moving from a target to a non-target facility, they can as well be regarded as mobility (not amounting to attrition) as far as the movement occurs within the health sector and within borders. The attrition which occurs within borders is referred to by some researchers as health workforce mobility (Humphreys et al, 2009) and is the subject of the discussion in the next section.

5.2.1.3 Mobility of healthcare workers

At the end of the tracking, 40.2% (51/127) of participants had left their target facilities but were still working within the countries, counted to the pool of available health workforce in the country. The attrition from target facilities was slightly higher in Malawi 47.8% (22/46) compared to Tanzania 45.7% (37/81). *Figure 4.4*, *Figure4.5*, *Table 4.3* and *Table 4.4* show the type and extent of mobility among participants.

The pattern of health workforce mobility within a country may be more informative with regards to the AAAQ model of the health workforce than the numerical value of health workforce density. Shemdoe et al. (2016) describe the mobility of healthcare workers within a country as 'intersectoral mobility' and underscores the importance of considering this pattern of mobility rather than the absolute numbers of healthcare workers on the

health workforce density in the discussions around human resources for health in a country (Shemdoe *et al.*, 2016).

In this study, some participants moved in one direction. For example, from target facilities to private practice or to work with NGOs; none of these moved back to the target facilities. Others moved in multiple directions. For example, a participant would leave for further study and return to the same facility or be transferred from a rural facility to another rural facility and later to an urban facility. Similarly, some participants changed roles, once or multiple times and this occurred with or without a change in location.

The participants' movements across facilities were mostly urban-urban, rural-rural or rural-urban (*Figure 4.5* and *Figure 4.6*). Movement of healthcare workers from rural to urban settings is common and is a recognised cause of health workforce inequitable distribution (Serour, 2009; Sirili and Simba, 2020; Witter et al., 2011). Conversely, two participants, one from each country, moved from an urban to a rural facility. Also, as stated earlier, the two participants described in *Malawi Case-1* who went to work with an NGO moved from a semi-urban district to one of the most remote rural districts in the country. This suggests that although health workforce mobility can be a cause of inequitable distribution, it can also alleviate it. This assertion is supported by findings from other studies (Buchan et al., 2019; Dussault et al., 2006; Evans, 2014).

Sirili (2020) reports a rural-rural migration of healthcare workers of up to 40% across districts in Tanzania, with up to 70% of them migrating within the same district. Reasons for the migration included caring for close family members, rejection by the community, poor living conditions, lack of social amenities, cultural issues such as fear of superstition and more importantly movements occurred administratively, due to orders made by health authorities (Sirili and Simba, 2020). Administrative decisions, lack of social amenities, poor living conditions and seeking closeness with family members were also reasons for health workforce mobility in this study. An understanding of the SEM and the conceptual framework used in this study could make a difference in handling the causes of mobility such as those described above for the case in Tanzania. For example, healthcare workers who had to relocate due to rejection by the community members would benefit from holding a dialogue (mesosystem level) between the involved parties and analyse the causes of the rejection and identify solutions. Relocation alone would probably not solve the problem. If there was a challenge with a healthcare worker, relocation would just move the problem from one facility to the other.

The workforce mobility can also be influenced by the income and economic factors. Witter (2011) observed that the difference in income (from formal and informal sources) was the main stimulus for doctors in-country movements in Vietnam (Witter et al., 2011). Similarly, participants in this study mentioned that income, their own income and their spouses', to be an important factor to consider before relocating.

Given that mid-level healthcare workers are known to have the highest retention rate in rural settings and the least risk of external migration (Buchan et al., 2019; Chimwaza et al., 2014; McAuliffe et al., 2009; Shemdoe et al., 2016), it seems to be more relevant to determine their mobility and the effect such mobility would have on health workforce availability, accessibility and acceptability rather than their retention (Chen, 2010). These findings and this study suggest that addressing the inequitable distribution (accessibility to the available health workforce) appears to be more attainable and would probably require less resources than addressing availability (the supply of healthcare workers).

This finding could be the reason for several studies pointing out that, in low-resource settings, priority should be given to addressing health workforce inequitable distribution rather than the availability. Inequitable distribution can lead to a lack of access to a qualified health workforce even in a country that has a high healthcare worker to population ratio or even in urban areas or among high wealth quantile population - usually assumed to have high accessibility to the health workforce (Buchan et al., 2013; Chen, 2010; Hart, 1971; Wilson et al., 2009).

A focus on health workforce mobility is consistent with systems thinking (Peters, 2014; Adam, 2014). System thinking is an emerging concept and approach to solving public health problems from a system's point of view rather than a narrow focus on the sole problem identified. For example, rectifying the problem of poor retention or inequitable distribution of healthcare workers needs to involve a comprehensive consideration of all possible facets contributing to the problem within and outside the health system. For example, in Uganda, a system thinking approach helped revise policy to ensure a mutual benefit between the public and private sector. System thinking helped to harmonise the two and resulted in improved retention among doctors (Paina et al., 2014).

The mobility observed among participants in this study was probably influenced by factors in each of the six building blocks of the health system (WHO, 2010c) as well as factors outside the health sector, SEM factors and not least the labour market forces (Buchan et al., 2019; Rispel et al., 2014; Witter et al., 2011). The five participants; two in Malawi and

three in Tanzania, who started in private practice probably did so to take advantage of the potential for a thriving medical private practice.

Participant characteristics such as age, gender, cadre, marital status, number of children and geographical location where participants grew-up, may also influence the likelihood of attrition/mobility. The discussion in the next section is focused on retention in relation to the participant's socio-demographic variables.

5.2.2 Retention and participant's demographic characteristics

Participants who were born or who spent their primary and secondary school years in rural settings were significantly more likely to be retained in target facilities. The higher retention among participants from a rural background was not only observed when they were posted in rural facilities but even when they were posted to semi-urban and urban health facilities. *Table 4.2* shows that the likelihood of retention increased with increased exposure to a rural setting. It increased from 13.6%(3/22) among those who spent their early life exclusively in urban settings, to 43.7%(14/32) among those who spent part of their early life in rural and part in urban settings, and further to 57.5%(42/73) for those who spent the entire early life in rural settings. This association was strongly significant ($p<0.001$).

Selective recruitment of candidates from a rural background is a strategy that has shown to improve retention in many low-and-middle-income countries (Mbemba, et al., 2016; Wilson *et al.*, 2009) and is a strategy proposed by WHO for increasing access to the health workforce in rural areas through improved retention, with strong evidence (WHO, 2010b).

Although the decision to work in rural settings is personal and influenced by personal attributes (Couper *et al.*, 2007), studies have shown that the extent of retention among healthcare workers in rural areas is related to how strong the ties are between them and the rural communities. Recruiting candidates from rural backgrounds such as the offspring of rural tribal rulers in India for medical studies (Rawal et al., 2015) and traditional healers for community health training in Nepal (Poudyal *et al.*, 2003) resulted in improved retention. A study done among nurse auxiliaries in rural Guatemala showed improved retention among those from a rural background, and this was a result of their perception of shared cultural values and previous experiences of similar health problems as the rural population (Hernández et al., 2012).

Participants in the age group 31 to 40 were significantly more likely to be retained than those younger than 30 or older than 40. Similarly, participants who had stayed in the job for 11 to 15 years had significantly higher retention compared to those who had stayed for less than 10 years or more than 15 years (*Table 2*). In *Malawi Case-1* the two participants who left the facility to work with an NGO were younger than the rest. Despite the potential for collinearity between age and duration at work, this finding compares to the observations by Rispel et al. (2014) in South Africa where nurses in the age group 25 to 45 were significantly more likely to be retained than those younger than 25 or older than 45, also nurses who had been in the job for 5 to 9 years were twice as likely to remain in the job than those who had stayed for less than a year or for more than 20 years (Rispel *et al.*, 2014). This finding may also suggest that reasons for relocation among healthcare workers may emanate from issues related to personal and family life rather than work itself.

There was no difference in retention regarding gender in this study. A higher proportion of male participants may have skewed the findings. In Malawi, only two of the 46 candidates were female, in Tanzania, 50% were female. As described before in the methodology (section 3.2), the researcher did not influence participant selection for this study as participants had already been recruited by the ETATMBA programme. It would have been more informative if there was participant gender balance in Malawi as well. In Malawi, traditionally, there are more male than female Clinical Officers and the opposite is true for Nurse-Midwives' cadre. Previous studies have shown contradicting results on the association between gender and retention, some studies showing no effect on retention; e.g. in Australia (Chisholm, 2011) and in Thailand (Pagaiya, 2015) while others showing that gender had an influence on retention. A study in Ethiopia showed that retention was two times higher among female than male healthcare workers (Michael et al., 2011), and the male gender was associated with a higher intention to relocate (Gesesew *et al.*, 2016). In South Africa, the retention was higher among female and was even higher if they were married and had children. Also, the probability of leaving their current job decreased significantly with each additional child (Rispel et al., 2014). There is evidence to suggest that males are more likely to accept rural postings than females; however, females have a higher retention once in a rural post (Alam et al, 2012; Hatcher et al., 2014).

Although this study did not show any association between retention and gender, marital status or number of children; evidence from other studies suggests that being female, married and having children is associated with higher retention in both genders. The

participants in this study were all employed at the start of the follow-up, so the aspect of deployment could not be explored. However, studies indicate that healthcare workers who are single are more likely to accept rural placement than those who are in a relationship or have a family. However, those in a relationship and/or with children are more likely to be retained if they accept rural placement (Hatcher et al., 2014; Wilson *et al.*, 2009).

The other factor that did not show any association with retention in this study is cadre. No significant difference was observed across the three cadres included in the study with regards to retention. Nor was there a difference in retention in regards to the content of the training received or the facility renovation (in Tanzania). This may be due to the lack of a proportionate cadre mix across the two countries and the limited sample size. All participants from Malawi were Clinical Officers and in Tanzania, all were either Assistant Medical Officers or Nurse-Midwives. However, in other places, cadre was found to influence retention. In South Africa, nurse cadres with "marketable" specialities e.g. emergency medicine nurses were less likely to be retained (Rispel et al., 2014). A higher retention rate was observed among lower than higher cadres in Malawi (Manafa et al., 2009) and Ethiopia (Michael et al., 2011). Similarly, a study in Kenya showed twice as much attrition among registered midwives (higher cadre) than enrolled midwives (lower cadre) (Chankova, et al., 2009). In Thailand, the motivations and reasons to work in rural areas varied across healthcare cadres being higher among medical doctors compared to dentists and pharmacists (Thammatacharee et al., 2013). Although not a finding directly shown in this study, these studies imply that to be successful, strategies for improving retention need to be comprehensive as suggested by this study's conceptual framework, in this case, be able to address cadre-specific needs.

A study linked to the ETATMBA programme in Tanzania revealed that, although mid-level healthcare workers are known to be highly retained, when attrition occurs to them, the consequences are serious as it may be difficult to find a replacement (Shemdoe et al., 2016). Since this study focused only on the cohort of healthcare workers in the ETATMBA programme, it was not possible to determine whether there were other replacements made or how the attrition affected the functionality of the facilities where it occured. This is one of the limitations of this study.

Two participants, both from Tanzania died during follow-up. For a cohort of 81 healthcare workers, this is a relatively high mortality. Death contributes significantly to losses of the

health workforce in LMIC (Lehmann et.al., 2008). For example, in Kenya, death was responsible for more than half of cases of attrition among laboratory staff in selected public facilities (Chankova et al., 2009). Deaths from Ebola claimed up to 8% of the workforce in Sierra Leone and Liberia during the Ebola epidemic (Evans, et al., 2015). Determining mortality estimates among the health workforce, which could be achieved through modelling of mortality patterns, could help in health workforce planning. In the same way, a keen attention on patterns of health workforce retirement could be useful.

In the next section, a discussion of in-service training in relation to health workforce retention is discussed.

5.2.3 Retention and in-service training

Education-focused interventions are the most effective in ensuring retention. The effectiveness is higher when bundled together with other interventions such as regulation of practice (coercion), field practice involving community-based programmes (immersion), financial incentives and professional support (Wilson *et al.*, 2009; WHO, 2010). The ETATMBA programme was an in-service training and did not involve pre-service institutions, and also training was one component among several in the programme as such it is difficult to attribute the retention of participants sorely to the intervention. However, it does provide a platform for appraising the patterns of retention and attrition exhibited.

The in-service training in the ETATMBA programme aimed at improving the participant's clinical and leadership skills and was not specifically designed to improve retention (Ellard et al., 2014, 2016) (*Methods Section 3.2*). Through interviews, participants asserted that the training they received encouraged retention. At least three reasons were mentioned; (1) it was a form of professional development, (2) it led to improved confidence and competence at work and (3) it improved participant's recognition. The third reason was more relevant among participants in Malawi who graduated with a BSc qualification.

These un-intended consequences of the in-service training programme in turn galvanised the desired outcomes of health work force's accessibility, acceptability and quality as outlined in the AAAQ model. These outcomes support the idea that a new intervention carefully implemented comprehensively can result in system-level effects with multiple overarching benefits (Tangcharoensathien et al., 2013).

The retention rate observed in this study was 46.5%. It is less than what has been observed previously. In Mali, a five-year retention rate of 84.6% was observed among rural doctors (van Dormael *et al.*, 2008), and in Ethiopia a retention rate of 54.1% was found among healthcare workers (Gesesew *et al.*, 2016). However, comparing these three retention rates is imprecise as the parameters used in calculating them are different as alluded to before in *Section 5.2.1.1.*

The study conducted in Mali by van Dormael et *al*. (2008) has more similarities to this study as it was a follow-up study conducted among community doctors posted in rural healthcare facilities and the followed-up was done for five years (2003 to 2007). The higher retention rate of 85% observed, compared to the 46.5% in this study could be explained by two key reasons. The study in Mali was based on a program which recruited young doctors immediately after graduation; whereas, participants in this study were well established in their jobs, some retired during the follow-up and were a mid-level cadre. The training among doctors in Mali was specifically designed to improve retention and was part of a bundle of interventions, which was not a strong feature of the ETATMBA programme. The other interventions in Mali were the provision of incentives such as better housing, renovation of healthcare facilities, remote allowance and professional support such as mentoring from senior doctors who had worked in similar settings and the support from a professional association. The doctor's professional association was actively involved in the programme which made the participants in Mali feel recognised, the same was not the case in this study with the exception of the Clinical Officers in Malawi. MAOCO, the professional association for clinical officers in Malawi seems to have influenced participants in *Malawi Case-2* to stay longer in the job. There is evidence to indicate that in-service training programmes that are designed to address the local health needs result in improved retention (Bluestone *et al.*, 2013; van Dormael *et al.*, 2008).

The ETATMBA programme attempted to 'bundle' the training with facility renovation. This was done in Tanzania. A sub-group of participants, those trained under World Lung Foundation 53%(43/81) had their healthcare facilities renovated in addition to the training (*Table 4.5* and *Section 3.2*). Contrary to expectations, facility renovation did not make any difference to participant retention in this study. The small sample size and other contextual factors such as the remoteness of the renovated facilities and the functionality of facilities before the renovation, in comparison to facilities that were not renovated may have confounded the findings. The facilities chosen for the renovation were also those that were severely dilapidated. Availability of better infrastructure, equipment and

supplies has shown to encourage health workforce retention in previous studies (Lehmann et.al., 2008; Mbemba et.al., 2016).

Bonding or coercion which involves attaching a mandatory service for a specified period in return of training costs, was not explicitly part of the ETATMBA programme. However, participants were expected to remain in their workstations for a considerable period of time to help improve the quality of services following completion of the programme. There is no clear evidence that coercion improves retention. Whereas, coercion has resulted in improved retention in some settings such as Malawi (Schmiedeknecht et *al.*, 2015), India (Sundararaman et *al.*, 2011) and Nepal (Shankar, 2010), in other settings such as South Africa, it remains controversial (Kotzee *et al.*, 2006). Wilson et al. (2009) expressed concerns over coercive strategies that such strategies may help solve short-term HRH needs but may actually worsen the problem in the long term (Wilson *et al.*, 2009).

Nine participants 7% (9/127) enrolled for further studies during the tracking, 10% (5/46) in Malawi and 5% (4/81) in Tanzania. Participants thought that exposure to the ETATMBA training contributed to them securing the training opportunities. The BSc qualification along with the networking that had developed between the participants in Malawi and their trainers some of whom were from the UK contributed to their ability to secure career development opportunities. Two of them secured opportunities to attend Master's courses in the UK and one participant secured a training post within Malawi for a Bachelor's degree in medicine. Although obtaining opportunities for career development was primarily not the intention of the ETATMBA programme, the outcome did give them an added advantage.

76.5% (39/51) who left target healthcare facilities voluntarily did so after graduating from the ETATMBA programme in 2014, this includes 86.4%(19/22) participants who left target facilities in Malawi and 69.0% (20/29) in Tanzania, suggesting that, completion of the in-service training by ETATMBA could have been the main impetus for the increased attrition and mobility observed. This is not an isolated observation, sometimes healthcare workers opt for rural postings aiming for preferential selection by the authorities for career progression (Sheikh et *al.*, 2012).

In LMIC, it is a common practice to train one cadre of healthcare workers (usually a lower cadre) for skills normally performed by another cadre (usually a higher cadre), referred to as up-skilling, task-shifting or task sharing (*Section 2.3.2.2*). Up-skilling Clinical Officers or

Assistant Medical Officers to perform caesarean sections and midwives to administer anaesthesia (in this study, this was done to nurse-midwives in Tanzania) is the commonest type of task-shifting and is reported to improve retention among mid-level healthcare workers (Bergström, 2015; Chu et *al*., 2009; Eliah et *al*., 2014; Nyamtema et *al*., 2011; Pereira et *al*., 2010; 2016; Iwu, 2016). However, no studies were found to evaluate the effectiveness of task-shifting as a strategy for improving health workforce retention. The ETATMBA training provided participants with leadership skills apart from clinical skills. These additional competencies may have added to the risk of attrition and mobility among the participants.

The ideas laid out in this section (*section 6.2*) imply that there is a need for clearer definitions and measures of retention, attrition, and mobility of the health workforce. Such clarity will help inform interventions and research on the subject. There is a lack of credible evidence for or against all the available strategies for increasing rural health workforce retention (Grobler et *al*., 2015). Much remains to be explored regarding the effectiveness of the existing strategies, whether implemented singly or as bundles of interventions as recommended by the WHO (Cosgrave et.*al*, 2019; Mbemba et *al*., 2016; WHO, 2010). However, what is clear is that the likelihood of success of a HRH intervention programme depends on the extent of how comprehensive its approach is.

5.3 Using the SEM to appraise perceptions on retention by healthcare workers (participants) and policymakers (key informants)

The application of SEM in human resources for health research is limited. Studies that have attempted to use it, only use parts of the model; for example, a study to explore factors affecting retention among Physicians in Pakistan grouped the factors into only three levels; individual, external or environmental and organisational factors (Shah et *al*., 2016). Similarly, a systematic review by Liu et al. (2015) grouped contextual factors on incentive strategies for improving human resources for health into three; macro-, meso- and microsystem factors (Liu *et al*., 2015).

To the best of our knowledge, this is the first study to apply the SEM to appraise perspectives on retention among mid-level healthcare workers and policymakers and contributes to the body of knowledge on health workforce retention and the influence of this on policy and research.

5.3.1 Factors related to individual healthcare workers

The relationship between demographic characteristics of study participants and retention was discussed earlier (*section 5.2.2*). However, during interviews, participants and key informants alike mentioned factors on individual characteristics and choices to have a strong influence on retention. These include the need for autonomy, a sense of belonging, recognition, age (e.g. near retirement from work), need for promotion, career development opportunities, income and personal beliefs.

Having a clear career structure and transparency in the allocation of opportunities for career development was perceived to strongly affect retention. Junior participants mentioned this more often and with more passion than senior participants. Healthcare workers have expressed similar concerns in several studies (Adegoke et *al.*, 2015; Marinucci et *al.*, 2013). Partiality in allocating opportunities for further studies was a strong factor affecting healthcare worker's motivation in Zimbabwe (Taderera *et al.*, 2016).

The lack of clear promotion structures has strongly been reported to have an effect on retention from the time of recruitment (Purohit, 2016; Sirili et *al.*, 2014), during service years (Michael et *al.*, 2011) and even among retired healthcare workers (Adegoke et *al.*, 2015; Marsden et *al.*, 2014). Lack of clarity on the career structure, unclear grounds for promotions and allocation of opportunities for further study was also mentioned by participants in this study and could have resulted from several factors, but in most cases, the blame was on managers at the different levels; facility, district and national.

The other individual factor mentioned was the participants' income. This was perceived to be a strong factor for retention among participants. The income was considered from all sources not only the healthcare worker's job. Spouse's income and income from other activities such as farming and small-scale business were considered. Participants reported being motivated by being paid risk allowance, mobile phone top-up allowance, hardship allowance, and salary while on study leave. Higher income is reported to have encouraged health workforce retention in several countries including South Africa (Kotzee et *al.*, 2006), India (Sundararaman and Gupta, 2011), Bangladesh (Alam et al., 2012), Pakistan (Shah et *al.*, 2016), Zimbabwe (Taderera *et al.*, 2016) and Senegal (Nagai *et al.*, 2017). The observed effect is not cadre specific.

Depending on the context, monetary incentives can result in a huge improvement in retention. For example, in Cameroon, monetary incentives involving an additional 75% of basic salary resulted in an 8-fold increase in retention among doctors and a 4-fold increase

in retention among nurses (Robyn et *al.*, 2015). In contrast, surprisingly, George (2013) reports that low salary was not a reason for attrition among healthcare workers in South Africa (George *et al.*, 2013).

There was no monetary incentive attached to the ETATMBA programme, the views participants gave were based on income from their job or other sources but not from the programme.

Non-monetary incentives such as recognition from fellow workers and the community, status, respect and feeling satisfied for contributing to the wellbeing of the people were strongly perceived to improve retention and this resonates with findings from previous studies including those done in Tanzania (Munga et *al.*, 2008; Mkoka et *al.*, 2015), Haiti (Jerome and Ivers, 2010), in South Africa (Akintola *et al.*, 2016), Zimbabwe (Taderera *et al.*, 2016), and Senegal (Nagai *et al.*, 2017).

Participants in Tanzania mentioned the prestige associated with a government administrative post at a healthcare facility to be an important motivation factor. Some participants had a strong attachment to a post such that they would refrain from an opportunity for further studies or promotion transfer to protect their position. Similar observations were made in India (Sheikh et al., 2012). After graduating from the ETATMBA programme some participants were allocated medical and nursing students to teach, this made them feel valued and improved their self-image. This encouraged retention and is consistent with an observation in Nepal where retention among rural doctors was improved by involving them in teaching medical students posted in their facilities (Shankar, 2010).

Participants stated the sense of belonging to be a strong factor for retention. The high retention observed in *Malawi Case-2* could be attributed to teamwork among participants and the influence of the professional association on them. As mentioned above in *Section 5.2.3*, active participation of the professional association was responsible for the high retention of rural community doctors in Mali (van Dormael et *al.*, 2008). This is supported by findings from a survey conducted among newly graduated medical doctors in Thailand where about 30% mentioned companionship and support from friends and colleagues as a factor they would consider before consenting to a rural posting (Thammatacharee *et al.*, 2013).

Some participants professed that their faith in God, religious upbringing and desire to help those in need as reasons for them to stay in rural, hard-to-serve areas. Although the

influence of faith and personal beliefs on retention is highlighted in other studies (Araújo and Maeda, 2013; Sheikh et al., 2012), inculcating such beliefs in policy and practice could be a challenge.

Sometimes healthcare workers decide to take a rural post to experience something different. This was observed in this study and is not unique. This has been reported in Senegal (Nagai *et al.*, 2017) and India (Sheikh *et al.*, 2012).

The individual factors mentioned in this section affect retention most likely by their influence on the intrinsic motivation of participants and consequently the individual's decision to remain in or leave the job. However, other factors such as the family and the surrounding community will usually be considered before a decision to leave or stay is reached, and factors related to these aspects are discussed in the next section.

5.3.2 Factors related to participant's family (Microsystem)

For participants with families, the welfare of family members, spouses, and children, came first if they were to consider relocating. Lack of amenities in rural areas is a common factor affecting retention. Decent housing, availability of good schools for children, avoiding interruption to children's or spouses' education, or avoiding disrupting their spouses' business were some of the factors mentioned. Participants in *Malawi Case-2* mentioned a lack of accommodation as the main demotivating factor. This is a consistent finding in previous studies in Malawi and other LMIC (Chimwaza et *al.*, 2014; Sheikh et *al.*, 2012; Mbemba, et *al.*, 2016).

The need for proximity to other family members was also perceived to either increase or reduce the likelihood of retention. For example, one participant from Malawi wanted to get a transfer to a home district to be able to take care of a terminally ill parent. Another participant thought that if he worked in a home district, he would not be able execute his duties properly because of requests for favours from relatives which would affect his performance. Other studies have indicated that proximity to family members is an encouragement to stay longer in a location (Sheikh et *al.*, 2012; Sirili and Simba, 2020).

In *Malawi Case-2*, the MOH did not facilitate a transfer of a Clinical Officer's spouse, a Midwife, to join her husband who had been transferred to the MOH headquarters in the capital. As a result, the Clinical Officer left the job and started a private medical practice allowing him the flexibility of remaining in contact with his family. None of the key informants mentioned considerations for retaining healthcare workers on the grounds of

their family circumstances. The attrition of this participant could possibly have been prevented had there been a policy to consider dual transfer in such situations.

5.3.3 Factors related to the surrounding community (Mesosystem)

5.3.3.1 Community-related factors

All four case studies show clearly that a participant's engagement with the surrounding community was a strong motivation that encouraged retention. Participants volunteered to take leadership positions in local schools or church committees. Although these are non-job-related roles, they strengthen the connection between healthcare workers and the community, an attribute which helps improve retention, most likely through an increased sense of recognition. A good relationship with the local community including familiarity with the language, culture, and customs are some of the qualities mentioned to encourage retention among healthcare workers in other settings including Guatemala (Hernández et al., 2012), Pakistan (Shah et al., 2016) and India (Sheikh et al., 2012).

The community surrounding the facility in *Malawi Case-2* provided support to enable one of the participants to go for training that enabled him to progress in his career. The participant mentioned the support he received to have contributed to his decision to remain in the facility aiming to pay back the loyalty to the community. A similar finding was reported in India where healthcare workers who received support from the community at the start of their employment were willing to stay longer in the job (Sheikh et al., 2012). In South Africa, a scholarship programme for candidates from rural backgrounds that included regular mentoring, support and volunteer opportunities resulted in a successful rural recruitment and retention (Ross, 2007). A good relationship with the surrounding community can also encourage retention indirectly. For example, Zimbabwe's use of community health volunteers helped with non-skilled work such as assisting in sorting outpatient files which reduced workload and burn-out among skilled staff and this encouraged staff motivation (Taderera *et al.*, 2016).

5.3.3.2 Institution (management) related factors

The theme of how participants related to the facility leadership and managers at district and national level, and how this affected retention received a lot of attention among healthcare workers in both countries. The issues mentioned include favouritism regarding transfers, promotion, and the allocation of opportunities for career progression, taking

part in decision making and recognition. Some of these factors overlap with those mentioned under the individual factors (*Section 5.3.1*).

Participants mentioned some practices such as being assigned a variety of tasks, using a suggestion box to collect ideas for improvement or being asked to take part in facility management/planning meetings to have encouraged retention. These were considered by participants as a source of motivation and is supported by findings from other studies (McAuliffe et al., 2009; Sheikh et al., 2012).

Participants of ETATMBA praised the strong clinical mentoring support received by the trainers. Supportive supervision and mentoring encourage healthcare workers to stay in rural locations (McAuliffe *et al.*, 2013). However, this has to be done with care to avoid making the healthcare worker feel intimidated or loose the sense of autonomy (Selebi *et al.*, 2007; Humphreys *et al.*, 2009; Zimmerman *et al.*, 2016).

However, some practices were perceived to negatively affect retention although these were not directly related ETATMBA programme.

Partiality by the facility leadership in handling participant's promotion or in allocating opportunities for career progression was perceived to negatively affect retention. For example, after graduating from the ETATMBA programme, some participants from Malawi received a promotion and a salary increase while this did not happen to others with similar qualifications and years of experience and sometimes from the same facility. Similar observations were reported in a study conducted previously in Malawi (Manafa et al., 2009). Partiality in the allocation of hardship allowances among healthcare workers in hard-to-reach areas was reported as a policy concern for retaining rural healthcare workers in Bangladesh (Rawal et al., 2015). In Ghana, partiality in promotion and transfer of health staff was noted in part to be due to flexible HRH policies which allowed a negotiation space among district regional managers. Decisions that came from those negotiations were perceived by other staff members to be biased and unfair (Kwamie et al., 2017).

A difficult relationship among healthcare workers or between healthcare workers and their managers reduces retention (Mbemba, et al., 2016). Such difficulties were not reported in this study. On the contrary, a cohesive relationship seems to have been responsible for the retention observed in *Malawi Case-2* and *Tanzania Case-1* and *Case-2*. However, on several occasions, participants placed blame at the district or central/national level for their failure to listen or act. Previous studies in Malawi showed

that difficulties in the relationship between colleagues and/or management were significantly associated with quitting the job (Schmiedeknecht et al., 2015; Mcauliffe et al., 2016). Lack of platforms to discuss such grievances were reported to aggravate such problems in Zimbabwe (Taderera *et al.*, 2016).

The lack of performance appraisal, job description and feedback on practice is common in both countries -Malawi and Tanzania (Manafa et al., 2009; Chimwaza et al., 2014; Mkoka et al., 2015; Shemdoe et al., 2016) revealing the lack of proper HRH management processes. This was also pointed out by participants in this study. In one facility in Malawi, despite a good record on the provision of services, staff received serious admonition whenever a serious incident such as maternal death occurred. This was reported to seriously diminish their morale. Chimwanza (2014) reported that up to 70% of healthcare workers in Malawi experience such admonition and become demoralised and willing to leave their jobs (Chimwaza et al., 2014). Such an unhelpful management style has been reported in other places and has negative consequences towards retention (Bradley et al., 2009; Chimwaza et al., 2014; Hatcher et al., 2014; Mkoka et al., 2015).

The observation that five healthcare workers in Tanzania were disqualified, some of them close to retirement age, suggests that the institutions responsible for governance and regulation of practice – regulatory bodies and professional associations probably need strengthening. The disqualification followed a move by the newly elected government to validate secondary school academic certificates of all civil servants. Civil servants without valid secondary school certificates or those who could not provide credible reasons for not having one were disqualified. Had professional associations been stronger and apt such faltering should have been identified and fixed earlier.

Addressing issues related to improving the management style may require investments in training and time. For example, in Botswana, a participatory process that used facilitated discussions including observation, reflection, planning, and action-planning resulted in more supportive health management committees (Nkomazana et al., 2016). This would agree with Patterson (2011) and Cometto (2020) who noted that the quality of leadership at the facility/district is key to developing a workforce that is motivated, creative and capable of innovative problem solving (Patterson et al., 2011; Cometto et al., 2020).

In most settings, evaluation of the impact of interventions on HRH is hampered by paucity of data. Availability of reliable data improves human resources for health (Waters *et al.*, 2013). However, comprehensive and reliable data to allow for monitoring is missing in

most LMIC, the World Health Statistics is a promising reliable up-to-date source, but faces the challenge of maintaining the quality of data because participating countries usually do not generate data in time, or the data generated is not standardised (WHO, 2016b).

5.3.4 Factors related to the political, legal environment and security factors (Exosystem)

Although societal processes such as political stability, legal and security issues were not specifically discussed by participants in this study, these have shown to affect retention and intention to stay in other areas. A study conducted in Malawi and Afghanistan showed that participants were more willing to stay longer in the job in Malawi than Afghanistan in spite of similar demographic characteristics and level of job satisfaction among study participants (Fogarty et al., 2014).

In India, the presence of malicious extremist groups in rural parts of India was a deterrent to rural posting and retention (Sheikh et al., 2012). Lack of political stability and security concerns have also been reported to affect health workforce retention in some parts of Nigeria (Awofeso, 2010) and Pakistan (Shah et al., 2016). In South Africa, healthcare workers were satisfied despite low wages as long as the area was secure and crime was controlled (Akintola *et al.*, 2016).

In times of conflict, rural healthcare workers may be targeted. More importantly, in the period after a humanitarian crisis such as war, healthcare workers and particularly mid-level cadres in low resource settings often lack support, this leaves them feeling marginalised and disempowered (Witter et al., 2017). This is likely to affect not only their performance and productivity but their willingness to continue in the job.

5.3.5 Shift in perspective over time (Chronosystem)

This study has shown that perspectives on retention appeared to change when there is a change in demographics (*Figure 4.13*). The perspectives on retention among junior health workers differ from senior healthcare workers. Similar observations were found in India where doctors posted to rural facilities, although they did not like it initially, after a few years, they developed an interest working in rural areas and were willing to remain in rural practice for a longer time than they had initially intended (Sheikh et al., 2012).

This points to the need for flexible but strategic retention policies that take the expressed interest of the individual healthcare workers involved in consideration.

5.4 Case studies; the role of context on retention

The case studies bring the study context into perspective. The cases reiterate findings from the tracking and those examined using the SEM, the HAF, the AAAQ model and the WHO recommendations. The case studies helped to match the findings and relate them based on facility location, characteristics of participants who worked there and the resultant retention, attrition or mobility. Contextual issues such as a very cohesive group of participants in *Malawi Case-2*, exposure of participants in *Malawi Case-1* to the labour market forces of the capital in its vicinity and the extensive facility renovation in *Tanzania Case-1* and *Tanzania Case-2*, might help explain the retention pattern observed. Such lessons help to better understand reasons behind the observed patterns and help to relate the study finding to the conceptual framework (Ambrosini, 2010, Larrinaga, 2017).

The observed higher attrition among healthcare workers in a semi-urban facility (*Malawi Case-1*) compared to a rural facility (*Malawi case-2*) is against expectations. Retention is usually higher in urban settings. However, this could have been a result of the influence from market forces in the capital. The NGO that recruited the two clinical officers is based in the capital Lilongwe.

The example of the study conducted in Mali given in *Section 5.2.3* helps to show that a complex interaction of multiple context-specific factors could be responsible for the high retention observed. This includes participants taking part in some professional association activities, financial incentives, mentoring by senior colleagues and familiarity with culture and language (van Dormael et *al.*, 2008).

A survey of healthcare workers conducted in Malawi, Tanzania and South Africa further substantiates the effect of context on job satisfaction and retention. While it is generally assumed that working conditions and remuneration is higher in South Africa, the survey revealed contrasting results. The study reported a higher job satisfaction score for Malawi (71%) and Tanzania (83%) compared to South Africa (52%). The intention to leave was insignificant in Malawi and Tanzania but substantive in South Africa with OR 2.158 (1.501; 3.103) (Blaauw *et al.*, 2013).

Regarding the relationship between contextual factors and financial incentives, Liu et al. (2015) comment that financial incentives that would encourage retention in one setting may actually have negative consequences on other settings and underscores the importance of considering the context in formulating and implementing HRH interventions (Liu *et al.*, 2015).

The complex interaction between sociocultural, community, leadership and individual characteristics of healthcare workers, availability of resources, the work environment means that the policies to improve retention needs to be comprehensive, multifaceted, flexible, evolving and strategic and always regard contextual factors at the centre of the policy formulation and implementation (Strasser, 2010; Liu *et al*., 2015).

5.5 Study findings and the conceptual framework

The findings from the study relate to the conceptual framework in several ways.

The conceptual framework underscores the importance of a comprehensive approach in designing and implementing HRH programmes. Based on the programme description, the ETATMBA programme did not take into account all key aspects outlined in the conceptual framework. For example, the situational analysis and planning aspects as outlined in the HAF are not as prominent as the implementation and monitoring & evaluation aspects (Section 3.2). To some policy-makers, the interview was the first time to hear about the programme. This showed that not enough was done on advocacy for the programme. This implies that probably not all potential stakeholders were fully involved in implementing the programme from the outset.

The programme involved an educational intervention – in-service training and targeted healthcare workers in remote and rural locations, this was an important intervention and a relevant target. In addition, the training content included a leadership component for some participants. Some aspects lacking from the approach include, the lack of a structured personal and professional support. Another missing facet is the lack of financial incentives for participants who did not receive direct financial incentives, except for the Kigoma group in Tanzania, supported by the WLF. These had their facilities and houses renovated and had access to a motorbike. Participants however regarded the financial aspect to be important, although not in isolation (section 4.2.3.6). The other aspects missing, includes the lack of influence on HRH policy, no bonding strategy and the lack of a plan to establish partnerships across different sectors within the health system (*Section 1.3.2*).

Despite the lack of a comprehensive approach, the ETATMBA programme addressed the components of the AAAQ model. After graduating from the ETATMBA training, healthcare workers could perform more skills, or the same skills as before training but with more competency and confidence. This addresses the "availability" and "accessibility" aspects of the model. Involvement of participants in various community

activities including those not related to healthcare like providing leadership towards construction of a local school or church signified acceptance by the community of the healthcare worker. This in turn gave the healthcare worker a better sense of belonging and recognition (*Section 4.2.3.2*).

The findings from this study supports the conceptual framework in that interventions with a comprehensive approach are more likely to succeed and that HRH policies needs to be health workforce centred.

5.6 Methodological considerations

The study used a longitudinal design with both, prospective and retrospective arms. The prospective arm allowed interaction with participants in real-time. This approach differs from other studies on retention in several ways. All previous studies on retention cited in this study were of retrospective design (Amuakwa-Mensah, 2014; Mandeville *et al.*, 2015; Michael *et al.*, 2011; Pagaiya *et al.*, 2015; van Dormael et *al.*, 2008). The prospective approach used in this study made it possible to check for data accuracy and to triangulate the information collected at the time data was collected. Participants got in touch with the researcher whenever there was a change of circumstances in their job e.g. change in roles or transfer. The observation/tracking of all participants in this study started and finished at the same time. The approach in other studies was different. For example, the study among rural doctors in Mali recruited new participants/graduates in each of the five years of follow-up, resulting in participants being followed for variable durations i.e. ever-changing denominators. This increased heterogeneity among participants which may have reduced the internal validity of the study (van Dormael *et al.*, 2008).

Although participants from the two countries are categorised as mid-level cadres, notable differences exist between them. The participants in Malawi were all Clinical Officers and all worked in district hospitals located in district headquarter towns, these are urban or semi-urban locations. Participants in Tanzania were of two cadres, Assistant Medical Officers and Nurse-Midwives and they all worked in Health Centres located in villages. This also may have increased the heterogeneity among study participants in this study.

The study used the SEM as a framework for analysis. Framework data analysis was deemed appropriate method for analysing the qualitative data. In Framework data analysis, the framework matrix, in this case, the SEM provides a canvas on which the emerging themes are mapped, linkages between themes are made and meanings derived.

The SEM also allowed for a simultaneous application of the study's conceptual framework.

Framework analysis has been used in other studies and provided useful insights. Gale (2013) noted that when qualitative data is analysed using the framework method, "the whole is greater than the sum of its parts", implying that while it is important to consider individual perspectives, a holistic approach which involves identifying connections between themes, comparing and contrasting the different standpoints is important (Gale, et al., 2013).

The information from the four case studies helped to contextualise the study, provide explanation to reasons for the study findings and findings.

A major challenge encountered in the case studies was on how to maintain anonymity of the health facilities and participants involved. The difficulty with maintaining anonymity among study participants in longitudinal studies has been reported in other studies (Larrinaga, 2017, Sheikh et al., 2012; Wurie et al., 2016; Witter et al., 2017). However, the data obtained from such studies is rich and has profound contextual gen based on the local context and individuals, hence, despite the challenge encountered with maintaining anonymity the benefits of the method outweigh the risks. A careful study design is however advocated to ensure that every precaution is taken to mitigate any potential breach of anonymity.

Finally, although the approach taken to interview individual participants had the benefit of capturing real-life experiences and generate realistic policy targets, the three cadres involved are not representative of the entire health workforce in Malawi and Tanzania. While perceptions on retention were based on individual experiences which are subjective and potentially limit the generalisability of findings, these individual experiences highlight the complexity with which management of human resources for health encompasses.

5.7 Strengths and limitations of the study

5.7.1 Strengths

The longitudinal design with a retrospective and a prospective arm

This was an appropriate design for tracking individual experiences over time and generated appropriate data to inform the study. Real-time iterations allowed

triangulation and further collection of data which is recommended in qualitative methods (Grossoehme and Lipstein, 2016).

Use of tele-interviews

The possibility of contacting participants via social media and use of tele-interviews made it possible for the researcher to keep in touch and obtain the required information from participants. Had there been need for the presence of the researcher in person in the field, the costs involved, the logistics and feasibility would have been very difficult.

The study population

Most studies on retention have focused on doctors and nurses, this study contributes to the understanding of retention among mid-level healthcare workers.

Tracking participants after exit

The fact that communication continued even after a participant had left from their target facility or job made it possible to collect data on reasons for such occurrences and whether such participants decided to revert to where they had been before. Previous studies on retention lost contact with the participants after attrition had occurred leading to a lack of participant's information after the exit, which may be crucial to the understanding of reasons for attrition.

Mixed methods design

The mixed methods design employed allowed for depth and breadth of data collection. The data from the tracking (quantitative), the interviews (qualitative) and case studies allowed for a deeper understanding of factors affecting retention among participants and the context in which these factors are derived from.

5.7.2 Limitations

The study encountered the following limitations:

Availability and quality health workforce data

In most facilities, the workforce data was not available. There was no register to record HRH data. Hence, the study relied on the healthcare workers' memory. Mobility or the reasons thereof, including the date when change of roles among participants occurred were usually not recorded, this was a challenge when collecting retrospective data, for

the period from 2014 to 2012. Triangulation of data and checking records from district authorities were used in case of doubt.

Risk of a selection bias

The selection of target facilities and participants in the ETATMBA programme took place at the start of the programme in 2012. This study did not influence the selection. There is a risk of selection bias. However, this study involved all participants who could be traced, this may have prevented further bias had a smaller sample been studied. Hence although there was an element of bias, the study sample was representative of the cadres involved in the study.

Cadre and gender representation

The study involved only one cadre in Malawi and two cadres in Tanzania. The majority of participants were male. A wider scope of healthcare workers including those from private facilities and urban facilities in Tanzania would have strengthened the study. The distribution of participants' gender was uneven with more male than female participants. This may have affected the study's internal validity as well.

Tele-interviews

Although the opportunity to conduct tele-interviews is a strength to the study, as it allowed timely and personal data collection. But it is not without shortcomings. Tele-interviews miss the face-to-face experience personal meeting, which is crucial in collecting qualitative data. All key informant interviews were conducted via telephone.

Changing participant characteristics

Some participant's socio-demographic variables such as age, marital status, number of children, etc. change over time. These variables were considered as fixed at the time of first data collection in 2014. However, a challenge was encountered when calculating the association between variables. For example, a participant who was 40 in 2012 would be 45 in 2017. Similarly, a participant who did not have a child in 2014 could have one or more children in 2017. The difference such changes would make to retention were not captured in this study. Measurements such as Kaplan-Meyer survival curves or Cox proportional hazard ratio which are best suited in representing such data could not be applied because of the limited scope of data collected.

Challenges on ensuring participant anonymity

While maximum care was taken to preserve participant's anonymity, there is a slight risk that participants may identify a person or the facility being referred to in the study. As stated earlier in the methodology (*section 3.11*), this is a common challenge with longitudinal designs. Participants were made aware of this and were willing to have their stories told as examples in the thesis.

Limitation to capture individual change in perspectives on retention over time

The study design did not allow thoughts and experiences from interviews and repeat interviews to be linked to participants over time. Thus, it did not allow observation of change in opinion over time, if there was one, in relation to change in individual's circumstances such as gender, age, family situation etc.

Sample size

It would have been useful to determine how the content of the training and the facility renovation to selected facilities in Tanzania, as shown in *Table 3.1* affected retention. However due to the small sample size (*Table 4.5*) this was not possible to perform.

In the qualitative part, a smaller sample size could provide deeper insights instead of including all study participants in the interviews.

Limited scope

The tracking involved a select group of healthcare workers and did not consider what was happening with other healthcare workers in the target facilities or the changes in other health system building blocks in the health system that were probably happening concurrently. For example, new HR policies introduced by the new government of Tanzania in 2015 may have influenced the other five building blocks of the health system in the country. These changes may have confounded the results of the study.

5.8 Ideas for future research

The following ideas are suggested for future research based on findings from this study.

Future research on health workforce retention would be more meaningful if standard definitions and indicators are developed and widely utilized. Thus it is critical that more work is done on how to best determine and measure health workforce retention, attrition

and mobility and establish standards on how to track healthcare workers and compare these parameters at local, national and international levels.

The existence of standard indicators and means of data collection would allow researchers to conduct studies with stronger evidence. The lack of randomised controlled trials on health workforce retention means that there is need of devising and conducting good quality studies on this subject to generate evidence to inform policy and practice. There are challenges in conducting studies with robust evidence not least ethical issues around testing effect of interventions such as supportive supervision which are supported by existing policies (Wilson *et al.*, 2009). However, studies need to be performed to ascertain the role and effectiveness of the different approaches to performing known interventions such as supportive supervision.

The exploration of existing HRH practises would enhance the understanding of reasons behind the HRH crisis. A special focus on health workforce flow and distribution within countries is needed. It is a priority research area recommended by policy makers in low resource settings (Ranson *et al.*, 2010). This would help elucidate causes and factors for healthcare workers' mobility and how this affects their distribution and performance.

Investigating how healthcare worker's characteristics such as the place-based (rural/urban) processes affect retention is needed. This would help to shed light on a key finding from this study and previous studies that healthcare workers exposed to rural locations have a higher retention rate. However, the exact cause to this observation has not yet been documented. Since this study revealed a higher retention of healthcare workers who spent their early life in rural settings, regardless of their work location, it is important to further explore this aspect to establish attributes that bring such behaviour among these healthcare workers. It is also important to establish whether such increased retention could be intentional or a result of an inherent lack of active search for other opportunities which their urban counterparts could be used to.

Furthermore, given that healthcare workers' preferences change with time, it is important to determine what preferences affect their choices at different stages in their job life-span and how these affect retention and mobility. The SEM used in this study could be utilised to appraise such preferences and perspectives to determine the intentions, attitudes and behaviour of healthcare workers at the facility, sub-national and national/ministry or central level in real time. This would help to devise tailored and timely interventions to prevent unhealthy attrition and mobility.

Lastly, it is critical that future studies consider including a wider scope of stakeholders who are involved in every aspect of health workforce management including the supply

(pre-service institutions), recruitment, motivation, development and retirement to fully comprehend the possible factors that influence retention. This will help to develop relevant, tailored and effective interventions.

5.9 Chapter summary

This chapter discussed the findings conceived from this study, compared and contrasted these findings from previous research on the subject and has highlighted the contribution of this study to the body of knowledge on the subject. The lack of standardised definitions and measurements of health workforce retention, attrition and mobility present a challenge in research and intervention programmes.

Most of the study findings concur with findings from previous studies. Participant's characteristics, especially their ties with rural settings increases the likelihood of staying longer in their job. This study has added the realisation that, the resulting improved retention is observed not only in rural settings but also in urban settings.

Opportunities for career progression and in-service training is a motivation for retention but can lead to increased mobility of the health workforce especially if it results in a workforce with a specific skill set that has higher demand in the labour market. The resulting mobility can either worsen or improve the health workforce inequitable distribution, the understanding of this and efforts to regulate it is critical in addressing health workforce challenges in LMICs.

The Socio-Ecological Model is a useful framework for appraising perspectives and opinions on HRH interventions such as retention. The overlap of individual factors between participants and key informants and lack of emphasis on family and close community factors by key informants reveal a policy gap that needs fixing. Policies need to align expectations from both groups to be successful.

Context has a crucial role in determining how the health workforce responds to intervention, it is critical that interventions are designed with the knowledge of the local context in mind.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.0 Overview

This chapter outlines the conclusions of the study, the contribution this study makes to the body of knowledge on health workforce retention, the application of the methodology used and implications of the study findings to HRH policy and practice.

6.1 Contribution to health workforce retention body of knowledge

The study adds to the body of knowledge on this subject in defining health workforce retention, in the methodology used and the findings from the study.

Based on the findings from literature and the insights gained from conducting this study we suggest a definition for health workforce retention as follows,

> *"Health workforce retention is the duration in months or years, a healthcare worker remains employed by an organization in a particular role".*

However, we place more emphasis on explaining the parameters considered in determining the reported retention rather than on the definition itself. Particularly, as shown from this study, retention could involve staying at the same facility and retain the role and employment, or remaining at the same facility but changing the role, employer or both. It could as well involve retaining the role, e.g. clinical patient care but change the facility or employer or retain the employer for example, government employment and have the role or health facility change. Providing such explanation allows for making valid comparisons across programmes, organizations and countries, which are difficult to make at the moment.

It is important that the WHO and the international community work towards agreeable definitions and indicators for health workforce retention, attrition and mobility along with clarity on what data should be collected, at what level of healthcare system, at what frequency and which tools to be used. The "health labour market flow" indicators proposed by the WHO in 2017 (WHO, 2017) needs publishing and advocating for use across countries. A uniform understanding of these terms and their practical applicability is crucial in addressing the global health workforce crisis. Having standard definition and indicators for these key terms will not only enable country, regional and international comparisons, but will allow generation of valid data for empirical research.

The second most important contribution is the realisation that for any HRH intervention to succeed, a comprehensive approach is needed. At the minimum, all the four phases and the six actions in the HAF needs to be considered and mapped out clearly by all key stakeholders at programme inception. The lack of a comprehensive approach affects programme implementation regardless of its scope and availability of resources.

Although this study was not an intervention in itself, but used the ETATMBA programme as a canvas to map out factors related to health workforce retention, the findings from this study - both the qualitative and quantitative aspects agree with previous studies at large (taking the definition and parameters of retention as defined by those studies). However, there are unique findings from this study and are worth pointing out.

The five-year retention rate of 46.5% is slightly lower than the rate reported in previous studies, notably in Mali and Senegal. The attrition rate increased after participants graduated from the in-service training course. However, with the lack of standard definitions and indicators for retention and attrition, for any study, considerations on the context and methodology used is more important than counting on the numerical figure on retention. Hence this study highlights the importance of being cautious when interpreting or comparing retention and attrition findings. It is important that the bigger picture is considered, not least the gain or loss to the country's collective health workforce and the return on investment for the HRH intervention in question. This is more important than a selective consideration of whether objectives of a vertical programme like ETATMBA were met.

The association between growing-up in rural settings and a higher retention rate was a significant finding in this study as was determined in previous studies. However, this study has further determined that this group of healthcare workers have a higher retention rate in rural as well as in urban settings.

This study has also revealed as increase in mobility of healthcare workers in both countries, after an in-service training. The increase in mobility observed was rural-urban, government-private, clinical-administrative etc. This underscores the importance of considering improving access to the health workforce in both rural and urban facilities, rather than a selective focus on the rural areas as has been advocated by WHO and other authorities because this is likely to fail or worsened the imbalance.

The increased mobility following the in-service training also brings to light the key recommendation from HAF, that, a successful intervention needs to consider all six action

areas; policy, education, financing, partnerships, leadership and human resource for health management systems. In this case, consideration of the other five actions in implementing the intervention would have resulted in a much better outcome. A comprehensive programme is likely to result into other un-intended outcomes that will strengthen the other health system building blocks.

The lack of credible evidence on HRH interventions from robust studies such as randomised controlled trials needs urgent international attention. Credible studies are key to enable formulation of wining strategies that will help alleviate this longstanding and serious problem. A common challenge is the lack of reliable HR data, a problem which was encountered in this study as well. There is a need to improve HRH governance including improving data collection and utilisation. It is important to make sure that the data collected is uniform and comprehensive to enable comparisons to be made within countries, regionally and internationally. This will enable countries and organisations working on improving the health workforce to perform monitoring and evaluation and make informed decisions.

A clear gap in perspectives on retention was observed between participants and policy makers, with participant's perspectives centred on the family and community aspects while perspectives by policy makers centred on the individual healthcare worker. This is a unique finding from this study following the application of the SEM. It is imperative that the health system establishes a system to encourage frontline healthcare workers to contribute to the HRH policy formulation and implementation.

6.2 Application of the study methodology

The longitudinal design applied in this study enabled an in-depth understanding of factors surrounding health workforce flows over a period of five years. Although each individual healthcare worker is unique in behaviour and choices, each individual story enabled a better understanding of a collective story of whole study group. More of longitudinal studies need to be conducted for better understanding of the dynamics in health workforce flows. The main downside of these studies is the ethical challenge of maintaining anonymity of study participants. Studies needs to be carefully crafted to mitigate this challenge.

The qualitative aspect of the study was key to an in-depth understanding of the findings from the follow-up (quantitative) and the case studies. The qualitative data provided explanations for retention or attrition patterns exhibited. Furthermore, the qualitative

approach helped reveal beliefs and perceptions which although were not exhibited by participants, would have led to attrition had other factors changed. In addition, the application of the Socio-Ecological Model was key in unravelling factors considered to influence retention on the different levels of the health worker's engagement with different factors in the environment.

Of the six WHO building blocks of the health system, the health workforce is unique in that it is a resource with psychology, a family, surrounding community and a society around it. Hence, interventions focused on healthcare workers are influenced by many surrounding factors as explained in the Socio-Ecological Model, which continue to evolve with time. It is important that interventions to improve HRH are tailored to the local context and accommodate current and future health workforce demands. Thus the study strongly advocates for use of this, or a similar model in HRH research and interventions.

6.3 Practical applications for policy making

This in-service training programme did not result in improved retention in the ETATMBA target facilities. However, the programme equipped participants with much needed knowledge and skills which were of benefit for the whole health system. In-service training interventions such as the ETATMBA programme need to be implemented and viewed as contributing to the quality of the wider national health workforce rather than considering achievement of isolated vertical programme deliverables as an end in itself.

The unintended consequences of the ETATMBA programme such as promotions and acquisition of career advancement opportunities needs to be well thought through right from the start of the programme and to put in place ways of handling such occurrences. This will ensure a more elaborate definition of programme success in light of the country's context, health policy and the health workforce.

In-service programmes such as ETATMBA needs to consider carefully the mode, content and duration of the training, the characteristics of the intended trainees such as age, cadre, from rural/urban setting. These have an implication into programme outcomes. A number of participants retired during the follow-up, a better consideration of participants age and career plans would have led to inclusion of younger healthcare workers who would have a longer duration to give back to the health system the knowledge and skills acquired.

Similarly, the design of the programme needs to be improved, a key recommendation is to make sure the facility where a trained healthcare worker returns after the training enables them to utilize the skills acquired. Making sure there is enabling environment for application of skills acquired is as important as the training itself. Also responsible authorities need to put in place structures for career progression or promotion in light of the in-service training to help keep the trained health workforce in the intended locations and roles.

The lack of alignment between perspectives from healthcare workers and the priorities of policy makers and implementers revealed in this study is of concern. There is a need to broaden focus by policymakers to make the policies comprehensive and inclusive so that issues raised by healthcare workers such as family and community factors are considered. It is imperative that responsible authorities at national and sub-national levels provide a mechanism and a platform for the voices of frontline health workers to be heard and to ensure that their opinions influence the existing and future HRH policies.

The HRH policies should avoid a selective and narrow focus of factors related to the individual healthcare worker, as reflected in the perspectives from key informants. This recommendation is made with the awareness that the key informants were some select officials from the Ministry of Health who took part in the study, not the whole HRH management team, that means their views may not be considered representative of the country's HRH policy personnel, but it also shows that such perspectives exist and exerts its influence in the HRH planning of the country.

It appears sensible to assume that in a country with a relatively low external migration of the health workforce, such as Tanzania and Malawi, health workforce mobility has more impact on the AAAQ of the health workforce and probably needs more attention than focusing on the availability.

Such an approach would inform resource allocation, more resources should be directed towards strengthening the deployment of healthcare workers and improving the work environment. By responding to healthcare worker's expectations the "pull" factors will be strengthened resulting into increased morale and intrinsic motivation, which are key factors for improving health workforce performance. This way workforce distribution would be influenced by the internal labour market forces. A dynamic health workforce that allows healthcare workers to change jobs or location, within the health sector, based on the compensation or working environment would make health sector become more

competitive for attracting and retaining the best health workforce. This will ultimately improve healthcare delivery. The available pool of health workforce in a country should be viewed as a country's collective asset.

This study has shown that retention increases with the exposure to rural settings. Although it is challenging to define a place as "rural" and "remote", it is important that this aspect of HR is not neglected. Candidates with a longer rural exposure needs to be prioritised over those with urban exposure in training intervention programmes. Such candidates are more likely to stay longer in the employment regardless of the location where they are deployed.

The role of the support received from work colleagues, administrative structures and professional associations is paramount. This study has shown that in-service training and support interventions are effective in improving retention. Implementing a bundle of these interventions is highly encouraged. Future in-service programmes needs to consider putting support structures such as mentors and senior colleagues with knowledge on the programme in target facilities to encourage retention and improve health workforce motivation and a sense of belonging. It is important to involve professional associations and regulatory bodies during all key steps of managing the health workforce including, but not limited to the training, attraction, deployment, on-boarding and during regular staff appraisals.

Although the ETATMBA programme had ended at the start of this study, some policy-makers heard about it for the first time during the interviews signifying lack of advocacy. It is important that programme implementers and gate keepers take the responsibility of making sure all key stakeholders are adequately informed about a programme before its inception. Such an approach will avoid unnecessary duplications, improve integration across departments, improve accountability and utilization of programme outputs.

The study has shown that context is key to formulating and implementing successful HRH policies. The context within which healthcare workers are exposed to may be different in different locations within the country. The HRH policy needs to be formulated in such a way that it will cater for both the overarching national issues and sub-national specific issues. Similarly, policy formulation and implementation should be done with a comprehensive consideration of the knock-on or knock-off effect on each of the six actions proposed by the WHO, UNICEF and the USAID in the HAF.

This work has highlighted both methodological and practical policy issues on human resources for health focusing on the pivotal role of human resources for health in strengthening health systems particularly in low-and-middle-income countries. The recommendations from this work contribute to the ongoing discussion on how availability and distribution of health workforce could be improved which is crucial in meeting the Universal Health Coverage.

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APPENDICES

Appendix I: Summary table of articles included in the literature review

SN	Author	Year	Country	Title	Study design	Sample size
1.	Abdul Rahim R	2014	Malaysia	Health Workforce Crisis: Recruitment and Retention of Skilled Health Workers in the Public Health Sector in Malaysia	Review	N/A
2.	Abuagla A	2016	Sudan	Challenges to implementation of the WHO Global Code of Practice on International Recruitment of Health Personnel: the case of Sudan	Qualitative	5
3.	Adegoke A	2015	Nigeria	Job satisfaction and retention of midwives in rural Nigeria	Mixed-methods	119
4.	Adhikari R	2015	Nepal	Vacant hospitals and under-employed nurses: a qualitative study of the nursing workforce management situation in Nepal	Qualitative and review of documents	70
5.	Akintola O	2013	South Africa	Factors influencing motivation and job satisfaction among supervisors of community health workers in marginalised communities in South Africa	Qualitative	26
6.	Alameddine M	2012	Lebanon	The retention of health human resources in primary healthcare centres in Lebanon: a national survey	Cross-sectional national survey	755
7.	Amiresmaili M	2014	Iran	Factors affecting leave out of general practitioners from rural family physician program: A case of Kerman, Iran	Quantitative	271
8.	Antwi J	2013	Ghana	Evidence from Public Sector Wage Reforms	Review	N/A
9.	Awofeso N	2010	Nigeria	Personal view: Improving health workforce recruitment and retention in rural and remote regions of Nigeria	Review	N/A
10.	Bangdiwala S	2010	Multiple	Workforce Resources for Health in Developing Countries	Review	N/A

11.	Bärnighausen T	2009	Multiple	Designing financial-incentive programmes for return of medical service in underserved areas: seven management functions.	Review	N/A
12.	Barrett T	2009	Multiple	Nurses are the key to improving mental health services in low- and middle-income countries	Review	N/A
13.	Bergström S	2015	Multiple	Training non-physician mid-level providers of care (associate clinicians) to perform caesarean sections in low-income countries	Review	N/A
14.	Bertone M	2015	Multiple	The complex remuneration of human resources for health in low-income settings: policy implications and a research agenda for designing effective financial incentives.	Review	N/A
15.	Blaauw D	2012	South Africa, Tanzania, Malawi	Comparing the job satisfaction and intention to leave of different categories of health workers in Tanzania, Malawi, and South Africa	Cross-sectional survey	2,220
16.	Bonenberger M	2014	Ghana	The Effects of Health Worker Motivation and Job Satisfaction on Turnover Intention in Ghana	Mixed-methods	256
17.	Bourgeault I	2016	Multiple	Knowledge and potential impact of the WHO Global code of practice on the international recruitment of health personnel: Does it matter for source and destination country stakeholders?	Review	N/A
18.	Buchan J	2013	N/A	Early implementation of WHO recommendations for the retention of health workers in remote and rural areas	Review	N/A
19.	Buchan J	2013	N/A	Challenges posed by the global crisis in the health workforce: No workforce, no health	Review	N/A
20.	Cabral J	2013	Timor-Leste	Scaling-up the medical workforce in Timor-Leste: Challenges of a great leap forward	Review	N/A
21.	Chandler C	2009	Tanzania	Motivation, money and respect: A mixed-method study of Tanzanian non-physician clinicians	Mixed-methods	35 qualitative
22.	Chisholm M	2011	N/A	Measuring rural allied health workforce turnover and retention: What are the patterns, determinants and costs?	Review	N/A

23.	Coetzee M	2013	South Africa	Employees' satisfaction with retention factors: Exploring the role of career adaptability	Quantitative	158
24.	Cometto G	2013	N/A	Health Workforce Brain Drain: From Denouncing the Challenge to Solving the Problem	Review	N/A
25.	Darkwa E	2015	Bangladesh	A qualitative study of factors influencing retention of doctors and nurses at rural healthcare facilities in Bangladesh	Qualitative	11
26.	Delobelle P	2011	South Africa	Job satisfaction and turnover intent of primary healthcare nurses in rural South Africa: A questionnaire survey	Cross-sectional survey	143
27.	Deressa W	2012	Ethiopia	Attitudes of undergraduate medical students of Addis Ababa University towards medical practice and migration, Ethiopia	Cross-sectional study	600
28.	Dolea C	2010	N/A	Evaluated strategies to increase attraction and retention of health workers in remote and rural areas	Review	N/A
29.	E-Jardali A	2013	Lebanon	A national study on nurses' retention in healthcare facilities in underserved areas in Lebanon	Cross-sectional survey	857
30.	Eliah E	2014	Kenya, Malawi, Tanzania	Task shifting for cataract surgery in eastern Africa: productivity and attrition of non-physician cataract surgeons in Kenya, Malawi and Tanzania	Mixed-methods	129
31.	Frehywot S	2010	Multiple	Compulsory service programmes for recruiting health workers in remote and rural areas: do they work?	Review	N/A
32.	Gesesew H	2016	Ethiopia	Health Workforce Acquisition, Retention and Turnover in Southwest Ethiopian Health Institutions	Mixed-methods	367
33.	George G	2013	South Africa	Migration of South African health workers: The extent to which financial considerations influence internal flows and external movements	Cross-sectional survey	694
34.	Goetz	2015	Kenya	Working atmosphere and job satisfaction of healthcare staff in Kenya: An exploratory study	Quantitative	435
35.	Goma F	2014	Zambia	Evaluation of recruitment and retention strategies for health workers in rural Zambia	Mixed-methods	45 qualitative

36.	Gow J	2013	Zambia	An evaluation of the effectiveness of the Zambian Health Worker Retention Scheme (ZHWRS) for rural areas.	Qualitative	234
37.	Grobler L	2015	Multiple	Interventions for increasing the proportion of health professionals practising in rural and other underserved areas (Review)	Review	N/A
38.	Gross J	2010	Kenya	The impact of an emergency hiring plan on the shortage and distribution of nurses in Kenya: The importance of information systems	Review	N/A
39.	Hagander L	2013	Multiple	Surgeon migration between developing countries and the United States: Train, Retain, and Gain from Brain Drain.	Review	N/A
40.	Hatcher A	2014	South Africa	Placement, support, and retention of health professionals: national, cross-sectional findings from medical and dental community service officers in South Africa	Quantitative	685
41.	Hongoro C	2004	Multiple	How to bridge the gap in human resources for health	Review	N/A
42.	Huicho L	2012	Peru	Incentives to attract and retain the health workforce in rural areas of Peru: a qualitative study	Qualitative	91
43.	Humphreys J	2009	N/A	Improving workforce retention: developing an integrated logic model to maximise sustainability of small rural and remote health care services	Review	N/A
44.	Ibeziako O	2013	South Africa	Hospital reform and staff morale in South Africa: a case study of Dr Yusuf Dadoo Hospital	Cross-sectional survey	179
45.	Iwu C	2013	South Africa	An Analysis of the Reasons for Staff Turnover amongst Paramedics in South Africa	Qualitative cross-sectional Survey	122
46.	Jayasuriya R	2012	Papua New Guinea	Rural health workers and their work environment: the role of inter-personal factors on job satisfaction of nurses in rural Papua New Guinea.	Cross-sectional study	344
47.	Jerome J	2010	Haiti	Community Health Workers in Health Systems Strengthening: A qualitative evaluation from rural Haiti	Qualitative	462
48.	Johnson P	2013	N/A	An integrative review and evidence-based conceptual model of the essential components of pre-service education.	Review	N/A

49.	Kanchanachitra C	2011	Multiple	Human resources for health in southeast Asia: Shortages, distributional challenges, and international trade in health services	Review	N/A
50.	Katende G	2016	Uganda	Shining a light on task-shifting policy: Exploring opportunities for adaptability in non-communicable disease management programmes in Uganda	Review	N/A
51.	Kinfu Y	2009	Multiple	The health worker shortage in Africa: Are enough physicians and nurses being trained?	Review	N/A
52.	Kwamie A	2017	Ghana	Postings and transfers in the Ghanaian health system: A study of health workforce governance	Qualitative	95
53.	Kwansah J	2012	Ghana	Policy talk: Incentives for rural service among nurses in Ghana	Qualitative	115
54.	Labhardt	2011	Cameroon	Improved retention rates with low-cost interventions in hypertension and diabetes management in a rural African environment of nurse-led care: A cluster-randomised trial	Prospective cohort	95
55.	Labonté R	2015	South Africa	Health worker migration from South Africa: causes, consequences and policy responses.	Mixed-methods	Survey = 1,623 Interviews = 45
56.	Lehmann U	2008	Multiple	Staffing remote rural areas in middle- and low-income countries: a literature review of attraction and retention	Review	N/A
57.	Liu X	2015	N/A	Analysis of context factors in compulsory and incentive strategies for improving attraction and retention of health workers in rural and remote areas: a systematic review.	Review	N/A
58.	Mackintosh L	2003	Malawi	A study identifying factors affecting retention of midwives in Malawi	Review	N/A
59.	McPake B	2013	N/A	Why do health labour market forces matter?	Review	N/A
60.	Manafa O	2009	Malawi	Retention of health workers in Malawi: Perspectives of health workers and district management	Qualitative	15
61.	Marinucci F	2013	Multiple	Factors affecting job satisfaction and retention of medical laboratory professionals in seven countries of Sub-Saharan Africa.	Quantitative	224

62.	Mbemba G	2013	Multiple	Interventions for supporting nurse retention in rural and remote areas: an umbrella review.	Review	N/A
63.	Mbemba G	2016	Multiple	Factors influencing recruitment and retention of healthcare workers in rural and remote areas in developed and developing countries: an overview	Review	N/A
64.	McAuliffe E	2013	Malawi Tanzania Mozambique	The Critical Role of Supervision in Retaining Staff in Obstetric Services: A Three Country Study	Quantitative	1,561
65.	Mokoka E	2010	South Africa	Retaining professional nurses in South Africa: Nurse managers' perspectives	Qualitative	21
66.	Munyewende P	2014	South Africa	Positive practice environments influence job satisfaction of primary healthcare clinic nursing managers in two South African provinces.	Cross-sectional survey	111
67.	Nagai M	2017	Senegal	Retention of qualified healthcare workers in rural Senegal: lessons learned from a qualitative study	Qualitative	176
68.	Okello D	2015	Multiple	Exploring the influence of trust relationships on motivation in the health sector: a systematic review	Systematic review	N/A
69.	Olujimi S	2014	Nigeria	Study of Attrition, Availability and Retention of Midwife Service Scheme Officers in Nigeria	Mixed-methods	555
70.	Ozgediz D	2008	Uganda	The neglect of the global surgical workforce: Experience and evidence from Uganda	Review	N/A
71.	Pagaiya N	2015	Thailand	Rural retention of doctors graduating from the rural medical education project to increase rural doctors in Thailand: A cohort study	Quantitative	7,157
72.	Purohit B	2016	India	Initial posting-a critical stage in the employment cycle: Lessons from the experience of government doctors in Gujarat, India	Qualitative	24
73.	Ranson M	2010	N/A	Priorities for research into human resources for health in low- and middle-income countries	Qualitative	24 countries

74.	Rawal L	2015	Bangladesh	Developing effective policy strategies to retain health workers in rural Bangladesh: a policy analysis.	Review	N/A
75.	Ricketts P	2005	N/A	Workforce Issues in Rural Areas: A Focus on Policy Equity	Review	N/A
76.	Ross A	2007	South Africa	Success of a scholarship scheme for rural students	Qualitative	48
77.	Ross A	2004	South Africa	Rural scholarship schemes A solution to the human resource crisis in rural district hospitals?	Review	N/A
78.	Rosskamb E	2013	N/A	Increasing skilled birth attendance through midwifery workforce management	Review	N/A
79.	Rourke J	2010	N/A	How can medical schools contribute to the education, recruitment and retention of rural physicians in their region?	Review	N/A
80.	Rusa L	2007	Rwanda	Rwanda: Performance-Based Financing in Health	Review	N/A
81.	Russell D	2012	N/A	How best to measure health workforce turnover and retention: five key metrics	Review	N/A
82.	Russell D	2013	Australia	What is a reasonable length of employment for health workers in Australian rural and remote primary healthcare services?	Review	N/A
83.	Rutebemberwa E	2014	Multiple	Financial interventions and movement restrictions for managing the movement of health workers between public and private organisations in low- and middle-income countries.	Review	N/A
84.	Sapkoto B	2015	Nepal	What factors influence the choice of urban or rural location for future practice of Nepalese medical students? A cross-sectional descriptive study	Descriptive cross-sectional study	393
85.	Schmiedeknecht K	2015	Malawi	Predictors of Workforce Retention Among Malawian Nurse Graduates of a Scholarship Program: A Mixed-Methods Study	Mixed-methods	30 qualitative
86.	Schull M	2010	Malawi	Strengthening health human resources and improving clinical outcomes through an integrated guideline and educational outreach in resource-poor settings: a cluster-randomised trial	Cluster-randomised trial	30 rural facilities

87.	Selebi C	2007	South Africa	Job satisfaction among nurses in a public hospital in Gauteng	Quantitative	578
88.	Senkubuge F	2014		Strengthening health systems by health sector reforms	Review	N/A
89.	Shah S	2016	Pakistan	Motivation and Retention of Physicians in Primary Healthcare Facilities: A Qualitative Study from Abbottabad, Pakistan	Qualitative	22
90.	Shankar P	2010	Nepal	Attracting and retaining doctors in rural Nepal	Review	N/A
91.	Sheikh K	2012	India	Location and vocation: why some government doctors stay on in rural Chhattisgarh, India	Qualitative	37
92.	Shemdoe A	2016	Tanzania	Explaining retention of healthcare workers in Tanzania: moving on, coming to 'look, see and go', or stay?	Mixed-methods	Qualitative = 37 Quantitative = 126
93.	Sikwese A	2010	Zambia	Human resource challenges facing Zambia's mental healthcare system and possible solutions: results from a combined quantitative and qualitative study.	Mixed-methods	Qualitative = 56 Quantitative = 65
94.	Siril N	2014	Tanzania	Addressing the human resources for health crisis in Tanzania: The lost in transition syndrome	Quantitative	91
95.	Soc S	2004	South Africa	The perceptions of nurses in a district health system in KwaZulu-Natal of their supervision, self-esteem and job satisfaction.	Cross-sectional survey	319
96.	Sundararaman T	2011	India	Indian approaches to retaining skilled health workers in rural areas	Review	N/A
97.	Taderera B	2016	Zimbabwe	Health personnel retention strategies in a peri-urban community: an exploratory study on Epworth, Zimbabwe	Qualitative	
98.	Tangcharoensathien V	2013	N/A	Health workforce contributions to health system development: a platform for universal health coverage.	Review	N/A
99.	Thammatacharee N	2013	Thailand	Attitudes toward working in rural areas of Thai medical, dental and pharmacy new graduates in 2012: a cross-sectional survey	Cross-sectional survey	1,225

100	Troy P	2007	South Africa	Nurses' experiences of recruitment and migration from developing countries: a phenomenological approach.	Qualitative	12
101	Verani A	2016	Mozambique	Legal and regulatory framework for health worker retention in Mozambique: Public health law research to strengthen health systems and services	Review	N/A
102	Verma P	2016	Multiple	A systematic review of strategies to recruit and retain primary care doctors	Systematic review	N/A
103	Wafula J	2011	Kenya	Attracting and retaining health workers in rural areas: investigating nurse's views, career choices and potential policy interventions	Mixed-methods	345
104	Waters K	2013	Kenya	Kenya's Health Workforce Information System: A model of impact on strategic human resources policy, planning and management	Qualitative	9
105	Wibulpolprasert S	2003	Thailand	Integrated strategies to tackle the inequitable distribution of doctors in Thailand: four decades of experience	Review	N/A
106	Willis-Shattuck M	2008	Multiple	Motivation and retention of health workers in developing countries: a systematic review	Systematic review	N/A
107	Wilson N	2009	Multiple	A critical review of interventions to redress the inequitable distribution of healthcare professionals to rural and remote areas	Review	N/A
108	Witter S	2017	Sierra Leone , Cambodia, Uganda, Zimbabwe	Experiences of using life histories with health workers in post-conflict and crisis settings: methodological reflections	Review	N/A
109	Wurie H	2016	Sierra Leone	Retention of health workers in rural Sierra Leone: findings from life histories.	Qualitative	23
110	Zimmerman M	2016	Nepal	A staff support programme for rural hospitals in Nepal	Review	N/A

Appendix II: Participant information sheet

Factors affecting health workforce retention following an in-service training programme in Malawi and Tanzania

(Information and confidentiality statement for interview Participants)

My name is …… and I am working for the Liverpool School of Tropical Medicine. We are conducting a study to find factors that affect retention of healthcare workers in Malawi and Tanzania. This study is done as a follow-up of the ETATMBA programme. You are asked to take part in this study because you took part in the ETATMBA programme.

PARTICIPANT INFORMATION

You are being invited to take part in this research study because you were a participant of the ETATMBA programme (because you are a policy maker at the MOH). Before you decide whether to participate, it is important for you to understand why the study is being conducted and what it will involve. Please take the time to listen to/read through this information carefully. If you have any questions, please free to ask me for further information. I would like to point out that you do not have to accept this invitation and should only agree to take part if you want to.

THE STUDY

The study is done to map out location of healthcare workers who were recruited in the ETATMBA programme and to ask their perceptions about healthcare worker's retention.

WHAT THE STUDY INVOLVES

If you agree to take part in this study, I will ask you, on a quarterly basis your job location and ask you questions about your perspectives about staff retention and factors associated with it (I will ask about your role as a policy maker in formulating and implementing policies on health workforce retention). We will identify a secure place for the interview so that other people do not hear the discussion. You do not have to answer any questions that you do not feel comfortable with and you may stop the interview at any time by letting the interviewer know. The discussion will last up to an hour at the most. If you feel upset/distressed or unwell during the interview, please do indicate and we will stop. And seek for the necessary support.

VOLUNTARY PARTICIPATION

If you choose not to take part, it will not put you at any disadvantage. You can withdraw from this study at any point.

POTENTIAL RISKS TO PARTICIPATING IN THIS STUDY

There are no known risks associated with this study. However, if you feel uncomfortable at any time during the discussion, the interview will be stopped.

POTENTIAL BENEFITS TO PARTICIPATING IN THIS STUDY

There are no immediate benefits to you for taking part in this study. However, your involvement in the study will help us to understand factors behind healthcare workers' attrition and how healthcare workers perceive retention. This may be helpful in formulating solutions to the shortage of human resources for health.

INCENTIVES TO PARTICIPATE

You will not receive payment for your involvement in this study.

CONFIDENTIALITY AND ANONYMITY

All information will be treated in strict confidence and anonymised, nobody will be able to identify any person from the information given. The information you give will be stored in a password protected computer and only the researcher will have access to the information.

HOW WILL THE DATA BE USED?

The discussion will be recorded on a voice recorder and transcribed as soon as possible. Any identifying information will be coded or removed to protect the identity of the respondents. It will not be possible to identify any individual from these results.

HOW WILL THE DATA BE STORED?

Only the researcher will have access to the data. No data will be shared with organisations that took part in implementing the ETATMBA programme. Data will be stored securely by the Centre for Maternal and Newborn Health at the Liverpool School of Tropical Medicine for a minimum of five years.

DISSEMINATION OF FINDINGS

The findings from this study will form a result chapter of an MPhil thesis. The results may also be used in writing manuscripts for publication. Publication of the results from this

study will not include any information which would enable anyone taking part in the study to be identified. A copy of the final report (Thesis) will be availed to the MOH.

FURTHER INFORMATION

If you would like further information, please speak to the researcher or the assistant researcher conducting the interviews. Alternatively, if you would like further information after the interview has finished then please contact:

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Thank you.

Appendix III: Contacts request sheet

Factors affecting Health Workforce Retention following an In-service Training programme in Malawi and Tanzania.

Contact sheet

Introduction:

Hello, my name is ……, I work with Liverpool School of Tropical Medicine which works in collaboration with Warwick University. I am conducting a study to follow up participants for the ETATMBA program to map their retention and find out perspectives towards retention. This study will involve quarterly follow up of participants to ask about their location, job and roles, and explore perspectives towards retention based on their circumstances.

Purpose:

You are being asked to participate in this study because you are a participant of the ETATMBA program.

To be able to conduct the study, I will need your contact details to be able to conduct you during the period of the study which will take up to four years.

Note that the contact details you provide will be kept in a database in a password protected computer and only the researched will have access to it. The contact details will be kept confidential and used only for this study.

Your role:

You are not in any way obliged to accept taking part in this study or in giving contact details. If you do not feel like taking part in the study, now or at any time in future please let the me know and your contact details will be taken out of the database. Your decision not to participate in this study or to withdraw from it will not have any effect on your job or welfare.

I will contact you by your preferred method one day before to request an appointment. The following day I will contact you and request the information explained above, once every three months. However, at any time, especially if you experience notable changes to your job or personal circumstances e.g. transfer, promotion, demotion, dismissal, study leave etc that you wish to communicate please do so at any time convenient to you.

Consent:

I …….. a participant for ETATMBA programme give my contact details to the study team. I am giving these contact details without any form of coercion. I am aware that I have the right to retract my information whenever I feel so.

Signature: …….. Date: …….

Name (optional)	

District	
Facility	
Role	
Mobile phone number (please provide more than one if applicable and indicate preferred)	
Land line phone:	
Email address:	
Facebook account name	
Skype address	
Twitter account name	
WhatsApp number:	
other social media (please specify)	
What is your preferred means of communication	
Which days and time do you prefer to be contacted? Weekend/Working days/ morning, afternoon/evening	
Any other relevant information with regard to keeping in touch with you:	

If you have any questions about the study please do not hesitate to contact the researcher at **Email:** mselenge.mdegela@lstmed.ac.uk **Mobile:** +447446842039 **Landline:** +44 151 705 3705

Thank you

Appendix IV: Topic guide for semi-structured interviews - participants

Study Title: Factors affecting Health Workforce Retention following an In-service Training programme in Malawi and Tanzania

Introduction

1. Can you please explain briefly about your job?
2. How long have you stayed in this facility?
3. How long have you been in this role?
4. What is your opinion regarding the training your received under ETATMBA?

Factors affecting retention and intention to leave

1. What is your opinion about staff transfers?
2. How would you feel if asked to be transferred to another location/facility?
3. Given a choice, would you consider changing your current role? Why?
4. If you moved to another facility, what aspects of your life will be affected?

   Probe for both negative and positive effects, probe about personal, family, community, society, national-wide factors.
5. What kind of changes would happen to make you change your opinion on relocating to another health facility and/or assuming another role?
6. Given a choice for which facility to move to if transferred, would you choose a higher-level or lower-level health facility? Why?
7. What more needs to happen to make you remain in your job in this facility?
8. If you were to move to another facility, what would you want to see happen to you?
9. If you changed your location, what would have happened for you to remain?
10. How do you view your job and your role in view of the training you received under ETATMBA?
11. What should responsible authorities do at the district and national level to improve staff retention? Probe about: Policy on HRH, education, partnerships, leadership and finance.

Comments and suggestions

1. Do you have any comments or suggestions on how retention of healthcare workers could be improved in your facility and in your district?
2. Do you have any questions?

Thanks

Appendix V: Topic guide for semi-structured interviews – key Informants

Study Title: Factors affecting Health Workforce Retention following an In-service Training programme in Malawi and Tanzania

Introduction

1. What is your job at the MOH? What are your key roles?
2. How long have you been working with the MOH?
3. How long have you been in this role?
4. What is your opinion regarding the ETATMBA programme?

Factors affecting retention and intention to leave

1. What is the policy of the MOH on staff retention?
2. In your role how do you deal with the issue of staff retention?
   Probe for examples.
3. How do you think ETATMBA training influence retention of the participants?
4. How do you decide when and where to transfer staff?
5. What is the MOH's policy on hard-to-reach areas?
6. What has the MOH done regarding staff retention?

Comments and suggestions

1. Do you have any comments or suggestions on how retention of healthcare workers could be improved?
2. Do you have any questions?

Thanks

Appendix VI: Ethics approval certificates

(i) Ethics approval certificate from Ifakara Health Institute

INSTITUTIONAL REVIEW BOARD
P O BOX 78373 DAR ES SALAAM, TANZANIA
Tel +255 (0) 22 2774714, Fax: + 255 (0) 22 2771714 Email: irb@ihi.or.tz

National Institute for Medical Research
P O Box 9653
Dar Es Salaam
Email: headquarters@nimr.or.tz

09th March 2012

Godfrey Mbaruku
Ifakara Health Institute
P O Box 78373
Dar Es Salaam

IHI/IRB/No: 35

INSTITUTIONAL CLEARANCE CERTIFICATE FOR CONDUCTING HEALTH RESEARCH

On the 9th March 2012, the Ifakara Health Institute Review Board (IHI IRB) reviewed from study titled *"Enhancing human resources and articulating appropriate technologies for maternal and perinatal survival in sub Saharan Africa"* submitted by the Principal Investigator Godfrey Mbaruku

The following documents were reviewed

1. Protocol
2. Informed Consent Forms
3. Budget
4. Tools
5. CVs

The study has been approved for implemeniation after IRB consensus. This certificate thus indicates that, the above- mentioned study has been granted an Institutional Ethics Clearance to conduct the above named study in Kigoma region: Kigoma, Kasulu and Kibondo; Morogoro: Kilombero and Ulanga; Rukwa and Shinyanga regional, Kisarawe, Lushoto and Kibaha

The Principal Investigator of the study must ensure that, the following conditions are fulfilled during or after the implementation of the study:

1. PI should submit a six month progress report and the final report at the end of the project
2. Any amendment, which will be done after the approval of the protocol, must be communicated as soon as possible to the IRB for another approval
3. All research must stop after the project expiration date, unless there is prior information and justification to the IRB
4. There should be plans to give feedback to the community on the findings
5. Any publication needs to pass through the IRB

The IRB reserves the right to undertake field inspections to check on the protocol compliance

Chairperson
JOYCE K. IKINGURA

IRB Secretary
BEVERLY MSAMBICHAKA

Dar es Salaam: PO Box 78373, Tel: 022 2774756, Fax: 022 2771714
Ifakara: PO Box 53, Tel: 0232 525164, Fax: 0232 525312
Bagamoyo: PO Box 74, Tel: 0232 440065, Fax: 0232 440064
Rufiji: PO Box 40 Ikwiriri, Tel: 0787 384521, Fax: 0232 010001
Mtwara: PO Box 1048, Tel: 0232 333487
Kigoma: PO Box 1077, Tel: 0282 803855

www.ihi.or.tz

(ii) Ethics approval certificate from University of Warwick for Malawi

20 March 2012

Warwick Medical School

PRIVATE
Dr. Paul O'Hare
Warwick Medical School
University of Warwick
Coventry
CV4 7AL

Dear Paul

Study Title and BREC Reference: *Enhancing human resources and the use of appropriate technologies for maternal and perinatal survival in sub-Saharan Africa - develop, implement and evaluate a programme of locally based clinical service improvement – 143/09/2011*

Thank you for submitting the above-named project to the University of Warwick Biomedical Research Ethics Sub-Committee for Chair's approval.

I am pleased to confirm that your application meets the required standard which means that full approval is granted and your study may commence.

I take this opportunity to wish you success with the study and to remind you any substantial amendments require approval from the committee before they can be made. Please keep a copy of the original signed version of this letter with your study documentation. The committee also requires you to complete an End of Study Declaration Form when you reach the end of your study: this form has been e-mailed to you.

Yours sincerely,

Jane

Jane Barlow
Chair
Biomedical Research
Ethics Sub-Committee

Copy:
File
Dr. Anne-Marie Brennan
Dr. David Davies

Biomedical Research Ethics Subcommittee
Enquiries: Clair Henrywood
Tel: 02476-528207
Email:brec@warwick.ac.uk

THE UNIVERSITY OF WARWICK

(iii) Ethics approval from University of Warwick for Tanzania

28th November 2013

Warwick Medical School

PRIVATE
David Ellard
Health Sciences
WMS
University of Warwick
CV4 7AL

Dear David,

Study Title and BSREC Reference: Enhancing human resources and Use of appropriate Technologies for Maternal and Perinatal Survival in Sub-Saharan Africa (ETATMBA): Training evaluation, Tanzania REGO-2013-572

Thank you for submitting the above-named project to the University of Warwick Biomedical and Scientific Research Ethics Committee for Chair's approval.

I am pleased to confirm that your application meets the required standard which means that full approval is granted and your study may commence.

I take this opportunity to wish you success with the study and to remind you any substantial amendments require approval from the committee before they can be made. Please keep a copy of the original signed version of this letter with your study documentation.

Yours sincerely,

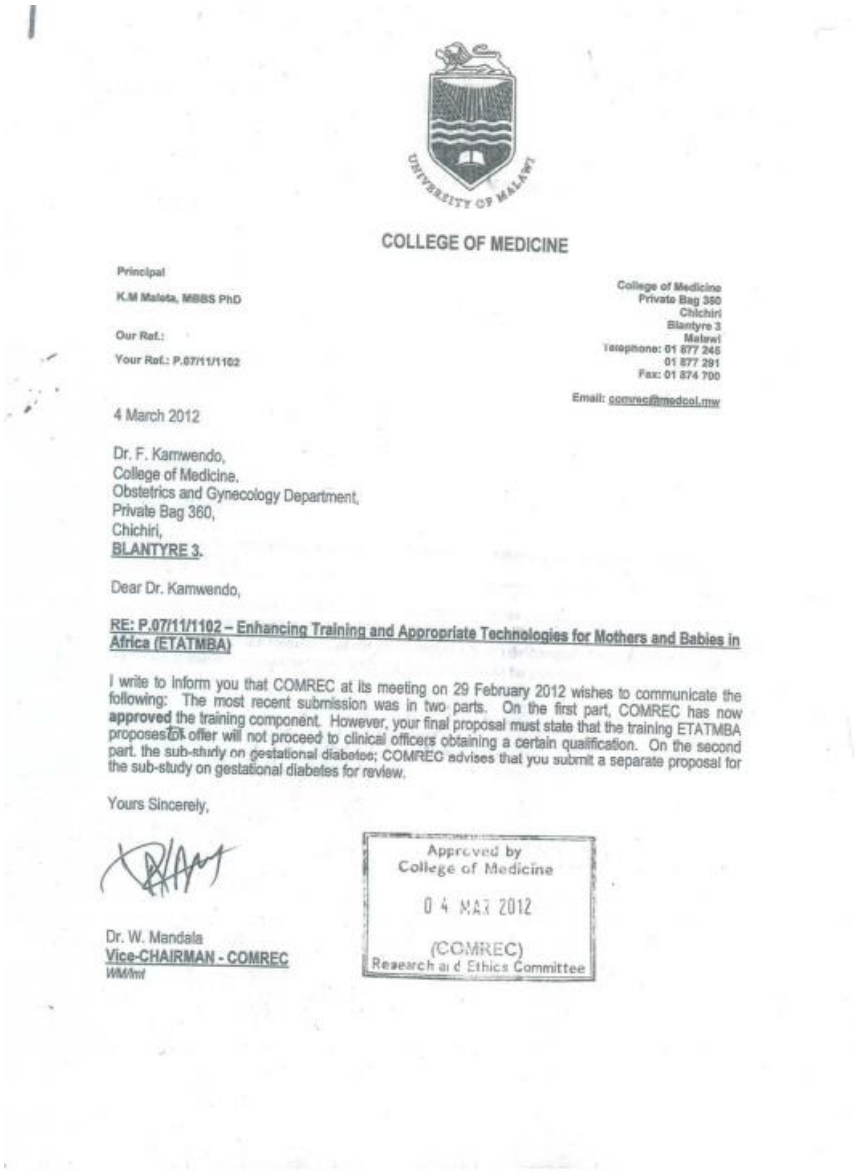
P.P. Graham Hewitt

Dr David Davies
Chair
Biomedical and Scientific
Research Ethics Sub-Committee

Biomedical and Scientific Research Ethics Subcommittee
A010 Medical School Building
Warwick Medical School,
Coventry, CV4 7AL.
Tel: 02476-151875
Email: BSREC@Warwick.ac.uk

THE UNIVERSITY OF WARWICK

(iv) Ethics approval certificate from the University of Malawi



COLLEGE OF MEDICINE

Principal
K.M Maleta, MBBS PhD

Our Ref.:
Your Ref.: P.07/11/1102

College of Medicine
Private Bag 360
Chichiri
Blantyre 3
Malawi
Telephone: 01 677 245
01 677 291
Fax: 01 874 700
Email: comrec@medcol.mw

4 March 2012

Dr. F. Kamwendo,
College of Medicine,
Obstetrics and Gynecology Department,
Private Bag 360,
Chichiri,
BLANTYRE 3.

Dear Dr. Kamwendo,

RE: P.07/11/1102 – Enhancing Training and Appropriate Technologies for Mothers and Babies in Africa (ETATMBA)

I write to inform you that COMREC at its meeting on 29 February 2012 wishes to communicate the following: The most recent submission was in two parts. On the first part, COMREC has now approved the training component. However, your final proposal must state that the training ETATMBA proposes to offer will not proceed to clinical officers obtaining a certain qualification. On the second part, the sub-study on gestational diabetes; COMREC advises that you submit a separate proposal for the sub-study on gestational diabetes for review.

Yours Sincerely,

Approved by
College of Medicine
04 MAY 2012
(COMREC)
Research and Ethics Committee

Dr. W. Mandala
Vice-CHAIRMAN - COMREC
WM/mf

Appendix VII: Module 1 Curriculum - Malawi

Day 1
MONDAY

Time	Topic	Method	Leader
8.00-8.30	Clinical officers as advanced leaders introduction	Discussion	xxxxxxxx
8.30-9.30	MCQ		
9.30-9.45	Break		
9.45 10-45	1. Epidemiology *Traditional birth attendants, rationale for change, current data on place of delivery, major causes of maternal death and neonatal death*	Epidemiology seminar	xxxxxxxx
10.45-11.00	Break		
11.00-12.00	OSCE demonstration		Xxxxxx Xxxxxx xxxxxxx
12.00-1.00	Lunch		
1.00-2.30	Safer vaginal delivery; *Simulations of ECV, breech, twins, vacuum extraction, shoulder dystocia.*	Practical session	xxxxxxx
2.30-2.45	Break		
2.45-4.00	Safer vaginal delivery teaching others *Teaching other breech, forceps, vacuum extraction, twins shoulder dystocia. Managing and leading teams, drills based on local settings*	Practical session	xxxxxxx

Day 2
TUESDAY

Time	Topic	Method	Leader
8.00-9.00	Neonatal resuscitation *What about the baby? What are the major causes of neonatal death and disability in Malawi?*	Group discussion	xxxxxxx
9.00-10.00	1. Why neonatal resuscitation is important; principles of good neonatal care *Wider team-working; adoption of evidence-based practice; hypothermia, kangaroo mother care, breastfeeding* 2. Serious maternal and neonatal infections in the local context *Appropriate antibiotics on local inventory? What to do when these not available*	Seminar Group discussion	xxxxxxxx xxxxxxxx xxxxxxxx
10.00-10.15	Break		
10.15-11.00	1. Collecting the data on HIV infection and acting on it *Checking HIV status of pregnant women, offering counselling and contact tracing* 2. The implications of being HIV positive for preventing puerperal sepsis	Seminar Seminar	xxxxxxxx xxxxxxxx
11.00-12.00	4. Management of sick neonates *Signs and symptoms; appropriate interventions, local settings*	Seminar	xxxxxxxxx
12.00-1.00	Lunch		
1.00- 2.30	Neonatal resuscitation scenarios *Learning techniques, training others. Bag-and-mask, Helping Babies Breathe, intubation (trial session)*	Practical session	xxxxxxxxx
2.30-2.45	Break		
2.45-4.00	Neonatal resuscitation scenarios *Learning techniques, training others. Bag-and-mask, Helping Babies Breathe, intubation (trial session)*	Practical session	xxxxxxxxx

Day 3
WEDNESDAY

Time	Topic	Method	Leader
8.00-8.30	Managing bleeding and blood loss in PPH 1. Are we giving women a good start *Detecting, preventing and correcting anaemia, steps to enhance current practice*	Seminar	xxxxxxx
8.30-9.00	2. Life support in haemorrhage and fluid loss *Optimal support for the haemorrhaging patient at clinics, during transfer and on reception at district hospitals; fluid balance considerations*	Seminar	xxxxxxx
9.00-9.30	3. Blood transfusion: have we got enough? If not, why not? *Evidence from the most recent inventory, current guidelines for storage and administration of blood, experience of supporting women with PPH, current guidelines on blood donation*	Seminar Discussion	xxxxxxx
9.30-9.45	Break		
9.45-12.00	Abortion 1. The local scene *Legal situation, epidemiological evidence, Malawi National Health Service Guidelines ch. 6* 2. Effective intervention post-abortion *Life support and general measures, the manual vacuum aspirator*	Seminar Seminar	xxxxxxx xxxxxxxx
12.00-1.00	Lunch		
1.00-2.30	Other active interventions in APH/ PPH: what is available? *Placenta previa, abruption, Repair of lacerations, manual removal of placenta, repositioning inverted uterus, management of uterine atony, placenta accreta (uterotonics, bimanual uterine compression, intra uterine balloon tamponade using condoms, hysterectomy),*	Practical session	xxxxxxxx
2.30-2.45	Break		
2.45-4.00	Other active interventions in PPH: what is available? *Teaching others, auditing, preventing recurrence*	Practical session	xxxxxxxx

Day 4
THURSDAY

Time	Topic	Method	Leader
8.00-8.45	Blood pressure 1. Managing hypertension in pregnancy and antenatal care *BP checks of pregnant women, availability of sphygmomanometers, health education for reporting signs of pre-eclampsia, time of transfer for raised BP*	Seminar	xxxxxxx
8.45-9.15	2. The eclamptic patient and management: local and international practices	Seminar	xxxxxx
9.15-10.00	3. Magnesium sulphate *Evidence of effectiveness, is it administered early enough – if not, why not? Local guidelines on use of magnesium sulphate*	Seminar	xxxxxxxx
10.00-10.15	Break		
10.15-12.00	Active monitoring and active intervention prevents ruptured uterus 1. Active monitoring: is the partogram being used? What is the evidence that it helps? If it works, why is it not happening? Evidence from significant event reviews in Malawi *Review of evidence, discussion of benefit of change* 2. Place of delivery: where do women deliver and why? Relevance of place of delivery to incidence of infection and to PPH Right place, right time? Pathway of care: transfer between healthcare localities *Low birthweight and perinatal loss: what is the evidence? Should there be more guidance on place of care? Transfers in utero, time intervals for decision-making, transport, reception, operative intervention*	Seminar Discussion	xxxxxxxxx xxxxxxxx
12.00-1.00	Lunch		
1.00-2.30	Simulation training for team leadership: Eclamptic fit and resuscitation of sick infant *Managing and leading teams, drills based on local settings, prioritising*	Seminar Practical session	xxxxxxxx xxxxxxxx
2.30-2.45	Break		
2.45-4.00	Simulation training to teach others: Eclamptic fit and resuscitation of sick infant *Managing and leading teams, drills based on local settings, prioritising*	Seminar Practical session	xxxxxxx xxxxxxx

Day 5
FRIDAY

Time	Topic	Method	Leader
8.00-10.am	Agenda setting for service improvement *What changes in current patterns of delivery of care would help to reduce morbidity and mortality. Audit as professional tool to improve clinical service and display leadership, criterion-based audit in Malawi, confidential enquiries into maternal mortality, the right culture and attitude*	Seminar	xxxxxxxxxxx
10.00-10.15	Break		
10.15-11.15	MCQ		
11.15-1130	Break		
11.30-12.30	OSCE first half / Lunch second half	Faculty	
12.30-1.30	Lunch first half / OSCE second half		
1.30-2.30	How to do an audit	Seminar	xxxxxxxxx
2.30-2.45	Break		
2.45-4.00	Meet your Audit tutor: and plan audit details, time table, email address		Faculty