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# Evaluating a potential role for community pharmacists in post-bariatric patient nutritional support

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## Summary

Physiological changes to the body from bariatric surgery necessitate lifelong vitamin and mineral supplementation to prevent potential nutritional deficiencies. Presently, there is no consensus on appropriate long-term follow-up in community settings for people who have undergone bariatric surgery. Current UK guidelines recommend annual monitoring of nutritional status, but little else. Semi-structured interviews were carried out with members of a high volume bariatric surgical unit and community pharmacists working in a variety of settings and locations. Data were collected between June and August 2018 and analysed using a thematic analytic framework. Twenty-five participants were recruited. Bariatric staff (n = 9) reported negligible interaction with community pharmacists but felt establishing communication and developing a potential pathway to collaborate, would provide additional support and potentially improved levels of patient compliance. Community pharmacists (n = 16) reported poor knowledge of bariatric surgery, indicating they were unable to routinely identify people who had bariatric surgery, but understood issues with absorption of vitamins. There is evident potential to involve community pharmacists in post-bariatric patient care pathways. Pharmacists possess knowledge of absorption and metabolism of supplements which could be used to actively support people who have had bariatric surgery in their changed physiological status. Education ought to focus on the functional impact of bariatric surgical procedures and interventions and the consequent nutritional recommendations required. Communication between bariatric units and community pharmacies is needed to construct a clear and formalized infrastructure of support, with remuneration for pharmacy specialist expertise agreed to ensure both financial viability and sustainability.

## KEYWORDS

bariatric surgery, community pharmacy, follow-up, nutrient supplementation, patient support

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## 1 | INTRODUCTION

The restrictive and malabsorptive effects of bariatric surgical procedures require lifelong vitamin and mineral supplementation to avoid nutrient deficiencies, which can lead to long term pathological change.<sup>1</sup> Post-surgically, people who have had a bariatric procedure are cared for by the surgical multi-disciplinary bariatric team for a period of 2 years, before being discharged into general practice for long-term follow-up and care. Current guidelines from the National Institute for Health and Care Excellence recommend the need for “at least annual monitoring of nutritional status and appropriate vitamin supplementation according to identifiable need. This is an integral part of post-surgical care in the context of a shared care model of chronic disease management”.<sup>2</sup> However, no evidence based consensus currently exists as to what this post-surgical follow-up ought to entail. There are published recommendations for both acute and community settings offering guidance,<sup>1,3-6</sup> but there is also a degree of ambiguity regarding with whom responsibility for the long-term follow-up of patients' individual nutritional status lies, with limited references to the involvement of community pharmacy. Effective communication and co-ordination between bariatric surgical units and community settings is pivotal in ensuring pathways are developed and sustained, to provide optimal, ongoing care for bariatric surgical patients who are transitioning through changes in attitude and behaviour towards both their short and long term nutritional needs.<sup>7</sup>

Prior to surgery, nutrition and supplementation is discussed with the patient via members of the bariatric multidisciplinary team, including dietitians and a specialist pharmacist in our bariatric surgical unit. The pharmacist undertakes a medication review, which a personalized set of guidelines and key recommendations for both medicines use and adjunct nutritional supplementation following surgery. A copy of this documentation is provided to the patient, sent to the GP and also filed in the patient's hospital notes.

Whilst the ongoing need for vitamin and mineral supplementation is reinforced in follow-up appointments in Secondary Care, audits in our bariatric surgical unit reveal there are high rates of patient non-attendance. Additionally, there is no information on the uptake of published guidance about the long term management of bariatric surgical patients in the community and, but it is not clearly defined as to what the role of community pharmacy within this monitoring ought to include.

Evidence shows that many patients decline to attend follow-up appointments following surgery,<sup>8-10</sup> nutrient deficiencies are common<sup>11</sup> and compliance with vitamin and mineral supplements is poor<sup>12</sup> for many reasons, including the size of pills or capsules<sup>13</sup> and their perceived and actual side effects.<sup>14</sup> Feedback from patients at our support group and previous research has shown that patients felt they needed support around nutritional considerations in the longer term.<sup>15</sup>

Public Health England has highlighted the evident need for greater research into understanding the role of community pharmacists, acknowledging the importance of community pharmacies to local health needs, since they are often the first point of contact for

### What is already known about this subject

- The long-term monitoring and support of people undergoing bariatric surgery is crucial to the potential for successful post-operative outcomes and an improved quality of life.
- There is currently limited guidance as to what ought to be included and what is feasible in the context of follow-up in community-based settings.
- Bariatric surgery fundamentally alters the physiology of the body, meaning lifelong vitamin supplementation is needed.

### What this study adds

- A potential role for community pharmacists in bariatric surgical care is explored.
- The availability and accessibility in community contexts provides an opportunity to directly improve long term patient compliance with recommended levels of vitamin supplementation.

the general public and can offer individualized advice and focused interventions to promote and support the long term health and wellbeing of the population.<sup>16</sup>

There are nearly 12 000 community pharmacies in England.<sup>17</sup> Community pharmacies are perceived by the general public as being easily accessible, conveniently located. 89% of the population of England are within a 20-minutes walk of their nearest pharmacy, where they are perceived as being flexible, providing trustworthy advice and as a consequence are often the initial point of contact for people with health concerns (1.6 million health encounters per day), with over 90% of community pharmacies having a designated consultation area in which to provide confidential advice and support to patients.<sup>18</sup>

In addition to community pharmacies, NHS England launched a pilot study in 2015 to support pharmacists working within general practice in the United Kingdom, with pharmacists working collaboratively in more patient-centric roles, using and applying their knowledge of medicines management and taking responsibility for patients with long term conditions and the routine execution of clinical medications use reviews (MURs).<sup>16</sup>

Currently, community pharmacists do not have a definitive role in post-bariatric surgical support but undoubtedly have the generic skills and degree of accessibility to the general public, which ensures their functional capacity to potentially support these patients long-term.

The aim of this study was to explore a potential role for community pharmacists in the provision of post-bariatric surgical nutrient support.

## 2 | MATERIALS AND METHODS

A qualitative methodological approach underpinned the study. The inductive approach of qualitative methods are most appropriate where there is a distinct paucity of information on specific subjective issues for investigation,<sup>19</sup> permitting exploration and consequently a critical understanding of issues to be gained.<sup>20</sup>

Data were analysed using a thematic analytic framework, informed by the guidance of Braun and Clarke<sup>21</sup> and Robson<sup>22</sup> (see Table 1). Thematic analysis seeks to uncover patterns or themes which emerge from the data related to the research question. Themes allow exploration of the parts of the phenomenon, which give a greater understanding of the whole.<sup>23</sup> The identified themes serve as the basis for analysis, which inform a rich, detailed and complex account of the situation under investigation.<sup>23</sup>

Thematic analysis is flexible in that it can be adapted to suit a range of theoretical and philosophical approaches.<sup>21</sup> For this study, a social constructivist philosophical perspective informed the analysis.

This perspective that reality is constructed through interactions with others and is influenced and shaped by life experiences, social and cultural norms and values.<sup>24</sup> We assert that obesity, through its classification as a disease by the American Medical Association<sup>25</sup> is an illness and it is important to understand the social construction of obesity as an illness as this may potentially influence policy on treatments and allocation of resources. Conrad and Barker<sup>25</sup> offer three areas for exploration within a social constructivist framework:

1. Many illnesses are particularly embedded with cultural meaning, which may not be related to the condition, which directs how society responds to the people suffering from that condition.<sup>25</sup> Currently, society perceives obesity as a deviant condition, with culpability attributed to the individual<sup>26</sup> and treatments such as bariatric surgery, have negative connotations, for example, a method of cheating or wasting health resources.<sup>27</sup>

2. Most illnesses are socially constructed at the experiential level, framed on how people understand and deal with the illness on a day to day basis.

Medical knowledge about illness and disease is not necessarily given by nature but is constructed and developed by claims-makers and interested parties.<sup>25</sup> In order to more fully understand the way in which the participants' made meaning of their professional roles, the approaches to patient support and the resultant meanings and actions, it was important to acknowledge the multiple realities and interpretations of the participants.

Active delineation between what socially constructed knowledge is and what knowledge actually constitutes is also a paramount consideration, since it impacts on the capacity that bariatric surgical teams and community pharmacists have to react to it in practice.<sup>28</sup> Critical reflection and the capacity for reflexivity in the context of decision-making now characterizes the majority of medical and allied health and social care professions.<sup>29</sup> This has entrenched the notion of an ethical stance as an integral part of professional practice. It stems from the notion that accountability in terms of "being" in the world belies the contextual and situational basis of how we might begin "know" in practice. This methodological approach ensured knowing was authentic and contextually valid.

Two cohorts of participants were approached to become participants in the study. First, a range of staff working within the Bariatric Surgical Unit were asked to consider taking part in the study. Second, community pharmacies within the general locality of the hospital and wider areas from which patients had been referred to the hospital were approached. All participants in the study were approached in writing and were informed of the aims of the study and that participation was both voluntary and anonymous.

Participants who consented to take part had the option to be interviewed face to face or by telephone. Purposive sampling was employed to ensure that a representative sample of the bariatric multidisciplinary team was apparent, to capture the wide range of contextual situations and settings in which community pharmacists practice and to reflect the wide geographical spread of the patient population. Written consent was obtained from each participant and all were assigned an anonymous code to ensure the confidentiality of all data collected. The researchers ensured that prior to interview, each participant was aware of the aims of the study and were comfortable taking part. No participant declined to take part or dropped out.

Data were collected through semi-structured interviews, face to face (n = 14) and by telephone (n = 11) and were facilitated via the use of a topic guide (see Table 2) which was pilot tested with a representative sample prior to seeking ethical approval. Interviews were carried out by two experienced researchers, both female. One was a clinical academic researcher working between academia and the NHS (YG), the other was an academic pharmacist (CES). According to the preferences of the participants, face to face interviews were carried out in a private area in the participants' place of work and involved only the participant and researcher. All participants were aware of the researchers' academic and clinical backgrounds and a rapport was established with each participant prior to commencing the interviews.

**TABLE 1** Thematic analytic framework

Step	Definition	Actions
1	Data familiarization	Reading transcribed data, highlighting areas of interest (key words, actions etc), comparing data to notes taken during interviews and reflective diaries made by researcher
2	Generation of initial codes	Drawing up list of initial codes, mapping to potential areas of common experience
3	Identifying themes	Grouping codes into broad themes and moving all data to each theme and refining themes
4	Construction of thematic network	Refining mapping of the analysis
5	Integration and interpretation	Constructing tables which describe, illuminate and summarize the patterns and themes

Sources: Braun and Clarke<sup>21</sup> and Robson.<sup>22</sup>

**TABLE 2** Topic guide for interviews

1. Please tell me about your role (in hospital or community)
2. How often do you come into contact with patients/clients who have undergone bariatric surgery?
3. *Community pharmacists*: What are your knowledge levels of bariatric surgery? How did you learn this?  
*Hospital*: What are your levels of knowledge about the role of the community pharmacist? How did you learn this?
4. Tell me how often you discuss the importance of nutrient supplementation after surgery and how this is raised in a consultation  
*Community*: how often do you liaise with hospital colleagues (pharmacists or other staff about patient management? Can you talk me through an example?  
*Hospital*: how often do you liaise with community pharmacist about patient management (not just bariatric patients) and how do you do this? Can you talk me through an example?
5. How important do you feel the issue of nutrient supplementation is with bariatric patients?
  - a What do you think the main issues are?
6. How confident are you in discussing nutrient supplementation with bariatric patients?
  - a Tell me about the areas you feel you would like to know more about with respect to nutrient support with bariatric patients/clients
7. How would you envisage bariatric surgical units and community pharmacies working together to support bariatric patients in the community after surgery?
8. Where do you think the opportunities and areas for development lie?
9. What potential barriers do you think there might be and how could these be overcome?
10. Is there anything else you would like to tell me about your feelings towards a potential role for community pharmacists in post-bariatric nutrient support?

Bariatric surgical staff were asked to discuss any interactions with community pharmacists, their experiences of patient compliance with nutrient supplementation and to explore how they felt community pharmacies might potentially be utilized in the provision of bariatric patient care. The community pharmacist cohort were asked to discuss any involvement with bariatric surgical teams, their knowledge of bariatric surgical procedures, their involvement with bariatric patients, which services were currently delivered in the context of their roles and finally whether they perceived that involvement with bariatric patient support was an area worthy of further exploration.

All interviews were audio-recorded and transcribed verbatim. Interviews lasted between 30 and 45 minutes. Both researchers took additional notes during and after the interviews. Participants were interviewed once and any areas of ambiguity were clarified after data was transcribed. Data saturation in each group was agreed with the research team before ceasing recruitment. Data were analysed by YG, CES, CH, LP, KM and LCD through a constant comparative framework in order to specifically understand individual participants' perspectives, to identify common themes<sup>19</sup> constructed from the data and to maintain reflexivity to identify and acknowledge any inherent bias<sup>30</sup> from the interviewers. The coding process was completed manually. Recruitment took place between June and August 2018.

Ethical approval for the research was granted by the National Health Service and the University of Sunderland, with written, informed consent obtained from all participants.

### 3 | RESULTS

A total of 25 participants were recruited to the study across both cohorts. In the bariatric surgical staff cohort, 9 participants were

recruited to the study and consisted of the following healthcare professionals: dietitians (n = 2), specialist pharmacists (n = 2), physician (n = 1), surgeons (n = 2) and specialist nurses (n = 2). The second cohort were community pharmacists (n = 16), again purposively sampled to ensure that the wide range of settings in which community pharmacists practice were represented to capture all potential roles and to reflect the wide geographical spread of the patient population of the bariatric service (see Table 3). No participants dropped out of the study.

#### 3.1 | Bariatric surgical staff

Bariatric staff (n = 9) reported negligible interaction with community pharmacists, but felt establishing communication and a potential pathway to embedding community pharmacists as part of patient care would provide additional support, resources and potentially improved patient compliance with nutrient supplementation.

Analysis of the data identified four core themes (see Table 4) which illuminated the perspectives of the bariatric surgical staff to provide an understanding of their interpretation of the role of community pharmacists and the potential to provide nutrient support for patients.

#### 3.2 | Theme 1: Lack of patient engagement and compliance

The bariatric surgical staff participants reported that a lack of patient engagement and compliance with supplementation in the post-surgery phase of their care:

**TABLE 3** Participant demographics

Participant	Gender	Role	Do you have contact with community pharmacists in practice?	Do you feel there may be a role for community pharmacists to provide nutrient support to patients?	Would you be prepared to get involved with community pharmacists to establish a pathway of patient care?
A	M	Dietitian	No	Yes	Yes
B	M	Nurse	No	Yes	Yes
C	M	Physician	No	Yes	Yes
D	F	Nurse	No	Yes	Yes
E	M	Surgeon	No	Yes	Yes
F	F	Pharmacist	Yes but limited	Yes	Yes
G	M	Surgeon	No	Yes	Yes
H	F	Pharmacist	Yes but limited	Yes	Yes
K	F	Dietitian	No	Yes	Yes
			Do you identify bariatric patients in routine practice?	Do you feel there may be a role for community pharmacists to provide nutrient support to patients?	Would you be prepared to get involved with bariatric surgical teams to establish a pathway of patient care?
I	F	Community pharmacist	No	Yes	Yes
L	F	GP pharmacist	No	Yes	Yes
M	F	Community pharmacist	No	Yes	Yes
N	F	Community pharmacist	No	Yes	Yes
O	M	Community pharmacist	No	Yes	Yes
P	M	Community pharmacist	No	Yes	Yes
Q	M	Community pharmacist	No	Yes	Not sure
R	M	Community pharmacist	No	Yes	Yes
S	M	Community pharmacist	No	Yes	Not sure
T	F	Community pharmacist	No	Yes	Yes
U	F	Community pharmacist	No	Yes	Not sure
V	F	Community pharmacist locum	No	Yes	Yes
W	F	GP pharmacist	No	Yes	Yes
X	F	Community pharmacist	No	Yes	Yes
Y	F	Community pharmacist locum	No	Yes	Yes

A lot of patients are non-compliant, the main reasons coming out seems to be not realising the importance. This is disappointing given the amount of times we've discussed this with them. Other reasons seems to be that patients report not being able to afford to pay for vitamins, that they stopped taking them because they feel fine. Some patients have been given bad information in the community, where GPs have told them that their bloods are fine and to stop taking vitamins (Participant A) Today in clinic, half an hour ago, I met a lady who had a bypass in 2010, and she hasn't been taking any of her vitamins for the last six years. I hear this regularly, so the patients don't seem to be taking them long term (Participant C)

### 3.3 | Theme 2: Perceived ambiguity in bariatric patient care pathways in community settings

Participant narratives revealed that longer term follow-up in community settings was not straightforward due to the relative degree of confusion in relation as to what patients actually need:

It would be good for patients to have somewhere to go that can offer support in the community. Within the first two years, when they are here [under the care of the bariatric surgical team], there is less need for community support, but longer term, we're in the dark as to what is going on, really. That's obviously a big concern, isn't it? (Participant D)

**TABLE 4** Themes constructed from bariatric surgical staff

	Theme
1	Lack of patient engagement and compliance
2	Perceived ambiguity in bariatric patient care pathways in community settings
3	Perceptions of limited intraprofessional communication between care settings
4	Embracing innovation in post-bariatric patient support

It is very rare for me to hear from a GP or a Practice Nurse about a patient, it is always the patient. I think if we could educate [the GPs and Nurses] to give them an idea of what we have the patients doing and what to expect, and what is needed long-term, I think we would be all in a much better position to support patients (Participant K)

### 3.4 | Theme 3: Perceptions of limited intraprofessional communication between care settings

Participants revealed that intraprofessional communication between care settings was relatively limited, with many reporting little or no contact with community pharmacists:

I don't think there are many pharmacists in the community that would have such an interest, and certainly I can't recall ever being contacted by one (Participant E)

I've never heard from a pharmacist. Probably the only ones who would contact us are maybe the nurses, or the GPs, but even that would be probably on a very rare occasion (Participant K)

### 3.5 | Theme 4: Embracing innovation in post-bariatric patient support

This theme was common to both bariatric surgical staff and community pharmacists with all staff resonating the clear commitment to work in engaging patients to be empowered about their post-surgical long term care and maintenance plan.

It is up to the patients to realise they have to take ownership of taking all their vitamins and minerals and carry on. But if you are going to extend that, then the community pharmacist would be the next step up because patients would be accessing them for other reasons. Community pharmacists could be utilised to reinforce the importance of taking supplements,

because patients are likely there to collect prescriptions monthly or bi-monthly (Participant C)

Pharmacists are accessible in the community, patients don't need to make appointments to see them, they can ask for advice. If community pharmacists had extended knowledge of the effects of bariatric surgery and the interactions with vitamins and other medicines, they could further advice and support the patients (Participant F)

### 3.6 | Community pharmacists

Community pharmacists (n = 16) reported poor knowledge of bariatric surgery and were not able to identify people who have had bariatric surgery in routine practice, but understood the resultant pathophysiological issues of vitamin malabsorption and deficiency. With appropriate training and a pathway created in collaboration with the bariatric team, pharmacists felt that gaining this knowledge, would directly benefit patients and potentially extend the role and resultant impact of community pharmacists in practice. Analysis of the community pharmacists' narratives revealed three additional themes (see Table 5).

### 3.7 | Theme 5: Identifying pre-existing origins and level of knowledge of bariatric surgical procedures and outcomes

Community pharmacists reported that their formalized learning of bariatric surgical intervention was relatively limited and much generalized with minimal educational focus across educational curricula dedicated specifically to the care of people who have had bariatric surgery. The resultant outcome of this was articulated as community pharmacists being reliant on anecdotal knowledge rather than an evidence based approach to the care of people who have undergone bariatric surgery in practice.

I don't know much, I've done some reading in the past and a single question came up on a clinical diploma I was doing. I know a little about general issues bariatric patients face, like malabsorption, but beyond that, I wouldn't say any more specific knowledge (Participant I)

**TABLE 5** Themes from Community Pharmacy cohort

	Theme
5	Identifying pre-existing origins and level of knowledge of bariatric procedures and outcomes
6	Perceptions of bariatric surgical patient presentation in the context of community pharmacy practice
7	Identifying barriers and enablers to develop a service for bariatric patient support



I know what medications are involved, and I know a little about the procedures, but that is purely from a non-evidenced based knowledge (Participant N)

### 3.8 | Theme 6: Perceptions of bariatric surgical patient presentation in the context of community pharmacy practice

It was difficult for community pharmacists to identify people who had undergone bariatric surgery patients in routine practice, as people did not commonly inform pharmacists that they had undergone bariatric procedures:

Unless I ask, or unless patients tell me when I dispense medication, I wouldn't know. I have had patients who have asked, because of certain tablets, especially modified released ones, they want to check if they are okay, but unless patients tell me they have had surgery, I wouldn't know (Participant M)

Most of the time I find out after they have had their surgery. We didn't actually get told about the operations beforehand, it's only when we got the prescriptions through, and the patients stating they had the operation done when we're going through their medication (Participant Q)

Very little. I think there are under 10 bariatric surgical patients. We don't catch them because we have nothing to do with their admission or discharge (Participant T)

### 3.9 | Theme 7: Identifying barriers and enablers to develop a service for bariatric patient support

Community pharmacists were receptive to working collaboratively within and alongside bariatric surgical units to develop care specialist community pharmacist pathways for patient support. They also acknowledged the wider fiscal implications of this in healthcare practice:

In summary, pharmacists need a broader awareness of bariatric surgery and better communication with surgical units, but there are acknowledged time constraints on pharmacists so this would need to be discussed so support was feasible, but I think it's a good idea (Participant O)

There would need to be remuneration, appropriate remuneration, attached to the provision of a service and the workload would have to be manageable. If you take an MUR as a payment model that already works, then this could be used as an example (Participant T)

For pharmacists working in GP practices, our time is more protected so you can book a patient in and choose not to schedule anything else in that time, so there is an opportunity for in-depth discussion to provide support (Participant L)

## 4 | DISCUSSION

The study revealed that there is currently limited communication between community pharmacists and bariatric surgical units, along with no formal education available in order for community pharmacists to learn more about both bariatric surgical procedures, vitamin and mineral supplementation requirements, which tends to be picked on an ad-hoc basis. There are several significant presenting opportunities to involve community pharmacists in post-surgical bariatric patient care, particularly in relation to dietary vitamin and mineral supplementation support. Pharmacists possess specific knowledge around the absorption, distribution, metabolism and excretion of vitamins and minerals as well as the presenting pathophysiology of systemic illness relating to them. They also have extensive experience in explaining complex information in a manner understandable and accessible to those unfamiliar with medical terminology and jargon, potentially meaning that education around bariatric surgical intervention and consequent nutritional recommendations for patients could be facilitated in a clear and understandable manner. There is existing published evidence on the impact of bariatric surgical intervention on vitamin and mineral uptake<sup>31</sup> which could be readily integrated into evidence based educational training for community pharmacists with a specialist interest in this area.

Pharmacists have long been acknowledged as being valuable members of interprofessional teams for people who have had bariatric surgery in the context of providing their specific disciplinary expertise on the availability of dosage forms and dosage modification so patient pharmacotherapy in bariatric surgical care is not unduly or extensively interrupted. Their assistance in the often co-morbid conditions associated with obesity such as oral anti-hypertensive medications, oral hypoglycaemic medications and insulin for various classifications of diabetes and the use of medications for depression and anxiety is invaluable. Pharmacists also work in the context of pre-surgical bariatric care to ensure that patients living with obesity have sufficient prophylactic medication in relation to treatment dosage of anti-bacterial and anti-viral pharmacological interventions.<sup>32</sup> Alongside international studies which reveal the attitudes and barriers to the provision of weight management for all people<sup>33</sup> our study provides one means of focusing approaches for those who have undertaken the most drastic approach to weight loss, bariatric surgical intervention.

Research from the extant published evidence base on the scope and role of the community pharmacist have already provided parallel spheres of applied clinical practice for active comparison with the field of bariatric patient care. Prentice et al 2019 explored the potential for their extended scope in bowel screening for colorectal cancer, which

identified they were ideally placed to both undertake additional education in this area of practice and also act as a valuable conduit and mechanism of optimal communication between Bowel Cancer UK and the general public.<sup>34</sup> This entailed the community pharmacists providing facts to patients about colorectal cancer, including the benefits of early detection and ensuring that home testing kits could be correctly used by patients through the articulation of clear and accessible information. There are clear and evident parallels between the need for this information and that which would also be articulated to people who have undergone bariatric surgery.

Since 2016 when Public Health England, established quality criteria detailing how community pharmacists could gain "Healthy Living Pharmacy Status; in relation to health promotion, the potential to use transferable skills of educational empowerment for patients have been evidenced across numerous areas of medical health education, such as smoking cessation, cancer screening, dentistry, blood pressure monitoring and glycaemic control.<sup>35</sup> Further integration and development of this into National Institute for Health and Excellence Guidelines was further acknowledged with the 2018 publication of "Community pharmacies: promoting health and wellbeing".<sup>36</sup> To extend the reach of community pharmacy into the field of post-surgical bariatric care is another means of utilizing the transferable skill set in advocating and sustaining positive long term health and wellbeing for patients who find lifestyle adjustment challenging in the initial stage of their adaptation to another aspect of their altered physiological status.

Optimal mechanisms of communication between bariatric units and community pharmacies are needed to discuss the potential logistics of support in clinical practice and to construct a formalized operational infrastructure to ensure that patients are aware of the potential support their pharmacist can offer them, that their specific needs are met and that they are subsequently supported in being able to follow key recommendations after their bariatric surgical intervention has taken place. The financial feasibility of providing this service is also something which can be potentially be reconciled in relation to the cost effectiveness of this proposed evidence based intervention in relation to the preservation of the long term health status of these patients.

This study is the first to explore the role of community pharmacists in the context of post-bariatric nutrient support. The findings of this study are acknowledged to be limited to the perspectives of the participants who engaged in this study. The bariatric surgical cohort were all recruited from the same bariatric surgical unit, but this encompassed the members of the multi-disciplinary team involved in-patient care, which is an international model.

The community pharmacist cohort were recruited from a wide range of settings across a diverse geographical range in the North East UK, encompassing the breadth of roles that community pharmacists undertake in England. Although there were participants who represented the traditional model of a pharmacist working in a community setting, the other roles such as embedded pharmacists in GP practices are unique to the United Kingdom and may not exist in other countries. However, given that there is no formal role for community

pharmacists in post-bariatric surgical patient care, these insights may provide points of departure for development collaborative working across healthcare teams, to inform potential of future service provision at local, national and global levels. As this was a pilot study, which aimed the perspectives of community pharmacists and aiming for an in-depth understanding of current knowledge and practice, we only focused on any relationships between them and bariatric surgical units; we did not seek the views of staff working in general practice such as GP's and Practice Nurses, nor did we interview any patients. This will be undertaken in the next phase of our work.

Additionally, we acknowledge that there may be bias from the two researchers carrying out the interviews, given one worked part-time in a bariatric surgical unit and the other was a community pharmacist. However the findings are proposed to be relevant and in some instances potentially transferable, to the global bariatric surgical community and could possibly be adapted to healthcare systems of individual countries.

Both cohorts of participants felt there were clear opportunities to involve community pharmacists in post-surgical support of people who have undergone bariatric surgery with issues surrounding vitamin and mineral supplementation. Pharmacists possess knowledge around absorption, distribution, metabolism and excretion of vitamins and minerals meaning that providing education and awareness raising around the mechanisms of bariatric procedures and nutritional recommendations for patients would be relatively straightforward. Communication between bariatric units and community pharmacies, was lacking and is needed to discuss the logistics of supporting this initiative in practice and in the formal construction of an economically viable and sustainable infrastructure to ensure patients are aware of pharmacist support, their needs are met and recommendations followed. The issue of remuneration to implement such a service needs to be agreed for it to be financially viable and sustainable in the longer term.

Findings were discussed with both cohorts of participants and presented at a regional pharmacy collaborative. Feedback was overall positive, reflecting current practice and supportive of further work being undertaken to explore this area in more detail.

We recommend that a pilot project with a small group of pharmacies is carried out, working in collaboration with the bariatric surgical unit, utilizing the expertise of the specialist bariatric pharmacist and other members of the multidisciplinary team including dietitians to agree what support the community pharmacist could provide. This further study may potentially involve general practice and patient participants, to agree a pragmatic operational framework which could test the potential role and infrastructure of community pharmacy over a period of 6 months. We feel the optimum time to involve community pharmacies would be at the time of the pre-surgical assessment, when a patient could nominate a pharmacy, who would receive a copy of the medication review and be in a better position to offer support after surgery. As the pharmacist would have the information on the patient, it would lessen the burden on the patient to disclose and explain themselves. After such time, the project outcomes ought to be reviewed and evaluated to assess impact in clinical practice, patient

and pharmacist acceptability and if successful, how to sustain this pathway long-term.

## CONFLICT OF INTEREST

Kamal Mahawar is on the editorial board of *Clinical Obesity*, Yitka Graham received funding from Metagenics, and she is also a reviewer for *Clinical Obesity*. All other authors have no conflicts of interest to declare.

## AUTHOR CONTRIBUTIONS

YG conceived the idea for the study, led on data collection and analysis and write up of the manuscript. CES collected data and contributed to analysis and write up. LP and CH contributed to data analysis and write up. CT and AF contributed to write up. KM assisted with study design, contributed to data analysis and write up. LCD contributed to study design, data analysis and writing up.

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