

# BMJ Open Non-physician anaesthesia providers' perspectives on task sharing practices in Zambia and Somaliland: a qualitative study

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## ABSTRACT

**Introduction** The 68th World Health Assembly, in 2015, called for surgical and anaesthesia services strengthening. Acknowledging the healthcare staff shortages, they referred to task sharing, among others, as a more effective use of the healthcare workforce. While task sharing has been increasingly proposed as an important strategy to increase the reach and safety of anaesthesia as well as a means of supporting the workforce in low-resource settings, most data on task sharing relate to non-anaesthetic healthcare contexts. The aim of this study was to understand anaesthetic task sharing as currently experienced and/or envisaged by non-physician anaesthesia providers in Zambia and Somaliland.

**Methods** An exploratory qualitative research methodology was used. Participants were recruited initially via contacts of the research team, then through snowballing using a purposive sampling strategy. There were 13 participants: 7 from Somaliland and 6 from Zambia. Semistructured interviews took place synchronously, then were recorded, anonymised, transcribed and analysed thematically. Triangulation and respondents' validation were used to maximise data validity.

**Results** Four major themes were identified in relation to task sharing practices: (1) participants recognised variable components of task sharing in their practice; (2) access to task sharing depends both on sources and resources; (3) implicit barriers may inhibit task sharing practices; (4) there is an appetite among participants for amelioration of current task sharing practices.

**Conclusions** Empowering task sharing practices can be achieved only by understanding how these practices work, by identifying gaps and areas of improvement, and by addressing them. The findings from this exploratory study could help the global community understand how anaesthetic task sharing in low-resource settings works and inspire further research on the field. This could inform future modelling of workforce planning strategies in low-resource settings to maximise the effectiveness and professional well-being of the workforce.

## INTRODUCTION

The 68th World Health Assembly, in 2015, highlighted the role of surgical and anaesthesia care as part of the universal health

## STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ We conducted semistructured interviews for in-depth exploration of participants' perceptions regarding task sharing practices.
- ⇒ Online interviews had the advantage of being able to reach participants in different areas.
- ⇒ Transferability of the results is likely to be limited due to the small sample and the variation in health-care systems.
- ⇒ Interviewer/interviewee relationship prior to the study was difficult to establish which might have impaired interview fluency and data collection.

coverage and called for surgical and anaesthesia services strengthening. Acknowledging the healthcare staff shortage, the 68.15 resolution refers to task sharing, among others, as a more effective use of the healthcare workforce.<sup>1</sup>

Following this, the World Federation of Societies of Anaesthesiologists, recognising that in many countries anaesthesia might be provided by non-physician anaesthesia providers (NPAPs), emphasised that anaesthesia must be, wherever and whenever possible, provided, led or supervised by physician anaesthesia providers (PAPs).<sup>2</sup> The College of Anaesthesiologists of East, Central and Southern Africa, noting that NPAPs are filling the workforce gap in many low/middle-income countries (LMICs), fosters good working relationships with the allied health professionals.<sup>3</sup> In national levels, many countries have developed National Surgical Obstetric and Anaesthesia plans (NSOAPs) in their effort to strengthen their surgical system with task sharing being one of the proposed strategies to expand the anaesthesia workforce.

Task shifting,<sup>4–7</sup> defined by the WHO as 'the rational re-distribution of tasks among health workforce teams. Specific tasks are moved

from highly qualified health workers to health workers who have fewer qualifications in order to make more efficient use of the available human resources.’<sup>8</sup> is often used interchangeably with the term ‘task sharing’ but is not the same.<sup>4–7</sup> Authors using the term task sharing refer not only to the delegation of tasks from one professional cadre to another but also to a model of shared responsibility across cadres. This requires that specialist providers, or (where there are no specialists) more qualified individuals, be available to mentor, support and assist providers with less training, either locally or remotely.<sup>4–6 9</sup> More specifically in anaesthesia, ‘the non-specialist provider would ideally have the consultation of the specialist anaesthetist during complicated or unusual cases’.<sup>4</sup>

## BACKGROUND

The limited research into anaesthetic workforce in LMICs focuses mainly on quantity (number of providers)<sup>5–7</sup> and to a lesser extent quality (training programmes).<sup>10</sup> Where task sharing is mentioned, it is described as being related to one or more of the following practices: supervision, mentorship and support (help/advice-seeking) of NPAPs,<sup>4 11–13</sup> collaboration,<sup>14</sup> division of the workload<sup>9 11 12</sup> and existence of referral systems.<sup>9 12</sup>

While task sharing is increasingly proposed as an important strategy to increase the reach and safety of anaesthesia as well as a means of supporting the workforce in low-resource settings, most data on task sharing relate to non-anaesthetic healthcare contexts, which are significantly different from anaesthesia in the acuity and specific challenges encountered by its providers.

NPAPs are central to the anaesthetic workforce in LMICs<sup>2 5 15</sup> and can provide vital insight into whether and how task sharing practices are taking place. Nonetheless, to our knowledge, none of the existing literature on task sharing directly involves NPAPs in LMICs and how they perceive task sharing practices.

The aim of this study was to understand anaesthetic task sharing as currently experienced and/or envisaged by NPAPs in two specific LMICs’ context, Zambia and Somaliland. By taking account of two very different country contexts, we hope to add nuance to the understanding of task sharing in LMICs.

Zambia is a lower middle-income country in the south-central part of sub-Saharan Africa with an estimate population of 20 million in 2022.<sup>16</sup> It gained its independence from Britain in 1964.<sup>17</sup> Zambia has training programmes for both PAPs and NPAPs. In 2017, Zambia had 0.95 trained anaesthesia providers (APs) (PAPs and NPAPs) per 100 000 population, of which 74.7% were NPAPs.<sup>5</sup> Zambia was the first sub-Saharan country to create an NSOAP in 2017.<sup>18</sup> Inter alia, task sharing is acknowledged as an important component of the Zambian health workforce expansion. The NSOAP proposes to identify existing task sharing practices, formalise supervision and communication as well as develop reporting systems to facilitate task sharing.<sup>19</sup>

Somaliland is a low-income sub-Saharan country located in the Horn of Africa. In 1991, the Republic of Somaliland self-declared its independence from Somalia. Though Somaliland’s sovereignty has not been internationally recognised, it has an autonomous government and an estimated population of 5.7 million.<sup>20 21</sup> The first formal NPAP programme in Somaliland was launched in 2013.<sup>22</sup> At the time of this study, there were 3 PAPs (non-permanent)<sup>23</sup> and 47 trained APs with 1.2 APs per 100 000 population<sup>24</sup> working in the country. In 2023, Somaliland’s Ministry of Health Development organised a conference to plan their NSOAP.<sup>25</sup>

## Note on terminology

The terminology used to describe APs in LMICs varies widely. It includes PAPs and NPAPs. The NPAP workforce is an extremely heterogeneous group, ranging from healthcare workers who have received formal training to those who have been trained on the job.<sup>5 10</sup> Furthermore, depending on the country, many different cadres of NPAPs exist, such as nurse anaesthetists, clinical officer anaesthetists and anaesthetic technicians, among others.<sup>5</sup> In this study, we will use the abbreviation TS to refer to task sharing. When we refer to task shifting, we will use the whole term. We will use the term level 2 hospital to refer to district regional (DGH) and private hospitals of an equivalent level and level 3 hospital for tertiary referral hospitals.

## Reflexivity

We aimed to achieve a position of ‘empathic neutrality’, acknowledging that the research cannot be bias-free due to the researchers’ characteristics and preconceptions regarding the topic.<sup>26</sup>

In research partnerships between higher-income and lower-income settings, there is potential for unethical or extractive research to occur. We sought to establish reciprocally advantageous research relationships within the team of Zambia, Somaliland and UK-based researchers with mutual engagement in study conception through study design, data analysis and results dissemination. The composition of the research team, both PAPs and NPAPs from LMICs and high-income countries (HICs), has shaped both the questions being asked and the data analysis. The researchers from Zambia and Somaliland were able to bring context-familiar insights throughout the research process. The UK team members have varying experiences of working as anaesthetists in LMICs. Although some members of the research team lack direct experience of the challenges that NPAPs face in these countries, this could be an advantage as these members have not a formed opinion regarding anaesthesia care in these settings.

The purpose of the study (to understand TS as experienced by NPAPs) and the interviewer’s identity (white, female, physician anaesthetist in aHIC) and personal opinion (that NPAPs’ insight is vital for conceptualisation of TS in anaesthesia in LMICs which in turn could

strengthen TS practices) were known to the participants which could have influenced their responses. Finally, the language used by the interviewer might have directed the interview and the data that emerged from it.

## METHODOLOGY

### Study design

A qualitative research methodology, using one-to-one semistructured interviews, was used to understand anaesthetic TS as experienced and envisaged by the participants, NPAPs, in two LMICs: Zambia and Somaliland. A generic topic guide (online supplemental material 1) was developed with the contribution of all the members of the research team. Although it was not piloted in advance, clarity and context relevance was checked by our NPAP co-researchers.

The Consolidated criteria for Reporting Qualitative research checklist<sup>27</sup> was used to guide reporting of this study (online supplemental material 2).

### Sampling

The study population was NPAPs currently working in either Zambia or Somaliland able and willing to conduct an online interview in English. We did not have any exclusion criteria as long as the inclusion criteria were met. The initial recruitment of participants took place via contacts of the research team. Further sampling was through snowballing<sup>28</sup> via recruited participants incorporating a purposive strategy to achieve representation of both genders, both rural and urban settings, a range of different professional backgrounds and of years of professional experience. We planned to recruit between 6 and 10 participants from each country.

### Data collection and management

All interviews were conducted online synchronously through WhatsApp calls by the same researcher (KIK), in English. Participation was voluntary throughout the project and full informed consent (written or verbal—audio recorded) was given by all participants. Ethical approval for the study was granted as detailed at the end of this paper.

Interviews were audio-recorded with participants' consent, with manual notes taken contemporaneously except for one interview during which the interviewer took only manual notes according to that participant's preference. At the end of the interview, participants were given the option to review the transcript of their interview and were asked if we could approach them for follow-up discussion. Audio-recordings were then anonymised and subsequently transcribed by the interviewer. Data have been stored securely in line with Oxford University's research data management guidelines.

### Data analysis and validity

Data analysis was done using Microsoft Excel/Word and manual notes. Following familiarisation with the data, a

first round of initial coding was applied to all transcripts by each of the six members of the team individually. Initial codes were then reviewed, compared and agreed among the researchers. By such a method, group codes were developed and refined. Coding was inductive as there are no predefined theories to draw from in the specific field. Thematic analysis was used to identify relevant concepts to model the experience of NPAPs with regard to TS.

We used triangulation and respondents' validation to maximise the validity of our data.<sup>29</sup> Triangulation was achieved through the participation of multiple analysts, who each independently analysed the same qualitative data and then compared their findings.<sup>30</sup> Respondent validation took place through online discussions, in which the participants were presented the findings of the study and were given the opportunity to provide feedback prior to dissemination.

### Patient and public involvement

Patients and the public were not involved in the design or conduct of this research.

## RESULTS

### Background information

In total, 14 potential participants approached the interviewer (by text) of whom 13 proceeded with the interview: 7 from Somaliland and 6 from Zambia. The participant who did not proceed with the interview did not provide a reason. All interviews were conducted from the interviewer's home while participants chose their location. No one else was present during the interviews. Median interview duration was 40 min.

All participants reviewed the transcript of their interview. There were no amendments and no interviews were repeated. 12 out of the 13 participants agreed to be contacted again after the data analysis to discuss the results with a response rate of 100%, and they all agreed with the findings.

Participant demographics are shown in [table 1](#) by country; professional background, training and years of professional experience are demonstrated in [table 2](#), while the level of hospital where they are working and its distance from a referral hospital are presented in [table 3](#).

**Table 1** Participants demographics by country

Country	Zambia	Somaliland
Number of participants	6	7
Gender		
Male	3	4
Female	3	3
Age groups		
25–29	0	2
30–39	4	5
>40	2	0

**Table 2** Participants professional background and experience

Country	Zambia	Somaliland
Formal training programme	6	6
Trained on the job	0	1
Professional background	Nursing 5 Clinical officer 1	Nursing 6 Nursing/midwife 1
Years of professional experience		
<5	4	2
6–10	1	5
>10	1	0

In Zambia, two of the six hospitals where participants worked had PAPs, while in Somaliland, only one of the hospitals where participants worked had a non-permanent PAP.

### Themes

TS practices were recognised by participants in both countries. There were many similarities in how participants see TS practices despite the different working contexts. Where differences emerged, these are featured. The selected quotations highlight the summary points presented. Quotes are anonymous with country (Z for Zambia and S for Somaliland) and interview number given in brackets.

The following themes were identified in relation to TS practices (figure 1).

### Theme 1: providers recognised variable components of TS in their practice such as workload division, referral systems and support systems

#### Workload division

The majority of the NPAPs interviewed were either working in more than one hospital (4 out of 13) or had more than one responsibility in the same hospital (consultations, management, anaesthetic aspects of care out of theatres, other clinics, supervising students) (9 out of 13).

The workload varied between participants interviewed and was attributed mainly to the number of NPAPs working in the hospital. Outside level 3 hospitals, participants reported that their job could be quite challenging and stressful especially with regard to the workload (shortage

of staff, people feeling overwhelmed and discouraged, more than one role/job) as well as the isolation (working alone). Nonetheless, for many participants, anaesthesia is a very rewarding job with references to patients' well being, pride in what they are doing and a community of practice.

The work here is critical because you work alone, every time alone. (S6)

It's quite challenging. Most of them are actually discouraged. When you look at the workload that is there for us it is very huge the responsibilities are far beyond...Me personally I love what I do, I have the passion for what I do. (Z6)

### Referral systems

Participants reported that patient referrals between hospitals were primarily driven by lack of surgical specialties and/or anticipated need for intensive care postoperatively.

The reason for referring in most cases is from the surgical aspect, not because of anaesthesia. (Z2)

If we have a doctor who can do it you don't have to refer. Because we are trained, we know there is no other place better than us to be to give anaesthesia as safe as we do. (S5)

In Somaliland, participants described no involvement of NPAPs in the referral process, whereas Zambian participants described joint decision-making regarding referrals, usually after consulting with management and/or the seniors/PAPs.

When we sent someone to another hospital the doctors [surgeons] sent them. Anaesthesia does not send. We don't send difficult cases for anaesthesia, we do it. Sometimes they sent critical cases, they sent to hospitals with higher ICU [intensive care unit]. (S2)

The second on-call or those who are seniors consent and then the doctor who knows the system they will communicate to the hospital. (Z6)

### Support systems

Support can include routine clinical assistance in theatre, additional help in emergencies and non-emergent consultation among others.

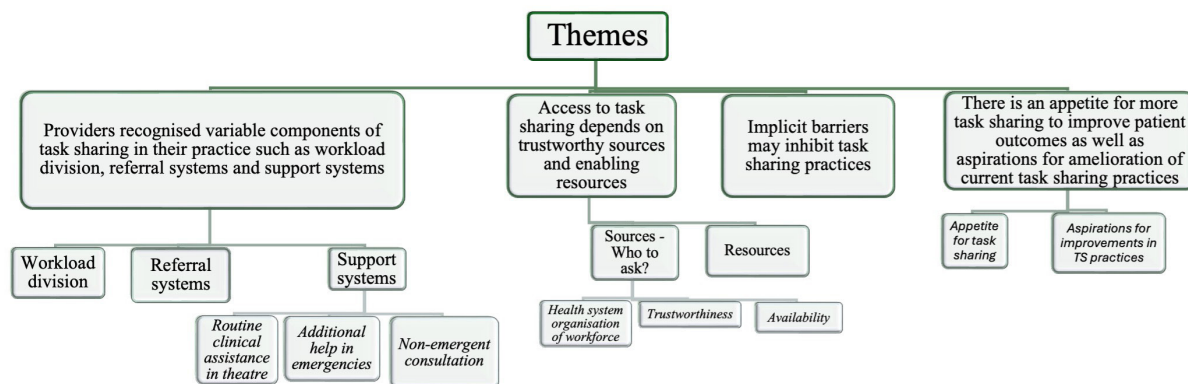
#### Routine clinical assistance in theatre

With regard to clinical (hands-on) assistance, none of the 13 hospitals where the NPAPs interviewed work did they have an assigned assistant for anaesthesia. Yet, participants reported that there was always someone to assist informally, through use of ad hoc arrangements with other professional groups (porters, theatre staff, doctors, AP students). These ad hoc systems were dependent on interprofessional relationships and in some cases, on informal but proactive training in advance by the AP in anticipation of the need.

**Table 3** Hospital level and distance from referral hospital

Country	Zambia	Somaliland
Hospital level	Level 3: 1 Level 2: 5	Level 3: 1 Level 2: 6
Distance/time of regional hospitals from referral hospital	<1 hour: 1 2–4 hours: 3 >5 hours: 1	<1 hour: 2 2–4 hours: 3 >5 hours: 1





**Figure 1** Themes. TS, task sharing.

The hospital only has one anaesthetic porter. So it's difficult to have him ready available when you need him. So usually for assistance we depend on the members of the team that are available. Sometimes we ask the doctors to assist, sometimes we ask the students if they are available, sometimes the nurses themselves come in to help. (Z1)

Assistant no. But when you are doing anaesthesia the two of us who is the nurse anaesthetist help each other. You can get medical doctors and there is also medical students so you can get help. Even the surgeon can help you. (S4)

We have some students that we are training now. Before we don't have that one. So only you will be alone to do anaesthesia. If you see this is too much for you, you can call for help otherwise you will do yourself. But we have some, our doctors, they can help you and they know what you need. We teach them, our doctors. (S5)

#### *Additional help in emergencies*

Participants universally reported having back-up systems in place for challenging emergency cases. Some systems were formalised (by rota), others were informal, but still felt to be robust by participants. Whichever the case is, there is a feeling of common identity and support, a sense of being part of a professional team.

During the day if the one working is overwhelmed, there are many cases, the one who is night is called to come and help (and vice versa). (Z3)

But if you need backup, all of us we are backup ... We don't have the same distance from the hospital. So we call first who are closer. If I find them ok. But if you don't find them we call others. (S5)

#### *Non-emergent consultation*

Having clinical assistance and back-up systems for emergencies is invaluable, but most of the NPAPs interviewed felt that it was also important to have someone to consult when confronted with challenging or unusual cases. This could be someone more senior, or with a higher level of training (PAP), or could be a colleague.

It is important for the patient, for the safety of the patient. It is important to have someone to consult, to help with each other. (S2)

It is very important because there are times when it is really difficult to make a decision. But when you put two minds together you find a common base on which to proceed with a case. (Z1)

I discuss the cases with my colleague before we even start the surgery and if we feel we need to consult further then we also call the doctor at the referral hospital. (Z4)

### **Theme 2: access to TS depends on trustworthy sources and enabling resources**

Access to support systems was reported as dependent both on 'sources' and 'resources', where 'sources' are the individuals asked for consultation/advice, and 'resources' are the means by which support is accessed (including but not limited to aspects of the health systems in place). In many cases, 'source' and 'resource' were viewed as interconnected.

#### **Sources: who to ask?**

Who they will consult (colleagues, classmates, teachers, PAPs) depended on the wider health system organisation of workforce as well as factors as trustworthiness and availability of the source.

#### *Health system organisation of workforce*

Participants' access to PAPs in particular appears to depend on the wider health system organisation of workforce: participants within hospitals with a PAP, or with a formal referral hospital or regional PAP, would generally access that PAP. In areas without regional PAPs, access to support was much more dependent on prior relationships with NPAP colleagues and previous teachers.

There is a doctor anaesthetist at the referral hospital who I do consult time and again. Whenever I have a difficult case or when I want to refer a patient... If we feel we need to consult further then we also call the doctor at the referral hospital. (Z4)

If I need any consultation from the anaesthesia sometimes I call my teacher, who teach me the anaesthesia. He lives in different country but I have his contact. He's all the time I feel free to call him. (S3)

### Trustworthiness

In either case, the value of personal relationships regarding who to consult was universally acknowledged. Most participants knew the person they ask for advice, having either met or worked together in the past; there is an element of trust. Seniority/experience is another factor affecting who they will consult.

I used to work in another hospital and they have friends, classmates, my seniors who graduated before me. I discuss with them and if I need any consultation from the anaesthesia sometimes I call my teacher, who teach me the anaesthesia. He lives in different country but I have his contact. He's all the time I feel free to call him. (S3)

It is based on you. You call basically the person that you feel can help you ... At my place I have never worked with an anaesthesiologist, I just call him because I have met him at some workshop. So if they can be coming, we work together, because if I work with you it will be very easy for me to call you when I have a problem. (Z3)

My friends some work there more than 10 years. That's why I am calling him. That man maybe he is senior. That man I will call. Maybe 3–4 men work more than 10 years and why I ask that guys. (S1)

### Availability

Availability seems to be another factor facilitating the decision of who to consult.

Some of the senior anaesthetist are always readily available, sometimes you even call them if they are home and discuss over the phone ... I am happy with the way things are at our hospital ... they are always reachable and always ready to assist. (Z1)

He is almost always readily available, so I like calling him for any help. (Z5)

### Resources

Resources include 'means' that make support easier to get. They are not specific to the person but systems in place and/or general facilitators such as social media platforms. Most participants reported consultations by phone. There is a national WhatsApp group (for both NPAPs and PAPs) in Zambia. Participants varied in their view of the usefulness of this group for consultations in emergency cases.

We have our teachers. So we call them or we text and they will tell us what we can do. (S5)

We have various social media platforms where we are interacting with the physicians, the seniors and so on. So they just need to break the barrier and reach

out to those because they have their phone numbers, they have their names, they know where they are found ... The idea is they want people to be free to communicate. So the group was created for sharing of experiences. If you had a difficult case, you had an interesting case, you share the experience with the group. You can even consult actually on the group. (Z1)

I don't see it to be of great help. We are very few and we are overwhelmed. So the time that you get a phone and start checking on WhatsApp you find that someone was asking for help but maybe an hour has even passed. (Z5)

### Theme 3: implicit barriers may inhibit TS practices

Participants implicitly acknowledged the presence of hurdles in asking for advice, including feeling powerless, pride and weakness, among others.

In this field it is not about knowing everything, it is not about pride. It is about consultation and teamwork. (Z2)

Don't be afraid to ask someone and don't be scared to say I don't know. (S3)

Colleague consultation is not a weakness but you are aiming at helping a patient. So if your consultation is going to help the patient why not do it? So I encourage my colleagues to consult more with our senior people. (Z3)

### Theme 4: there is an appetite for more TS to improve patient outcomes as well as aspirations for amelioration of current TS practices

#### Appetite for TS

The value of TS to improve clinical outcomes was universally acknowledged by participants. Cross-cadre working including ready access to physician providers was particularly welcomed with regard to patients' well-being. There was also a strong wish among NPAPs for physical/in-person support and seniors/PAPs visiting the district hospitals and working together.

It is important for the patient, for the safety of the patient. (S2)

We need someone who are experienced. Not only for difficult cases to be discussed with them, but we need to have continuing education. (S5)

They [PAPs] are more experienced, sometimes they have handled those cases before. The outcome is usually great when you have opinions based on that case. (Z6)

I want to discuss, it's something good that make my job better. (S6)

It is very important that we call people that are experienced to consult them about a difficult case. But more importantly, it was going to be better if you were

there, you do that difficult case together. That would be ideal. (Z3)

### Aspirations for improvements in TS practices

Several ideas were suggested by NPAPs themselves which could facilitate TS practices relating to both sources and resources. Source-focused aspirations included increasing manpower (both NPAPs and PAPs), having more seniors/PAPs available for mentoring/discussing difficult cases, and reinforcing/establishing personal relationships by seniors/PAPs visiting DGH and working with NPAPs regularly. Resource-based suggestions included the empowerment of NPAPs by access to learning and training opportunities, regular meetings to discuss difficult cases, phone lines to call for help and centralised platforms/forums in each province for discussion (smaller groups rather than one national group).

More numbers of anaesthesiologists, more access. I told you we just have a regional one, suppose he is not picking. Numbers which is shared to each facility, whenever someone has a problem they can call. Also it can help if we have anaesthesiologists from time to time they go in these hospitals work with these anaesthetists. Once you have that relationship with them it will be easier for you to call them. (Z3)

Platform where we can be discussing such cases with doctor anaesthetist and also maybe having them visit these district hospitals maybe for mentorship... Regional or national conferences, meetings where we can discuss difficult cases. An interactive forum where we discuss cases and see how best we can move on or improve. (Z4)

To have more people to ask or to discuss and training, continuing training ... You need anaesthesia policy, national policy ... Every region in Somaliland, 6 regions, one anaesthesiologist doctor. They take responsibility, they talk if you have problem in government. Because this is doctor, there is more powerful. (S6)

## DISCUSSION

In recent years, the concept of TS has gained significant attention as a means of increasing the reach and safety of anaesthesia as well as a means of supporting the anaesthetic workforce in LMICs. Yet, relatively little work has described what TS in anaesthesia looks like in practice. The aim of this exploratory qualitative research was to understand anaesthetic TS as currently experienced and/or envisaged by NPAPs in two specific LMICs' context, Zambia and Somaliland.

It is clear from our study that participants recognised different elements of TS in their practice including support,<sup>4 12</sup> referral systems<sup>4 9</sup> and workload,<sup>11 12</sup> which will now be considered in turn.

The significance of interprofessional relationships on TS practices and especially the advice-seeking element

of support (who to consult) was universally acknowledged in our study. This is consistent with the findings of Edgcombe *et al*<sup>12</sup> who interviewed NPAPs and PAPs in three sub-Saharan countries and described how relationships built during training programmes influence subsequent help-seeking. It is also consistent with the finding in our study of participants' aspiration for increased face-to-face contact with PAPs/senior colleagues in order to reinforce personal relationships which in turn could ease advice-seeking.

Although the relevance of interprofessional relationships to TS appears to be a universal finding in our study, there are important contextual differences. Whereas the Zambian cohort described structures which identify available PAPs for consultation (either in the hospital or in the region), in Somaliland, this was not found to be the case and consultation relied almost entirely on personal relationships generally formed during training programmes. However, in both contexts, participants preferred to consult someone who they knew personally rather than someone they did not know.

Structured referral systems are an essential element of TS<sup>4</sup> and of any healthcare system.<sup>9</sup> The differences in the wider healthcare system organisation and more specifically the presence of PAPs could explain the diverse involvement of NPAPs in the two countries in the referral process. It is unknown what the clinical impacts of this are and whether increasing PAP involvement would increase the robustness of the referral system. Furthermore, it is interesting that participants in Somaliland perceive referral for critical care purposes as outside the anaesthesia role. This of course may be explained by the varying involvement of anaesthetists in critical care between countries.

It is already recognised that a manageable workload is key to an effective anaesthesia workforce in LMICs.<sup>11</sup> In our study, workload concerns were expressed mainly by participants working outside level 3 hospitals. These were unsurprisingly related to the number of NPAPs working in the hospital and appeared to be linked with a sense of isolation which is consistent with what has been cited in other studies.<sup>4 12</sup>

This exploratory study opens up potential avenues for further research and policy development. It is clear that there is a strong appetite among participants to strengthen TS practices. Their aspirations for increasing manpower, more seniors/PAPs for support and the importance of personal relationships to facilitate TS are consistent with the limited existing literature<sup>4 11 12</sup> and suggest potential areas of research focus to inform policy development at regional or national levels.

## LIMITATIONS

The design of this study allowed for a relatively small sample: between 6 and 10 participants from each country were planned as a pragmatic choice due to resource constraints. We mitigated the impact of this on



generalisability by using purposive strategies to identify participants from different contexts and different demographics, to maximise the breadth and richness of data collected. Although we did not use a formal data saturation methodology, we note that data analysis of the final interviews revealed no new emergent themes giving us some confidence that we were close to data saturation.

We also recognise that collecting data via synchronous online interviews meant that an interviewer/interviewee relationship prior to the study was difficult to establish. Furthermore, English is neither the interviewers' nor the participants' primary language, which might have potentially affected comprehension, and connectivity problems/restrictions in some cases might have impaired interview fluency. However, synchronous online interviewing was the only realistic data collection method at the time of the study design due to travel restrictions (pandemic). Online interviews had the advantage of being able to reach participants in different areas in the two countries as well as allowing participants to undertake the interview at a place and time convenient for them.

## CONCLUSIONS

The potential benefits of TS practices to improve patient safety and workforce's well-being are considerable. Empowering TS practices can be achieved only by understanding how these practices work, by identifying gaps and areas of improvement, and by addressing them. NPAPs are a critical component of the anaesthetic workforce in LMICs and can provide valuable insights into the challenges around TS practices as well as recommendations to ensure that TS practices are successful. The findings from this exploratory study could help the global community understand how TS in anaesthetics in low-resource settings work and inspire further research on the field, which in return can inform future modelling of workforce planning strategies in low-resource settings to maximise the effectiveness and professional well-being of the workforce.

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**Patient consent for publication** Not applicable.

**Ethics approval** This study involves human participants and was approved by the following: (1) University of Oxford Tropical Research Ethics Committee (OXTREC; reference no: 547-212); (2) University of Zambia Biomedical Research Ethics

Committee (UNZABREC; reference no: 1893-2021); (3) Somaliland does not have a National Institutional Review Board. A letter of approval was obtained from the Somaliland Ministry of Health Development (reference no: MOHD/VM:3/71/20214). The study has also been registered with the Zambia National Health Research Authority (reference no: NHRA000014/28/10/2021). Participants gave informed consent to participate in the study before taking part.

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**Data availability statement** All data relevant to the study are included in the article or uploaded as supplemental information. Original interview recordings and transcripts cannot be made openly available in order to preserve participants' anonymity.

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## REFERENCES

- 1 World Health Assembly. 68th Meeting. WHA 68.15. Strengthening Emergency and Essential Surgical Care and Anaesthesia as a Component of Universal Health Coverage. Geneva: World Health Assembly, 2015. Available: [https://apps.who.int/gb/ebwha/pdf\\_files/WHA68/A68\\_R15-en.pdf](https://apps.who.int/gb/ebwha/pdf_files/WHA68/A68_R15-en.pdf) [accessed 22 Jan 2024].
- 2 WFSA Universal Health Coverage statement, Available: <https://wfsahq.org/news/latest-news/wfsa-releases-position-statement-on-anaesthesiology-and-universal-health-coverage-uhc/> [Accessed 22 Jan 2024].
- 3 CANECSA Strategic Plan 2021-2024, Available: <https://canecs.org/resource/> [Accessed 22 Jan 2024].
- 4 Meara JG, Leather AJM, Hagander L, et al. Global surgery 2030: evidence and solutions for achieving health, welfare, and economic development. *Lancet* 2015;386:569-624.
- 5 Kempthorne P, Morris WW, Mellin-Olsen J, et al. The WFSA global anesthesia workforce survey. *Anesth Analg* 2017;125:981-90.
- 6 Atiyeh BS, Gunn SWA, Hayek SN. Provision of essential surgery in remote and rural areas of developed as well as low and middle income countries. *Int J Surg* 2010;8:581-5.
- 7 Federspiel F, Mukhopadhyay S, Milsom PJ, et al. Global surgical, obstetric, and anesthetic task shifting: A systematic literature review. *Surgery* 2018;164:553-8.
- 8 World Health Organization. Task Shifting: Rational Redistribution of Tasks among Health Workforce Teams: Global Recommendations and Guidelines. Geneva: World Health Organization, 2008. Available: [https://www.who.int/workforcealliance/knowledge/resources/taskshifting\\_guidelines/en/](https://www.who.int/workforcealliance/knowledge/resources/taskshifting_guidelines/en/)
- 9 Smith M. Is task sharing preferred to task shifting in the provision of safe surgical care. *Surgery* 2018;164:559-60.
- 10 Law TJ, Bulamba F, Ochieng JP, et al. Anesthesia provider training and practice models: a survey of Africa. *Anesth Analg* 2019;129:839-46.
- 11 Kudsk-Iversen S, Shamambo N, Bould MD. Strengthening the anesthesia workforce in low- and middle-income countries. *Anesthesia & Analgesia* 2018;126:1291-7.
- 12 Edgcombe H, Baxter LS, Kudsk-Iversen S, et al. Training non-physician anaesthetists in Sub-Saharan Africa: a qualitative investigation of providers' perspectives. *BMJ Open* 2019;9:e026218.
- 13 Igaga EN, Sendagire C, Ayebale ET. Task sharing in global anesthesia and surgery: workforce concerns. *Curr Anesthesiol Rep* 2021;11:59-63.



- 14 Orkin A, Rao S, Venugopal J, *et al.* Conceptual framework for task shifting and task sharing: an international delphi study. *In Review* [Preprint] 2020.
- 15 Workforce map (Internet). WFSA; 2021. Available: <https://wfsahq.org/resources/workforce-map/>
- 16 The World Bank. Data. Zambia, Available: <https://data.worldbank.org/country/ZM>
- 17 Republic of Zambia Central Statistical Office. Zambia in figures, 2018. Available: <https://acazambia.org/wp-content/uploads/2019/09/Zambia-in-Figure-2018.pdf> [Accessed 19 Jan 2024].
- 18 World Federation of Societies of Anaesthesiologists. National Surgical, Obstetric and Anaesthesia Plans (NSOPAs), Available: <https://wfsahq.org/our-work/advocacy/national-anaesthesia-plans/> [Accessed 19 Jan 2024].
- 19 Ministry of health. National surgical, obstetric and anaesthesia strategic plan (NSOAP) year 2017-2021, Available: [https://www.pgssc.org/\\_files/ugd/d9a674\\_70f6813fe4e74c4d99eb028336a38745.pdf](https://www.pgssc.org/_files/ugd/d9a674_70f6813fe4e74c4d99eb028336a38745.pdf) [Accessed 19 Jan 2024].
- 20 Somaliland Profile. BBC News, 2024. Available: <https://www.bbc.co.uk/news/world-africa-14115069> [Accessed 19 Jan 2024].
- 21 Somaliland in figures. Available: <https://slmof.org/wp-content/uploads/2023/05/SOMALILAND-IN-FIGURES-2021.pdf> [Accessed 19 Jan 2024].
- 22 Sund G. A brief history of anesthesia in Somaliland. *Anesth Analg* 2023;137:248–50.
- 23 Dahir S, Cotache-Condor CF, Concepcion T, *et al.* Interpreting the lancet surgical indicators in Somaliland: a cross-sectional study. *BMJ Open* 2020;10:e042968.
- 24 Concepcion TL, Smith ER, Mohamed M, *et al.* Provision of surgical care for children across Somaliland: challenges and policy guidance. *World J Surg* 2019;43:2934–44.
- 25 Republic of Somaliland Ministry of Health Development. MOHHD organised National Surgical Obstetric and Anaesthesia Plan for 2022-2030, Available: <https://somalilandmohd.com/mohd-organized-national-surgical-obstetric-and-anesthesia-plan-for-2022-2030/> [Accessed 19 Jan 2024].
- 26 Ormston R, Spencer L, Barnard M, *et al.* The Foundations of Qualitative Research. In: *Qualitative Research Practice: A Guide for Social Science Students and Researchers* Sage. London, 2014:1–23.
- 27 Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care* 2007;19:349–57.
- 28 Ritchie J, Lewis J, Ellam G, *et al.* Designing and Selecting Samples. In: *Qualitative Research Practice: A Guide for Social Science Students and Researchers* Sage. London, 2014:129.
- 29 Lewis J, Ritchie J, Ormston R, *et al.* Generalising from Qualitative Research. In: *Qualitative Research Practice: A Guide for Social Science Students and Researchers* Sage. London, 2014:358–9.
- 30 Ritchie J, Lewis J, Elam G, *et al.* Designing and Selecting Samples. In: *Qualitative Research Practice: A Guide for Social Science Students and Researchers* Sage. London, 2014:117–9.