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Understanding the Barriers to Task Sharing in Caesarean Section Delivery by Assistant Medical Officers

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Abstract

Background

Shortage of skilled human resources for health necessitated task sharing in developing countries. Demand for advanced clinical work in Tanzania necessitated training of Assistant Medical Officers (AMOs) cadre which fitted between Clinical Officer (CO) and Medical Doctors (MD) responsibilities. Practically, AMO executed responsibilities intended primarily to MDs at district health services including performance of Caesarean Section (CS). While their work is significant, scholars and practitioners raised concern on AMO performance of CS. This paper aimed to analyse barriers to implementing task sharing in CS delivery by practising AMOs and those in managerial positions.

Methods

An explorative case study design was carried out in four different zones to include one district in each of selected zones. The districts studied included Handeni, Kasulu, Kilombero, and Masasi. In-depth interview guide exploring barriers to implementing task sharing in CS was used to interview 18 AMOs in clinical and managerial roles. A Hybrid thematic approach was used to analyse collected data.

Findings

Five themes emerged illustrating barriers to task sharing in CS by AMO. These included unstructured internship programme, unorganised licensing system, shortage of equipment and medical supplies, weak supervision of AMOs together with other cadres involved in task sharing and limited benefits after graduation.

Conclusion

The findings of this study underscore the fact that barriers limiting implementation of task sharing in CS delivery by AMOs may have potential to negatively influence the performance of this cadre. A comprehensive approach aiming to improve internship, professional regulation, mentorship and statutory benefits may provide conducive environment for AMOs to perform better in task sharing teams. Further, improvement in functional equipment and medical supplies in health facilities create enabling environment for AMOs to perform CS as part of task sharing.

Keywords: *AMO, Barriers of implementation, Task sharing, Caesarean section, Health workforce, Health services.*

Introduction

The post-independence health systems in most Sub-Saharan African countries have been characterized by a chronic shortage of skilled health workforce (1,2). To ease the burden of the shortage of highly skilled health workforce, many countries embarked on task shifting that was later renamed task sharing. The World Health Organization (WHO) defined task sharing as the 'rational' redistribution of tasks among health workforce teams (3). Task sharing involves delegation of some delineated tasks to newly created cadres of health workers who receive specific competency-based training for efficient use of available human and ease bottlenecks in service delivery (3). Across different nations, task sharing especially with surgical interventions creates lifesaving window to both mother and fetus due to emergency conditions during pregnancy (4).

From the 1930s to the 1960s, Tanganyika and later Tanzania made a health policy decision to train lower-level cadres of clinical practitioners as means to respond to acute shortage of Medical Doctors (MDs). The cadres were Medical Assistants, now called Clinical Officers (COs) and a cadre below the Medical Assistants, the Rural Medical Aides now referred to as Assistant Clinical Officers (ACOs). The aim of training these cadres was the country's endeavor to increase access and equitable services to all people, especially in the rural areas. Thus, these low and middle-level cadres were deployed in the rural areas where concomitantly Primary Health Care (PHC) facilities were constructed for provision of Primary Health Care. It was then realized that to cater for more advanced clinical work, there was a need to train a more advanced cadre between the CO and the MD. Therefore, Tanganyika started training of Assistant Medical Officers (AMOs) in 1963 (5).

An AMO is a Clinical Officer who has worked for not less three years and has undergone training for two years in recognized AMO training College. Most of these Colleges are managed and supervised by the Ministry of Health. Currently, three of the colleges are managed by faith-based Organizations (FBOs). After completion of the training, they are awarded an Advanced Diploma in Clinical Medicine. In this regard, if we use the current WHO proposed terminologies they qualify to be senior Associate Clinicians (6). This locally trained cadre was deployed in health care system mainly in rural areas- including rural districts hospitals and lower-level facilities such as Health Centres (HC). As of 2015, there were seven AMO training Colleges which are Kilimanjaro Christian Medical College (KCMC), Bugando Medical Centre, Mbeya, Tanga, Tanzania Training Centre for International Health (TTCIH)-Ifakara, Seliani Lutheran and Lugalo Military Medical School.

An AMO is prepared to carry out those duties which were primarily supposed to be carried out by MDs at the district level. This happens due to the critical shortage of MDs, urbanization of MDs and the longer-time training required to produce MDs (7–9). With this milieu, AMOs are expected to take full responsibility for all aspects of patients' management including performing surgeries, managing obstetric complications and other responsibilities (5). A survey done in Mwanza and Kigoma regions, which represent the Lake and Western geographical zones in Tanzania showed that over 85% of Caesarean Sections (CS) and a high proportion of other obstetric surgeries in the rural districts in Tanzania are performed by AMOs (10).

Within a contemporary health system of Tanzania, task sharing demand AMOs to perform CS deliveries together with other roles which are similarly performed by MDs (5). Despite AMOs being expected to have acquired adequate clinical and surgical skills during their training, scholars and other medical practitioners have raised concerns about the performance of CS by AMOs (11). The practice and experience of AMOs concerning the specific tasks of performing CS include; their need for supportive supervision, referral practices and skill mix for the surgical team is reported to suffer from many barriers (12). Whereas most previous studies in this area were focused on training of AMOs and their roles in task sharing teams particularly in performing CS, little is known about barriers of implementing task sharing in CS delivery in Tanzania (5,12,13). This study, therefore, aimed at analysing barriers of implementing task sharing in CS delivery by AMOs, seven decades since its introduction in Tanzania from AMOs perspectives.

Materials and Methods

We conducted a qualitative study at four different districts located in four zones with both rural and urban characteristics. Since the performance of the CS by AMO is an existent event which encompasses social processes, we employed an explorative qualitative case study design (14).

Study context categorised

Tanzania is administratively categorized into seven zones including; Northern, Eastern, Central, Western, Lake, Southern highlands and Southern zones. Practically, the zones of Central, Western and Southern are regarded to be in more rural setting of the country. Tanzania has six cities, two are in the northern zone and others in Eastern, Central, Lake and Southern highland zones. Dar es Salaam, the largest commercial city that has the largest health workforce in the country is located in the Eastern zone.

This study was operationalized in districts with predominantly rural, but some urban characteristics including Handeni, Kasulu, Kilombero, and Masasi that are found in zones namely Northern, Western, Eastern and Southern in that order. Further, one retired AMO who worked across different levels of Tanzanian health system was interviewed in Dar es Salaam. Purposive sampling was used to select four of 7 zones including a zone with mostly dominant rural features, a zone with an AMO school owned jointly by government and non-profit organisation, a zone with an AMO school that is fully owned by government and a zone without AMO school but with CS above national average. For each zone, one district with both urban and rural characteristics was included in the study. Further, selection of zones with AMO schools purposively considered one AMO school located in urban and other in relatively rural area. Notably, although predominantly rural, each zone each included urban centres, and one of the two selected AMO schools was located in an urban center within the Northern zone. Lastly, the zones were purposely selected because their CS had rates were either above or below the national average (12). The purposive selection of zones and districts aimed to capture diversity of information across different setting in which AMO were practising to provide rich and detailed information for this study.

Study population

Participants of this study were AMOs working as clinicians and in managerial positions at the district hospital and selected health centres that provided comprehensive obstetric and newborn care. In addition, one retired AMO who had long experience working as a clinician and served in different managerial levels was included in this study (Table1). Participants who had worked in managerial positions served as either facility in-charges, member of Council Health Management Team (CHMT), District Medical Officers (DMO) or retired AMO, see Table 1.

Table 1: Classifications of the AMO who participated in this study

Study participants	Number	Study participants	Number
District Medical Officers	04	Practicing AMOs	09
Medical Officers In-charge	04	Retired AMO	01

Sampling strategy

The purposive sampling strategy was employed to recruit practicing AMOs based on their managerial positions and working experience. Prior to field work, the information on AMOs was sought from the Ministry of health and AMOs medical association. This was further

confirmed and discussed with selected district health authorities upon arriving in those districts for data collection and subsequently contacting participants for consent and setting of appointments. The participants were AMOs in managerial positions, who served as district medical officers (DMOs) and health facility in-charges (MOI) in the selected districts. For practicing AMOs, all who have worked for less than five years were categorised as less experienced while those who have worked above five years were categorised as experienced in selected districts. Finally, a retired AMO who was later trained as MD and served in different managerial levels was invited to participate in the study (Table 1). This selection aimed at capturing a wide horizon of experience from different capacities. The selection of AMO from both managerial and clinical roles provided multilevel information on task sharing and CS delivery, which was later useful during axial coding in the analysis. The researchers built strong rapport with the respondents to create trust as well as a conducive environment to provide desired information.

Data collection

In-depth interviews were conducted by principal investigators and research assistants, until information saturation was achieved, making a total of eighteen in-depth interviews (15). Based on the literature regarding task sharing and AMOs training, the interview guide was developed to suit the context of our study (11,16–18). This was further refined through the study objectives which constituted the main study attributes. The information which was sought by question within the interview guide included barriers of implementing task sharing in CS delivery at the district level by AMOs. The in-depth interview guide included topics such as training, licensing, human resources, referral system, skill mix, professional association matters, infrastructure, and medical supplies, which were explored through questions supported by probes. The in-depth interview guides were developed in English and thereafter translated into Kiswahili language. They were flexible and revised in the course of data collection to include the new emergent themes to be included in subsequent interviews. Data collection was done for six months, from September 2016 to February 2017. Digital audio recorders were used to record interviews which were undertaken in a separate room away from earshot of other people. Time range for undertaking each interview was between 60 and 100 minutes.

Data management

To ensure data quality, we recruited and trained Research Assistants (RAs) who were fluent in both English and Kiswahili, had more than five years of experience in health systems

research, and public health, and were knowledgeable about the Tanzanian health system. The RAs were trained on research process, the objectives of the study, study tools and ethical considerations. Further, the Principal Investigators conducted most of the interviews while at the same time, the RAs were ensuring quality of recordings as well as writing notes. Interviews were conducted in Kiswahili language. Debriefing sessions to ensure consistency and quality work were conducted after each interview. This process enabled the researchers to map new development and issue to guide future interviews. Audio recordings and field notes were digitally stored by an appointed data manager and was only accessible to the research core team using a well designated password.

Data analysis

For all interviews, verbatim transcription was applied. All transcripts were translated from Kiswahili to English before the analysis. In order to ensure exactitude of the translation process, a thorough validation of original codes and quotes was undertaken by four experienced researchers before coding. All noticeable shortcomings were discussed in analysis meetings and fixed prior to the next stage.

A hybrid thematic analysis employing both inductive and deductive reasoning was employed for analysis (19). This approach provided more flexibility for analysis of data by incorporating pre- conceived idea from literature and other sources together with new emerging information from the data. This makes this approach more appropriate in exploring experiences of AMOs on barriers of implementing task sharing in CS delivery. Based on the study objectives, initial codebook was developed. The codebook was further refined using the themes which emerged from the analysis process. The use of both inductive and deductive approaches provided a room for researchers to comprehend barriers of implementing task sharing in CS delivery by AMOs at the district level in Tanzania while observing fidelity of analysis plan (19). Initial codebook was developed under the leadership of the Principal Investigator and thereafter shared to all other investigators for advanced scrutiny. The codebook was discussed and improved by the research team and thereafter imported to NVivo 11 computer analysis software for qualitative data analysis. Three investigators tested the improved codebook by coding three interview transcripts. The results of this testing process showed similar coding across the three investigators hence there was no need to further modify the codebook.

The process of coding was further pursued through coding meaningful units of texts to codes (nodes) which then represented that entire unit. Depending on the meaning carried by meaningful unit, coding was done more than once. Despite being guided by analysis plan, this process was not restricted to primary codes at this point. We used inductive coding to the

segments of text which denoted a new emerging theme. Further, newly established codes were either treated as separate code or merged to improve the initial established codebook. Through constant comparisons of similarities and differences, we arranged codes into categories which were then amalgamated into themes. Despite undertaking iterative analysis plan, it was paramount to further go back to the transcripts for more scrutiny. This process provided opportunity to identify, summarise, retain the patterns, similarities, differences as well as further ascertaining emerging themes. In cross-checking interpretation and reliability, coding was checked by fellow independent researchers. Finally, the sub-themes and themes were arranged in order which was backed by concise quotes for illustration of each respective theme.

Further, credibility was ensured by using member checking approach whereby researchers referred to the study participants to verify collected data. Collection of data included audio recording and field notes and a rich mix of AMOs' narrations ensured transferability and dependability. The research team bracketed all previous knowledge and common understanding on barriers of implementing task sharing in CS were set aside to ensure confirmability.

Ethics approval and consent to participate

Muhimbili University of Health and Allied Sciences Research and Ethical Review Committee provided ethical permit to conduct this study (Ref. No. 2015-06- 09/AEC/Vol. IX/103). Ministry of Health and the Ministry responsible with Regional Authorities and Local Government provided permission to conduct this study in selected areas. For each participant, an informed consent was solicited after receiving thorough details of the study. Prior to interview, participants were informed that their participation was voluntary and they were free to decline the process of interview at any time. Privacy of the participants was ensured by not using their names during the data collection. The names of health facilities were shielded avoid identification by people who were outside research team. Prior to audio recording, a permission was requested from the study participants to implement that process. All methods were conducted in accordance with relevant guidelines and regulations of the approval bodies, and adhered to the principles outlined in the Declaration of Helsinki.

Findings

We present findings from 18 in-depth interviews with AMOs, including 3 females and 15 male participants. The mean age of all study participants was 45.7 years. Their work experience as AMOs ranged from 3 to 25 years. While all of them hold an advanced diploma qualification,

which is a prerequisite for becoming an AMO, two have a master's degree in addition to the advanced diploma. Our presentation of findings is structured in five thematic areas that emerged from the barriers of implementing task sharing strategy in CS delivery by AMOs strategy seven decades' post-independence in Tanzania.

Table 2: Summary of the themes illustrating barriers of implementing task sharing strategy in CS delivery by AMOs

SN	THEME
1.	Lack of structured and uniform internship programme deny newly graduating AMOs the opportunity for developing practical clinical skills
2.	Unorganized, unfriendly licensing and relicensing systems pose a threat to the AMOs practice
3.	Erratic availability of medical equipment, medicines and medical supplies impair the performance of AMOs and thus hamper the realization of the task sharing strategy
4.	Lack of a strong supportive supervision system for both AMOs and other cadres which are crucial for task-sharing in services delivery
5.	Limited benefits after graduating as an AMO from being a CO act as a disincentive to join the training to potential AMO trainees

Theme 1: Lack of structured and uniform internship programme deny newly graduating AMO opportunity for developing practical clinical skills.

Lack of structured and uniform internship programme immediately after accomplishment of AMO training was reported to deny newly graduating AMOs the opportunities for developing clinical skills. Our findings show that, each council has its own arrangement for AMOs to work under supervision immediately after completion of studies. This is a transition period before being left to work independently. Our analysis reveals that, due to lack of uniformity across councils, time for internship varied from three to twelve months.

> *"… What they did, of course, they were given an orientation course. You know there is orientation and induction, yes so, they received the orientation course from the doctor in charge of the theatre. Meaning that in six months they were assigned to the theatre…"* (AMO in district health management position).

Although not structured, participants revealed that across the four zones under study, newly graduated AMOs were attached to seniors at the regional or district hospital for a period

ranging from 3 to 12 months before they are posted to work in districts or health centres. The aim of this system was stated as to supplement the clinical skills and orient them on guidelines and protocols for quality services provision.

> *"… when they arrive at our facility…. the main thing that we consider is the labour ward because that is where most emergency cases are found …. So, when they report for work …. they perform all activities as other doctors, but we do not put them on the on-call roster alone in a period of two to three months… So, during the day if there is a CS to be performed, they will attend with another experienced doctor until a point where you are confident that they can undertake the procedures on their own…."* (AMO in health facility management position).

Theme 2: Unorganized, unfriendly licensing and relicensing systems pose a threat to the AMOs practice.

Participants reported that the licensing and re-licensing procedures were not known forth hand to the AMOs. Every AMO upon graduation reported back to his/her working station and had to make their own initiatives to understand the procedures for licensing and registration for compliance. It is by law that every clinician has to possess a license that allows him/her to practice.

> *"…with regards to that issue, there was a day I was at the ministry, and I asked them how do I operate without a registration number? I was more surprised when they told me that I will be paying twenty thousand shillings…"* (Practicing AMO)

Participants stated that re-licensing was tied up to an annual subscription which is revised from time to time. During the data collection of this study annual subscription fees was 20,000 Tanzanian Shillings. AMOs who were interviewed in this study showed dissatisfaction with annual subscription requirement as it only focus on paying the subscriptions rather than skills acquired.

> "*…we thought once you get your registration number you will be recognized and there is no more paying, but the procedure is you have to pay annually…"* (Practicing AMO).

Furthermore, the participants stated that although the registration system was acceptable to the AMOs, the system of registration was not inclusive as majority of the AMOs perceived it as an order from higher authorities.

> *"…the procedure is acceptable because the order is from the ministry., So no one can resist…"* (Practicing AMO)

Theme 3: Erratic availability of medical equipment, medicines and medical supplies impair the performance of AMOs and thus hamper the realization of the task sharing strategy.

Participants in this study reported that the government policy on drugs and supplies is a barrier to effective delivery of health care services. In Tanzania supply of medical equipment, drugs and medical supplies is centrally done by the government Medical Store Department (MSD). On a few occasions, MSD may allow some other vendors to supply the medical equipment, drugs and supplies. Most of the time allowing other vendors do happen when MSD is out of stock of the required item.

Participants acknowledged that the supply of drugs, equipment and medical supplies through the MSD has reduced the cost of the drugs and supplies compared to if they were ordered through private bidders. However, most of the participants at the district level were not comfortable with the monopolisation system that has made MSD be the only supplier of equipment, drugs, and medical supplies in Tanzania. They stated that this system causes a shortage of drugs and supplies to the health facilities in their areas partly due to out of stock or delayed delivery.

> *"… we have a system of receiving supplies from MSD…. This system has reduced the costs of drugs and medical supplies. Nevertheless, the system has its serious problems, sometimes it has also failed because after pressing an order you may find out that half or three-quarter of what you requested is absent…"* (AMO in district health management position).

In other places, AMOs complained that MSD had not supplied what they requested, and a major challenge was that MSD will not return your money, it is retained for the district to order another stock. Therefore, the district needs to secure funds from another source for them to procure the needed drugs and supplies. During this delay time, the AMOs do not perform their roles as required hence delivering substandard or incomplete services which in turn harm their career development and performance.

> "…*When something like that happens, we are stuck, it is better on the side of drugs. When you are stuck in terms of equipment you order through a bidder. It should be remembered that when you order something from MSD, and if they do not have it, they will not return your money. So, when we miss certain items from MSD, we have to look for other sources of money to order drugs from private vendors which are very expensive*…" (Practicing AMO).

Theme 4: Lack of a strong supportive supervision system for both AMOs and other cadres which are crucial for task-sharing in services delivery.

AMOs who served as clinicians and at the managerial positions unveiled the existence of a weak supervision system. They stated that the weak supervision system was a product of factors such as absence of structured contextualized supervision guidelines, shortage of staff for supervision and inconsistent supportive supervision. Although in some places there was a form of attachment to seniors for all newly graduated AMOs, lack of supervision guidelines may lead to non-uniform supervision in the performance of the CS by AMOs. Supportive supervision was reported to be conducted by senior AMOs without formal guideline.

> "*No…. we do not have operational guidelines; ……aaaa…… First, a little while back……they were the only doctors we had, and they were the ones we depended on. So, the supervision was done by the experienced ones supervising the ones who were recently from school and later on, we got one doctor, MD……but he was in the administration system as the DMO, so he is also not around. So, you will find that the former AMOs are the ones supervising their fellow AMOs…"* (Practicing AMO).

Both Managers and all AMOs interviewed in this study revealed an absence an enabling environment for supportive supervision. In this case, the most reported barrier was the shortage of funds for comprehensive and sustained supervision. Supervision was too superfluous, focusing on managerial issues and in most cases, it was irregular and not sustained.

> *"We face a financial deficit and sometimes money is not sent on time. Also, infrastructure especially in Morogoro and some districts like Kilombero are not good especially during the rainy season as it is now. Another challenge is shortage of health workers in some health centres, also lack working tools…"* (AMO in health facility management position).

Furthermore, it was pointed out that most of the time the supervision was not supportive, and it ended up in managerial issues rather than touching base on the core issues. Across the four zones, AMOs who were practicing in rural settings narrated their complaints concerning the form and content of the contemporary supportive supervision. Analysis of the interviews revealed that most of the supportive supervision visits from the district level were perceived as ad hoc inspection, administrative and delivering administrative instructions in quick methods rather than technical support particularly in strengthening clinical skills.

> *"…In normal practice the supportive supervision from the council visits the facility and they merely observe and map our weaknesses. They do not stay here and work hand in hand to improve the situation like … (Non-Government Organization (NGO) mentioned) .... who will always come with entire theatre team a nurse, anaethetist and a gynaecologist. They stay here, and work with us even with difficult cases since they provide prior information before coming. The NGO has participated thoroughly in implementing Comprehensive* Emergency Obstetrics and Newborn Care. *Contrary, the DMO's office does not give us technical support, they only send health officers and nurses."* (Practicing AMO).

Amidst the stated challenges, participants of this study revealed that there was supportive supervision from an NGO which was implementing training on Comprehensive Emergency Obstetrics and Newborn Care (CEmONC). The NGO was also facilitating post-training support supervision in health facilities. The NGO implemented supportive supervision to all cadres involved in skill mix for emergency obstetrics care through coaching, mentoring and donated equipment relevant for performing CS.

Theme 5: Limited benefits after graduating as an AMO from being a CO act as a disincentive to join the training to potential AMO trainees.

Findings from this study show that both AMOs in managerial positions and those practicing share the same notion that post-graduation of AMOs have minimal benefits, particularly for those who have worked as COs for a long time. Participants of this study reported that when one becomes an AMO it is like approaching the dead end of their career path. Despite some few AMO being admitted for the Doctor of Medicine degree, it was explained to be extremely difficult for the AMOs to survive the stiff competition with those fresh from advanced secondary school level. The degree training does not recognize AMO prior learning hence training and work experiences were like zero as the AMOs are supposed to train five years same as those fresh Form Six graduates to become MDs. Some AMOs opted to go for two years of training in either anesthesiology or ophthalmology, a situation that adds up more responsibilities without any promotion or salary increment.

> *"…: Maybe I can ask, what makes them to study? Because even though you study your salary will not change and will remain the same as the AMOs' salary. Maybe if you are studying to have more responsibilities…"* (Retired AMO).

Furthermore, the participants reported that, AMO training from being a CO was not associated with salary increment. At some point, the AMOs reported that if one was already a Principal CO the salary went down after becoming an AMO.

Discussion

We aimed to analyze the barriers to implementing task sharing in CS delivery by AMOs seven decades after its introduction in Tanzania from AMOs and health managers' perspectives. The findings of this study represent barriers facing AMOs engagement is task-sharing strategy in delivering CS within district health service. This cadre was initially brought as an interim solution to address the shortage of medical officers in the early days of post-independence (5,13,20). However, it has remained the backbone of the district health system for over seven decades, as a critical shortage of medical officers continues to persist at the district level. The latter happens despite the growing number of medical officers graduating in Tanzania partly due to the limited employment capacity of the medical officers (12,21). Ensuring that AMOs are not sidelined or rendered obsolete requires updating their training, expanding their roles through structured internships, and clearly defining career paths within the evolving health workforce architecture.

As pointed out by the findings of this study, the lack of a structured internship programme in otherwise skills deficient AMOs graduates poses a significant threat to the quality of CS services provided by this cadre. AMOs is an upgrading cadre from the CO; therefore, one would expect their training to be more focused on hands-on skills. Surprisingly, the challenges facing training of other cadres with large classes face the training of AMOs, which has a maximum of 40 students at a time (5,13) pointed out that the AMOs was threatened by the presence of a large number of other groups of trainees in the teaching hospitals. In the aforementioned study, Sirili et al felt that perhaps the existence of other competing groups of trainees made the AMOs a less priority group. While some places as revealed by this study have organised an informal way of supplementing the AMOs' skills, the fact that it is not a formal programme makes it lack the defined competencies and skills to be acquired (22). The latter is possible when there is a defined curriculum for the AMOs internship programme (23). The need for an internship programme to associate clinicians is not a new phenomenon as it was also echoed over a decade by a study in Malawi that compared surgical outcomes among the medical officers and Cos (24). Many Low-and Middle-Income Countries (LMICs) have different forms of associate clinicians to mitigate the pressing shortage of medical officers (25). However, the lack of structured internship programmes poses a threat to the sustained clinical outcomes of these cadres. Therefore, we feel that it is high time for context-specific internship

programmes that will have minimum defined competencies to be developed and implemented. Furthermore, our findings revealed an important dynamic in the hierarchical interaction between AMOs and MDs. Some AMOs described tensions or unclear role boundaries following the introduction of MDs into district-level systems, where MDs were often assigned administrative roles while AMOs continued to handle clinical responsibilities. This reflects both the aspiration for upward mobility and the structural limitations inherent in the AMO career trajectory. The latter is similar to what was observed in Mozambique by Cumbi et al (26) in 2007, where mid-level providers (técnico de cirurgia) were reported to be in conflict with MDs.

As revealed in this study, an unfriendly licensing and relicensing system was another heartbreaking experience for the AMOs. While licensing and relicensing is a professional requirement in the medical field, making it cumbersome may defeat the purpose as one may find a way of bypassing this procedure (27,28). Although we could not explicitly find from literature as reported in our findings, tying licensing and relicensing to fees and not professional training raises more questions on the purpose of this practice. We feel that relicensing should be based on professional development training and not only on the fees. Furthermore, the employers should be responsible for the relicensing fees to support the sustainability of professional council activities. We feel that linking relicensing with professional development will help in building up and consolidating the skills of the AMOs and thus perform CS better.

Our findings have also revealed erratic supplies and often out of stock of medicine and supplies necessary for the performance of CS. This finding conforms to what has been documented in previous studies in Tanzania on the shortage of medicine and supplies (29–31). Furthermore by 2020, in Tanzania less than 25% of all health facilities were capable of providing obstetric emergency care services (32). With a task sharing strategy, you need to have human and non-human requirements for it to work (3). Having trained an AMO who is placed at a health facility where one cannot perform the CS make him/her perform the general duties that otherwise could have been performed by a CO. The latter raises a question on the financial benefits of taking the two years of AMO training for those who can otherwise be termed as misplaced AMOs after they have graduated. Our findings conform to findings from studies conducted in many other parts of sub-Saharan Africa (33,34).

Findings of this study presents two overarching policy implications. Gaps in monitoring systems of supervision and regulation are evident during internship and even beyond. This should be tackled by ensuring proper policies to contain the observed gaps together with ensuring fidelity of the policies in medical practices. Secondly, unavailability of resources in

provision of benefits, equipment and medical supplies has hampered the performance of AMOs in provision of CS in task sharing teams. While, this has been a persistent problem, more innovative and evidence-based approaches should be adopted in the redistribution of resources to include those presented by this study. The recent increase in the number of MD graduates, both within and outside the practice, may also pose as a significant barrier due to their growing numbers as compared to the AMOs, as this could shift attention of policy makers away from AMO cadre. Pursuit of excellence through localized solutions may be an answer in times of resource scarcity.

Our findings imply that the coexistence of more MDs and AMOs demands a rethinking of the health system. It is high time to consider reforms that optimize roles, avoid systemic redundancy, improve quality of care, and promote equitable access to emergency surgical services. Retaining AMOs will require reforms that support both cadres in working effectively within a coordinated task-sharing framework. To ensure safer and more accessible emergency obstetric care, particularly in underserved areas, training programs and supervision systems should be strengthened to develop competent health professionals, while improved incentives should be provided to enhance retention and motivation.

Methodological considerations

The methodological rigor of this study was amplified through credibility, conformability, dependability and transferability (35). To ensure credibility, a common understanding among all members of the research team was sought for all codes and themes (36). All audio and transcripts collected from diverse locations were retained for review and audit trial to ensure dependability. To enhance transferability of the findings, the study adhered to all scientific procedures including proper description of the study setting, context, data collection process, and analysis.

Nevertheless, the current study presents some few limitations. The study could not be extended beyond four districts found in four administrative zones of Tanzania. This limits generalizability of the findings. The scientific procedures which guided the process of this study makes it replicable. Notably, this was a qualitative study, focusing on getting rich detailed analysis in each selected district and thereafter making multiple comparison among different respondents across the four two districts. We aimed to develop inferences which attract policy makers to reflect on barriers for implementation of task sharing by AMOs.

Lastly, this study focused on barriers of implementing task sharing in CS delivery by AMOs. This may bring to light barriers for the implementation of task sharing in CS delivery and left out other pressing issues surrounding their practice and the overall task sharing teams. This

study therefore opens a way towards studying technical and managerial aspects surrounding the delivery of CS by AMOs within task sharing teams.

Conclusion

The roles of AMOs in the implementation of task sharing in CS delivery are not properly executed due to an unstructured internship programme, which hinders newly graduated AMOs from acquiring the necessary skills. Further, unfriendly licensing and re-licensing procedures, erratic availability of medical supplies and equipment, weak supervision system for both AMO and other cadres involved in task sharing and limited benefits are crucial barriers encountered by AMOS. The barriers hinder the performance of AMO in implementing task sharing in CS delivery. Improving the preparation process for AMOs should go hand in hand with enhancing their working environment after graduation, while also considering other cadres involved in task sharing.

Abbreviations

ACOs	Assistant Clinical Officers
AMOs	Assistant Medical Officers
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
CHMT	Council Health Management Team
CS	Caesarean Section
COs	Clinical Officers
DMO	District Medical Officers
FBOs	Faith-Based Organizations
HC	Health Centre
KCMC	Kilimanjaro Christian Medical Centre
LMICs	Low-and Middle-Income Countries
MD	Medical Doctor
MDGs	Millennium Development Goals
MSD	Medical Store Department
MUHAS	Muhimbili University of Health and allied Sciences
NGOs	Non-Governmental Organizations
PHC	Primary Health Care
Ras	Research Assistants
TTCIH	Tanzania Training Centre for International Health
WHO	World Health Organization

Declarations

Consent for publication

This is an integral part of ethical approval.

Availability of data and Materials

We have stored all transcripts of this study but limited to share due to confidentiality.

Competing interests

All authors of this paper are hereby declaring that they have on competing interests.

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Authors' contributions

AA conceptualized this study, engaged designing the in study, development of tools, data collection and analysis as well as drafting the manuscript. NS and LM were engaged in study design, collection and analysis of data as well as manuscript drafting. SM was engaged in study design, data analysis, manuscript drafting and study coordination. All authors read and approved the final manuscript.

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