Factors Affecting the Availability of Essential Health Commodities in Tanzania with a Special Focus on the Tracer Commodities

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Abstract

Background: Access to essential health commodities is fundamental to healthcare system efficacy. These commodities are vital in delivering health services and form integral elements within the World Health Organization's strengthening framework, encompassing the six foundational building blocks. Regrettably, there has been a global increase in shortages and stockouts of essential health commodities in recent years.

Objective: The study aimed to identify factors influencing the availability of essential health commodities throughout all levels of the supply chain in Tanzania.

Methods: A cross-sectional convergent parallel mixed method study that employed both qualitative and quantitative data collection techniques was conducted. Quantitative data were analyzed using STATA version 16, while qualitative data were thematically analyzed.

Results: Factors contributing to stockouts of essential commodities at the national level included increased demand, delayed shipments from donors, decreased funding commitments, delayed disbursement of funds, global shortages, inadequate governance, debt within the Medical Stores Department, donor dependency for vertical programme commodities, and long lead times by Medical Stores Department's suppliers. At the regional and district levels, such factors include a shortage of human resources, lack of electronic medical records, limited interoperability of information systems, poor quality of logistics data, inadequate use of data for decision-making, and poor inventory management. At the healthcare facility level, factors included; an overwhelming number of exempted clients, which reduces facility revenues.

Conclusion: More efforts are still needed to address both the upstream and downstream challenges required to ensure sustainable access and availability of essential health commodities at service delivery points, as a pathway for improving health sector performance.

Keywords: Tracer commodities, essential commodities, availability, access, Tanzania

Background

Stockouts, which refer to the complete absence of a specific formulation and dosage of medicine at a given healthcare facility, are recognized as an essential measure of health service readiness (Prinja et al., 2015; Bigdeli et al., 2015). They can have significant consequences for the provision of quality health services. When stockouts occur in the healthcare system, consumers may use over-the-counter

medicines or products from unqualified sources, increasing the risks of counterfeit or substandard products (Leung et al., 2016).

Even the stockouts of a limited number of health commodities can have widespread implications for delivering high-quality health services. Consequently, stockouts serve as a critical indicator of the preparedness of health services. The prevalence of essential health commodities stockouts at healthcare facility levels in sub-Saharan Africa presents a significant public health challenge. This issue is recognized for its adverse impact on data utilized for performance analysis and continuous transformation and its influence on morbidity, mortality, and disease epidemiology (Koomen et al., 2019; Hwang et al., 2019).

Looking at the financing of healthcare commodities, many medicines are paid out-of-pocket, potentially exposing households to financial hardship (Mahler et al., 2011). To avoid stockouts of healthcare products, ensuring that all supply chain management system components are performing effectively is crucial. Furthermore, examining the logistics cycle within supply chain management can illuminate essential components crucial for guaranteeing access to and availability of health commodities. This analysis also underscores the pivotal factors positioned at the core of the supply chain cycle (Jia et al., 2017). In light of this, a well-functioning supply chain cycle ensures seamless management of health commodities, thereby facilitating effective healthcare delivery (WHO & World Bank, 2018).

The Government of Tanzania, in partnership with development and implementing partners, has made significant efforts to tackle the challenges associated with stockouts of healthcare commodities. A key focus has been to guarantee uninterrupted health services by ensuring service delivery points have access to essential health commodities. This commitment is evident through a dedicated and collaborative funding approach. For instance, there has been a significant increase in the national budget for medicines and related medical supplies from TZS 31 billion during the Financial Year 2015/16 to TZS 258.4 billion during the Financial Year 2022/23 (Luiza et al., 2016). Similarly, the 2018 Global Fund Audit, revealed that funds allocated to Tanzania are predominantly focused on commodity procurement, with 73% of the current grant earmarked for the procurement and distribution of health commodities. These endeavours signify that the government and development partners prioritise health commodities, with a substantial portion of the budget dedicated to ensuring their availability. Despite these promising efforts, supply chain challenges persist in the country (Pronyk et al., 2016). This study aimed to identify the factors influencing the availability of essential health commodities at all levels of the supply chain in Tanzania.

Methods
Study Design and setting
A cross-sectional convergent parallel mixed-method assessment was undertaken to gather information using quantitative and qualitative methodologies. To complement this, a desk review was also conducted. The study was conducted between August and September 2021 within selected healthcare facilities, encompassing district, regional, and national levels. The study was conducted in ten regions including Mtwara; Tabora, Dodoma, Tanga, Iringa, Kilimanjaro, Mbeya; Dar-es-Salaam, Kagera, and Mwanza which represent the Medical Stores Department (MSD) Zonal Strategic Business Units. The choice of districts and healthcare facilities in these regions was guided by considering the levels (hospital, health centre, and dispensary) and geography (rural or urban). The selection of facilities ensured that two dispensaries, two health centres, and one hospital were included in each district. The regional hospitals were purposefully included in the study. Generally, this resulted in 104 facilities included in this assessment (36 dispensaries, 40 health centres, 20 district hospitals, and 10 regional hospitals).

Participants recruitment

The individuals involved in the supply chain of health commodities were selected using purposive sampling. Specifically, four key informants were chosen from each sampled facility and district, Health Management Team representatives from the ten regions, and staff at the Medical Stores Department (MSD) zones. At the national level, key informants were drawn from various organizations, including the Ministry of Health, President's Office - Regional Administration and Local Government, Medical Stores Department central warehouse, Council Health Management Team, Programmes – National AIDS Control Programme, National Malaria Control Programme, National TB and Leprosy Programme, Immunization and Vaccine Development Programme, Reproductive and Child Health Section, Tanzania Medicines and Medical Devices Authority, and the Global Health Supply Chain Technical Assistance Project. To recruit these stakeholders for key informant interviews (KIIs), their contact information was obtained from the Ministry of Health through peer referrals. A list of all participating stakeholders and their phone contacts was generated. Subsequently, research assistants initiated contact with these individuals via telephone, and those who expressed interest were selected to participate in the interviews, considering their preferences regarding interview modality (phone or face-to-face) and scheduling availability.

Data collection

Data collection strategies included the following: (1) Desk review: This involved reviewing several documents, including stock status reports from central agencies of the Ministry of Health, to capture information on essential health commodities and the overall supply chain. (2) Quantitative site audits: These were conducted at health facilities using tools adapted from the Logistics cycle. (3) In-depth interviews: Key informants were purposefully selected and interviewed using a semi-structured interview guide through either phone-based or face-to-face strategies. All qualitative interviews were audio-recorded, transcribed, and translated from Swahili to English. The interviews typically lasted about 30-60 minutes per individual.

Data management and analysis

The quantitative data collected was entered into Microsoft Excel and analyzed using STATA version 16. On the other hand, the qualitative data was analyzed thematically, following the approach described by Braun and Clarke (2006). The transcribing and translating of the key informant interview (KII) data was conducted simultaneously by research assistants and verified by the research team. All interview transcripts were de-identified following transcription and translation, and pseudonyms were assigned to each participant. The data was then imported into NVivo 12 software (QSR International, Australia) for data management and deductive thematic coding. To begin with, the research questions were thoroughly examined, leading to the collaborative generation of an initial analytical matrix consisting of themes and subthemes. Subsequently, individual transcripts were analyzed, and relevant phrases (codes) representing participants' responses to the researchers' inquiries were extracted and linked to the appropriate themes and subthemes using NVivo software (QSR International Version 12). Throughout the coding process, ongoing peer engagement was maintained, employing a consensus-based approach within the research team to determine the inclusion or exclusion of codes that did not align with the developed subthemes and themes. Codes subjectively or objectively deemed to hold little value to the study were either retained or discarded. Lastly, the coded data were exported to Microsoft Word to create the research report.

Ethical considerations

Ethical considerations were ensured throughout the study. The research obtained ethical clearance from Tanzania's National Health Research Ethics Review Committee with the reference number

NIMR/HQ/R.8a/VOl.IX/3739. Moreover, the appropriate authorities in the selected regions, districts, and healthcare facilities sought permission to conduct the study. Informed consent procedures were strictly followed, and written informed consent was obtained from all participants. This ensured that participants were provided with clear information about the study's purpose, procedures, potential risks and benefits, confidentiality measures, and their right to withdraw from the study at any time without consequences. Participants could ask questions and seek clarification before voluntarily signing the informed consent forms. By obtaining ethical clearance, seeking permission, and obtaining informed consent, the study protected participants' rights, welfare, and confidentiality, and adhered to ethical guidelines and regulations governing research conduct.

Findings

Acknowledging that all visited hospitals have assigned personnel to manage essential health commodities is crucial. Nevertheless, it is noteworthy that these personnel may not possess pharmacy or laboratory sciences backgrounds, which are paramount for effectively managing essential commodities. For instance, among the visited facilities, 47% had pharmaceutical personnel and 2% had laboratory personnel managing health commodities. This indicates that in 51% of the visited facilities, commodities were overseen by staff lacking pharmaceutical and laboratory backgrounds, which are technically relevant to health commodities management. A detailed examination of individuals managing health commodities in 51% of the health facilities is as follows; 18% were nurses, 15% were medical attendants, 14% were clinicians, 3% were material managers, and one was an accountant (Table 1). Participants' level of education ranged from certificate to bachelor in their respective fields.

Table 1: Professionals managing health commodity stores

Profession	Number	Percentage
Pharmaceutical Personnel	50	47%
Nurses	17	18%
Medical Attendants	16	15%
Clinicians	15	14%
Storekeeper (No title recorded)	3	3%
Lab. Technologist/Assistant	2	2%
Accountant	1	1%
Grand Total	104	100%

Overview
The factors contributing to stockouts of tracer items at the national level included: increased demand, delayed shipments from donors, decreased funding commitments, delayed disbursement of funds and global shortages, inadequate governance, MSD debt, donor dependency for vertical programme commodities, and long lead times by MSD suppliers. The factors contributing to stockouts at the regional and district levels included: a shortage of human resources, lack of electronic medical records, non-interoperability of information systems, poor quality of logistics data, inadequate use of data for decision-making as well and poor inventory management. Contributors at the healthcare facility level

included: an enormous number of exempted clients who reduce the facility revenues, the absence of reliable electronic systems to monitor health commodity consumption, and inadequate capacity in stores for health commodities' management. Concerns about inadequate vehicles and fuel budget to carry out health commodities to healthcare facilities related supervisory visits surfaced at the regional and district levels. Some participants directly linked stockouts to the fluctuating availability of these commodities at the MSD.

The magnitude and frequency of stockouts of essential health commodities including tracer commodities.

Facility audits indicated that the availability of tracer commodities is directly linked to facility level and location. All the 30 tracer commodities with their respective types were more available in urban settings than rural ones. This was because urban settings are more privileged with fair infrastructure and sound systems, enabling adherence to storage measures compared to facilities in rural settings (Figure 1).
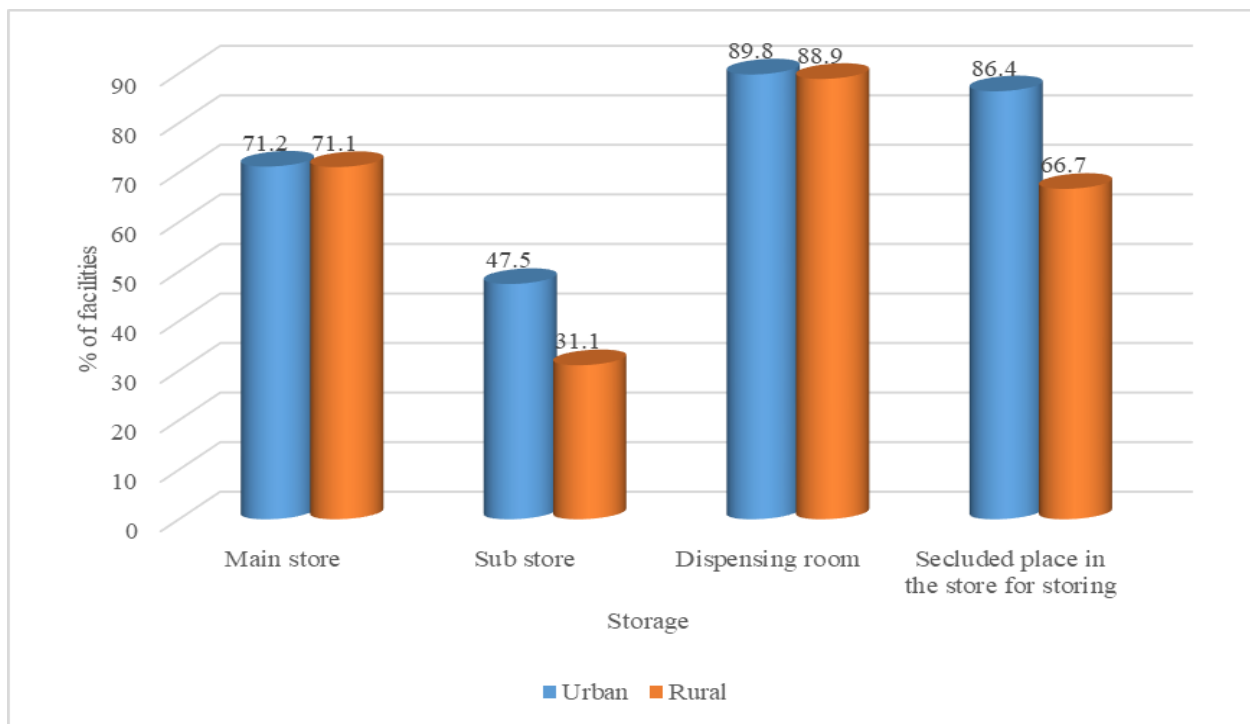

Fig 1: Comparison of availability of all the 30 tracer commodities between urban and rural settings

At the health facility level, there were variations in the availability of tracer items in hospitals, health centres and dispensaries. For example, the Pentavalent vaccine was more available at health centres than at other health facility levels. There were variations in the four presentations of Artemether Lumefantrine (ALU), with ALU 1x6 and ALU 4x6 more available at the dispensary level. At the same time, ALU 2x6 and ALU 3x6 were more available at health centres and hospital levels, respectively. Both amoxicillin caps and dispersible tablets for adults and children, respectively, were more available at the dispensary level. At the same time, both co-trimoxazole suspension and tabs were more available at the hospital level.

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Regarding anthelmintics, Albendazole was more available at the dispensary while Mebendazole was more available at the hospital level. For maternal health commodities for PPH and labour induction, Misoprostol was more available at the hospital level, while Ergometrine was more available at the health centre level. Looking at contraceptives, Depo-Provera was more available at the hospital level, while Microgynon was more available at both the health centres and the dispensary level.

Tracer commodities in the category of supplies, such as syringes, vary across the three levels, with 5cc syringes more available at the dispensary level, 10 cc syringes more available at the health centre level, and 2 cc syringes more available at the hospital level. Relatedly, gloves were more available at the hospital than at other levels. Considering antibiotics, Benzylpenicillin Ceftriaxone 250 mg and 1 g injections were more available at the health centre than at other levels. For HIV/AIDS commodities namely ARVs and Rapid test kits, variations were also seen across the levels. Considering Antiretroviral drugs (ARVs), Tenofovir, Lamivudine, and Efavirenz were more available at the hospital level, while Tenofovir, Lamivudine, and Dolutegravir were more available at the health centre level. As for Rapid test kits for HIV, SD BIOLINE was more available at the hospital and health centre level while UNIGOLD was more available at the dispensary level (Figure 2).
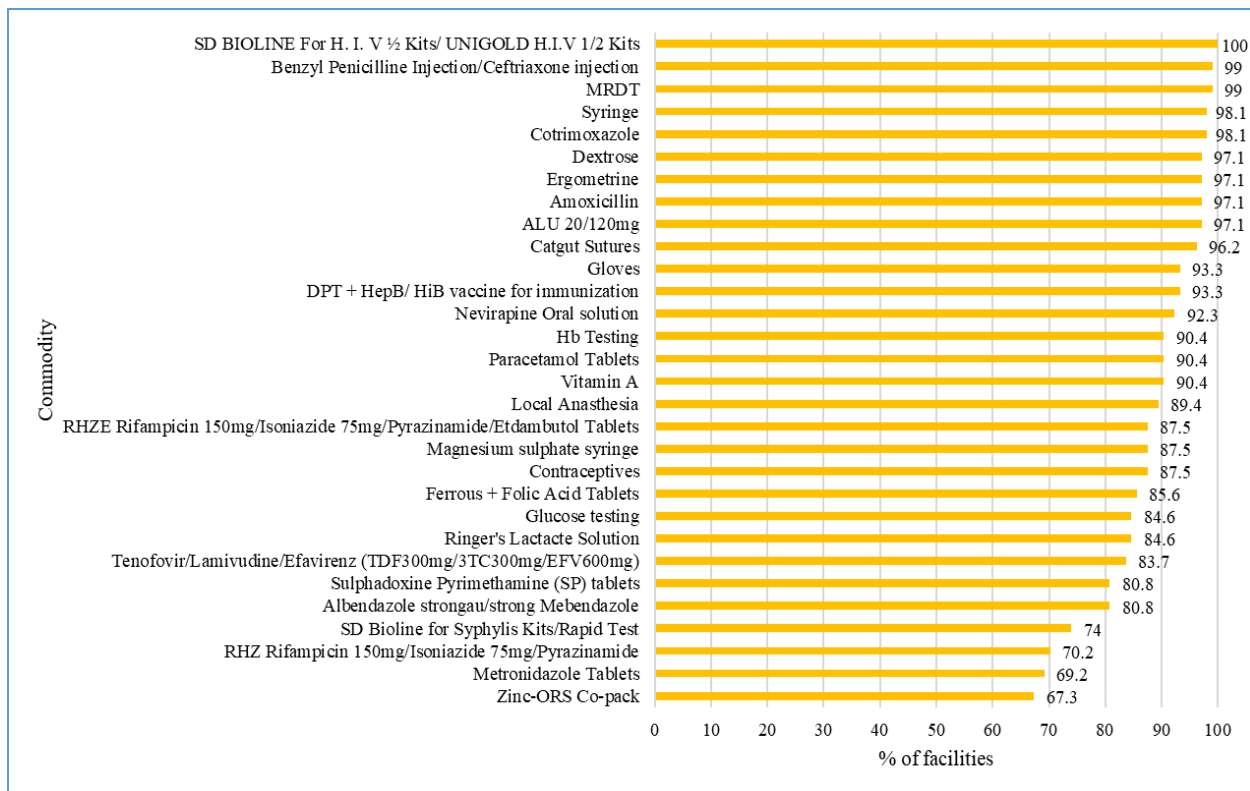

Figure 2: Tracer commodities availability at the facilities.

The findings indicated that the availability of tracer commodities at facilities highly depends on delivery from the Medical Stores Department. However, some indicated availability of commodities up to 90%. Where essential commodities were unavailable, concerns of budgetary limitations dominated as Information was mobilized for performance analysis and continuously transforming the facility's capacity to purchase some essential health commodities, including tracer items, which were out of stock at MSD.

During qualitative interviews, participants expressed mixed views on the availability of tracer items with most suggesting misalignment on the availability and supply of tracer commodities in the past six months. One group of respondents affirmed that the availability was good although concerns of increasing stockouts in recent months dominated. Another group of respondents affirmed that the availability of commodities at the MSD was not good in previous months and there has been much improvement in recent months.

Relatedly, disagreement emerged during qualitative interviews on the stock of tracer commodities in health facilities. One group of central government respondents suggested that stockouts never happened except for 'intermittent stockouts' in some facilities. Another group comprising respondents from the facilities, districts, regions and development partners affirmed frequent stockouts. The contributing factors to stockouts included facility-level problems, such as errors in forecasting and ordering, a sudden increase in demand from facilities; and stockouts at the national level due to decreased minimum stock levels, delayed shipments from donors, decreased funding commitments, delayed disbursement of funds, and global shortages. One participant commented:

> *"For now, we have improved availability and no major challenges. We purchased health commodities, and only a few are missing, but almost 90% of commodities are available, for example, TB medications. Only Metronidazole tablets have not been available since last month because we ordered them at the MSD"* (Facility in-charge, Mwanza).

The capacity of institutions in the selection, quantification, procurement, management, and distribution of essential health commodities

During qualitative interviews, it was pointed out that pharmacists at the district and regional levels are responsible for ensuring the availability of essential commodities. They conduct health commodity audits and ensure timely ordering, distribution, redistribution, and reporting. Budget expenditure monitoring and capacity building through training and supportive supervision comprise other responsibilities. Pharmacists at the national level affirmed involvement in ensuring the availability, quality, and safety of health commodities entering the country.

Regarding procurement, it was pointed out that ordering essential health commodities involves discussing the available resources at the facility level, preparing Report and Requisition forms, and submitting them through the Electronic Logistics Management Information System. They are then reviewed and approved at the district and regional levels before being sent to the MSD. The MSD and prime vendors dominated the place where procurement is done. However, procurement at the prime vendor was said to require evidence of stockouts of such commodities from MSD. The procurement challenges mentioned by some participants included: delayed updates on the order status even for emergency orders; delayed supply, frequent stocks of health commodities; supplying health commodities not ordered; absence of a guideline on procurement; and inadequate funds for procurement of essential health commodities. One participant commented:

> *"Sometimes they delay delivery because if we ordered at the beginning of July and we write a report in August, it means they need to have brought the medicines, but sometimes a month can end without having them delivered. We need to start manufacturing the medications here at home and I know some industries have started doing that. We have a functional industry making masks. An industry in Keko is making Paracetamol tablets with 70% government and 30% private ownership. Some industries plan to begin producing gloves and tablets in Njombe and creams and syrups in Dar es Salaam. This will reduce the time and cost of procurement of commodities. It will also ensure quality because we will manufacture ourselves"* (Facility in-charge, Mtwara).

Regarding health commodity management, Facility audits indicated different techniques at all facility levels. The techniques used at the hospital, health centres, and dispensaries included good storage practices, Standard Operating Procedures (SOPs), and energy backup systems. Geographically, facilities in rural areas had a significantly lower number (91.1%) of inventory management tools (prescriptions, bin cards, and ledgers) as compared to those in urban areas (100%). Rural and urban variations were also seen, with urban regions performing better in all aspects of inventory management, including having tools, systems, and equipment in place to enable good storage practices.

Furthermore, many hospitals have SOPs, inventory management tools, and store ledgers. Store ledgers were seen in all visited hospitals, while more bin cards were available at the health centre level (100% of all visited health centres). Regarding the First Expire, First Out (FEFO) application, all levels of health facilities practice it very well. From the facilities visited, the availability of ledgers was 99% but only 74% of the available ledgers were updated. Similarly, bin cards were available to 99% with 78% of the available bin cards updated. Moreover, regarding dispensing registers, the one for ARVs was available to 91% with 83% of the available ones updated.

In comparison, the new Integrated Logistics System (ILS) dispensing register was available to 66% with 90% updated. Lastly, the registers for rapid test kits were available to 80% with 94% updated. However, there is still a challenge with the availability of the tools, especially the ILS dispensing register for essential medicines and registers for record test kits (RTKs). However, updating the tools is a much more significant challenge, leading to reported poor data quality. To prevent the expiry of health commodities, the dominant strategies emerging during

qualitative interviews were supply inspection and refusal of commodities with a short shelf life; ordering commodities based on the demand, and redistribution of near-expiry commodities between facilities. One participant commented:

> "We work with Tanzania Medicines and Medical Devices Authority; we know the guidelines. The last time we destroyed expired health commodities was in 2016. We collect and evaluate all expired medicines and prepare for destruction. Another strategy is refusing medications that expire in the next three months. They also order medications considering the three-month demand" (CHMT member, Iringa).

Additionally, most qualitative participants mentioned that the MSD uses a direct delivery system to supply health commodities to the facility. The distribution time ranged between 14 and 28 days upon receiving the order. Almost all MSD officials confirmed the presence of enough vehicles for distribution. Most stakeholders acknowledged being involved in ensuring the availability of sufficient quantities of essential health commodities and capacity building, especially vaccines. However, an electronic system for prime vendor order management was pointed out as the leading solution to inadequate resources for distributing health commodities.

Public sector policies and strategies for the supply chain of essential health commodities including tracer commodities

The desk review examined eleven policy and programmatic documents, including Health Sector Strategic Plan IV (2015-2020), and it was designed to examine progress and challenges regarding the availability of essential health commodities involving 30 tracer commodities. The findings affirmed the presence of policy documents that emphasized the availability of essential health commodities to facilitate the provision of quality health services at service delivery points.

Key issues that most of the documents showed were increased allocation of funds for the procurement of health commodities to improve the availability of essential health commodities,

development of bottom-up quantification guidelines to guide the selection and quantification of essential health commodities, and the availability of management information systems that facilitate reporting of logistics information.

The review, however, indicated several challenges to the availability of essential health commodities. They include human resource shortages, outstanding MSD debt; donor dependency, especially for vertical programme commodities; delayed disbursement of funds; long lead times by Medical Stores Department suppliers and Vertical programmes' commodities suppliers, inadequate coordination and communication between Vertical programmes and MSD, absence of the national oversight body for quantification of all essential health commodities, delayed release of out-of-stock notification by MSD for timely procurement of essential health commodities from prime vendors, lack of interoperability of information systems and delayed distribution of standard treatment guidelines to health facilities.

Discussion

This paper presents factors affecting the supply chain for critical essential commodities in health facilities and selected medical stores in ten regions of Tanzania. The focus was on identifying the institutional factors that affect the availability of health commodities at all levels of the supply chains.

The findings revealed a spectrum of factors influencing the availability of essential health commodities. Challenges include outstanding debts with the MSD, reliance on donors, and delayed fund disbursement. Other key issues include a lack of out-of-stock notifications from MSD for timely procurement from prime vendors, information system interoperability issues, delayed distribution of standard treatment guidelines to health facilities, inadequate tracer commodity lists, disparities between reported availability via District Health Information System 2 and the actual situation on the ground, suboptimal inventory management practices, absence of logistics management information system tools for effective inventory management, and inadequate documentation of inventory management tools leading to poor data quality reported by health facilities regarding essential health commodities and subsequent stock imbalances, including under-stocks and stockouts.

It is important to note that most of these challenges have been widely documented in both Tanzania and Sub-Saharan Africa (Demessie et al., 2020 Githendu et al., 2020). Consequently, these challenges became central to the qualitative inquiry during this study.

More specifically, our findings indicate that at the facility level, challenges include insufficient capacity in health commodities management, a significant number of exempted clients reducing facility revenue, and the absence of reliable electronic systems for monitoring commodity consumption. There was a strong plea for the government to review the exemption policy or find ways to cover medications used by these groups to ensure facilities have adequate financial capacity for tracer item availability.

Furthermore, at the district and regional levels, concerns about inadequate vehicles and fuel budgets have surfaced with some linking the non-availability at facility levels to the fluctuating availability at the MSD. To address challenges in the availability of tracer commodities, suggestions included improving the availability of tracer commodities at the MSD and enhancing the overall functionality of the MSD, with some proposing an overall improvement in work performance. There was also a notable emphasis on building local manufacturing capacity instead of relying on external suppliers. It is crucial to note that many of these challenges have been previously reported (The Global Fund, 2015 Lee & Tarimo, 2018), indicating a need for the Ministry of Health to develop a comprehensive medicine policy guiding the availability, management, and use of medicines in the country.

The absence of a supply chain strategy to guide the implementation of health commodity-related plans is highlighted. Moreover, the Ministry of Health, particularly the President's Office - Regional Administration and Local Government, is urged to recruit and deploy pharmaceutical and laboratory personnel, especially at lower-level health facilities. This recommendation stems from the significant finding that only 47% of visited health facilities had personnel with a pharmaceutical background managing the stores.

This study uncovered several recommendations for increasing funds for commodity procurement at the facility level. These encompass the Ministry of Health's consideration of measures such as reducing overconsumption by exempted groups through a review of exemption policies and exploring funding avenues for essential health commodities used by these groups through the Medical Store Department. Additionally, facilities, districts, regions, and the Ministry of Health are encouraged to contemplate budget increments, diversify funding sources, and enhance payment systems to boost facility revenues. Furthermore, there is a call to facilitate health facility governing committees overseeing proper fund management. The Government of Tanzania is urged to ensure adherence to Health Commodity Revolving Fund guidelines, with reports prepared by health facility personnel, validated by governing committees, and submitted to relevant authorities for increased awareness, advocacy, and community sensitization to encourage more clients to join the National Health Insurance Fund and Community Health Fund. Implementing these recommendations has the potential to boost the availability of funds for financing tracer commodities across various levels and enhance their accessibility within the healthcare system at different tiers.

In light of our findings, we advocate for facilitating effective and efficient utilization of electronic systems at the facility level. Based on our results, we propose that the Ministry of Health, the President's Office - Local Government and Regional Administration, and the Medical Stores Department (MSD) consider enhancing facility electronic systems to capture patient information accurately, spanning from arrival to departure, to aid in correct quantification.

There is a recommendation to develop a system for monitoring the alignment between facility orders and deliveries from prime vendors. We suggest linking the Government of Tanzania Health Operation Management Information System (GoTHOMIS) data with the Electronic Logistics Management Information System and aligning reporting periods between District Health Information System 2 and Electronic Logistics Management Information System data. It is advised to revise how health commodities availability is reported via District Health Information System 2, moving beyond a binary "Yes" or "No" to indicate the quantity available and its expected duration.

Moreover, there is a call for capacity building for healthcare workers responsible for inputting data into these systems, focusing on proper filing and data triangulation techniques to ensure accuracy before submission to higher levels. The establishment of facility-level Information Mobilized for Performance Analysis and Continuous Transformation teams is recommended, along with efforts by MSD to align essential health commodities costs across various information systems.

Our findings have brought to light critical challenges associated with using prime vendors. To address these issues effectively, we recommend that the Ministry of Health, the President's Office - Local Government and Regional Administration, take the following steps: review and enhance contracts with prime vendors, promptly ensuring strict adherence to stipulated deliverables. Contract improvements may involve incorporating the direct delivery of commodities to health facilities. Developing an electronic system to monitor procurement processes involving facilities and vendors is also advised. Considering the apparent strain on current prime vendors leading to frequent delays, it is recommended to explore the possibility of increasing their number. It is crucial to uphold contractual agreements, particularly ensuring timely payments and conducting frequent reviews of contractual prices. Furthermore, a review of prime vendors' health commodity catalogues should be conducted

to include frequently missing items, thereby enabling them to fulfil orders from health facilities adequately.

Study limitation

This study focused on the issue of stockouts at various levels of the healthcare system. However, we recognize the crucial role of a diverse range of healthcare commodities in ensuring optimal healthcare service delivery. Given the challenges posed by stockouts of these tracer commodities, future studies may benefit from broadening their scope to examine all health commodities. Furthermore, our investigation focused solely on stakeholders' perspectives on the supply side. Recognizing the importance of understanding the demand side, future studies need to explore the views of end users. Future research endeavours should incorporate clients' perspectives to provide a more comprehensive understanding of the issue in examining stockouts.

Conclusion

Continuity in service delivery relies heavily on the consistent availability of health commodities. There remains a critical need for increased efforts to tackle upstream and downstream challenges in the supply chain, aiming to ensure enduring access and availability of essential health commodities at service delivery points. This comprehensive approach is essential as a pathway to enhance overall health sector performance.

Acknowledgement

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