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Original Article

Resilience of Tanzanian Healthcare Facilities Against the COVID-19 Pandemic: Preparedness, Leadership, and Healthcare Workers' Experiences

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ABSTRACT

Background: The coronavirus disease 2019 (COVID-19) pandemic is the most significant global health crisis of the past century, with a rapid spread and associated burden of disease and mortality. This study aimed to assess healthcare workers' effective preparedness, leadership support, and experiences in combating the COVID-19 pandemic.

Materials and Methods: A qualitative cross-sectional study was conducted among healthcare workers in the Dar es Salaam, Arusha, Dodoma, and Mwanza regions from August 24 to October 3, 2022. The study included 96 participants from 24 healthcare facilities, the qualitative sample size obtained based on the saturation principle. Both purposeful and random selection of participants were used, purposive sampling targeted healthcare workers directly involved in COVID-19 team, while simple random selection was applied to other available healthcare workers in the selected facilities. Interviews were recorded using Kobo Toolbox, while coding and thematic analysis were conducted using NVivo qualitative data analysis software.

Results: Most healthcare workers who participated in the interviews reported that preparations were not made in time; preparations started after the first patient was announced in Tanzania. In interviews, all healthcare workers reported that their healthcare facility leaders, including medical officers in-charge and department heads fully supported the fight against COVID-19. However, not all workers felt they had enough experience to combat the virus.

Conclusion: Comprehensive support should be provided to Tanzanian healthcare facilities to safeguard the well-being of healthcare providers. Regular and intensive training for all healthcare providers is necessary to promote preparedness and effectiveness in crisis management.

Keywords: Resilience, Preparedness, Leadership, Healthcare Workers, COVID-19 Pandemic, Tanzania

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INTRODUCTION

The COVID-19 pandemic is the most significant global health crisis of the past century, with a rapid spread and associated burden of disease and mortality. COVID-19 was declared a pandemic by the World Health Organization (WHO) on March 11, 2020. By December 8, 2022, about 642.9 million people were infected, and 6.6 million died from the COVID-19 virus worldwide [1]. Tanzania reported its first case of COVID-19 on March 16, 2020 at Mount Meru hospital in Arusha region, involving a citizen who returned to the country through the Kilimanjaro International Airport. In mid-April 2020, the Ministry of Health announced the spread of COVID-19, one month after Tanzania announced the most confirmed cases and deaths related to COVID-19; on May 2, 2020, 408 confirmed cases were reported [2, 3].

The health system's resilience is defined as "the ability, capacity, and capability of the health system to predict, prevent, prepare, absorb, adapt and transform when affected by shocks and stresses and to provide normal health services during crisis management" [4]. Resilient healthcare facilities are constantly changing according to the external environment. They have a flexible workforce, flexible supply chains, and organizational structure and can adapt to sudden environmental changes [5].

Events from the 2009 H1N1 pandemic, the 2014-2016 Ebola outbreak in West Africa, and the 2015-2016 Zika virus pandemic in South America and Southeast Asia have shown that countries with weak healthcare systems have difficulty coping with acute shocks. Following the Ebola virus outbreak in Guinea, Sierra Leone, and Liberia, the World Health Organization (WHO) focused on strengthening the healthcare system and encouraged policymakers and senior managers to strengthen the resilience of healthcare facilities [6]. Healthcare facilities should be enabled to respond quickly and effectively to acute, sudden, and severe shocks and crises by developing good strategies [7].

Healthcare facilities are mostly vulnerable to the severity of this disease. Studies have shown that the Iranian healthcare system has been moderately resilient against COVID-19 [8, 9]. Healthcare facilities in Tanzania were not well prepared to deal with these disasters and crises. They faced many challenges, such as political and structural instability, high turnover of top management, lack of funds, too much responsibility with too little authority, and changes in patient expectations and the public [9-11].

The health system consists of individuals, groups, and organizations that carry out the responsibilities of policy-making, financing, generating resources, and providing health services to restore, promote, and maintain public health [12]. Leadership and governance, health information systems, financing, equipment and supplies, health workforce, and service delivery are six building blocks to achieving health system's goals [1, 13]. Experience and adequate leadership of healthcare workers are essential elements for other building blocks in achieving the desired goals of any intervention. Effective preparedness, mitigation measures, and adequate leadership are essential in strengthening the health system and achieving the ultimate goals of improving health, financial risk protection, and responsiveness [11, 14].

Tanzania's health system combines public, private, and non-governmental organizations involved in financing and providing health services. The Ministry of Health of Tanzania is responsible for financing, planning, policy-making, and control of health organizations at the national level [15]. The main goal of the healthcare system is to promote and maintain the health and well-being of people while preventing and controlling disease. Therefore, the healthcare system should ensure that everyone can access affordable healthcare services. Healthcare facilities must be responsive to people's needs, adapt to economic, epidemiological, political, and social shocks such as disasters, wars, economic chaos, and epidemics [1]. They must be prepared for disasters to respond to them appropriately and provide the health services people need during a disaster [14].

This study aimed to determine healthcare workers' effective preparedness, institutional leadership support, and experience in combating the COVID-19 pandemic. The results may provide important insights for healthcare managers, policymakers, and experts to manage the crisis better.

Researching this area in the regions of Dar es Salaam, Dodoma, Mwanza, and Arusha which were among the regions with the highest prevalence of COVID-19 in the country, will provide important information to health service managers, policymakers, and experts to combat the crisis and make good use of limited resources whenever a disease re-emerges or other diseases of the same type.

MATERIALS AND METHODS

Study Area

This study was conducted in Dar es Salaam, Arusha, Dodoma, and Mwanza, representing the Ilala, Arusha urban, Nyamangana, and Dodoma urban districts respectively. The study areas were selected based on their potential and high prevalence of COVID-19 [16, 17].

Study Design and Population

A qualitative cross-sectional study design was carried out from August 24 to October 3, 2022. This study was conducted among healthcare workers, including nurses, doctors, pharmaceutical personnel, laboratory personnel, and other health support staff. Only government-owned healthcare facilities (public hospitals, health centers, and dispensaries) were involved in this study. During data collection, this study did not involve private healthcare facilities and student healthcare workers in short-term field practices.

Sample Size

The research involved 96 people from 24 healthcare facilities across four selected regions, including 8 hospitals, 8 health centers, and 8 dispensaries. Additionally, 48 key informants were interviewed, including healthcare workers (HCWs) and administrative leaders dedicated to the COVID-19 team within the healthcare facility, with 2 representatives from each facility participating in the study. The qualitative sample size obtained based on the saturation principle.

Sampling Procedure

HCWs dedicated to caring for only COVID-19 patients during disease outbreaks and leaders directly involved in the COVID-19 team were purposefully selected as key informants for in-depth interviews. Healthcare workers not dedicated to the COVID-19 team were selected randomly for individual interviews followed a stratified approach. A register of healthcare workers who met the inclusion criteria was first prepared in each facility. Individuals were then picked from these lists with the aid of randomly generated numbers so that every eligible person had the same opportunity of being included, thereby reducing the possibility of selection bias.

Data Management

Interviews were captured using Kobo Toolbox and later organized for analysis. Coding of transcripts and identification of themes were carried out with the assistance of NVivo software. Data collection was done by the principal researcher, who is fluent in both Kiswahili and English, allowing accurate capture of participants' views during the interviews. The interviews included a series of thoughtfully crafted questions, such as: " How prepared were healthcare facilities for the COVID-19 pandemic prior to the announcement of the first case in Tanzania?" and " What was the position of leadership in healthcare facilities in fighting against the COVID-19 pandemic?" Additionally, the researcher asked about the Tanzanian Healthcare Workers' Experience in Fighting against COVID-19 Pandemic. This meticulous approach involved listening to recorded interviews multiple times, transcribing them in Kiswahili, and accurately translating them into English. The interviewer received training to enhance qualitative interviewing skills and focused on avoiding leading questions to gather genuine responses.

RESULTS

Socio-demographic Characteristics of Participants

The study included 96 participants, with a slightly higher representation of females 56 (58.3%) compared to males 40 (41.7%). Most participants were young to middle-aged, with 25 (26.0%) aged 20-29 and 32 (33.3%) aged 30-39. Nurses made up the largest group at 34 (35.4%,) followed by administrative staff 24 (25.0%) and clinicians 22 (22.9%). Regarding education, 41 (42.7%) hold diplomas, and 36 (37.5%) have bachelor's degrees. Half of the participants reported being members of COVID-19 response teams, indicating direct involvement during the pandemic. In terms of working experience, 32 participants (33.3%) had between six and ten years of service. The variation

in years of experience provided different viewpoints from healthcare workers, as summarized in Table.

Table: Socio-Demographic Characteristics of Participants (N=96)

Variables	Frequency (n)	Percentage (%)
Gender		
Male	40	41.7
Female	56	58.3
Age in years		
20 – 29	25	26.0
30 – 39	32	33.3
40 – 49	16	16.7
50 and above	23	24.0
Field profession		
Clinician (doctor)	22	22.9
Nurse	34	35.4
Pharmaceutical personnel	9	9.4
Laboratory personnel	7	7.3
Administrative staff	24	25.0
Highest level of education		
Certificate	13	13.5
Diploma	41	42.7
Bachelor degree	36	37.5
Master degree	6	6.3
Dedicated in the COVID-19 team		
Yes	48	50.0
No	48	50.0
Service experience in years		
1 – 5	22	22.9
6 – 10	32	33.3
11 – 15	20	20.8
16 – 20	14	14.6
Above 20	8	8.3

1. COVID-19 Pandemic Preparedness at Healthcare Facility Before the Announcement of the First Case in Tanzania

Based on the contributions from Individual Interviews (IIs) and Key Informant Interviews (KIIs), the following four themes regarding COVID-19 pandemic preparedness at healthcare facilities were identified before the announcement of the first case in Tanzania.

i. Reactive Preparedness and Lack of Proactive Measures

Healthcare facilities did not prepare adequately before the first COVID-19 case was reported, leading to a reactive approach once the pandemic hit. Numerous participants' observations strongly represent this theme.

- II Insight: *"No, the preparations were not made in time; we started to struggle with the preparations after the first patient was reported"* (II, Health Center N).
- KII Insight: *"Preparations officially started after the announcement of the first patient in Tanzania"* (KII, Hospital R).

ii. Insufficient Resources and Infrastructure

Participants often reported problems related to the shortage of supplies. Items such as PPE and testing services were not easily available in many facilities, especially at the beginning of the outbreak which affected preparations in several places.

- II Insight: *" The availability of PPEs was delayed and preparing the areas took time because it required a lot of things to be implemented" (II, Hospital U)*.
- II Insight: *" No, preparations were not made in time; there were no PPEs such as masks, gloves, and many others because there was no budget allocated for the epidemic" (II, Health Center Q).*

iii. Lack of Training and Awareness Among Healthcare Workers

Several respondents mentioned that training activities did not start early. In some facilities only a few staff members attended the sessions, leaving many without enough information during the early stages of the outbreak.

- II Insight: *" The training was very late and even when the training was given, it was given to very few people"* (II, Dispensary E).
- KII Insight: *" We were very little prepared just by being given awareness, but the equipment and PPEs became a challenge"* (KII, Health Center T).

iv. Rapid Adaptation After the First Reported Case

Once the first case was announced in the country, many facilities began to organize themselves. Spaces were identified for patient care and staff started to adjust their routine work in response to the situation.

- II Insight: *" After the first patient was announced, we started preparations and started allocating an area inside the hospital for the patients of COVID-19"* (II, Hospital R).
- KII Insight: *" After the announcement of the first patient, we allocated an area to care for COVID-19 patients"* (KII, Health Center J).

The themes highlighted overall delayed preparation, limited resources, and suggesting need for better planning in future outbreaks through addressing the preparedness gaps reported in this study.

2. Position of Leadership in Healthcare Facilities in Fighting against the COVID-19 Pandemic

Statements from both individual and key informant interviews showed several ways in which facility leadership was involved during the COVID-19 period and seven themes emerged as follows.

i. Leadership Involvement at Facility Level

Many participants described leaders as being physically present and involved in daily activities. Their role included guiding staff and assisting with the search for protective supplies when shortages occurred.

- II Insight: *" The leaders became the front line to fight against COVID-19"* (II, Health Center J).
- II Insight*: " Leaders helped us because they were fighting to get PPEs"* (II, Dispensary P).

ii. Training and Staff Guidance

In some facilities, leaders supported staff learning by arranging training sessions and sharing the information they received with others.

- II Insight: *" Heads of departments were also given priority in training and they provided training to other staff"* (II, Dispensary K).
- KII Insight: *" The leaders stayed at the facility for more than 12 hours to make sure things were going well"* (KII, Health Center S).

iii. Support in Obtaining Resources

Participants also explained that leaders were involved in looking for supplies and making small improvements inside the facilities, such as arranging hand-washing points and ensuring basic protective materials were available.

- II Insight: *"Leaders fought to ensure that equipment and PPEs are available"* (II, Hospital W).

- KII Insight: *"The facility leaders played a part in guiding people to wash their hands by preparing the infrastructure"* (KII, Health Center I).

iv. Communication and Information Dissemination

Participants explained that information about COVID-19 was shared with staff from time to time. In many facilities, updates were given during routine meetings and morning reports so that workers could follow the situation.

- II Insight: *" They always gave information in the morning report regarding the trend of COVID-19 in our facility"* (II, Hospital U).
- II Insight: "*Leaders took part in providing updates on COVID-19"* (II, Hospital X).

v. Support and Morale Boosting

Leaders played a significant role in boosting the morale of healthcare workers by showing solidarity, providing emotional support, and encouraging teamwork. Their presence and support were crucial during the challenging times.

- KII Insight: *" The leaders helped us a lot even when we ran out of masks; they made sure they were available on time"* (KII, Dispensary G).
- KII Insight: *" Leaders mobilized us well inside the facility to protect ourselves"* (KII, Dispensary B).

vi. Autonomy and Decision-Making

In some facilities, leaders were able to make decisions at the local level during the pandemic. This helped them to act according to the situation in their own facilities instead of waiting for instructions from higher levels. As a result, some activities were handled earlier based on the needs at that time.

- II Insight: *"We became capable of making our own decisions well and buying PPEs according to our needs"* (II, Health Center S).
- KII Insight: *"Despite being given support by the government, we became capable of making our own decisions"* (KII, Hospital W).

vii. Challenges and Budget Constraints

In many facilities, financial resource was a problem during the COVID-19 period. Leaders explained that activities could not move as planned because funds were limited. Some facilities had to work with what was available, which was often not enough.

- II Insight: *" The biggest challenge is that there was no budget for the facility to run itself"* (II, Hospital M).
- KII Insight: *" Leaders tried to ensure that PPEs are available to healthcare workers, but they were challenged by the limited budget"* (KII, Dispensary K).

The accounts given by participants suggest that leadership efforts were often affected by shortage of funds. Despite these difficulties, leaders continued to support staff as much as the available resources allowed.

3. Tanzanian Healthcare Workers' Experience in Fighting Against COVID-19 Pandemic

Concerning Tanzanian healthcare workers' Experience in fighting against the COVID-19 pandemic, the following four themes were generated.

i. Inadequate Preparedness

Multiple participants emphasized the lack of preparedness before the outbreak of diseases. They pointed out that actions are only taken when the disease has spread significantly.

- II Insight: *"We did not have enough preparation; when the problem matures, we start rushing without having a solid strategy to fight the disease."* (II, Dispensary G).
- KII Insight: *"No, we have no preparation, we wait until the disease spreads, and then we start preparing ourselves"* (KII, Health Center O).

The general trend noted by participants depended on a reactive approach rather than a proactive and preventive one.

- II Insight: *"We are not prepared at all; for example, if we had been well prepared during COVID-19 currently we would not be rushing again with the alarm of the presence of Ebola disease"* (II, Dispensary C).
- KII Insight: *"We often struggle with the consequences but not prevention"* (KII, Health Center S).

ii. Need for Continuous Training and Education

Many healthcare workers reported about the need for regular training. They explained that learning opportunities were limited, and some staff had to depend on brief instructions which were not enough to handle a new disease situation.

- II Insight: *"There is no continuous training to fight emerging infectious diseases"* (II, Hospital X).
- KII Insight: *"We are asking for continuous education for health workers"* (KII, Hospital F).

Several respondents felt that the shortage of training affected their confidence when dealing with the pandemic. Some explained that they still needed more knowledge to handle similar situations in the future.

- II Insight: *"We still need enough education to fight disasters"* (II, Dispensary B).
- KII Insight: *"There is no training, and we were not even given training; I don't know if someone can fight fully without training"* (KII, Dispensary H).

iii. Insufficient Resources and Infrastructure

Shortage of protective materials and other basic items was frequently mentioned during the interviews. Some participants explained that available resources were not enough to meet the needs of staff during the outbreak.

- II Insight: *"In the case of the COVID-19 disease, we didn't have enough PPEs; imagine that everyone thinks about himself and has something to protect himself"* (II, Hospital M).
- II Insight: *"We did not prepare enough; many facilities started to implement self-protection after the government gave directions"* (II, Health Center N).

Participants criticized the systemic and organizational inefficiencies that exacerbate the problem of inadequate preparedness.

- II Insight: *"We gave up on everything...now it is like we are starting again, so we are really not prepared as individuals, as a hospital, as a ministry, and as a country in general"* (II, Health Center L).
- II Insight: *"We are not fully organized; we only fight when the problem is big, and there are no sustainable strategies"* (II, Hospital R).

iv. Perception and Awareness of Disease Threat

Several participants noted that there was initial skepticism and underestimation of the threat posed by COVID-19.

- II Insight: *"Most people started to believe about the existence of the disease, especially in their working facilities; previously, most people did not believe if the disease could come to Tanzania and cause harm"* (II, Dispensary H).
- KII Insight: *"Previously, most people did not believe the disease could come to Tanzania and cause harm"* (KII, Health Center I).

Some participants reflected on what happened during the COVID-19 period and explained that future outbreaks should be handled with better preparation than before.

- II Insight: *"We have to be better prepared in the future"* (II, Dispensary A).
- KII Insight: *"Even though I don't have much experience and what happened in the past in other diseases, but this COVID-19 we didn't prepare enough, we need more education"* (KII, Health Center L).

The views collected from participants show that many facilities faced similar difficulties during the pandemic. Most respondents pointed to the need for earlier preparation, more training, and better availability of working materials in health facilities.

DISCUSSION

Regarding whether preparations for the COVID-19 epidemic were made at the relevant healthcare center before the announcement of the first case in Tanzania, most people who participated in the interview reported that preparations were not made in time. Instead, preparations started after the first patient was announced in Tanzania. These results are consistent with the quantitative findings concerning the implementation effectiveness of Infection Prevention and Control (IPC) measures, where implementation effectiveness was delayed at 91% and fast responses at only 9% of IPC measures [3]. Also, the study assessed the current implementation status of preventive measures in healthcare facilities, reported an insufficient level of preparedness by 52%, only 25% of preventive measures were well prepared, and about 23% reported average preparedness [11]. All these studies challenge Tanzanian healthcare facilities to have great success in fighting against COVID-19 due to low responses to implementing preventive measures to protect against the disease while the disease is still re-emerging.

The way Tanzania prepared differed from many other countries where good preparation brought positive results such as in India during the first wave of COVID-19, the central government imposed a nationwide lockdown on March 25, 2020, and the result found a nicely managed infection rate and the Indian policy became liked across the world [18]. A study conducted in Taiwan provided a retrospective overview of the occurrence of COVID-19, combined with critical preventive measures, in the timeline of the early stage of the pandemic. Fewer outbreaks were reported in Taiwan than in neighboring countries due to several preventive measures and the support of technologies to control the COVID-19 pandemic [19]. Good disaster policies and hospital strategies that the Taiwan government had implemented extensively helped control the outbreak. Good strategies implemented by the government of Taiwan resulted in a meager chance of its citizens contracting COVID-19 when new drugs or vaccines were not yet available [19, 20]. The strategies used in Taiwan can be replicated and used as a guide and reference for future epidemic control strategies in other countries including Tanzania. Also, the strong measures taken by Vietnam have contributed significantly to fighting the COVID-19 pandemic in the country. The success was due to the agreement to review the use of emergency control measures in the outbreak areas and the cooperation of using resources from many sectors, including health, media, transport, education, public affairs, and defense [21]. Tanzania, also as a country that cares about public health, should not be behind learning from Taiwan and Vietnam in strategies that are positive for the health of the community rather than having a single focus on fighting disasters such as the COVID-19 pandemic.

The clarity of information and a clear communication message about the fight against COVID-19 through official and social networks contributed significantly to changing the community's behavior and determining the best way to protect oneself from infection [22]. However, in combating COVID-19, different approaches were recognized; for example, the South Korean government applied a far more liberal approach with no lockdowns, underpinned by mass testing which is conceptually different from the strict measures deployed in Vietnam [23]. Pakistan, the country where China is located in the northeast, shares a border of more than 500 kilometers, which is accompanied by studies and tourism. Therefore, the probability of an outbreak of COVID-19 in Pakistan is very high [24].

An appropriate combination of the government's command, control, incentives, and communication is critical to ensuring the public's compliance with the government's agenda [25-27]. In Vietnam, the MOH and the government strongly emphasized central management and leadership [28]. The way the Tanzanian government has responded to the COVID-19 pandemic has the same trend as the scenario of the South Korean government and Pakistan in a way that increased the number of infections to a large extent in South Korea and Pakistan. So, the government of Tanzania should comply with early infection control preventive measures to benefit public health.

Concerning the leadership position in healthcare facilities in fighting against the COVID-19 pandemic, all healthcare workers reported that their leaders thoroughly helped in the fight against COVID-19 in their facilities. Healthcare leaders are more efficient in fighting disease outbreaks due to their knowledge and training in infection prevention and control measures. The findings are consistent with a Canadian study that found that the prevalence of COVID-19 disaster preparedness activities in healthcare facilities was positively associated with healthcare leaders who received

training in responding to the effects of the disease and had dedicated Emergency Management (EM) resources [29, 30]. The study provides strong evidence of the diversity of regional, organizational, and EM resources in delivering disaster preparedness activities and training for leaders in Canadian health care [29].

In particular, during this COVID-19 pandemic, healthcare leadership needs to reorganize consumer behavior and healthcare protocols based on best practices for controlling COVID-19 and other diseases of the same kind [31]. The design of healthcare facilities should provide a natural environment that supports service providers to act professionally, trustworthy, and respectfully for the whole community [32]. Models from management consultants and the armed forces were discussed and adapted to the surgical leader to provide a framework in which the surgical leader can successfully respond to the institutional crisis and ensure future stability [33]. Since healthcare workers in this study declared that they were not well prepared for the COVID-19 pandemic, capacity-building strategies should be in place so that healthcare leaders can appropriately take on the responsibilities of combating emerging infectious diseases of the same kind as COVID-19.

In response to a question that asked whether health workers in Tanzania have enough experience to deal with emerging infectious diseases such as COVID-19, all the healthcare workers who participated in this question said that they do not have enough experience to fight against COVID-19 in general. In the past decade, several emerging infectious diseases have posed a global threat to human health. Healthcare workers (HCWs) surveyed these days showed a lack of knowledge surrounding these pathogens and the need for more education/training [34, 35]. The novel pathogens outbreaks can be extremely stressful and detrimental to HCWs, but this stress can be lessened by clear guidelines from hospitals and IPC teams [36].

Healthcare systems must ensure that all HCWs develop the ability to manage new and emerging threats to maintain their mental health and well-being. The importance of communication and employee well-being cannot be understated. Similar to other studies [37, 38] many healthcare workers reported physical and mental fatigue and stress during these outbreaks. Therefore, comprehensive support should be provided in Tanzanian healthcare facilities to safeguard the well-being of healthcare providers. Regular and intensive training for all healthcare providers is necessary to promote preparedness and effectiveness in crisis management.

STRENGTHS AND LIMITATIONS

This study offers valuable insights into the resilience of healthcare facilities in Tanzania, while addressing preparedness, leadership, and healthcare workers' experiences across multiple regions which make the study more applicable. Involving different levels of healthcare facilities such as hospitals, health centers and dispensaries together with the different professional backgrounds enriched the diversity of views captured. In addition, the use of trained interviewers and systematic thematic analysis supported by NVivo software strengthened the creation of relevant themes and increases the credibility and consistency of the findings.

However, several limitations should be considered when interpreting the results. The use of qualitative approach may largely be based on participants' personal views and lived experiences, which may introduce subjective bias. In addition, participants were required to recall their experiences during the COVID-19 pandemic. This may have introduced recall bias, as some responses may be influenced by the current situation instead of referring to the situations of the past experience. Furthermore, the cross-sectional nature of the study limits the ability to understand changes over time which may not reflect how addressed challenges were improved over time following interventions implemented in different phases. Given these limitations, future studies are recommended to use mixed methods or longitudinal designs, the approaches will provide a more comprehensive understanding of the resilience of Tanzanian healthcare facilities against the COVID-19 and future pandemics.

CONCLUSION

Before announcing the first COVID-19 case in Tanzania, most healthcare workers reported that the relevant healthcare facility did not prepare in time. Instead, preparations began after the first patient was announced in Tanzania. All healthcare workers reported strong support from their facility

leaders in fighting COVID-19. Most of them were highly committed and took part in training other HCWs in their facilities. Healthcare workers in Tanzania reported lacking sufficient experience to deal with COVID-19. Policymakers should invest in continuous training and resource allocation to strengthen health system resilience in future outbreaks.

DECLARATIONS

Ethical Approval: Ethical approval for this study was obtained from The Open University of Tanzania with reference number PG202001923.

Informed Consent: Written informed consent was obtained from all participants prior to data collection.

Consent for Publication: Not applicable.

Conflict of Interest: The authors declare no conflict of interest.

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Authors' Contributions: Conceptualization, study design, methodology, resources, data collection, data analysis, and writing the original draft: EAM. Review and editing: MDV, SKN.

Data Availability: The datasets generated and analyzed during this study are not publicly available due to ethical and confidentiality restrictions. However, they may be obtained from the corresponding author upon reasonable request, subject to approval by the relevant ethics committee.

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