






Hospital Readiness and Perceived Health Professional Challenges to Prevent Pandemics in Gedeo Zone, Ethiopia: A Mixed-Method Study

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Background: Pandemics pose serious threats to health, society, and economy worldwide. Ethiopia has been affected by the COVID-19 pandemic, which has caused millions of deaths and disrupted essential health services. The readiness of health systems and the challenges that health professionals face in delivering pandemic-related services are crucial for preventing and controlling pandemics. However, these aspects have not been adequately assessed in low-income countries like Ethiopia, where poor prevention techniques and challenging work conditions can increase the transmission of diseases and overwhelm the weak healthcare system. This study aimed to assess hospital readiness and health professional challenges to prevent pandemics in Ethiopia.

Methods: A mixed-methods study design was used to collect data from 24 health professionals and four public hospitals using interviews and a checklist which explored the challenges and barriers of health professionals in preventing pandemics and assessed the hospital readiness. Data were analyzed thematically with open code software and descriptively with SPSS software.

Results: The study revealed the alarming gaps in the hospitals' readiness and the health professionals' capacity to prevent and control pandemics. Most of the hospitals had insufficient preparedness in terms of administrative activities, infection prevention and control (IPC) activities, emergency room preparedness, outpatient services, and logistics and supplies. The health professionals faced multiple challenges, such as lack of resources, training, personal protection, psychological support, and workload. The most critical challenges were the lack of personal protective equipment (PPE) and training, which compromised their safety and effectiveness.

Conclusion: The study underscored the need to enhance the hospitals' readiness and the health professionals' capacity to prevent and control pandemics and health professionals faced various challenges in preventing and controlling pandemics. These challenges include lack of resources, training, psychological support, and lifestyle changes which may compromise their quality of care, safety, and well-being.

Keywords: COVID-19, challenges, adherence, pandemic, prevention

Introduction

Emerging and reemerging pathogens pose global challenges to public health. Among them are pandemics, which are widespread outbreaks of infectious diseases that threaten health, society, and the economy. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has caused a pandemic of coronavirus disease 2019 (COVID-19), which has infected over 300 million people and killed over 5 million people worldwide as of January 2022.^{1,2}

The first confirmed COVID-19 case in Ethiopia was reported on March 13, 2020, and since then, the country has recorded more than 400,000 cases and over 6000 deaths in which the COVID-19 pandemic has also disrupted essential health services and exacerbated existing health challenges in Ethiopia, such as malnutrition, maternal and child mortality,

and communicable diseases.¹⁻³ Assessing the readiness and capacity of health systems and health workers is essential for preventing and controlling pandemics, such as COVID-19. Hospital readiness means that hospitals can offer prompt and quality care to patients with suspected or confirmed infections, while keeping health workers safe and reducing transmission within the facility.^{1,2}

Various obstacles hinder health professionals from providing pandemic-related services. These obstacles include insufficient knowledge, skills, equipment, supplies, guidelines, protocols, motivation, support, and protection. By comprehending these challenges and the hospital readiness, we can achieve the following: fill and meet gaps and needs; rank and carry out interventions; distribute and utilize resources; track and assess progress; and enhance and maintain performance.^{1,2} The World Health Organization (WHO) has stated the rights of health professionals during the COVID-19 outbreak, as they are at high risk of infection which include, receiving training on personal protective equipment (PPE), infection prevention and control (IPC) strategies, and disease epidemiology, as well as having adequate PPE and IPC supplies, such as hand sanitizer, gloves, face masks, gowns, goggles, soap and water, and cleaning supplies.¹⁻³

Health facilities need to prepare and respond effectively to tackle the risks of disasters. This includes having organizational, national, or international plans, collaborating and communicating with different stakeholders and institutions, training, and simulating professionals, and increasing surge capacity.^{1,2} Recent research in both developed and developing countries has shown that the only way to stop the deadly spread of infectious diseases is to have a well-organized system that can support institutions in facing the escalating threat. However, many factors are hindering the effective response to the pandemic, such as the shortage of hand-cleaning solutions and PPEs, the lack of training, the negligence, the ignorance, the poor infrastructure, and the low motivation and recognition of health workers.^{1,3} By understanding these challenges and the hospital readiness, gaps, and needs can be identified and addressed, interventions can be prioritized and implemented, resources can be allocated and used, progress can be monitored and evaluated, and performance can be improved and sustained.⁴

The health delivery system in low-income countries like Ethiopia faces many challenges in preventing pandemics, such as poor prevention techniques, difficult work conditions, and weak healthcare infrastructure. These challenges can increase the risk of disease transmission to health professionals and the community and overwhelm the already strained system. However, there is a lack of research on how hospitals and health professionals are prepared and equipped to deal with pandemics in such settings.^{5,6} Therefore, this study aimed to assess the readiness of hospitals and the difficulties faced by health professionals in preventing pandemics.

Methods and Materials

This mixed-methods study collected and analyzed data from four public hospitals in Gedeo Zone, Ethiopia^{7,8} from January to April 2023. Participants were purposively selected based on the concept of information saturation. Twenty-four health professionals (six from each hospital) participated in in-depth interviews (IDIs). The preparedness of all four hospitals was also assessed quantitatively by six data collectors. Qualitative data were collected using IDIs with a guide based on relevant literature and translated into Amharic. The interviews were conducted in quiet rooms, recorded with consent, and lasted 20 to 27 minutes. Probing was used to elicit more information. Checklist, questionnaire, and field note (memo) were also used as data collection tools. Hospital readiness data were collected using a checklist adapted from the Ethiopian health care facility COVID-19 preparedness and response protocol, which is a general tool that can be modified for any pandemic.⁹ The checklist evaluated the hospital preparedness in five areas: administration, infection prevention and control (IPC), emergency room, outpatient services and logistics and supplies.

The Institutional Review Board (IRB) of Dilla University's College of Medicine and Health Sciences approved the study ethically. The Gedeo Zone health bureau and the hospitals are supported officially. The respondents consented verbally after learning the study's purpose, objectives, and withdrawal rights. The data collectors followed IPC precautions such as masks, hand sanitizers, and social distancing. The investigators collected rich data by spending a long time in the setting, enhancing credibility. They transcribed the interviews verbatim and provided thick descriptions for applicability. Another transcriber checked, corrected, and translated the transcription. The data was saved as plain text and imported into open code software version 4.03 for coding and categorization. The data were analyzed thematically and grouped into themes. The findings included direct quotes of healthcare professionals without grammar editing to

preserve meaning. For the quantitative part, data were processed and analyzed in SPSS version 25.0 using descriptive statistics to calculate indices.

Result

Hospitals Readiness for Pandemics and Outbreaks Prevention

The readiness of the hospitals was assessed using a checklist adopted from the Ethiopian healthcare facility COVID-19 preparedness and response protocol (9). The checklist assesses the hospital readiness in five categories: administrative activities, IPC activities, emergency room preparedness, outpatient services, and logistics and supplies. Most hospitals were poorly prepared for administrative activities but had dedicated COVID-19 screening, case management, isolation, infection prevention area, and infection prevention. They also collaborated with the leadership for decisions and resources for the COVID-19 response (Table 1).

Regarding the infection prevention and control activities; none of the hospitals (0/4) had an adequate amount of PPE available and only a few (1/4) of the hospitals provided staff education about COVID-19 and other pandemics/outbreaks infection control (Table 2).

Among the parameters of emergency preparedness; most of the hospitals (3/4) have a prepared pre-triage area per protocol whereas lack of availability of fast mechanisms for rapid evaluation of the patients was seen in all hospitals of Gedeo Zone (Table 3).

Furthermore, the preparedness of all the hospitals was found to be poor regarding outpatient service and logistics and supply parameters (Table 4).

The Perceived Challenge Among Health Professionals in Prevention of Pandemics/ Outbreaks Sociodemographic Characteristics of the Participants

We conducted twenty-four in-depth interviews with various health professionals working in four hospitals in Gedeo Zone. Most of the participants (58.3%) were male and had a Bachelor of Science (BSc) degree (91.7%). Their ages ranged from 25 to 38 years, with a mean of 29.33 ± 3.34 . Half of them (45.8%) were nurses (Table 5).

Table 1 The Readiness of Hospitals Regarding Administrative Activities to Prevent Pandemics and Outbreaks, 2023

S. No	Readiness Indicators	Completion Rate of Hospitals [N=4]	
		Yes	No
1	Specified area for pandemics/outbreaks (COVID-19, Cholera etc) screening, isolation, case management, and infection prevention	4/4	0/4
2	Non case management centers including dedicated trained staff for deployment to pandemic/outbreak treatment center	1/4	3/4
3	Collaboration and leadership for potential resource allocation and decisions	4/4	0/4
4	Established methods for patient/family information delivery mechanisms including alternative languages	1/4	3/4
5	Strategies to maintain essential basic services (eg, pregnancy, surgery, inpatient service)	1/4	3/4
6	Contingency plans in case of staff shortages and turnover during pandemic/outbreaks	0/4	4/4
7	A well-designed strategy to screen and manage symptomatic health care providers	1/4	3/4
8	Supply and stock check list for emergency response.	1/4	3/4
9	Organized pandemic/outbreak response team composed of different professionals	2/4	2/4
10	Availability of ethical and morgue management committee	0/4	4/4
12	Centers nominated for pandemic (COVID-19) providing surgery, gynecology, and obstetrics services	1/4	3/4

Table 2 The Readiness of Hospitals in Gedeo Zone Regarding Infection Prevention and Control Activities to Prevent Pandemics and Outbreaks, 2023

S. No	Readiness Indicators	Completion Rate of Hospitals [N=4]	
		Yes	NO
1	Assigned one Infection prevention and control focal person	4/4	0/0
2	Staff training about COVID-19 and other pandemic and outbreaks infection control	1/4	3/4
3	Availability of plan on infection prevention and control material supply.	1/4	3/4
4	Initial assessment done to identify the available supplies and identify the gaps.	2/4	2/4
5	Availability of adequate amount of PPE (masks, goggles, soap, and alcohol-based sanitizer)	0/4	4/4
6.	Prepared primary water source and supply with its back up	4/4	0/4
7.	Utilization of the available national guideline regarding PPE	2/4	2/4
8.	Availability of monitoring mechanisms for staff illness and leave	4/4	0/4
9.	Developed plan to reduce patient and attendants overcrowding	1/4	3/4
10.	Plan to postpone non emergency services	1/4	3/4
11.	Mechanisms for handling of samples taken from suspected cases trained staff	4/4	0/4
12.	Provision of training on IPCs for Support staff (staff working in a morgue area, food service, janitors etc.)	0/4	4/4

Table 3 The Readiness of Hospitals in Gedeo Zone Regarding Emergency Room Preparedness to Prevent Pandemics and Outbreaks, 2023

S. No	Readiness Indicators	Completion Rate of Hospitals [N=4]	
		Yes	No
1	Availability of pre-triage area	3/4	1/4
2	Availability of isolation area for suspected cases near to pre-triage area to be used until patients transferred.	3/4	1/4
3	Planned strategies for isolation of suspected cases from other waiting patients in the emergency department.	1/4	3/4
4	Implementation mechanisms for infection prevention techniques (through policies, education, and signage)	1/4	3/4
5	Availability of referral mechanisms for non-COVID-19 health issues that need critical care	1/4	3/4
6	Care plans to reduce the number of professionals caring for suspect and confirmed cases until transferred.	1/4	3/4
7	Availability of mechanisms for rapid evaluation and prescription for minor illness.	0/4	4/4
8	Availability of transportation and risk communication plan for suspected cases	2/4	2/4
9	Keeping of 6 feet between beds in the routine emergency department care with minimizing attendants and care givers	0/4	4/4

The Perceived Challenges Among Health Professionals

The study examined the challenges faced by health professionals in implementing various preventive measures to curb the spread of the pandemic. As COVID-19 poses a global threat, health professionals have a vital role as implementers and leaders in promoting individual and collective behavioral change to prevent and respond to COVID-19 and other

Table 4 The Readiness of Hospitals in Gedeo Zone During Pandemics/Outbreaks Regarding Establishment of Outpatient Services, Logistics and Supplies, 2023

S. No	Readiness Indicators	Completion Rate of Hospitals [N=4]	
		Yes	No
1.	Availability of staffing plan regarding expanded service hours as needed	0/4	4/4
2.	Availability of easy ways for medication refills	0/4	4/4
3.	Availability of developed strategy for screening and triage using phone	0/4	4/4
4.	Availability of contingency plan to limit or cancel non-essential visits.	0/4	4/4
5.	Plan to decrease outpatient waiting area crowding with strict hand hygiene of patients and attendants	1/4	4/4
6.	Initial assessment to identify the available logistics and supplies for prevention, management response gaps for COVID-19 related activities	1/4	3/4
7.	Availability of mobilization activities to fill the identified gaps during the initial assessment regarding logistics and supplies	1/4	3/4
8.	Preparation of logistics and supplies as early as possible for prevention, management, and response-related activities	1/4	3/4

Table 5 Sociodemographic Characteristics of Study Participants, Gedeo Zone, SNNPR, 2023

Characteristics	Frequency (n)	Percentage (%)
Sex		
Male	14	58.3
Female	10	41.7
Religion		
Orthodox	11	45.8
Protestant	11	45.8
Muslim	2	8.4
Level of education		
Level 4	2	8.3
BSc	22	91.7
Marital status		
Single	10	41.7
Married	14	58.3
Profession		
Nurse	11	45.8
Anesthetist	3	12.5
Midwife	3	12.5
General Practitioners	5	20.8
Laboratory technician	2	8.3

related pandemics. The following themes present the findings related to the perceived challenges among health professionals:

Theme I: Challenges Related to Lack of Adequate Resources for Prevention

The health professionals who participated in this study faced a major challenge in preventing infection: the scarcity of essential resources. They revealed that their health facilities did not provide them with enough resources to protect

themselves and their patients from the infection. They specifically mentioned the lack of PPE such as masks, sanitizers, gloves, etc. They expressed their frustration and concern about how the inadequate supply of PPE put them at risk of contracting and transmitting the infection. They shared their experiences and difficulties regarding the availability and distribution of masks, sanitizers, and other resources as follows:

...I cannot say the PPE is adequate. We are using one surgical mask for more than 4 days and there is a limited number of sanitizers. More importantly, we have extremely limited face-shield, Google, and N95 masks. In addition, even with this limited amount of N95 masks, most are distributed to the administrative staff. So, I can say the distribution by itself is a problem... (IDI 9)

In some centers, good supplies of some of the PPEs have also been reported. One participant described this as:

...Availability of all personal protective equipment is good. They give us masks; sanitizer. Soup and water are available. But what we call goggles, face shield, N95 mask, and gown is not available... (IDI₂₂)

Theme 2: Challenges Related to Training

Another prominent issue in pandemics like COVID-19 is the provision of regular technical update training for the staff. This will improve the quality of care, protect the well-being of the professionals providing the care and help prevent large-scale transmission. The participants expressed this as:

The main challenges I am facing are a lack of training; we are practicing without training. I think, it is better if the responsible bodies gave us training. (IDI₁₆)

Providing updated training for frontline professionals is very important. Furthermore, prioritization should be made since covering all groups of professionals at a time may be challenging. The professionals described this issue as:

The other challenge is the thing related to training. If possible, I think all the health care providers should get the training. But usually, they provide training for less concerned professionals. I think it should be provided for each one of us. (IDI₁₁)

...The other issue is the issue of training, on training those who really needed are not trained, the janitors, the proctors, and the security team. And even those trainers should always be trained well, or others should take over. The training must be done departmental wise... (IDI₁₀)

Theme 3: Personal Protection Habit and Negligence Related Challenges

Individual protection measures are usually taken voluntarily by individuals. Wearing facial protective equipment, maintaining physical distance, and washing hands regularly would be extremely important to minimize the risk of acquiring the disease. These will avoid the disease's spread and contribute to preventing the failure of the health systems. Individuals expressed their poor personal protection habits as:

...Since it is a new practice I and my friends are very negligent on sticking with the prevention techniques.... (IDI₁₄)

...Poor personal habits and practice of infection prevention including negligence are other challenges I am facing.... (IDI₁₆)

Theme 4: Psychological Challenges

Pandemics like COVID-19 have a negative impact on the psychological aspects of health professionals and create new barriers to quality-of-service delivery. Participants explained this as:

...We are in great fear. Because we have no adequate protective equipment, no training, the government has no attention for us, so we have a fear and desperation.... (IDI₁₉)

Theme 5: Workload Related Challenges

The pandemic and outbreaks like COVID-19 have created a long-lasting and uncertain situation that affects the mental and physical well-being of the health professionals. They must cope with the increased workload due to staff turnover

and high demand for healthcare services. They also have to face the risk of being abused, victimized, and frustrated by the pandemic and its consequences. This is how some of the participants from the Gedeo Zone described their challenges.

...The other issue after any pandemics and outbreaks like COVID-19 is a significant increment in workload in all units because of staff mobilization.... (IDI₁₂)

Discussion

Infection prevention and control is the main priority of professionals and institutions during the pandemic season, despite the shortage of resources which can be mitigated by using and reusing PPE rationally, improving the logistics of PPE distribution, providing appropriate training with practical sessions, and following written PPE use protocols.^{10–12}

Our study showed that the preparedness of most of the hospitals in the Gedeo Zone was insufficient in terms of administrative activities, IPC activities, emergency room preparedness, outpatient services, and logistics and supplies. Similar findings were reported in Addis Ababa and Southern Ethiopia, which highlighted that the inadequate preparedness of institutions required more global solidarity, especially regarding the lack of equipment and the shortage of consumables.^{4,13} This could be explained by the fact that they encountered various challenges in implementing preventive measures to curb the spread of the pandemics and other outbreaks, which might have caused them fatigue.

Our study found five main themes of perceived challenges among health professionals. These were challenges related to lack of adequate resources for prevention, lack of adequate and appropriate training, challenges related to personal protection habits and behavior, psychological-related challenges, and workload. Similar studies also reported that the professionals faced challenges such as a lack of adequate and appropriate training and PPE, issues related to social acceptance, mental health, incentives, coping strategies, coordination, and direction during the COVID-19 pandemic.^{4,14}

This study found that lack of PPE and inadequate training were among the main challenges faced by most health professionals. This is consistent with a qualitative study of in Bangladesh and Ethiopia.^{4,10,14} This might be due to our study having external validity and using a deep assessment modality to explore the major problems.

Our study also identified challenges related to personal protection habits and negligence, psychological-related challenges, and workload as other additional barriers affecting the prevention practice of healthcare professionals. This may be due to the high risk of infection and transmission, the high workload and stress, the social isolation and stigma, and the lack of psychological support and coping strategies because the study was conducted during the period of the COVID-19 pandemic. In accordance with our study, a study conducted in Yemen reported similar findings.¹⁵

This study revealed that the main perceived barriers to preventing and controlling COVID-19 and other related pandemics and outbreaks were the lack of adequate PPE, poor healthcare infrastructure, unaffordable hand sanitizers and face masks for the public, and insufficient financial resources. These barriers were reported by most of the participants in the study. This shows that the hospitals involved in this study had to cope with a large population and limited resources nationwide at the time of the study. This result is consistent with a study done in Jordan on the second wave surge and in Pakistan.^{16,17}

This study found that general practitioners faced different degrees of stress and psychological distress during epidemic control, which agrees with a similar study done in Shanghai and Island.^{18,19} A probable reason for this is that general practitioners have to deal with a high demand to fight a public health emergency and their number is incredibly low in Ethiopia.

The study also showed that the outbreak and pandemic-related issues affected the health professionals' lifestyles and work environment, leading to various problems such as anxiety, depression, and fear. This can be explained by the fact that healthcare providers are more exposed to pandemics and outbreaks than other groups of society, as they are on the frontline. Several studies done in developed and developing countries proved the result in which COVID-19 and other pandemics and epidemics are the most devastating conditions to change the lifestyle, health condition, and social interaction of healthcare providers.^{20–22}

Conclusion and Recommendation

The study underscored the critical need to enhance the hospitals' readiness and the health professionals' capacity to prevent and control pandemics in Ethiopia. The study recommended that health professionals should receive adequate resources, training, personal protection, psychological support, and workload management from the government, non-governmental organizations, and other stakeholders. The study also suggested that the health professionals should follow the infection prevention and control guidelines and protocols and seek timely help when needed. The study added to the knowledge and evidence base for improving the quality of health care services and the safety and well-being of health professionals in low-resource settings during pandemics.

Abbreviations

COVID-19, Corona Virus Disease 2019; HCPs, Health Care Providers; IPC, Infection Prevention and Control; PPE, Personal Protective Equipment's; SNNPR, South Nation Nationalities and Peoples Region.

Data Sharing Statement

All the required documents are available in the hands of the corresponding author and can be supplied upon request.

Ethics Approval and Consent to Participate

We adhered to the Declaration of Helsinki, which advocates for the potential benefits for the participants. We also followed the WHO's ethical and safety guidelines for human subject research, as our study on hospital readiness and perceived health professional challenges involved ethical and methodological issues specific to this type of research. The Institutional Review Board (IRB) at Dilla University, College of Medicine and Health Sciences, approved our study ethically, obtaining written informed consent from key informants after informing them about the study's objectives, procedures, risks, and benefits and accepting both written and verbal consent. The study participants had the right to withdraw from the study at any stage of data collection. Moreover, we obtained written informed consent from the key informants for publication of the study results.

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Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare that they have no competing interests in this work.

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