

A cross-sectional survey of COVID-19 preparedness in governmental hospitals of North-West Ethiopia

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Abstract

Introduction: The novel coronavirus was first reported in December 2019, from Wuhan, China, and it has been declared as a pandemic by World Health Organization on 7 January 2020, and from that time till now the disease transmitted across the world. Hospitals need to be prepared for the overwhelming COVID-19 cases in their respective hospitals.

Objectives: The objective of this study was to assess the level of hospital preparedness for COVID-19 in South Gondar Zone Governmental Hospitals, 2020.

Methods: The institutionally based survey was conducted in South Gondar Zone Hospitals from 20 July to 25 July 2020. We used the World Health Organization preparedness checklist for COVID-19, and the checklist has three options for eight hospitals (not started, in progress, and started), so each hospital evaluated out of 208 points (104 items × 2) to assess each hospital their preparedness based on the checklist. Statistical Package for the Social Sciences, Version 21, is used for the analysis of the data. We used descriptive statistics and explained by using text and tables.

Results: We evaluated all eight hospitals in these zone hospitals and only one hospital was in an acceptable level of preparation (>146 points), three hospitals were in an insufficient level of preparation (73–145 points), and the other four hospitals were grouped under the unacceptable level of preparation (<72 points) for COVID-19. And in all hospitals, there was no laboratory diagnostic method and treatment center for the COVID-19 virus.

Conclusion: From the level of COVID-19 pandemic preparation from eight hospitals, only one hospital reaches the level of an acceptable level of preparedness. Mobilizing the community and other stakeholders to equip the hospital with resources and prioritization is recommended to mitigate the impact of COVID-19.

Keywords

COVID-19, preparedness, hospitals

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Introduction

Novel coronavirus (also called COVID-19, or 2019-nCoV, or SARS-CoV-2) first reported in December 2019, from Wuhan, China, and it has been declared as a pandemic by World Health Organization (WHO) on 7 January 2020, and from that time to now the disease transmitted across the world.¹ Currently, in the world, more than 32 million people infected with the disease; more than 983,000 people lost their lives due to COVID-19; in Ethiopia, more than 71,000 people infected with the disease, and 1149 of them died of this pandemic virus; and there were also more than 60 confirmed cases in the South Gondar Zone till now (Ethiopian Minister of Health Report).

However, there might be underreporting of the number of cases due to diagnostic insufficiency, low testing capacity, and fragile health care system, especially in developing countries. The number of COVID-19 cases is getting increased every day both globally and in our country with the limited testing ability, which means if this problem is left unmanaged there could be a high chance of getting untested

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but positive cases in general patients visiting health hospitals. Hospitals need to be prepared for the overwhelming COVID-19 cases in their respective hospitals. Currently, in the South Gondar Zone, there are more than 60 confirmed cases of COVID-19.

However, this result might not be representative and even there is no evidence of what will happen in the area. Cases found from the community indicate that there is a high community transmission, so the respective treatment center and the hospital have to be prepared per the standard. Hospital preparation with the resource, capacity building, and surveillance is the major way to prevent for further spread of the pandemic.² In Ethiopia, the pandemic preparedness was 52% (based on Ready score criteria), which needs community awareness, sanitation measure, and fulfillment of the materials required for the pandemic.³ Specifically, drugs, personal protective equipment (PPE), and laboratory services were scarce and need immediate action before the overwhelming of the pandemic.⁴ Patients with COVID-19 came to the hospital for other health care services like emergency operation; during that time, this patient needs critical precaution like used materials (the anesthesia machine, breathing system, and other materials need to be changed or isolated for another case).⁵ Preparedness for COVID-19 even in developed countries showed limitations like an insufficient backup plan, shortage of PPE, and lack of isolation centers.⁶

Underestimation of the risk of COVID-19, insufficient preparation, communication failure, unused preexisting data of COVID-19, a saturation of the health system with an infected individual, infected health personnel, and testing strategy were the indications of poor preparedness, and the country will be affected the most.⁷

WHO and other international organizations recommend the use of effective countries' experience, infection prevention practices, and immediate and flexible health policies for better prevention and control of the pandemic.⁸

Assessing the baseline preparedness of hospitals is important for filling the gap of the institutions for the prevention of the COVID-19 pandemic.⁹ The objective of this survey was to identify the preparedness of hospitals for the COVID-19 pandemic and to show the gap of the hospitals for the concerned body.

Materials and methods

An institutional-based survey was conducted in South Gondar Zone Hospitals from 20 June to 25 June 2020. South Gondar Zone is located in Amhara regional state, and Debre Tabor, which is 669 km away from the capital, Addis Ababa, was the study area. Based on the population growth projection, the current total population of the zone is about 2,578,906.

There are eight governmental hospitals from these seven primary hospitals (Addis Zemen, Ebinat, Mekane Eyesus, Nefas Mewucha, Andabet, Arb Gebeya, and Wogeda) and one general hospital (Debre Tabor General Hospital). For all

hospitals, the source of the fund was governmental. Ethical approval for this study was waived by Debre Tabor University ethical review committee with the number HSC/1094/2020, and informed written consent was not required, because this was all about hospital evaluation and not the involvement of human subjects in this study. We used the WHO Readiness Checklist for COVID-19¹⁰ after contextualized it to our setup to assess each hospital their preparedness based on the checklist. The used checklist is attached as a supporting file. The checklist was found freely at www.euro.who.int.

The checklist was filled by giving the checklist directly to the COVID-19 focal person in each hospital. And there were no follow-up done after primary surveyed data. Statistical Package for the Social Sciences (SPSS, Version 21) was used for the descriptive analysis of the data. The summarized data were explained by using text and tables.

Result

A total of eight hospitals were evaluated for their COVID-19 pandemic preparedness in the WHO COVID-19 preparedness checklist, which contains 104 items with 11 domains after we contextualized into our setup (incident management system, surge capacity, infection prevention and control, case management, human resource, continuity of essential health services, and patient care, surveillance, communications, logistic, and management of supplies, including pharmaceuticals, laboratory services, and essential support services). The checklist was filled by the Hospital COVID-19 focal person at each respective hospital.

The checklist has three options (not started, in progress, and started) and assigns 0 for not started, 1 for progress, and 2 for started, so each hospital was evaluated out of 208 points (104 items \times 2); this classification was adopted from disaster preparedness evaluation by WHO toolkit at Italy:¹¹ if the hospital performs less than 35% (72 points), it is in an unacceptable level of preparation; if it is 35% to 70% (73–145 points), it is in an insufficient level of preparation; and if it is more than 70% (>146 points), it is in an acceptable level of preparation (Table 1).

Incident management system (D1)

In this domain, all hospitals achieve more than 50% of the required score and one hospital had a full score on this domain. This domain was the first important baseline assessment of their disaster plan, assigning the focal person for the pandemic and communication to the respective body concerning the pandemic in their hospital. The most missed part of this domain was the presence of an isolated room for the pandemic.

Surge capacity (D2)

From this domain in all hospitals available materials for the pandemic including a mechanical ventilator, intensive care unit (ICU) room, and bed, expanding the hospital inpatient

Table 1. Performance of each hospital on each domain at South Gondar Zone Governmental Hospitals, 2020.

Domain	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	Total points
WHO full score	10	16	30	34	26	8	18	16	22	14	14	208
Hospital 1	10	7	23	26	25	7	17	14	20	13	8	170
Hospital 2	5	5	7	11	8	4	4	5	9	3	3	64
Hospital 3	5	9	17	22	12	3	6	4	9	5	8	100
Hospital 4	6	8	19	14	4	5	2	5	6	4	3	76
Hospital 5	6	5	6	10	8	4	4	5	10	3	4	65
Hospital 6	5	9	17	22	12	3	6	4	9	7	8	102
Hospital 7	6	9	19	12	5	4	6	8	7	4	4	84
Hospital 8	5	6	8	10	8	5	4	6	8	5	4	69

D: domains; WHO: World Health Organization.

capacity was the main problem. But all hospitals were good at canceling non-essential surgeries.

Infection prevention and control (D3)

In this domain, all hospitals making awareness on the importance of hand hygiene for the pandemic and application of universal precaution perform well, but they lack other components like putting the patient in an isolated and well-ventilated room, availability of adequate PPE, avoidance of patient movement from room to room, and practice in recording the entry of persons to the patient room.

Case management (D4)

In this domain, most of the components were not applicable since there were no cases admitted for COVID-19 in these catchment hospitals. And from the components, the hospitals had a triage system, health personnel were aware of the disease, and they know the guidelines of COVID-19 management, but there was no triage supervisor on each hospital and also the logistics were not fulfilled for the case management.

Human resource (D5)

From this domain, almost all hospitals practice the following components like updating their staff, planning for additional staff, arranging shift work, and also giving training about COVID-19 for their staff. But other components were not practiced in this domain.

Continuity of essential health services and patient care (D6)

From these components, relatively all hospitals achieve well. All hospitals prioritized the continued services, and identified the required materials and drugs for the continued services during the pandemic. Be familiar with the preparedness mechanism of each hospital, the frequently missed component in this domain.

Surveillance (D7)

From these domains, the fully implemented components were the distribution of clinicians, implementation of data collection, and reporting system, but the other components were not still started like assigning of epidemiologists and testing of hospitalized personnel.

Communications (D8)

Communication domain components were in progress in all hospitals and the completed components from this domain were the establishment of communication mechanism and briefing on COVID-19 for the hospital staff.

Logistic and management of supplies, including pharmaceuticals (D9)

The completed components have updated the inventory of all equipment and repairs of types of equipment. Other components not started were as follows: assessment of the quality of equipment, contingency plan, and agreement; coordination with the pre-hospital network; and transportation services. The other components were in progress.

Laboratory services (D10)

From this domain, the started components were continuous services of basic laboratory and establish a laboratory referral pathway for identification and confirmation of COVID-19. Backup laboratory personnel, prioritize testing for respiratory viruses and establishing and train staff on packaging and transportation of specimens, and testing of COVID-19 virus on each hospital were not started yet. The other components were in progress.

Essential support services (D11)

From this domain, estimation of additional supplies and anticipation of the impact of COVID-19 on hospital supplies were in progress. And other components were not started yet.

Table 2. Evaluation of each hospital on WHO COVID-19 Preparedness Checklist at South Gondar Zone Hospitals Amhara, Ethiopia, 2020.

Hospitals	Total points out of 208 n (%)	Preparedness level of hospital
Hospital 1	170 (81.7)	Acceptable
Hospital 2	64 (30.7)	Unacceptable
Hospital 3	100 (48)	Insufficient
Hospital 4	76 (36.5)	Insufficient
Hospital 5	65 (31.2)	Unacceptable
Hospital 6	102 (49)	Insufficient
Hospital 7	84 (40.3)	Insufficient
Hospital 8	69 (33.2)	Unacceptable

WHO: World Health Organization.

Hospital 1 is a general hospital and the others were primary hospitals. So, in these zone hospitals, only one hospital was in an acceptable level of preparation, three hospitals were in an insufficient level of preparation, and the other four hospitals grouped under an unacceptable level of preparation (<72 points) for COVID-19 (Table 2). In all hospitals, there were no case management centers and even there were also no laboratory services for diagnosis of COVID-19 in these zone hospitals.

Discussion

In this survey, we found that there was no hospital prepared enough to prevent the COVID-19 pandemic and case management. Only one hospital reaches an acceptable level of preparedness, but even these hospitals had no COVID-19 diagnostic laboratory services.

One study showed related results with our work by assessing the surge capacity of the hospital assessed, and the result also showed that the hospitals were not well prepared for the COVID-19 pandemic.¹²

Other studies also agree with our work that in low-income countries, shortage of the necessary materials for diagnosing and managing the COVID-19 pandemic was bad news.¹³ And also, in low-income countries and with low health systems, the preparation was poor.^{14,15} The study advised that preparation is the cornerstone for the prevention of the pandemic spread and reducing the damage of the virus.¹⁶ This finding also agrees with the study done in our country Ethiopia which showed that the overall pandemic preparedness was low and needs much work for preventing COVID-19 pandemic.³

Other studies showed hospitals were prepared almost better than our catchment hospitals for COVID-19.^{17,18} The differences were the health system and economical level of the country. In a well-developed country, the pandemic preparedness and the facility of the health system were good.

In all surveyed hospitals, we found that there were different levels of PPE, including masks, gloves, and hand sanitizers,

and insufficient water supply from all hospitals. Other studies related to our work showed that hospitals were in poor preparation for the pandemic, including insufficient water supply.¹⁹ And WHO recommends the fulfillment of all the required PPE for the control of pandemic.²⁰

Insufficient preparations for the pandemic cause a lot of damages to the community, including the loss of lives. In this work, we found that there were no laboratory services to diagnose COVID-19 immediately. Timely diagnosing the pandemic is vital for the prevention of the further spread of the pandemic and early management of COVID-19 cases.^{21,22}

But other studies showed that at least there was a diagnostic laboratory for the pandemic COVID-19 in each hospital by setting criteria.²³ The experience of the SARS (severe acute respiratory syndrome) virus pandemic helps to prepare well for diagnosing the virus early, and the other difference could be related to the quality of the health system in the modern world.

In our evaluation, we found only one hospital with an ICU facility with four beds and four ventilators, but the other seven hospitals did not have an ICU facility. Another study also revealed in Ethiopia that there were scarce facilities of ICU and mechanical ventilators in both private and governmental hospitals.³ In the ICU facility and mechanical ventilators, other countries are better than Ethiopia;²⁴ the differences were related to the experience of other pandemic experience previously and the level of quality of hospitals. ICU facility with adequately equipped materials was needed in the era of COVID-19 for the management of critical patients with the coronavirus.²⁵

From previous pandemic experience, governance and coordination, health system infrastructure, and community engagement were important to reduce the damage from pandemic.²⁶

The temperature was checked daily for all patients and health professionals working on each respective hospital at the entrance gate, but there was no other screening test in all hospitals. But health professionals had to be screened for the virus to diagnose asymptomatic COVID-19 cases.²⁷

Conclusion

It has been concluded that based on the findings—from the level of COVID-19 pandemic preparations—only one hospital was at the acceptable level of preparedness from eight hospitals. So it needs attention in fulfilling the required diagnostic laboratory services and other PPE in the remaining hospitals.

Recommendations

This type of preparation during the era of COVID-19 pandemic condition was not good to prevent and control the pandemic. The problem was also high in third world countries like our country Ethiopia since it had a poor health system and low quality of health care services. So early

mobilizing the governmental resource, community, and other stakeholders to equip the hospital with resources is recommended to mitigate the impact of COVID-19.

Limitations of the study

One of the limitations of this study was its study area since it was only delimited to South Gondar Zone Hospitals and it was difficult to generalize to other hospitals. The other limitation is its study design which the study was a cross-sectional survey that captures data points at a given time and therefore might not be accurate as time progresses.

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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; and gave final approval of the version to be published. All authors have agreed on the journal to which the article has been submitted, and agreed to be accountable for all aspects of the work.

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Ethical approval

Ethical approval for this study was waived by Debre Tabor University ethical review committee with the number HSC/1094/2020 because all hospitals were under the catchment area of the university and no involvement of human as a study subject.

Informed consent

Informed consent is not required since it was an institution evaluation and not the involvement of human subjects in this study.

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