Assessment of preparedness and response of health professionals towards COVID-19 pandemic during early period in public hospitals in Oromia regional state, Ethiopia

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Abstract

Background: The COVID-19 has put global health institutions on alert. Organizations such as the CDC and WHO have developed preparedness and prevention checklist of 2019-nCoV infection to be used by public and healthcare professionals. Since COVID 19 pandemic is unexpected and no country aware of it prior to outbreak, there is limited information on the overall preparations of healthcare providers in Ethiopia. Therefore, the aim of this study was to assess early healthcare professionals' preparedness and response to COVID 19 Pandemic in Oromia regional state, Ethiopia.

Methods: The study was conducted on healthcare professionals working in public hospitals of Oromia regional state. The study was carried out by online questionnaire prepared using SurveyMonkey©. The collected data was analyzed, and One-way ANOVA was used to determine the significant differences between health professionals working in different hospitals. The statistical significance associations of variables of interest was determined at 95% confidence intervals.

Results: Healthcare professionals in the public hospitals of Oromia regional state, Ethiopia perceived that they are not yet well prepared and may not respond to the pandemic quickly and efficiently. Even though, they have positive response towards identifying signs and symptoms, provide education and utilization of PPE, they are still lacking in practical responses like managing cases, implementing emergency plans and isolation procedures from many others.

Conclusion: As the Federal Ministry of Health, Ethiopia Public health institute and Oromia health bureau are vigilant and continually conducting preventive measures programs, extensive and maximum effort should be done to improve healthcare providers' preparedness and response towards any emergency related to COVID-19 pandemic.

Background

The current flare-up of respiratory sickness caused by a novel coronavirus (named "COVID-2019") has bolted down the world and has been recognized as a danger by US Centers for Disease Control (CDC) and pronounced pandemic by World Wellbeing Organization (WHO). The primary case was identified in Wuhan City, Hubei Area, China and since at that point, the infection has spread in disturbing rate [1]. It is one of the worldwide pandemics with colossal wellbeing, financial and psychosocial emergencies influencing the citizens of any countries. Coronaviruses are a huge family of encompassed RNA infections found in a many of creatures like camels, cattle, cats, and bats. In moderately uncommon occasions, vectors can transmit coronaviruses to people with proceeded circulation coming about

from human-to-human exposure. Examples include severe acute respiratory syndrome coronavirus (SARS-CoV), Middle East Respiratory Syndrome Coronavirus (MERS-CoV), COVID-2019, like MERS-CoV, and SARS-CoV, all of them have originated in bats [2].

Taking after the WHO COVID 19 crisis affirmation, local and national governments and universal bodies have forced public health and social measures on people, educate and communities to contain the illness. These measures incorporate identifying and confining cases, contact-tracing and isolate, social and physical separating counting mass get-togethers and travel confinements [3]. Accordingly, in any nation, particular areas or administrations can be the central point of the episode. In spite of the fact that healthcare is given exterior clinics (such as crisis clinics, nursing homes, community wellbeing centers), hospital-based experts stay the bunch at amazingly tall chance of exposure to the diseases and may contract or transmit it in like manner [4]. In any case, data around the wellbeing frameworks and health professionals' readiness for combating the 2019-nCoV isn't known. Subsequently, their mindfulness and readiness in overseeing the 2019-nCoV contamination are vital to prevent the further spread of the disease. Our study will be conducted to assess the preparedness of healthcare personnel against the 2019-nCoV outbreak and how well they respond in an outbreak [5].

Healthcare workers are extremely exposed to the contaminations, more than any other people, as they are in contact with the infected people. Particularly, amid any flare-up, they may have to be work with a healthcare team [6] as their response to manage novel Corona infection which may put them under the most elevated chance of contracting the virus. Their behavior, mental set up and material readiness in overseeing the responding to the COVID-19 is exceptionally vital to avoid spread of this amazingly communicable illness [7]. The readiness includes from fabric accessibility such as sufficient N-95 masks for health care staff and its use according to its guidance to mental readiness to supply fundamental administrations without any fear [8-11].

Since COVID 19 pandemic is unexpected and no country aware of it prior to outbreak, there is limited or no studies and surveys all over the world and it is extremely lacking in Ethiopia. Consequently, the preparedness and awareness level of health care providers in Oromia regional state is unknown. Therefore, this study assessed healthcare professionals' preparedness and response towards COVID 19 Pandemic in the region. The finding helps to understand how healthcare professionals' readiness to protect themselves and contain the pandemic.

Methods and Material

Study Setting and Design

This study was conducted in Oromia National regional state public hospitals. Oromia region is one of nine constitutionally established states and largest and populous of all. There are 82 functional public hospitals in the region of which 44 are primary hospitals and 34 are general hospitals and 4 are comprehensive specialized hospitals. During the survey, a cumulative of 273 anesthesia professionals, 213 biomedical engineers,4051 Health Officers, 1391 medical doctors, 193 specialists, 19 public health specialists, 2359 laboratory technologists, 4632 midwifery professionals, 15401 Nurse professionals, 2664 pharmacy professionals, and 997 environmental health professionals were serving in those hospitals. Data was collected from April 01 to April 30, 2020 G.C and cross-sectional study design was employed [12].

Study Population, Sample Size and Sampling Technique

All health care workers in Oromia region's Public hospitals were included as study population. The survey was conducted in all functional public hospitals in Oromia Regional state, Ethiopia. There was no restriction on the number of participants per hospital and convenient sampling technique was used. All Healthcare providers in the hospitals including physicians, nurses, pharmacists, and others were included. We enrolled staff members who are or were handling suspected cases in settings in their respective hospitals [13,14].

Data Collection Tool

The study was carried out using a structured questionnaire adapted from the CDC checklist and the previous questionnaire on the recent outbreak. The questionnaire included different types of questions in the questionnaire including (Yes/No) questions, open-ended questions, and multiple-choice questions as well. The original questionnaire was developed in English and the study team collaborators at hospital level were responsible support for its translation into Afan Oromo when there was need. To gather information about the health care provider's preparedness in the participants' hospitals, we developed an online questionnaire using SurveyMonkey© that limits one-time participation per unique IP address and the link was sent to participants via Email, Telegram, WhatsApp, Facebook and LinkedIn for easy accessibility [15].

Data Analysis and Management

The collected data was organized by Google Sheets and collected in an Excel spreadsheet. The survey was completely anonymous. Only the study team had access to all data. Data entered into Google Sheets were quality-checked by to ensure accuracy. The statistical computer package, IBM SPSS, Version 22 was used to perform quantitative analysis on the collected data. In order to perform analysis of data, it was necessary to code the response variables, i.e., yes = 1, no = 0. Data cleaning were carried out throughout the data entry process. The analysis of the data was performed through descriptive statistics, such as frequencies for each of the variables. One-way ANOVA was used to determine the significant differences of each variable between the groups. The threshold for statistical significance was $p \leq 0.05$ [16].

Results

A total of 340 healthcare professionals completed the survey, more than 72% of the respondents were male. The majority of the respondents were in the age range between 21 and 30 years. In terms of experience, 80.8% of the respondents had up to 5 years during the study period. Concerning their profession, majority were physicians 120(35.29%) followed by nurses 90(26.47%) and majority of them 160(48.48%) are working in primary hospital (Table 1).

Table 1: Usociodemographic details of the respondents.

Characteristics		Frequency	percentage
Age	21-30	190	55.88
	31-40	130	38.24
	41-60	20	5.88
Gender	Male	245	72
	Female	95	28
Level of hospital	Primary	160	48.48
	General	110	33.33
	Comprehensive specialized	60	18.18
Profession	Physicians	120	35.29
	Nurses	90	26.47
	Pharmacists	70	20.58
	Laboratory technologists	60	17.64
Experience	Up to 5 years	170	51.52
	6-10 years	110	33.33
	More than 10 years	50	15.15

Table 2 presented the health care professionals' preparedness towards COVI-19 Pandemic. The mean scores were obtained by calculating the total response for each item in the questionnaire and the total sample participated in each category. The data showed that most of the respondents were not prepared for the COVID-19 Pandemic. There were significant differences between healthcare professionals on most of the items asked in the questionnaire.

Pharmacists felt they have no sufficient information about COVID-19 preparedness [0.46(±0.35)], didn't aware for guidelines and recommendations from WHO and FMoH [0.27(±0.39)], were not reading journals and articles about COVID-19 [0.44 (±0.15)], felt that there is low support from local officials during emergency situation. The nurses found it difficult to access educational ways about COVID-19 management [0.46 (±0.35)], low support from local officials [0.27(±0.39)], didn't know who to contact during emergency [0.44(±0.15)], difficult to get update and literatures about COVID-19 [0.40 (±0.23)], low participation in educational practices about COVID-19 [0.43 (±0.33)], low participation during planning [0.43(±0.33)], low understanding about history taking [0.43 (±0.28), not familiar with local emergency response system [0.36 (±0.18)] and most of them didn't consider themselves ready for management of COVID-19 [0.43 (±0.24)] [17].

Laboratory technologists felt low understanding about obstacles regarding COVID-19 preparedness [0.30 (±0.31)], challenging to access educational ways about COVID-19 [0.48 (±0.11)], insufficient awareness about recommendations from WHO and FMoH [0.42(±0.28)], most of them didn't read journals and articles about COVID-19 [0.42 (±0.23)], felt low support from local officials [0.39 (±0.34)], didn't know who to contact when got emergency [0.45 (±0.31)], not familiar with triage system [0.30 (±0.31)], didn't know isolation procedures [0.48 (±0.11)], not familiar with local emergency response system [0.42 (±0.28)] and most of them didn't consider themselves ready for management of COVID-19 [0.43 (±0.24)]. Physicians felt low support from local officials [0.30(±0.31)], didn't know who to contact in emergency situation [0.48 (±0.11)], didn't participate in educational activities about COVID-19 pandemic [0.42 (±0.23)], most of them didn't participate in planning [0.39 (±0.34)], and were not familiar with local response system [0.39 (±0.26)] (Table 2).

Table 2: Preparedness of health care professional towards COVID-19 Pandemic.

S. N	Items	Items mean score (SD)				P value
		Physicians	Nurses	Pharm	Lab	
1	Sufficient information about COVID-19	0.60 (±0.34)	0.60 (±0.30)	0.46 (±0.35)	0.63 (±0.24)	0.043
2	Aware of obstacles in COVID-19 preparedness	0.69 (±0.21)	0.64 (±0.21)	0.60 (±0.19)	0.30 (±0.31)	0.037
3	Access to educational ways about COVID-19	0.58 (±0.39)	0.46 (±0.35)	0.60 (±0.22)	0.48 (±0.11)	0.048
4	Aware of recommendations from WHO, FMoH	0.62 (±0.14)	0.60 (±0.19)	0.27 (±0.39)	0.42 (±0.28)	0.002
5	Read journals and articles about COVID-19	0.63 (±0.24)	0.60 (±0.22)	0.44 (±0.15)	0.42 (±0.23)	0.0073
6	Sufficient support from local officials	0.30 (±0.31)	0.27 (±0.39)	0.40 (±0.23)	0.39 (±0.34)	0.0001
7	Know who to contact during emergency	0.48 (±0.11)	0.44 (±0.15)	0.43 (±0.33)	0.45 (±0.31)	0.0021
8	Update and literature about COVID-19 management accessibility	0.52 (±0.28)	0.40 (±0.23)	0.35 (±0.22)	0.60 (±0.19)	0.033
9	Participation in educational activities about COVID-19	0.42 (±0.23)	0.43 (±0.33)	0.43 (±0.28)	0.54 (±0.24)	0.044
10	Participation in emergency plan drafting and preparation	0.39 (±0.34)	0.35 (±0.22)	0.56 (±0.29)	0.51 (±0.15)	0.032
11	During admission, relevant history should be taken	0.55 (±0.31)	0.43 (±0.28)	0.53 (±0.32)	0.39 (±0.26)	0.017

12	Know how to use PPE	0.60 (±0.19)	0.56 (±0.29)	0.51 (±0.24)	0.63 (±0.24)	0.25
13	Familiar with triage system	0.54 (±0.24)	0.53 (±0.32)	0.36 (±0.18)	0.30 (±0.31)	0.044
14	Know how to perform isolation	0.51 (±0.15)	0.51 (±0.24)	0.39 (±0.34)	0.48 (±0.11)	0.03
15	Familiar with local emergency response system	0.39 (±0.26)	0.36 (±0.18)	0.45 (±0.31)	0.42 (±0.28)	0.0022
16	I consider myself prepared for management of COVID-19	0.57 (±0.18)	0.43 (±0.24)	0.60 (±0.19)	0.43 (±0.24)	0.036

Table 3 reveals that the health care professionals' perceived responses to the COVID-19 Pandemic. The data showed that most of the respondents perceived positive responses towards Confidence in providing patient education, ability to identify sign and symptoms of COVID-19 and readiness to participate in peer evaluation skills on COVID-19. However, most of them perceived negative towards other items like ability to care for COVID-19 patient without supervision, managing the common symptoms and reactions of COVID-19, and confidence in implementing emergency plan, and isolation procedure Yet, there were significant differences found between health care professionals' perceived response towards COVID-19 on some of the items asked in the questionnaire. Nurses [0.46(±0.35)] and laboratory technologists [0.48 (±0.11)] were not sure of their scope in their role against COVID-19, and physicians perceived positive to most of items included in the questionnaire with highest mean scores for those statements (Table 3).

Table 3: perceived response of health care professionals towards COVID-19 pandemic.

S.N	Items	Items mean score (SD)				P value
		Physicians	**Nurses**	**Pharm**	**Lab**	
1	Confident in providing patient education	0.79 (±0.33)	0.60 (±0.30)	0.66 (±0.35)	0.63 (±0.24)	0.079
2	Able to identify sign and symptoms of COVID-19	0.82 (±0.22)	0.64 (±0.21)	0.62 (±0.19)	0.60 (±0.31)	0.137
3	Familiar with scope of my role in COVID-19	0.58 (±0.28)	0.46 (±0.35)	0.60 (±0.22)	0.48 (±0.11)	0.041
4	I can care of COVID-19 patient without supervision	0.44 (±0.29)	0.30 (±0.19)	0.27 (±0.39)	0.32 (±0.28)	0.0012
5	I can manage the common symptoms and reactions of COVID-19	0.47 (±0.32)	0.40 (±0.22)	0.44 (±0.15)	0.42 (±0.23)	0.003
6	I would feel confident implementing emergency plan, and isolation procedure	0.47 (±0.24)	0.34 (±0.39)	0.43 (±0.23)	0.39 (±0.34)	0.0021
7	I can identify possible indicators of mass exposures	0.50 (±0.18)	0.44 (±0.15)	0.43 (±0.33)	0.45 (±0.31)	0.0023
8	I would feel confident as a manage or coordinator of a quarantine center	0.47 (±0.24)	0.40 (±0.23)	0.35 (±0.22)	0.30 (±0.19)	0.013
9	I am ready to participate in peer evaluation skills on COVID-19	0.64 (±0.33)	0.53 (±0.33)	0.63 (±0.28)	0.54 (±0.24)	0.064

Discussion

The COVID-19 outbreak, which was first detected in Wuhan, China, in December 2019, has been evolving rapidly. On 30 January 2020, the WHO Director-General declared that the current outbreak constituted a public health emergency of international concern, and on 12 March 2020 the COVID-19 outbreak was declared a pandemic [3]. Ethiopia has been doing widespread efforts in containing this pandemic, whose cases are increasing slowly but the worst is feared in coming weeks or months, as pattern of COVID-19 effect being observed in many countries [18]. For this purpose, extensive media and physical campaigns about preventive mechanisms of the disease, increasing number of functional laboratories to test for the infection, tracing contacts, and others are being undergone.

Federal ministry of health and Ethiopian public health institute released a checklist to check for preparedness and response of health facilities in the country and little is included about the health care providers in that specific document [18]. Therefore, the status of preparedness and perceived response of health professionals in the country is largely unknown and this study, with its own limitations, revealed the current readiness of health professionals in Oromia regional state, Ethiopia. Regarding the sociodemographic data of study participants, majority of them were male: and it may be due to presence of more male work forces in medical and health sector in the country due to low number of females in the profession. And most of them were in age range of 21-30 and this may be due to more social media utilization by this age group and also it can be because Ethiopian population is young making the public servants fall in young age group [19].

According to result of this online survey, healthcare professionals in Oromia public hospitals are not prepared for a COVID-19 infection outbreak and they had difficulty in accessing the research literature, felt they have no sufficient information about COVID-19 preparedness, didn't aware for guidelines and recommendations from WHO and FMoH, were not reading journals and articles about COVID-19 which shows that either they were too

busy with patients or they must have limited access to literatures. They also felt that there is low support from local officials during emergency situation which may be poor communication and collaboration between different stakeholders.

Handful of respondents were also not sure who to contact during emergency situation which may be due to absence or functionality of reporting channels. Majority of participants didn't participate in educational activities about COVID-19 pandemic and this can be also due to absence of such educational opportunities or professionals busy time to take such activities seriously. Most of them didn't participate in emergency planning ad it may be because of perceiving planning something administrative and not their scope and were not familiar with local response system which can be due to absence of stressful outbreaks in their community recently. Our findings, therefore, advocate that existing systems of preparedness and response to of COVID-19 Pandemic may not be an effective way to reach, prepare and convince health care providers, which would otherwise not respond to this pandemic timely and effectively.

Healthcare professionals perceived a positive response towards some of items included in the questionnaire like Confidence in providing patient education, ability to identify sign and symptoms of COVID-19 and readiness to participate in peer evaluation skills on COVID-19. Tis may be due to extensive media campaign on sign, symptoms and prevention methods of COVID-19 pandemic so that respondents could easily know it and be confident to provide education. However, most of them perceived negative towards ability to care for COVID-19 patient without supervision, managing the common symptoms and reactions of COVID-19, and confidence in implementing emergency plan, and isolation procedure of COVID-19 which indicates low behavioral and psychological preparedness due to fear from reports from other countries regarding the disease and professionals' eminent exposure and absence of much real experiences about COVID 19 outbreak.

The total mean score for preparedness and responses to COVID-19 was negative among the health care professionals, although there was a range of variance in scores. Probable reasons may be the fact that the preparedness and response program have not been comprehensive. There may be behavioral, social and psychological factors which should be assessed in addition to absence of compulsory trainings, sufficient modules, documents and guidelines available for all at all levels including remote areas, friendly relationship with local authorities, functional and effective communication in the health system and so on [18]. Therefore, health care providers should be ready for response to COVID-19 pandemic by materials, behavior and psychology as recommended by international and national health institutions [20]. Every responsible bodies, governmental and/or non-governmental, should work hand in hand to avert this problem by equipping health care providers in all dimensions to help them respond to the pandemic quickly, effectively and successfully.

Conclusion

Healthcare professionals in the public hospitals of Oromia regional state, Ethiopia perceived that they are not yet well prepared and may not respond to the pandemic quickly and efficiently. Even though, they have positive response towards identifying signs and symptoms, provide education and utilization of PPE, they are still lacking in practical responses like managing cases. As the Federal Ministry of Health, Ethiopia Public health institute and Oromia health bureau are vigilant and continually conducting preventive measures programs, extensive and maximum effort should be done to improve their preparedness and response towards any emergency related to COVID-19 pandemic.

Limitation

This survey was carried out via online and didn't represent many of health care providers who didn't appear and access the questionnaire during study period. It also analyzed responses of only four groups of health professionals due to few responses from other professional groups. This study also didn't show preparedness and response of health professionals working frontline at health centers, private clinics and hospitals.

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