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Healthcare Professionals' Willingness and Preparedness to Work During COVID-19 in Selected Hospitals of Southwest Ethiopia

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Background: Many healthcare professionals are dying of COVID-19 while trying to save others. The loss in the healthcare workforce due to sickness and absence will double the risk of a crisis. Identifying barriers of willingness to work during epidemics outbreak and preparedness of healthcare professionals is important to minimize the shortage of human power.

Methods: Facility-based cross-sectional study was conducted among healthcare professionals working in the selected hospitals of Southwest Ethiopia from June 1–30/2020. The data entry was done by Epi-Data Manager version 4.4.1.0 and exported to SPSS version 23 for analysis. Multivariable logistic regression analysis with a backward stepwise approach was done to identify independent predictors of poor preparedness and willingness of the healthcare professionals to work during COVID-19 and Variables with P-value <0.05 were considered as a statistically significant determinant.

Results: Of 407 healthcare professionals who participated in the study, 246 (60.4%) were male. The mean age of the respondents was 28.47±5.60 years. Forty-seven (11.55%) Physicians, 59 (14.50%) pharmacy personnel, 52 (12.78%) Laboratory personnel, 31 (7.62%) Midwives, and 195 (47.91%) Nurses were included in the study. The healthcare professionals who were not prepared for the provision of services during COVID-19 and not willing to work during COVID-19 were 165 (40.5%) and 86 (21.1%) respectively. Having 6 to10 years' experience (AOR=4.046, CI: 1.05–15.58), and divorced marital status (AOR=7.855, CI: 1.781–34.65) were independent predictors of not willing to work during COVID-19. Similarly, lack of personal protective equipment (AOR=28.089, CI: 13.9–56.67) and shortage of infrastructure at the work place (AOR=28.1, CI: 13.9–56.67) were independent predictors of poor preparedness.

Conclusion and Recommendations: Healthcare professionals' willingness and preparedness to work during COVID-19 was low. Use of Telemedicine, provision of personal protective equipment, increasing hospital's safety with adequate infection control policy, and assigning staff who have experience of more than ten years in the risky wards of the hospitals may decrease staffs absentee and increase in the provision of continuous service.

Keywords: healthcare professionals, preparedness, willingness, COVID-19, Southwest Ethiopia

Introduction

Background

The COVID-19 pandemic is emerged as a major concern and has led to a dramatic loss of healthcare professionals (HCPs) around the world. Over (570,000) of HCPs had been infected with COVID-19 globally and more than 20,000 healthcare

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professionals had died while providing service to save the lives of others. It is now considered a catastrophe on an astonishing scale. Failure of governments to document infection rate and death of healthcare workers are scandals that put HCPs at advanced risk and underestimate the genuine scale of more death.[1–3]

HCPs are in front of fighting the coronavirus pandemic spread which makes them at the greatest risk of contracting the disease. Keeping the working environments safe for healthcare providers and an effective plan for them is crucial in each phase of the pandemic.[4]

The first basic characteristic of the pandemic is increasing in demand for HCPs. However, the critical shortage of HCPs can happen at a peak time of the infection or in life-threatening pandemics because of absenteeism due to illnesses, caring for a family member, or unwilling to work. Because of these reasons, better preparations for the next pandemic require estimates of HCPs' willingness to work and an understanding of factors that influence it.[5–7] However, the healthcare industry is getting a challenge due to the ongoing scarcity of HCPs.

Trained HCPs are a key human resource to prevent, manage, and combat the infection, as the COVID-19 pandemic rises. Though they are a priority in most countries, HCPs have great concerns. For instance, lack of personal protective equipment. In addition, they have great concerns for their safety and about their families since might transmit the infection to their families.[8] For instance, in china HCPs affected during the COVID-19 outbreak were up to 20% of all infected cases.[9] Due to their professional obligations, they must be at their workplaces even if their health is in danger. Nevertheless, they should be kept healthy while they are providing services for patients.[10,11]

The COVID-19 pandemic is causing worldwide panic. HCPs were reported to face a greater amount of stress, anxiety, and burnout. It is an unfamiliar distressing affair for them.[12,13] The incidence of anxiety, depression, post-traumatic stress disorder, and burnout was eminent during and after the outbreak. The incidence of anxiety, depression, post-traumatic stress disorder, and burnout was eminent during and after the outbreak. These crises not only have a long-term impact on the minds of healthcare providers but also, hindered the immediate reaction to the recent COVID-19 pandemic. So governments and healthcare leaders must engage to take immediate measures to minimize the hazardous psychological effects of COVD-19 on HCPs.[14]

The commonest attributes for the HCPs to be infected were lack of awareness and preparedness during the epidemic, ineffective institutional infection prevention measures, shortage of guidance in infection control rule procedures, irrational use of personal protective equipment (PPE), unavailability of PPE in the facility, performing a high-risk activity such as intubation and nebulization, and exposure to unsuspected COVID-19 patients. These factors forced the healthcare professional to refrain from rendering services during the outbreak.[15]

Ethiopia was under a five-month state of emergency earlier to September 2020 to fight the COVD-19 pandemic. The country had also launched project 'the new coronavirus emergency response and health facility readiness.[16] But, the spread of the pandemic was increasing at an alarming rate during those months due to poor preparedness. It is now the leading country in East Africa with the highest number of infected people. Thousands of HCPs have been infected with COVID-19, particularly due to insufficient infrastructure in the quarantine and isolation area.[17] Lack of better infrastructures and healthcare provision with poor health outcomes were common in sub-Saharan African countries including Ethiopia.[18]

Evidence from Ethiopia indicated huge numbers of HCPs are requesting their annual leave and bringing medical certificates to be free of work during the COVID-19 pandemic.[16] Types of disaster, worrying about family, and concerns about personal safety were the suggested factors associated with willingness to work during the increment of COVID-19. Lack of PPE and infrastructure will compromise the safety of Healthcare professionals.[16,19]

Generally, understanding the status of HCPs' preparedness, and willingness may have a fundamental role for continuous provision of health service through developing policies and strategies that decrease HCPs' absenteeism, death, and illness during or following COVID-19 pandemic. However, no study was conducted in Southwest Ethiopia on the preparedness and willingness of healthcare professionals during the COVID-19. Therefore, this study is aimed to assess HCPs' willingness and preparedness to work during the COVID-19 in selected hospitals of Southwest Ethiopia.

Methods

Study Settings and Period

This study was conducted in selected hospitals of Bench-Shako, Kafa and Sheka zones which are found in Southern

Nations, Nationalities and Peoples Regional State (SNNPRS) of Ethiopia. These hospitals are Mizan-Tepi University Teaching Hospital (MTUTH) which is found in Bench-Shako-zone and located about 585 Kilometer (KM) away from Addis Ababa. Gebretsadik Shawo general hospital and Wacha Primary hospitals are also found in the Kafa zone at a distance of 441 and 520 KM from Addis Ababa, respectively, whereas Tepi general hospital is found in the Sheka zone about 611 KM away from Addis Ababa. More than 657 healthcare professionals have been working in the aforementioned hospitals: 223 in MTUTH, 176 in Gebretsadik Shawo hospital, 131 in Wacha hospital and 127 in Tepi hospital. The study was conducted from June 01–30/2020.

Until December 19, 2020, the total numbers of confirmed COVID-19 cases and deaths in Ethiopia were 119,494 and 1846, respectively. But in SNNPRS, 4287 cases and 44 deaths were reported. In July 2020 more than 10 HCPs were infected with COVID-19 while they delivered regular service.

Study Design

Facility based cross-sectional study design was employed.

Population

Source Population

The study populations were HCPs who have been working in MTUTH, Gebretsadik Shawo Hospital, Wacha primary Hospital, and Tepi General Hospital.

Study Population

The study populations were HCPs who have been working in MTUTH, Gebretsadik Shawo Hospital, Wacha primary Hospital and Tepi hospital and who fulfilled the inclusion criteria during the study period.

Eligibility Criteria

Inclusion Criteria

- HCPs that worked in one of the four hospitals (MTUTH, Gebretsadik Shawo hospital, Wacha hospital and Tepi hospital) and worked there for at least 6 months.

Exclusion Criteria

- HCP who will not want to participate and not available at study area during data collection because of different reasons (Annual vacation, moved for training purpose).

Sample Size Calculation and Sampling Technique

The Sample size was calculated by using single population proportion formula based on the following assumptions: 1) since there was no study conducted on the prevalence of preparedness and willingness to work during COVID-19 among healthcare professionals, P-value = 50%. 2) D = 5% the margin of error, 3) Zα/2 = 95% confidence of certainty (1.96) n = $[(Z\alpha/2)2 *p (1-p)]/d^2$ = 384, 10% non-response rate = 39 and the total sample size become = 423. From 423 sampled HCPs, 407 health professionals responded, with a response rate of 96.22%. The total sample size was proportionally divided for each health hospital and a stratified sampling technique was used to select the study participants. The sample was selected from all hospitals based on the number of health professionals. Within each hospital, the sample was taken from each department based on the proportion of their health professionals.

Study Variables

The dependent variables were willingness and preparedness to work whereas, the independent variables were age, sex, educational status, occupational status, marital status, qualification, total year of experience, work setting, and experience in the current setting.

Data Collection Tool Development, Validation and Measurements

The questionnaire was first prepared based on national[20] and WHO[21] preparedness guidelines for Management of COVID-19 and after reviewing the previous study conducted on the preparedness of healthcare professionals during Ebola outbreak[22] and COVID-19 pandemic.[23,24] The questionnaire of the willingness part was also developed after reviewing previous studies conducted for the same purpose.[25] The first draft of the questionnaire was made and subsequently validated in two steps. First, the developed tool was sent to researchers to give their expert opinion with respect to its simplicity, relativity, and importance. Second, a pre-test (pilot) study was conducted on 22 HCPs, 5% of the total sample size at Shenan Gibe hospital which is located nearby our study area. Reliability was calculated using SPSS Version 23, and Cronbach's alpha was 0.079. It was done for attaining opinions on making the questionnaire simpler and shorter. Participants were

selected for the pre-test study from all healthcare professions.

The questionnaire contains three sections: the Sociodemographic characteristics, preparedness and willingness sections. The preparedness section had 28 questions, and responses were recorded on a 5-point Likert scale (1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree). The correct answer for each question will assign with 5 points whereas the answer for incorrect was assigned with one point. The maximum score was 140 (5X28) and the minimum score for the participant was 28 (1x28). The mean score was calculated for all respondents and participants who scored the above mean score were considered as well prepared but those who score below the mean were considered as not prepared.

Similarly, the willingness section has 10 questions with a minimum of 10 points (1X10) and a maximum of 50 (5X10). Participants who scored below the mean score were classified as not willing to work but those who score above the mean were classified as willing to work.

Data Collection Process and Quality Control

Twelve data collectors (6 pharmacists, 4 nurses, and 2 midwives) were recruited and trained for two days to collect data from HCPs working in the hospitals (MTUTH, Gebretsadik Shawo hospital, Wacha hospital, and Tepi hospital). A stratified sampling technique was used to collect data. First, healthcare professionals found in every four hospitals were categorized into different departments (Physicians, specialists, health-officer, dentistry, psychiatric nurse, optometrist, pharmacy personnel, laboratory personnel, nurses, and midwives). Second, participants were selected from each department based on the numbers of HCPs found in it. Departments were considered as strata and from each stratum, participants were recruited randomly. This was done to include departments that had a limited number of HCPs to maintain quality of data collection; a pre-test was done on 22 HCPs (5% of total sample size at Shenan Gibe zonal hospital which is located nearby our study area). The training was given for data collectors for 3 days on patient privacy, on the content and clarity of a questionnaire. Data were collected under the close supervision of principal investigators and collected data were daily checked for completeness and consistency. The collected data were checked for completeness and cleaned before data entry.

Data Processing and Statistical Analysis

Data were entered into Epi-data manager version 4.0.2 and exported to the Statistical Package for Social Science (SPSS) version 24 for analysis. Categorical variables were expressed in terms of frequencies; percentages and SD. Data for continuous variables were presented by possible continuous measures of central tendency or variation or both. A chi-square test was done to check cell adequacy and factors associated with willingness and preparedness to work. Bivariate analysis was performed to select variables for multivariate analysis. Hence, variables with a p-value <0.25 in the bivariate analysis were taken as candidates for multivariable analysis. Finally, a multivariable logistic model was created to predict independent predictors of poor preparedness and willingness to work during COVID-19. Probability values less than 0.05 were considered as statistically significant.

Result

Socio-Demographic Characteristics of the Study Participants

From 423 sampled populations, 407 (96.2%) responded to the questionnaire. Out of 407 study participants, 246 (60.4%) were males. The mean and standard deviation for the age of participants was 28.47±5.601 years. Respondents were categorized into five main groups by occupation: Medical Doctors (11.55%), pharmacy personnel (14.50%), Laboratory personnel (12.78%), Midwives (7.62), and Nurses (47.91%). Nearly two-thirds (64.37%) of the respondents were married. Nearly two-thirds (61.4%) of the studied participants are degree holder. A total of 76.9% had been practicing their profession for less than 5 years (SD, 4.26 ±3.82 years). In studied facilities, 81.8% of the respondents had been working in the facility for less than 5 years (SD 3.72 ±3.21 years) (Table 1).

Willingness-Related Characteristics of Study Participants

The majority of the participants (78.9%) were willing to work during COVID-19 infection. Even most of the respondents were prepared to stay in hospital if the COVID-19 infection was increased by 301 (73.96%). Two hundred fifty-five (62.65%) professionals were willing to give care for COVID-19 infected patients ready to

Table 1 Socio-Demographic Characteristics of the Healthcare Providers

Socio-Demographic Characteristics of Healthcare Professionals (N=407)				
No.	**Characteristics**	**Categories**	**Frequency**	**Percentage (%)**
1	Sex (Gender)	Male Female	246 161	60.4 39.6
2	Age	<25 25–34 35–44 45–54 55–64 Mean ± SD	80 265 55 5 2 28.47±5.601	19.7 65.1 13.5 1.2 0.5
3	Occupation (profession)	Physicians Pharmacy personnel Laboratory personnel Midwives Nurses Others*	47 59 52 31 195 23	11.55 14.50 12.78 7.62 47.91 5.65
4	Work setting	OPD Medical ward Pediatrics ward Surgical ward and OR OPD, Emergency and general laboratory Outpatient and Inpatient pharmacy MCH, gynecology and Obstetrics, delivery room Others**	106 50 58 31 52 59 30 21	26.00 12.29 14.25 7.62 12.78 14.50 7.37 5.12
5	Marital status	Single Married Divorced	134 262 11	32.92 64.37 27.03
6	Level of education	Diploma Degree Specialist and Masters	148 250 9	36.4 61.4 2.2
7	How many years since you graduated	≤5 years 6–10 years ≥11 years Mean ± SD	313 67 27 4.2662±3.82091	76.9 16.5 6.6
8	Years in the current health facility	≤5 years 6–10 years ≥11 years Mean ± SD	333 51 23 3.72±3.21	81.8 12.5 5.7

Notes: Others* = HO, Anesthetists, Psychiatry nurses, Optometrists, Radiologists; Others** = Radiology, TB, ART clinic, Triage.
Abbreviations: OPD, outpatient department; OR, operation room; N, number.

work in a suboptimal environment like lack of food and shelter. Three hundred fifteen health professionals (77.39%) were willing to give care for COVID-19 infected patients. One hundred eighty-five health professionals (45.45%) had no absentee record from work. But some health professionals (40.78%) were not willing to proceed with their current job or seek resignation from their current job and seek others. The mean standard deviation for overall these 10 questions' Likert scale was 36.34 ±6. 64. Generally, more than half of professionals (54.05%) of participants were responded below the mean for 10 Likert scale questions. More than half (54.05%) of

Table 2 Willingness to Work During COVID-19 Infection Increment Among Healthcare Professionals

Variables	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	N	%	N	%	N	%	N	%	N	%
I agree to provide service during the increment of COVID-19 infection	11	2.7	40	9.8	35	8.6	188	46.2	133	32.7
I am ready to continue to give service in the healthcare facility when COVID-19 infection increased	33	8.1	41	10.1	32	7.9	195	47.9	106	26.0
I am ready to work in sub-optimal environment (lack of food, shelter) during increment of COVID-19 infection?	19	4.7	68	16.7	65	16.0	142	34.9	113	27.8
I suppose that I will make a remarkable contribution to the health facility if there is an increment of COVID-19 infection	11	2.7	28	6.9	22	5.4	184	45.2	162	39.8
I had mentioned regarding obtaining severe infection with my family	13	3.2	39	9.6	54	13.3	197	48.4	104	25.6
My family is ready to cope with the stress if I am going to work if during increment of COVID-19 infection?	25	6.1	49	12.0	39	9.6	190	46.7	104	25.6
Increment of COVID-19 infection plan in the hospital makes me feel safe	29	7.1	89	21.9	42	10.3	155	38.1	92	22.6
I am willing to give care for COVID-19 infected patients	23	5.7	42	10.3	27	6.6	200	49.1	115	28.3
I had no absentee from my work	98	24.1	99	24.3	25	6.1	109	26.8	76	18.7
I can proceed with the current job or considering not resignation and seek another job	80	19.7	86	21.1	41	10.1	124	30.5	76	18.7

Abbreviation: N, number.

participants were not willing to work during COVID-19 infection increment (Table 2).

The major motivation of healthcare workers during COVID-19 increment included professional obligation 326 (80.1%), social obligation 150 (36.90%), and compulsion from inistitution102 (25.1%) (Figure 1). The major factors that cause worriedness of HCW to work during of COVID-19 outbreak included transmission to the family (35%), Transmission to self (28%), and Transmission to other patients (21%) (Figure 2).

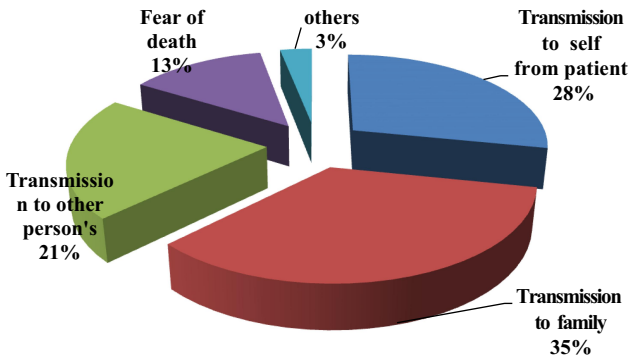

Figure 1 Motivation of HCW to work during increment of COVID-19 infection.
Notes: Fear of morbidity, and avoidance from risk.

Preparedness Characteristics of Study Participants

From a total of 407 study participants, 165 (40.5%) of them had not prepared for the prevention of themselves and patients from COVID-19. About one-third (34.2%) of respondents had agreed as they have PPE and keep themselves safe, 39.6% felt confident and keeps themselves healthy while doing their job and 35.9% were familiar

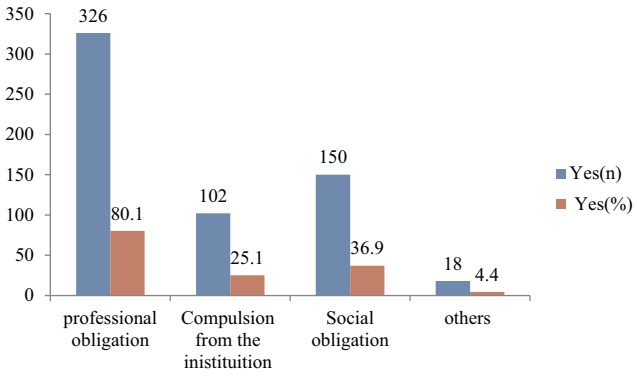

Figure 2 Factors that worry HCW to work during increment of COVID-19 infection.
Notes: Safety to doctors, and support to the deceased doctor's family, seeks of incentive, fear of work place punishment.

with COVID-19 related recommendations from the Federal Ministry of Health and/or Ethiopian Public Health.

Regarding preparedness in managing routine work during the COVID-19 pandemic, 42.5% of the respondents agreed that If their chief/director becomes ill, they had agreed to identify an individual(s) that will take over the role of running operations and 41.5% of them agreed that as their respective department has developed backup plans for key roles that should be taken during COVID-19. About 42% and 48% of respondents agreed that communication from their institution help them to continue their work safely and communication across teams in their institution was effective during this pandemic, respectively.

Half (53%) of study participants agreed their department had performed an estimation of the quantities that would be needed during the COVID-19 pandemic. One-third (39.6%) of pharmacy personnel agreed that as their department has developed plans to monitor the availability of infection prevention supplies, including surgical masks, N95 respirators, and Alcohol-based hand and identified a list of alternative suppliers/wholesalers/distributors for essential medicines, supplies, and medical devices to address shortages. But, 18.7% and 17.9% of respondents disagree as their department had identified opportunities for training programs for staff about all aspects of COVID-19, staffs have access to resources about the use of medications used during management of patients with COVID-19, respectively (Table 3).

Marital status, work setting, professions, total experience, experience in current setting preparedness to work and getting personal protective equipment were factors associated with willingness to work (Table 4).

Age, marital status, work setting, professions, total experience, experience in the current setting, willingness to work and getting personal protective equipment were factors associated with preparedness to work during COVID-19 (Table 5).

Marital status, work setting, work experience, experience in the current working area, preparedness, and lack of PPE were variables entered into Multiple Logistic Regression because their significance level in binary logistic regression was less than 0.25. Factors that independently and significantly predicts not willing to work includes, having many experiences of 6–10 years (AOR=4.04, CI: 1.05–15.58), being divorced from marital status (AOR=7.85, CI: 1.78–34.65) and not prepared to give service during the surge of COVID-19 (Table 6).

Age, Professional status, work setting, work experience, experience in the current working area, not willingness to work and lack of PPE were variables entered into Multiple Logistic Regression because their significance level in binary logistic regression was less than 0.25

The prominent independent, significant predictor of poor preparedness among health caregiver was lack of personal protective equipment and shortage of other infrastructure at the workplace (AOR=28.1, CI: 13.9–56.67) and not willing to work (Table 7).

Discussion

The result of this study had showed that the majority of healthcare professionals (78.9%) were willing to work (volunteer to give service) when a coronavirus infection was increased. This is lower than the finding reported from Nepal (90%).[25] But higher than a study conducted among physicians at the time of the influenza outbreak in which only 50% of physicians available and volunteer to continue to give services during the pandemic.[26] It is additionally high as compared to research conducted at Indian wherever solely 41.8% of the dentists were willing to give urgency services to patients throughout the increment of COVID-19,[3] AlSaif et al conjointly showed 57.4% of medical students were volunteer give service to figure as a part of HCW workforce throughout the COVID-19 pandemic.[7] Although it is important just in case of disasters it is troublesome to get a 100% participation of healthcare workers. Previous studies prompt that between 65% and 97% of healthcare workers were volunteers to involve in an exceedingly natural disaster, and between 54% and 86% in respiratory illness pandemic.[26–30]

The percentage of HCW who convey volunteers to give service ranged from 31% throughout the influenza outbreak in Hong Kong to 58% of US medical students focusing speculative influenza crisis.[31,32]

Two hundred fifty-five (62.65%) professionals were volunteers to serve for COVID-19 cases even in a suboptimal environment like lack of food and shelter. It is very low as compared to a study conducted in Nepal (72.6%).[25] The finding of this study showed that 185 health professionals (45.45%) had no absentee record response from work. The major motivation of healthcare workers during a COVID-19 increment includes professional obligation 326 (80.1%), social obligation 150 (36.90%) and compulsion from inistitution102 (25.1%). While a study conducted in Japan throughout the H1N1 pandemics indicated that giving safety to doctors, and support to the deceased doctor's family are some of the initiating agents for them to work.[33] It is also lower than the study conducted in Nepal (79.1%) where professional obligation as

Table 3 Preparedness of Related Information of Study Participant in the Selected Hospital of Southwest Ethiopia, 2020

Preparedness Variables	Strongly Disagree	Disagreed		Neutral		Agree		Strongly Agree	
I have the equipment (PPE) I need to keep myself safe	23 (5.7)	63	15.5	33	8.1	139	34.2	149	36.6
I feel confident I can keep myself healthy while doing my job	27 (6.6)	77	18.9	21	5.2	161	39.6	121	29.7
I am familiar with COVID-19 related recommendations from the Ethiopian ministry of health	24 (5.9)	48	11.8	34	8.4	146	35.9	155	38.1
In the event our chief/director becomes ill, our department has identified an individual(s) that will take over the role of running operations	28 (6.9)	37	9.1	47	11.5	173	42.5	122	30.0
Our department has developed backup plans for key roles that should be taken under our department?	23 (5.7)	39	9.6	37	9.1	169	41.5	139	34.2
Our department has developed effective plans for communication during emergencies	42 (10.3)	57	14.0	33	8.1	158	38.8	117	28.7
Communication from my institution on COVID-19 has helped me understand what resources are available to me (eg, safety and wellness guidance, access to benefits, work from home practices).	25 (6.1)	68	16.7	53	13.0	174	42.8	87	21.4
Communication from my institution provides me with the information I need to continue to work safely in my role	21 (5.2)	77	18.9	47	11.5	170	41.8	92	22.6
Communication across teams in our institution is effective during this crisis.	18 (4.4)	40	9.8	60	14.7	197	48.4	92	22.6
Our department has performed an estimation of the quantities that would be needed during the COVID-19 pandemic	39 (9.6)	38	9.3	34	8.4	215	52.8	81	19.9
Our pharmacy/pharmacy department has developed plans to monitor the availability of infection prevention supplies, including surgical masks, N95 respirators, alcohol-based hand sanitizers/disinfectants, gloves, etc	30 (7.4)	58	14.3	37	9.1	161	39.6	121	29.7
Our pharmacy/pharmacy department has identified a list of alternative suppliers/wholesalers/ distributors for essential medicines, supplies, and medical devices to address shortages	30 (7.4)	27	6.6	139	34.2	142	34.9	69	17.0
Our pharmacy/pharmacy department has developed an aim to preserve and re-use N-95 masks in the event of serious scarcities.	26 (6.4)	25	6.1	164	40.3	100	24.6	92	22.6
Our pharmacy/pharmacy department has developed plans to prevent irrational use of medications, including hoarding medications by patients and families, healthcare providers prescribing medications for themselves and/or their families	19 (4.7)	23	5.7	151	37.1	134	32.9	80	19.7
Our pharmacy/pharmacy department has plans that describe how all pharmacy personnel are educated on infection management measures, social distancing habits, personal protecting equipment, prevention, and treatment	24 (5.9)	57	14.0	46	11.3	180	44.2	100	24.6
Our pharmacy/pharmacy department conducts routine monitoring to ensure pharmacy staff adhere to infection control and social distancing measures	22 (5.4)	45	11.1	40	9.8	224	55.0	76	18.7
Our pharmacy/pharmacy department has explained the advantage of pharmacy personnel concerning all aspects of COVID-19 (eg, etiology, epidemiology, clinical manifestations, transmissibility, and treatments).	30 (7.4)	76	18.7	49	12.0	162	39.8	90	22.1
Our pharmacy staff have access to case management/treatment guidelines, including those drafted by the Ethiopian ministry of health, for use during the COVID-19 response	33 (8.1)	66	16.2	39	9.6	179	44.0	90	22.1
Our pharmacy staff have access to resources about the use of medications used during the management of patients with COVID-19	44 (10.8)	73	17.9	30	7.4	192	47.2	68	16.7
I have the equipment (PPE) I need to keep myself safe	23 (5.7)	63	15.5	33	8.1	139	34.2	149	36.6
I feel confident I can keep myself healthy while doing my job	27 (6.6)	77	18.9	21	5.2	161	39.6	121	29.7
I am familiar with COVID-19 related recommendations from the Ethiopian ministry of health	24 (5.9)	48	11.8	34	8.4	146	35.9	155	38.1

(*Continued*)

Table 3 (Continued).

Preparedness Variables	Strongly Disagree		Disagreed		Neutral		Agree		Strongly Agree	
In the event our chief/director becomes ill, our department has identified an individual(s) that will take over the role of running operations	28 (6.9)		37	9.1	47	11.5	173	42.5	122	30.0
Our department has developed backup plans for key roles that should be taken under our department?	23 (5.7)		39	9.6	37	9.1	169	41.5	139	34.2
Our department has developed effective plans for communication during emergencies	42 (10.3)		57	14.0	33	8.1	158	38.8	117	28.7
Communication from my institution on COVID-19 has helped me understand what resources are available to me (eg, safety and wellness guidance, access to benefits, work from home practices).	25 (6.1)		68	16.7	53	13.0	174	42.8	87	21.4
Communication from my institution provides me with the information I need to continue to work safely in my role	21 (5.2)		77	18.9	47	11.5	170	41.8	92	22.6
Our pharmacy staff are familiar with the latest recommendations on drug treatment during the management of COVID-19, including the frequently used medications, their dosages, dosing schedules, common side effects, drug interactions, dose adjustments, etc	67 (16.5)		76	18.7	45	11.1	163	40.0	56	13.8
Our pharmacy/pharmacy department has discussed arrangements for alternative pharmacy services, including Tele-pharmacy, home delivery of chronic disease medications	58 (14.3)		78	19.2	43	10.6	156	38.3	72	17.7
Should the need arise, and if given the appropriate training and approval from the government, I am confident that I can provide expanded services at the pharmacy, such as administering vaccinations and conducting COVID-19 serologic testing using rapid test kits (if it becomes available in Ethiopia)	51 (12.5)		59	14.5	44	10.8	166	40.8	87	21.4
For our patients who are on regular, chronic medications, we can deliver medications to their home	67 (16.5)		47	11.5	36	8.8	185	45.5	72	17.7
If the need arises, we can contact our patients via phone, email, or social media and discuss/council on their chronic medications	62 (15.2)		55	13.5	41	10.1	168	41.3	81	19.9
We'd like to find out how you have been handling the additional pressures of the current healthcare crisis recently I have been able to balance work with taking care of myself	35 (8.6)		55	13.5	37	9.1	196	48.2	84	20.6
I have been able to maintain a positive outlook on my ability to contribute during this time	36 (8.8)		41	10.1	53	13.0	191	46.9	86	21.1
Our pharmacy/pharmacy department has been working well together to support each other during this time. We'd like to know how supported you feel at this time. I have confidence in the leadership team's decisions for our institution at this time.	22 (5.4)		67	16.5	29	7.1	203	49.9	86	21.1
I have access to the information I need for my health and wellness (e.g, child care support, elder care support, healthcare access/benefits.)	33 (8.1)		70	17.2	30	7.4	175	43.0	99	24.3

a motivating factor. The belief in work safety throughout any kind of disaster plays a key role in the volunteer to participate.[27] The major vital barrier that influences HCW temperament to participate throughout the earthquake situation and respiratory disorder pandemic were fear and anxiety.[34]

Negligence, not fear of punishment, and seek incentive is more common among well-experienced Healthcare professionals. This will ban them from volunteer willingness to participate in a pandemic. Health caregiver who was divorced always has a psychological problem. This may hinder them from volunteer participation in the crisis.

Increasing the hospital's safety and resilience, adequate infection control policy, providing incentives and hazard allowance was the major motivating factor for HCW's willingness to participate. Dissemination of information on workplace safety and continuous supply of PPE during many types of a pandemic is vital. An unsafe workplace could lead to increase absenteeism during external or internal disasters.[34,35]

In this study from a total of 407 study participants, 165 (40.5%) of them had not prepared for prevention of themselves

Table 4 Factor Associated with Willingness to Work Among Healthcare Professionals

S. No.	Independent Variables	Classifications of Variables	Willingness		Total	Significance Level or p-value
			Willing to Work	Not Willing to Work		
1	Age	<25 years 25–34 35 and above	69 202 50	11 63 12	80 265 62	0.146
2	Sex	Male Female	195 126	51 35	246 161	0.901
3	Marital status	Married Single Divorced	215 102 4	48 32 6	263 134 10	0.004
4	Work setting	OPD MW PW Pharmacy Gyne/OBS/Delivery Laboratory Surgical ward and OR Others	71 36 47 57 21 44 26 19	35 14 11 2 9 8 5 2	106 50 58 59 30 52 31 21	<0.001
4	Professions	Nurses Pharmacy personnel Laboratory personnel Physician Midwives Others	147 59 43 34 22 16	48 0 9 13 9 7	195 59 52 47 31 23	0.001
5	Level of education	Diploma Degree MSC and specialists	123 190 8	25 60 1	148 250 9	0.185
6	Total-experience	0–5 years 5.1–10 years > 10 years	240 55 26	73 12 1	313 67 27	0.044
7	Experience in current setting	0–5Years 6–10 Years >10years	254 45 22	79 6 1	333 51 23	0.017
8	Preparedness	Prepared Not prepared	224 97	18 68	242 165	<0.001
9	Getting PPE and infrastructure	Yes No	242 79	46 40	288 119	<0.001

and patients from COVID-19. The finding of this study has inline with the study reported by Annan et al in which Healthcare professionals were ill preparedness for the Ebola outbreak.[22] Highly motivated, competent, and well-prepared healthcare providers will cope-up with serious outbreak. Such action will improve community health needs and end up with the best health outcomes. During a crisis, Healthcare professionals are expected to give services both for people suffering from disasters and for their regular patients. Few of them also wanted to care for their dependents. The unexpected decrement in the healthcare work force during a disaster is common because some healthcare providers are not willing to involve in disaster.[36,37]

About one-third of respondents had agreed 34.2% as they have the equipment (PPE) and keep themselves safe, 39.6% as they feel confident and keeps themselves healthy

Table 5 Factors Associated with Preparedness to Work Among Study Participants

S. No.	Independent Variables	Classifications of Variables	Preparedness		Total	Significance Level or p-value
			Prepared to Work	Not Prepared to Work		
1	Age	18–25 years 25–34 35 and above	40 152 50	40 113 12	80 265 62	0.001
2	Sex	Male Female	137 105	109 56	246 161	0.063
3	Marital status	Married Single Divorced	167 71 4	96 63 6	263 134 10	0.004
4	Work setting	OPD MW PW Pharmacy Gyne/OBS/Delivery Laboratory Surgical ward and OR Others	41 34 42 49 17 20 22 17	65 16 16 10 13 32 9 4	106 50 58 59 30 52 31 21	<0.001
4	Professions	Nurses Pharmacy personnel Laboratory personnel Physician Midwives Others	123 48 21 23 10 17	72 11 31 24 21 6	195 59 52 47 31 23	<0.001
5	Level of education	Diploma Degree MSC and specialists	95 139 8	53 111 1	148 250 9	0.046
6	Total experience	0–5 years 5.1–10 years > 10 years	175 42 25	138 25 2	313 67 27	<0.001
7	Experience in current setting	0–5Years 6–10 Years >10years	188 32 22	145 19 1	333 51 23	<0.001
8	Willingness to work	Yes No	224 18	97 68	321 86	<0.001
9	Getting PPE and infrastructure	Yes No	228 14	60 105	288 119	<0.001

while doing their job, 35.9% as familiar with COVID-19 related recommendations Ethiopian Ministry of Health. This is similar to the International Council of Nurse report (ICN) where HCW subjected to higher risk because of unavailability of PPE, medical supplies and inadequate preparation for this pandemic.[38] Unavailability of personal protective equipment and medical supplies exacerbated the infection rate among HCW and resulted in death for many Healthcare professionals in China and Italy.[39] Several Healthcare professionals in Tigray, Dire Dawa, and Harari regions of Ethiopia have reportedly been infected with the coronavirus, particularly those working in quarantine centers and isolation area due to lack of PPE, testing, protection and treatment supplies, insufficient

Table 6 Predictors of Not Willing to Work During COVID-19 Pandemic Among Health Caregivers (Multiple Logistic Regression)

Variables in Multiple Logistic Regression	Classifications of Variables	Willingness		COR(95% CI)	Significance Level (p)	AOR (95% CI)
		Willing to Work N (%)	Not Willing to Work			
Marital status	Married Single Divorced	215 (52.8%) 102 (25.1%) 4 (7.9)	48 (11.8%) 32 (7.9%) 6 (2.1)	 1.405 (0.848–2.33) 6.719 (1.825–24.734)	 0.091 0.006*	 1.702 (0.918–3.154) 7.855 (1.781–34.652)
Experience since graduated	0–5 years 6–10 years >10 years	240 (59) 55 (13.5) 26 (6.4)	73 (17.9) 12 (2.9) 1 (0.2)	5.67 (0.7–45.98) 7.908 (1.05–59.28)	0.127 0.042*	3.54 (0.18–8.303) 4.046 (1.05–15.58)
Preparedness	Prepared Not prepared	224 (55) 97 (23.8)	18 (4.4) 68 (16.7)	 8.724 (4.93–15.45)	 <0.001*	 8.717 (4.56–16.60)

Note: *Significantly associated.
Abbreviations: COR, crude odd ratio; AOR, adjusted odd ratio; CI, confidence interval; P, significance level.

Table 7 Predictors of Poor Preparedness to Work During COVID-19 Pandemic Among Health Caregivers (Multiple Logistic Regression)

Variables in Multiple Logistic Regression	Classifications of Variables	Preparedness		COR (95% CI)	Significance Level (p)	AOR (95% CI)
		Prepared	Not Prepared			
Availability of PPE and good infra-structure at work place	Yes No	228 (56) 14 (3.4)	60 (14.7) 105 (25.8)	 28.5 (15.24–53.3)	 <0.001	 28.089 (13.9–56.67)
Willingness status	Willing to work Not willing to work	224 (55) 18 (4.4)	97 (23.8) 68 (16.7)	 8.724 (4.93–15.45)	 <0.001	 8.238 (3.94–17.22)

infrastructure and wrong perception amongst community members on the risk of infection source for this virus.[17]

Preparedness of HCP before the occurrence of pandemic and disaster can decrease the further burden of the crisis. Additionally, knowing the factors that hinder the willingness to work of HCP during the COVID-19 pandemic can halt human power shortage and increase continuity of service.[40–44]

The use of Telemedicine, increasing hospital safety, adequate infection control policy, incentives, and hazard allowance were the major motivating factor providing continuous service during a crisis.[45] The use of Telemedicine can play an important role for Healthcare professionals including cost-saving, diminished travel time and reduced lost-work-time, reduce contact of patient's infection risk and compensate the limited Healthcare professionals so it is better to use Telemedicine during COVID-19 crisis.[46,47]

Limitations

The selection of study participants depended on their voluntary participation. Several study participants of the responders may give service within the hospitals of the various fields wherever the exposure to vital COVID-19 patients is also limited; so, their reality and perspective concerning COVID-19 may take issue.

Conclusion and Recommendation

The healthcare professional's willingness to work during COVID-19 infection increment was low. More than one-third of the study participants were not prepared for giving services during the COVID-19 pandemic. Having more experience and being divorced were the independent predictors of not willing to work. Lack of personal protective equipment was the independent and significant predictor of poor preparedness. Use of Telemedicine, provision of personal protective equipment, increasing hospital safety and adequate infection control policy, as well as the provision of incentives such as hazard allowance, may help to decrease staff absentee and provision of continuous service during and beyond the COVID-19 pandemic. Assigning staffs who have experience more than ten years in the risky wards of the hospitals may also decrease staff absenteeism and increase the provision of continuous service.

Abbreviations

COVID, coronavirus disease; HCP, healthcare professional; MTUTH, Mizan-Tepi University Teaching Hospital; PPE, personnel protective equipment; SARS, severe acute respiratory syndrome; SNNPR, Southern Nation Nationalities Region; WHO, World Health Organization.

Data Sharing Statement

All data generated or analyzed during this study are included in this article. The datasets used and/or analyzed during the current study are available from the corresponding author on request.

Ethical Approval

The proposal was reviewed by Mizan-Tepi University Ethical review committee and a letter of approval was granted (MTU/RD401/2020 on May 28, 2020). The letter was written to respective hospitals from Mizan-Tepi University and respective hospital managers to each unit under hospitals. Then, individual respondents' permission for participation was obtained through signing a written consent form.

Author Contributions

All principal investigators created a vital contribution to the conception, study design, and acquisition, analysis, and interpretation of data; participated in drafting, rewriting or critically reviewing the article. All Authors gave final approval of this version of the article to be published and 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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Disclosure

The authors declare no conflicts of interest in this work.

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