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Knowledge, Attitude and Practices Towards COVID-19 Pandemic Among Health Workers in Bosaso, Somalia

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Abstract: *Background*: WHO confirmed COVID-19 as a global pandemic on 11 March 2020. In Africa, the first case of COVID-19 was noted on 14 February 2020 in Egypt and Somalia confirmed its first case of the novel coronavirus in Mogadishu on 16 March 2020. In 12 June 2023, there are 26,439 confirmed cases and deaths has been recorded 1,361 in countrywide. Healthcare workers (HCWs) are critical to the continued effort in winning the battle over the disease. This study aims to determine healthcare workers' knowledge, attitudes, and practices towards COVID-19 in Bosaso, Somalia. *Methods*: Quantitative data were collected through self-administered questionnaires to obtain information about knowledge, attitude and practices towards COVID-19 pandemic among health workers in Bosaso, Somalia. We used convenience sampling techniques in this research. Then, we distributed questionnaires via Google Forms Online to select eligible participants, focused on those who were available and willing to participate in this study. The researchers continuously monitor the completion and submission of questionnaires from accomplished respondents. This study was analyzed using a descriptive statistics approach, and SPSS software version 25 was utilized. *Results*: A total of 142 health workers completed the questionnaires. More than 59% were female, while 41% were male. Most health workers 83% had good knowledge about COVID-19 transmission, while 17% had poor knowledge. Moreover, knowledge regarding signs, symptoms, and at-risk groups was generally satisfactory. However, a gap exists in the use of early antibiotics to take preventive measures against COVID-19 patients. Overall, 59.7% of health workers had a positive attitude towards the disease, although gaps have been identified as 21.1% health workers believe that being Muslim has less at risk for the COVID-19 occurrence. Majority of health workers were practicing frequent handwashing, using a complete set of PPE and wearing a mask when going to public places. *Conclusion*: Health workers in Bosaso demonstrated good knowledge, positive attitude and satisfactory infection prevention and control practices. The study recommends that the government prioritize behaviors in the dissemination of evidence-based information to healthcare professionals to increase their knowledge of preventive measures and their precautionary practices during health service delivery. In addition, policymakers and other stakeholders should prioritize awareness campaigns on COVID-19 pandemic prevention and control in advance. Further research at the study site is also advised.

Keywords: COVID-19, SARS-CoV-2, KAP Study, Health Workers, Bosaso, Somalia

1. Introduction

The World Health Organization (WHO) declared a "public health emergency of international concern" on January 30, 2020 for COVID-19 pandemic. Later, due to the continual rise in the number of affected countries, cases, and fatalities, WHO confirmed COVID-19 as a global pandemic on 11 March 2020, [1]. Globally in 14 October 2021, there was 239,007,759 confirmed cases of COVID-19, including 4,871,841 deaths, reported by WHO. Therefore, the United States has the highest number of cases worldwide, while India and Brazil are in the second and third categories, respectively, [2]. However, since

the beginning of the COVID-19 pandemic, the SARS-CoV-2 coronavirus that causes COVID-19 has undergone mutations, resulting in different virus variants. One of these is called the delta variant. The delta coronavirus is considered a "variant of concern" by the WHO and CDC because it appears to be more easily transmitted from one person to another, and it has yet believed to be the most contagious form of SARS- CoV-2. In Africa, the first case of COVID-19 was noted on 14 February 2020 in Egypt. A total of 8,496,129 COVID-19 confirmed cases and 215,591 deaths had been reported in 54 African countries as of today, 16 October 2021, [3]. Below are the proportions of cases by sub-region: Southern region 65% (3,910,670), Northern region 3.5% (205,106), Western region 11% (692,256), Eastern region 16% (965,659), and Central region 4.5 % (257,335). A new assessment by the World Health Organization (WHO) shows that only 14.2% or one in seven COVID-19 infections are being detected in Africa. To date, COVID-19 detection in Africa has focused on people reporting to health facilities with symptoms, in addition to testing arriving and departing international travelers, leading to large- scale under-reporting given the high percentage of asymptomatic cases on the continent, [4]. In sub-Saharan Africa, the number of laboratories-confirmed cases is still relatively low compared to other continents. This picture might be due to low testing capacity and a need for an active surveillance system. The few confirmed cases require an excellent isolation center, waste management, environmental decontamination, counselling from mental health and psycho-social support experts, and public health education, [5].

Somalia's healthcare system is fragile, fragmented, and underdeveloped because of the country's long history of war, violence, conflicts, and political unrest. Aid workers have often been targeted for carrying out life-saving humanitarian work. The country's capacity to prevent, detect and respond to emerging and expanding health threats such as coronavirus has been substantially lowered, [6]. The Global Health Security Index in 2019 was 16.6 out of 100, indicating that the country was unprepared to manage such epidemics. There are two healthcare workers per 100,000 people, compared to the global standard of 25 per 100,000, [7].

At the onset of the pandemic, Somalia had no laboratory with the capacity to diagnose coronavirus; hence, tests had to be transported to Kenya, with long waiting times before obtaining the results. It was limited to temperature screening of people arriving through airports and isolating those suspected of having COVID-19, [8]. Somalia confirmed its first case of the novel coronavirus (COVID-19) in Mogadishu on 16 March 2020, therefore, the cases were increased up to 21,269 confirmed cases, and 1,180 deaths have been recorded, on 15 October 2021, [9]. In response to COVID-19, the Federal Government of Somalia pledged US$5 million towards a healthcare response fund to rehabilitate nationwide healthcare facilities. However, the limited of current facilities means that COVID-19 testing is for suspected cases, thereby likely underestimating the burden of the disease, with most testing taking place in the main urban centers. The Ministry of Health further developed a National Preparedness and Response Plan for Risk communication and community engagement strategies and a task-force supported by national and international relief organizations. The Ministry of Health implemented medical oxygen that was urgently required to treat the more severe cases of COVID-19, in De Martini Hospital in Mogadishu, as COVID-19 response centre with the strong engagement of partners like the (WHO), UNICEF, and the (IOM), [10].

Despite this, disease transmission among HCWs was associated with overcrowding, the absence of isolation room facilities, and environmental contamination. On the other hand, this is likely compounded by the fact that some healthcare workers have inadequate awareness of infection prevention practices; knowledge of disease may influence HCWs' attitudes and practices, and incorrect attitudes and practices directly increase the risk of infection, [11]. A report on 30 September 2020 indicated that out of 3,700 cases of COVID-19, 191 (5%) were HCWs, two of them died. In addition, there is an underestimation of COVID-19 disease among healthcare workers due to probable underreporting, weak surveillance reporting systems in hospital settings, the stigma associated with testing or self-reporting as infected, and because most cases present with mild or asymptomatic infection, [12]. To reduce the rate of infection, there is a demand that healthcare workers have a good knowledge attitude and practice towards the disease. Therefore, this study aimed to evaluate the knowledge, attitude, and practice level of healthcare workers towards COVID-19 disease in Bosaso, Somalia.

2. Research Methodology

2.1. Research Design

A cross-sectional study design was used in this research. Therefore, the duration of this study was between August 2022- October 2022 in Bosaso, Somalia.

2.2. Target Population

This study targeted healthcare workers such as doctors, nurses, dentists, pharmacists, and public health officers who worked in public and private health centers in Bosaso, particularly those who fulfil eligibility criteria of the study. Bosaso is a city in the northeastern Bari province of Somalia. It is a sea-level city located on the southern coast of the Gulf of Aden. The city serves as the region's commercial capital and is a major seaport within the autonomous Puntland State of Somalia.

2.3. Sample Size

The sample size (n) of the study calculated according to the formula:

$$n = [z2 * p * (1 - p) / e2] / [1 + (z2 * p * (1 - p) / (e2 * N)]$$

Where: z = 1.96 for a confidence level (α) of 95%, p = proportion (expressed as a decimal)
N = population size
e = margin of error

z = 1.96, p = 0.9, N = 3000, e = 0.05

n = [1.962 * 0.9 * (1 - 0.9) / 0.052] / [1 + (1.962 * 0.9 * (1 - 0.9) / (0.052 * 3000)]

n = 138.2976 / 1.0461 = 132.203

n = 133

The sample size (with finite population correction) is equal to 133 participants.

2.4. Inclusion Criteria and Exclusion Criteria

The study targeted healthcare workers working in private and public health facilities who voluntarily agreed to participate in this study. However, healthcare workers living outside Bosaso are excluded from this research. In addition, healthcare staff who refused to participate or were unavailable during data collection were also excluded from the study.

2.5. Data Collection Techniques

Quantitative data were collected through administered questionnaires to obtain information about knowledge, attitude and practices towards COVID-19 pandemic among health workers in Bosaso, Somalia. The questionnaire was semi-structured into two main sections; socio-demographic characteristics of the respondents such as age, sex, marital status, educational level, years of experience in health service, if they had COVID-19 training and preventive measures against COVID-19 which they practice during service delivery. The second part focused practice level of the participants, including hand washing after coughing or sneezing, covering their mouth while coughing or sneezing, wearing PPE, and if they had contact with suspected COVID-19 cases.

2.6. Sampling Procedure

We used convenience sampling techniques in this research. Then, we distributed questionnaires via Google Forms Online to select eligible participants, focusing on those who were available and willing to participate in this study. The researchers continuously monitor the completion and submission of questionnaires from accomplished respondents.

2.7. Data Analysis

This study was analyzed using a descriptive statistics approach, and SPSS software version 25 was utilized. The univariate analysis was categorized to present frequencies and percentages with charts and graphs, including tables, and details of each variable.

2.8. Ethical Consideration

Approval of the Ministry of Health, Puntland State of Somalia and Bari region administration were obtained before conducted the research. Also, we obtained informed consent through electronic among respondents before data collection, protected data confidentiality, and maintained the participant's anonymity during study.

3. Results

3.1. Socio-Demographic Characteristics of the Respondents

A total of 142 health workers completed the questionnaires. More than 59% were female, while 41% were male. Approximately 52.8% of the respondents were between the 36-45 age range, and 42.3% were 16-25 age group. Despite, marital status, 57.8% of the participants were single, while 40.8% were married, and 1.4% were divorced. Regarding educational level, 74% earned bachelor's degrees from a university, followed by 23% with masters. Therefore, the majority of healthcare workers had university-level knowledge. The years of experiences in the health sector were 71.1% of the respondents had less than five years, and only 6.3% earned more than 5-9 years' experience in health facilities. Around 56.3% had not received COVID-19 training, while 43.7% had job training related to prevent coronavirus and control its transmission.

Among these participants, 99.3% known common symptoms of COVID-19 when the patients arrived health facility. In this study respondent, 96.5% were known that older people are more risk for the COVID-19 pandemic. Most participants, 97.9%, realized that preventive measures against COVID-19 are effective before the onset of cases. Also, 88.7% of studied participants were aware of the available vaccine for COVID-19 and its importance.

Table 1. *Socio-demographic characteristics of the respondents.*

Age group	Frequency	Percentages
16-25	60	42.3
26-35	75	52.8
36-45	5	3.5
46-55	2	1.4
Sex of the respondents		
Male	62	41
Female	85	59
Marital status		
Married	58	40.8
Divorced	2	1.4
Single	82	57.8
Level of the education		
Certificate	1	0.7
Diploma	3	2
Bachelor	105	74.3
Master	33	23
Years of experiences		
Less than 5 years	104	71.2
5-9 years	33	22.5
More than 9 years	10	6.3%
COVID-19 training		
Yes	62	43.7
No	80	56.3
Common symptoms of COVID-19		
True	141	99.3
False	1	0.7
Incubation period of COVID-19		
True	135	95.1
False	6	4.2
I don't know	1	0.7
Older people, with more risk for COVID-19		
True	137	96.5
False	4	2.8

Age group	Frequency	Percentages
I don't know	1	0.7
Preventive measures against COVID-19		
True	139	97.9
False	3	2.1
Available vaccine for COVID-19		
True	126	88.7
False	13	9.2
I don't know	3	2.1

Figure 1 shows the specialties of healthcare workers who participated in the study, 33.8% were medical doctors, and 23.9% were public health officers, nurses 14.8% with 14.8% lab technicians and 5.6% were dentists, 4.9% were pharmacist as well as 2.1% were midwives respectively.

Figure 2 presents that 88.7% of the health workers followed COVID-19 guidelines during case management and 11.3% did not follow the guidelines respectively.
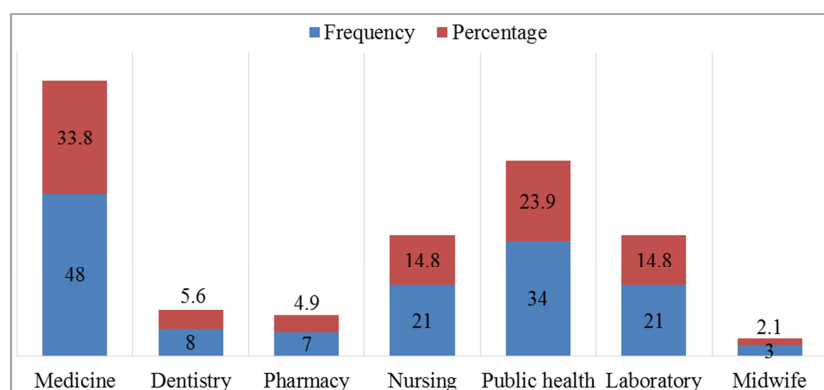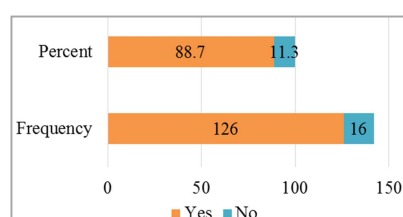

Figure 1. *Specialists of the health workers.*

Figure 2. *Follow the guidelines of the Ministry of Health for COVID-19.*

3.2. Africans Are Immune to COVID-19

Approximately 40.8% of the participants were disagreed for the believes of African people are immune to COVID-19 and 16.2% strongly agree this perception.

Nearly 21.1% of the participants were beliefs that the Muslim people are less at risk to get coronavirus. This is identified knowledge gap related to disease transmission and prevention as well.

Table 2. *Africans are immune to COVID-19.*

Africans are immune to COVID-19	Frequency	Percent
Strongly agree	23	16.2
Agree	33	23.2
Disagree	58	40.8
Strongly disagree	28	19.8

Muslims have less risk for getting COVID-19 disease

Muslims have less risk for getting COVID-19	Frequency	Percent
Strongly agree	20	14.1
Agree	30	21.1
Neutral	16	11.3
Disagree	41	28.9
Strongly disagree	35	24.6
Total	142	100.0

3.3. Practice Level of the Respondents

Approximately 84.5% of the respondents practiced hand washing after coughing or sneezing, but 15.5% were not practiced. Among 97.2% of the participants covered their mouths while coughing or sneezing while working with affected patients, while 2.8% did not know this matter. Healthcare workers wash their hands when touching contaminated for prevention. Of these, 71.2% of healthcare workers were aware of precautions to avoid normal activities when having flu, and 81.7% wear a mask when leaving home. On the other hand, personal protective equipment practice when dealing with COVID-19 patients was 81% and 19% without protective measures. The practice level of the respondents was essential to contribute to the prevention and control of the coronavirus pandemic at facilities level.

Table 3. *Practice level of the respondents.*

Washing hands after coughing or sneezing	Frequency	Percent
Yes	120	84.5
No	22	15.5
Covering mouth while coughing or sneezing		
Yes	138	97.2
No	4	2.8
How often do you wash your hands?		
Only when I feel its dirty like I have always been doing	31	21.8%

Washing hands after coughing or sneezing	Frequency	Percent
When I feel I have touched contaminated	59	41.5%
After touching or shaking hands with others	30	21.1%
At least every hour surface and objects	47	33.1%
Putting masks on suspected COVID 19 patients	11	7.7%
Practice preventive measures of COVID-19 in your health centre		
Frequent hand washing	97	68.8%
Protective clothing and masks to health staff	55	39.0%
Routine disinfection of surfaces that comes in	19	13.5%
Suspected patients in adequately ventilated single rooms	13	9.2%
Avoiding unnecessary moving of patients	9	6.4%
Contact of suspected COVID-19 cases	13	9.2%
Wear a mask when leaving home		
Yes	116	81.7
No	26	18.3
PPE practicing when dealing with Covid-19 patients		
Yes	115	81.0
No	27	19.0

4. Discussion

Majority of the participants in the study were female, 59% while 41% was male. That means the most of health workers in Bosaso was female. The 74% of them completed bachelor degree and 71.1% had less than 5 years of experience. Despite, the common sources of information among respondents were received the information from social media which is similar with previous studies conducted from Nigeria, Pakistan, UAE, Nepal, Ethiopia and Saudi Arabia [13-17] and respectively, [18]. However, health workers need to gain information from reliable sources, such as guidelines and reports published by WHO and the US Centers for Disease Control and Prevention (CDC), as misinformation have been widely circulated in social media which could negatively affect health worker's knowledge attitude and practice, [19].

Regarding COVID-19 training majority 56.3% of the health workers in the study indicated that they haven't received training during the pandemic which could be the reason for the existing knowledge, attitude and practice gap that are identified in the study and in that regard policy makers as well as administrators need to facilitate trainings for health workers to win the battle against the disease transmissions. Additionally, the study revealed that majority 83% of the health workers had overall good knowledge towards the disease. The study was related other previous studies conducted from Nigeria, Egypt, Nepal, Saudi Arabia, China and Ethiopia which had reported overall knowledge score of 88%, 80%, 82%, 88%, 89% and 88% respectively, [8]. The findings were disagreed with previous study by [6] which demonstrated significant poor knowledge among health workers although the study has been conducted few months after the pandemic emerged from China and poor knowledge could be due to limited information which was known from the virus.

The availability of vaccines 88.7% of the health workers were aware that there are available vaccines and treatments used against COVID-19. While another study from Sierra Leone reported about half of the health workers were not willing to take the vaccine if it becomes available, [10]. However, with another finds from UAE revealed that 41% of the participants show some degree of hesitation to take the vaccine. Therefore, vaccine hesitancy of the health workers has been widely seen in many countries of the developed and developing countries which could be due to some misconceptions from the vaccine as also reported [20].

5. Conclusion and Recommendation

Health workers in Bosaso demonstrated good knowledge, positive attitude and satisfactory infection prevention and control practices.

The study recommends that the government prioritize behaviors in the dissemination of evidence-based information to healthcare professionals in order to increase their knowledge of preventive measures and their precautionary practices during health service delivery. However, organizations and the government should also provide healthcare professionals with on-the-job training in coronavirus prevention. In addition, policymakers and other stakeholders should prioritize awareness campaigns on COVID-19 pandemic prevention and control in advance. Further research at the study site is also advised.

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