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Research Article

Evaluation of COVID-19 Vaccination Rate in Healthcare Workers in a Tertiary Hospital in Mogadishu Somalia: A Cross-sectional Study

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Abstract

Introduction: The percentage of healthcare workers vaccinated against COVID-19 in Somalia remains unknown. Our study's primary aim is to determine the COVID-19 vaccination rate among healthcare workers in a tertiary hospital in Mogadishu, Somalia.

Materials and Methods: This questionnaire-based cross-sectional was conducted between September 1st and September 20th, 2021.

Results: A total of 210 healthcare workers were included. Among 210 healthcare workers enrolled in the study, 56.2% (n=118) were male. Most (53.8%, n=113) participants were aged between 18 and 27. Most (48.6%, n=102) of all participants were physicians. The COVID-19 vaccination rate of the healthcare workers in Somalia Turkiye Training and Research Hospital was 20% (n=42). Males had a significantly higher vaccination rate than females (26.2 vs. 12%, p<0,05). The most common reasons for not getting vaccinated were fear of potential complications and believing that vaccination would not be protective against the disease.

Conclusions: Most healthcare workers were hesitant to be vaccinated despite the availability of the vaccine. This approach exposes physicians and allied health workers to a significant risk of COVID-19. It also obstructs the fight against COVID-19.

Keywords COVID-19 vaccination rate, COVID-19, Healthcare workers, Somalia.

Introduction:

When the coronavirus disease (COVID-19) was discovered in late 2019, it did not only become a significant global health burden, but it also became an economic and social burden all over the world (**1**). In many countries, the COVID-19 vaccine was approved for the general population at the end of 2020 and early 2021(**2**, **3**). The COVID-19 vaccines were evaluated through many clinical trials and demonstrated a high level of protection against the virus (**1**). Due to their profession and daily life work, healthcare workers (HCWs) are one of the most prone population groups to contracting SARS-CoV-2 infection, thus developing COVID-19 (**4**). Hence, HCWs were identified as one of the priority groups to receive the vaccine worldwide (**5**). Despite these efforts from the governments and institutions to vaccinate HCWs, the acceptance rate of COVID-19 vaccination among HCWs is relatively low. For instance, a poll that the Kaiser Family Foundation arranged in December 2020 found that 29% of the HCWs were hesitant to get the COVID-19 vaccines, while 27% of the individuals in the general population did not want to get vaccinated (**3**,**6**). Biswas and coworkers found that more than 75,000 healthcare professionals worldwide estimated that more than a fifth of the healthcare workers globally was hesitant to vaccinate (**3**,**7**). In Somalia, the ministry of health reported its first confirmed COVID-19 case in mid-March 2020. In early March 2021, the first doses of the COVID-19 vaccine arrived in Somalia through the COVAX facility. Therefore, the Somali government rushed to vaccinate frontline HCWs and those with the highest risk (**8**). The government has given at least 8,134,037 COVID-19 vaccine shots

during this study (**9**). However, the percentage of HCWs vaccinated against COVID-19 in Somalia Turkiye Training and Research Hospital remains unknown. The primary purpose of our study is to determine the COVID-19 vaccination rate among healthcare workers in a tertiary hospital in Mogadishu, Somalia. This study will also investigate why healthcare workers in Somalia are hesitant to get vaccinated.

Materials and Methods

This study is a single-center, cross-sectional cohort conducted between September 1st, 2021, and September 20th, 2021, at the Somalia Turkiye Training and Research Hospital. The hospital is a tertiary care facility and the largest hospital in Somalia (**10**), with all health departments, and it serves at least 1,000 patients per day. More than 1,000 healthcare workers are currently employed in the facility. Informed consent was obtained from every healthcare worker that participated in this study. This study does not reveal any personal data about the participants, and the participants' privacy was well protected. This study has been evaluated and approved by the Somalia Turkiye Training and Research Hospital ethical committee board.

The study participants were 210 healthcare workers from the Somalia Turkiye Training and Research Hospital who consented to participate. The healthcare workers who refused to participate were excluded from this study. The COVID-19 vaccines that Somalia Turkiye Training and Research Hospital healthcare workers received were the Oxford AstraZeneca vaccine and the Sinopharm COVID-19 vaccine.

A questionnaire created in Google Forms was used to collect the data. Every healthcare worker at the Somalia Turkiye Training and Research Hospital received a message including a link to the Google form quiz via an online platform. However, some healthcare personnel could not be

reached online; thus, a written version of the same questionnaire was gathered via a face-to-face interview by one of our investigators to guarantee the data's accuracy.

The questionnaire consisted of three sections, the first covering the participants' demographic information. The demographic information obtained from this questionnaire includes the participants' age, sex, and occupation. If the respondent indicated that he or she was a physician, the next question inquired about the participant's department. The second section of the questionnaire inquired about the participant's status of COVID-19 immunization. It also includes questions on the respondent's reasons for not receiving the vaccine if they are unvaccinated. The final section of the questionnaire included items that could only be answered by vaccinated individuals. It comprises questions addressing whether the participant experienced any issues after receiving the COVID-19 vaccination, regardless of the type of vaccine administered.

The information obtained via Google Forms and paper questionnaires was conveyed to a Microsoft Excel document and subsequently imported to version 26 of Statistical Package for the Social Sciences (SPSS) software. The data was eventually analyzed using version 26 of the Statistical Package for the Social Sciences (SPSS) program. In this study, descriptive statistics and mean comparisons were utilized. The data were shown as frequencies and percentages.

Results:

Among the 210 healthcare workers enrolled in the study, 56.2% (n=118) were male, and 43.8 (n=92) were female. In addition, the participants were divided into different age groups. Most (53.8%, n=113) of the patients were aged between 18 and 27. The second most common age group in the study was 28–35 years (42.9%, n=90), and it was followed by the 36–50 years (3.3%, n=7) age group (Table 1).

Approximately half (48.6%, n=102) of the participants were physicians. Nurses accounted for 33.8% (n=71) of the participants, followed by radiology technicians, anesthesia technicians, and laboratory personnel with 6.7% (n=14), 6.2% (n=13), and 4.8% (n=10), respectively (Table 1).

The Covid-19 vaccination rate among healthcare professionals at the Somalia Turkiye Training and Research Hospital was 20% (n=42). The remaining 80% (n=168) were not immunized against the virus. The vaccination rate was more common in males than females (26.2% vs. 12%, p=0.01) (Table 1).

Table 1: Descriptive analysis results of vaccination level according to demographic variables

Age	**Vaccinated**	**Non-vaccinated**	**% Of Vaccinated**	**Total HCW**	***P Value***
18-27 years	13	100	11.5	113	
28-35 years	26	64	29	90	
36-50 years	3	4	43	7	
Sex					
Male	31	87	26.2	118	
Female	11	81	12	92	<0.01**
Profession					
Doctor	31	71	30	102	
Nurse	4	67	5.6	71	
Radiology technician	2	12	14.2	14	<0.18
Anesthesia technician	4	9	30.7	13	
Laboratory staff	1	9	10	10	
Total					
	42	168	20	210	

Vaccination rates were 30% (n=31), 5.6% (n=4), 14.2% (n=14), 30.7% (n=4), and 10% (n=1) among physicians, nurses, radiology technicians, anesthesia technicians, and laboratory personnel, respectively. No significant correlation existed between SARS-CoV-2 vaccination and the participants' profession (p=0.18) (Table 1). Among 210 individuals, 80% (n=168) were not

vaccinated against COVID-19 disease. Among these 168 participants, 58% (n=97) reported fear of vaccination effects as their primary reason for not receiving the vaccine. On the other hand, 23% (n=39) believed they would not benefit from vaccination, while 8.3% (n=14) reported that they could not receive a vaccination due to reasons beyond their control. In addition, 9% (n=15) stated no apparent reason, and 1.7% (n=3) noted that they avoided the vaccination due to religious or cultural reasons (Table 2).

Table:2. Reasons of not getting SARS-CoV-2 vaccine for unvaccinated participants

Age	**I did not get the opportunity**		**I do not think it will be beneficial to me**		**I am afraid of its complications**		**I do not want to take vaccine due to religious or social reasons**		**No reason**	
	n ( )	**%**	**n ( )**	**%**	**n ( )**	**%**	**n ( )**	**%**	**n ( )**	**%**
18-27 years	(9)	9	(20)	20	(61)	61	(3)	3	(7)	7
28-35 years	(5)	7.8	(18)	28	(33)	51.52	(0)	0	(8)	12.5
36-50 years	(0)	0	(1)	25	(3)	75	(0)	0	(0)	0
Sex										
Male	(7)	8	(22)	25.2	(46)	53	(1)	1.1	(11)	12.6
Female	(7)	8.6	(17)	21	(51)	63	(2)	2.4	(4)	5
Profession										
Doctor	(8)	11	(21)	30	(34)	48	(1)	1	(7)	10
Nurse	(3)	4.4	(13)	19.4	(46)	69	(0)	0	(5)	7.4
Radiology technician	(1)	8.3	(2)	16.7	(5)	41.6	(1)	8.3	(3)	25
Anesthesia technician	(1)	11.1	(1)	11.1	(6)	66.6	(1)	11.1	(0)	0
Laboratory stuff	(1)	11.1	(2)	22.2	(6)	66.6	(0)	0	(0)	0
Total	(14)	8.3	(39)	23	(97)	58	(3)	1.7	(15)	9

Regardless of the type of COVID-19 vaccine received, 42.8% (n=18) of the 42 participants who have received SARS-CoV-2 immunization experienced adverse effects. Seventy-eight percent (n=14) of the individuals reported experiencing fever. While 72.2% (n=13) of those vaccinated reported body aches, 44.4% (n=8) complained about discomfort at the injection site. None of our participants experienced thrombosis or any other significant complications due to the vaccination (Table 3).

Table:3. This table summarizes the complications that vaccinated participants experienced regardless the type of vaccine

Variable	n Sample size	%
Fever	14	78
Body ache	13	72.2
Pain at the site of injection	8	44.4

Discussion:

The novel coronavirus infection 2019 (COVID-19) has been ongoing and infecting numerous people affecting their daily life in the process (**11**, **12**). Hence, this situation sparked the most extensive vaccine hunt in the history of medicine (**13**, **14**). Many studies about the COVID-19 vaccine have been done worldwide to ensure its safety and demonstrate its potential side effects. Vilches and colleagues reported that the vaccine could decrease the number of people infected by the virus and thus decrease the morbidity and mortality of the COVID-19 disease (**11**).

Some regions of the world have a higher acceptability rate of COVID-19 vaccination than others. For instance, in Vietnam, a study done by Huynh et al. in 2021 about the willingness of healthcare

workers to get SARS-CoV-2 vaccination concluded that 76% of HCWs were willing to get vaccinated (**15**). Another example is a cross-sectional study done in France by Gagneux-Brunon et al. in 2021, which assessed the intentions of HCWs to get vaccinated against COVID-19. They found that the intention to get the vaccination was as high as 75% (**16**).

In 2021, a study that enrolled 500 participants and conducted by Mohamud and coworkers worked on the COVID-19 vaccine acceptance rate in the general population in Mogadishu, Somalia (**17**). They concluded that most participants (63.2%) refused to take the vaccine. However, another study from Somalia by Ahmed and colleagues analyzed the data of 4543 participants and reported a high rate of the general population accepted to receive the COVID-19 vaccination (**18**).

In the present study, we found the COVID-19 vaccination rate among healthcare workers in Somalia Turkiye Training and Research Hospital as 20%. Furthermore, our study suggested that gender was a significant positive predictor of getting the vaccination, as the vaccination rate among males was significantly higher than among females. This relationship between gender and vaccination was also supported by a meta-analysis by Biswas and coworkers, which found that males were more likely to accept COVID-19 vaccination than females (**3**).

Our study also found that 30% of the physicians working in Somalia Turkiye Training and Research Hospital were vaccinated. However, the vaccination rate was much lower among nurses (5.6%). This fact exposes the nurses to significant risk as they are in close contact with the patients. Of note, our study did not show any association between the participants' profession and being vaccinated against COVID-19 disease.

In our study, the most common reason for not getting vaccinated was the fear of the vaccines' potential complications. Also, 23% of the participants believed that the vaccine would not protect

them from COVID-19 disease. This finding aligns with those reported by Biswas et al. in 2021 (**3**).

In our cohort, generalized body aches and pain at the injection site were the most common adverse effects of the vaccination. This finding is also consistent with the literature (**3**).

There are some limitations of our study. First, it has a small sample size. Second, it is a single-center study. However, its findings are significant since our center is the only tertiary care center in Somalia.

Conclusion

Only 20% of the healthcare workers in the only tertiary care hospital of Somalia are vaccinated against COVID-19 disease. Most healthcare workers were hesitant to be vaccinated despite the availability of the vaccine. This approach exposes physicians and allied health workers to a significant risk of COVID-19. It also obstructs the fight against COVID-19.

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Disclosure

The authors declare no competing interests.

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