



RESEARCH ARTICLE - MEDICAL TECHNIQUES

Awareness of Healthcare Providers About COVID-19 Vaccinations in Karbala City

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Article Info.	Abstract
<p><i>Article history:</i></p> <p>Received 01 July 2022</p> <p>Accepted 23 July 2022</p> <p>Publishing 15 November 2022</p>	<p>The process of creating a vaccination is more complex and challenging than that of creating medication. The immunization has developed over a period of 12 to 15 years. It would probably take months to design and manufacture a coronavirus vaccine, which is a significant hurdle. Despite promises from several groups that a corona virus vaccine will be ready soon, achieving so will be challenging in reality. However, no study has been conducted on the awareness of the COVID-19 vaccine in Iraq. Therefore, there is a more prominent need to evaluate their knowledge and awareness among HCWs.</p> <p>The study aims to determine the awareness of the COVID-19 vaccine among healthcare providers who are faced the Covid-19 Pandemic and also to find the association between sociodemographic and COVID-19 awareness.</p> <p>Descriptive cross-sectional study was performed at four hospitals and eighteen health care centers randomly selected multistage sampling in the Karbala governorate. The period of data collection lasted 3 months, it began on 18th January 2022 and ended on 12th April 2022. It aimed to determine the level of Knowledge and awareness regarding the COVID-19 vaccine among a sample of health care providers.</p> <p>The awareness score of the COVID-19 vaccine showed (52.3%) had fair awareness, and (28.2%) had poor awareness and (19.5%) had good awareness.</p> <p>This study concluded that the highest proportion of the study sample had a fair score of awareness of COVID-19 vaccine.</p>
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1. Introduction

Coronavirus disease 2019 (COVID-19), an acute respiratory disease caused by the SARS CoV-2 virus was first reported in China in late 2019 [1]. As of 22 December 2020, the COVID-19 pandemic had a disastrous global impact, necessitating mitigating efforts to limit the epidemic [2]. In Iraq, the city of Najaf, south of Baghdad confirmed the first cases of COVID-19 in February 2020. After two weeks, the Iraqi Ministry of Health (MOH) announced that 101 cases have been tested positive for COVID-19 with nine deaths cases in fourteen provinces almost 40% of those cases were in Baghdad. Then, the illness spread fast over the country as a result of human movements [3].

The infection spreads mostly by respiratory droplets and close contact, and it can be transmitted by symptomatic, pre-symptomatic, and asymptomatic carriers. Because COVID-19 is highly infectious in nature, WHO and governments have worked hard to keep it under control [4]. However, COVID-19 has destroyed healthcare facilities even in well-resourced nations, and healthcare workers are at high risk of infection because they are regularly exposed to SARS-CoV-2, so protecting them from infection is critical, not only for themselves but also for keeping healthcare resources from collapse [5]. As February 2021 WHO listed 7 vaccines that have been distributed in many countries and designated healthcare workers (HCWs) as the priority for vaccination. Furthermore, there are 200 other vaccines now under development with more than 60 of them in clinical trials [6]. Vaccines' production, storage, distribution, and administration may provide tremendous challenges, particularly in developing countries [7].

Multiple vaccines have been developed and tested in clinical trials then submitted to the FDA for Emergency Use Authorization (EUA), in response to the COVID-19 pandemic. Vaccines are one of the dependable and affordable public health interventions ever created and saving millions of lives each year [7]. The vaccine designed must be taken into account a variety of factors such as the choice of SARS-CoV-2 antigens, the vaccine platform and vaccination methods and routines. Vaccine platforms contain viral vector and some contain DNA or mRNA vaccines, inactivated vaccines, protein subunit, and (LAV) [8]. The process of creating a vaccination has more complex and challenging than that of creating medication. The immunization has developed over period of 12 to 15 years.

It would probably take months to design and manufacture a coronavirus vaccine, which is a significant hurdle. Despite promises from several groups that a corona virus vaccine will be ready soon, achieving so will be challenging in reality, health workers are fighting and highest risk for infected with SARS-CoV-2, many (HCWs) were lost their lives during pandemic [8]. therefore, there is a more prominent need to evaluate the factors influencing vaccination uptake among HCWs [9]. As a result, having high vaccination coverage among healthcare personnel early not only provides a sufficient workforce to treat patients but also allows medical authorities to communicate their good immunization experiences with patients and their families. This awareness of healthcare workers on the Covid-19 vaccine will constitute a basis for their recommendation of this vaccine to patients [10].

Nomenclature			
COVID - 19	Coronavirus disease 2019	PHCCs	Primary health care centers
MOH	Ministry of health	SPSS-28	Statistical Packages for Social Sciences- version 28
SARS-CoV-2	Sever Acute Respiratory Syndrome coronavirus 2	KAP	Knowledge, Attitude and Practice
WHO	World health organization	HCPs	Healthcare Providers
HCWs	Healthcare Workers	OR	Odd Ratio
FDA	Food and Drug Agency	PI	Percentile
EUA	Emergency Use Authorization	No	Number
DNA	deoxyribonucleic acid	SD	Standard Deviation
mRNA	messenger ribonucleic acid	DNK	Do Not Know
LAV	Live Attenuated Vaccine		

2. Materials and Methods

Before starting the sample collection, the necessary approvals and permissions were obtained from the health Directorate in Karbala Governorate, as well as the approvals of all hospitals and health sector directors, and PHCCs that were selected to participate in this survey. This research is descriptive; a cross-sectional study was performed at 4 hospitals and 18 PHCCs randomly selected (multistage sampling) in Karbala governorate /Iraq. The data collection period lasted 3 months, as it started on 18th January 2022 finished on 12th April 2022. The total number of hospitals in Karbala city are nine hospitals. four hospitals (50% of the total) were selected randomly by multi-stage sampling technique. There are four sectors of the primary healthcare center in the city of Karbala was included, and the number of healthcare centers in Karbala city are 34, 18 primary healthcare centers (50% of the total) have been selected randomly by multi-stage sampling technique. Exclusion criteria: healthcare workers out Karbala city and healthcare workers who does not have the desire or refuses to participate, the information was collected from interviewed healthcare providers using a questionnaire created and developed by the researcher.

A score (1) was assigned to each wrong answer, while a score (3) was given to the answers that were correct, and a score (2) was given to the neutral answer that was expressed (I don't know), (Likert respondent scale) [11].

Analysis of data had achieved by using SPSS-28 (Statistical Packages for Social Sciences- version 28). Data represented in simple measures of frequency, percentage, mean, standard deviation, and range (minimum-maximum values).

3. Results

Demographic data of the study sample are summarized in Table 1. The age was ranged from 20 to 59 years, The Mean± SD of the ages was 33.66±9.42, the highest percentage of healthcare providers (45.3%) was in the age group 20-29 years and the lowest percentage of healthcare providers (8.8%) was in the age group 50-59 years. Regarding gender; females represented 66.5% of the healthcare sample, and males were 33.5%, and the marital status, the highest percentage of healthcare providers (78.0%) was married, whereas the lowest percentage of them (2.0%) was divorced. A high percentage (95.4%) of health care providers were residents of rural areas.

Related to educational qualification, the highest percentage of HCPs (74.3%) graduated from college and higher, whereas the lowest percentage of them (1.5%) graduated from secondary school. Regarding the occupational level, the highest percentage of them (48.1%) was nurses. And years of work was 60.6% of them had equal or less than 10 years of work. While 76.4% of HCPs had been infected with coronavirus and 79.9% of them had immunization cards.

Table 1 Socio-Demographic characteristics

Independent variables		No	%
Age	20---29	207	45.3
	30---39	142	31.1
	40---49	68	14.9
	50---59	40	8.8
	Mean±SD (Range)		33.66±9.42 (20-59)
Gender	Male	153	33.5
Educational levels	Female	304	66.5
	Secondary	7	1.5
	Diploma	92	20.2
	College & higher	358	78.3
Marital status	Single	110	24.1
	Married	338	74.0
	Divorced	9	2.0
Residence	Rural	436	95.4
	Urban	21	4.6
Qualification	Doctor	9	2.0
	Pharmacist	52	11.4
	Dentist	14	3.1
	Nurse	220	48.1
	Technical	152	33.3
	Administrator	10	2.2
Duration of work (years)	<10years	277	60.6
	20---29	123	26.9
	=>30years	57	12.5

	Mean±SD (Range)		9.29±8.59 (1-43)
Have been infected with the COVID-19 virus	Yes	No	%
	No	349	76.4
Have immunization card	Yes	108	23.6
	No	365	79.9

Table 2 displayed the highest percentage of aware was (80.7%) that the participants believed, those may be infected with coronavirus even get a COVID-19 vaccine, while (36.5%) of participants felt that the COVID-19 vaccine must be taken whenever available. Regarding the awareness of the COVID-19 vaccine that protects from new mutation, the results found that the highest percentage (55.1%) of participants answered incorrectly.

Whereas (42.2%) of participants believed that herd immunity is enough to protect from coronavirus. The highest percentage of the participants (70.5%) answered correctly for awareness of performance work normally after taking the COVID-19 vaccine, (63.7%) of participants answered correctly that the COVID-19 vaccine should provide for all not only for the high-risk group. The majority of participants (70.9%) answered incorrectly that they thought never taken the immunotherapeutic medication with the COVID-19 vaccine. (76.8%) of participants believed that the COVID-19 vaccine should be a personal decision, while (76.9%) believed that they must be adherence to the time of the vaccination. A high percentage of participants (84.2%) was seeing that health care providers must be taken a training course on the COVID-19 vaccine.

Table 2 Distribution of sample according to their awareness of COVID-19 vaccine

Awareness of health care workers of COVID-19 vaccine	Yes		No		DNK	
	No	%	No	%	No	%
Aware that any person can be infected with coronavirus and even get a vaccine	369	80.7	63	13.8	25	5.5
Feel that the COVID-19 vaccine must be taken by all whenever it is available	167	36.5	257	56.2	33	7.2
Aware that vaccine can protect you from a newly mutated virus	205	44.9	198	43.3	54	11.8
Herd immunity is enough to protect everyone from the coronavirus	193	42.2	172	37.6	92	20.1
Aware that after taking COVID-19 one can perform work normally	322	70.5	88	19.3	47	10.3
Feel that the government should provide COVID-19 vaccine only for the high-risk groups (No)	166	36.3	256	56.0	35	7.7
COVID-19 vaccine can take with an immunotherapeutic	133	29.1	267	58.4	57	12.5
Think the COVID-19 vaccine should be a personal decision	351	76.8	91	19.9	15	3.3
Think the subsequent doses of the COVID-19 vaccine be taken at any time without the need for a time schedule (No)	106	23.2	311	68.1	40	8.8
Think it is better for all healthcare providers to take training courses on the COVID-19 vaccine	385	84.2	41	9.0	31	6.8

Awareness score regarding COVID-19 vaccine was showed that (52.3%) had fair awareness, and (28.2%) had poor awareness and (19.5%) had good awareness, as shown in Fig. 1. Table 3 showed that there was no significant association between the awareness of the study sample and socio-demographic characteristics except the age, educational level, qualification and duration of work (years) were significant at P-values (0.015, 0.0001, 0.0001 and 0.044) respectively. The findings showed a high percentage of participants (58.4%) had good awareness at the age of (20-29) years, and (68.5%) of them also had a good awareness as their level of education was at the college stage and higher. Also, there was an association between good awareness and qualification, (61.8%) of nurses had good awareness. While (66.3%) of healthcare providers had good awareness associated with years of work at less than 10 years.

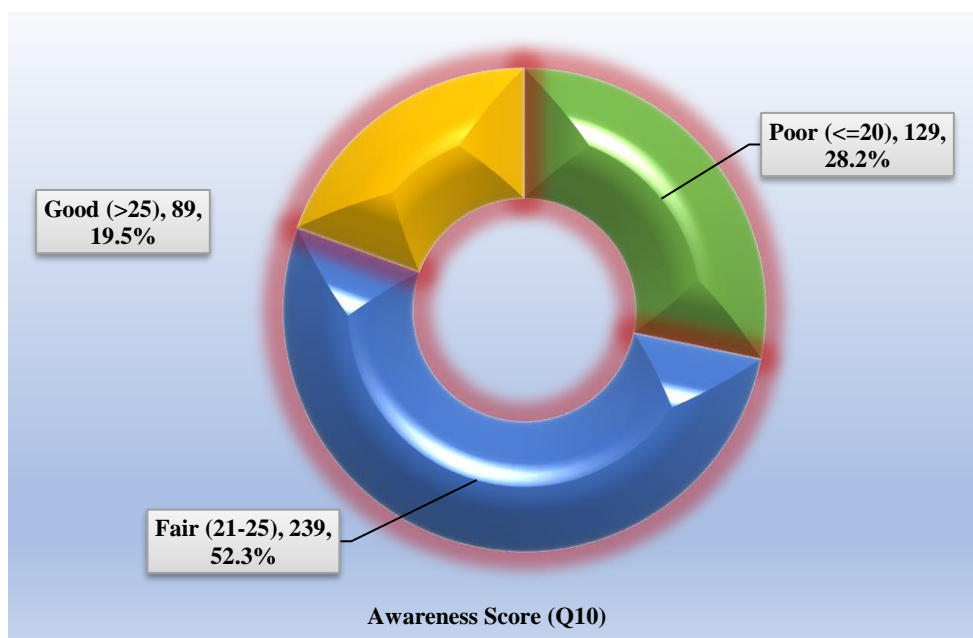


Fig 1. Awareness score toward COVID-19 vaccine among a sample of health care providers

Table 3 Association between awareness of COVID-19 vaccine and socio-demographic characters of healthcare providers

Independent variable	Awareness Score (Q10)						P-value	
	Poor (<=20)		Fair (21-25)		Good (>25)			
	No	%	No	%	No	%		
Age (years)	20---29	47	36.4	108	45.2	52	58.4	0.015*
	30---39	51	39.5	76	31.8	15	16.9	
	40---49	17	13.2	37	15.5	14	15.7	
	50---59	14	10.9	18	7.5	8	9.0	
Gender	Male	41	31.8	79	33.1	33	37.1	0.703
	Female	88	68.2	160	66.9	56	62.9	
Educational level	Secondary	2	1.6	5	2.1	-	-	0.0001*
	Diploma	11	8.5	53	22.2	28	31.5	
	College & higher	116	89.9	181	75.7	61	68.5	
Marital status	Single	28	21.7	56	23.4	26	29.2	0.219
	Married	96	74.4	181	75.7	61	68.5	
	Divorced	5	3.9	2	.8	2	2.2	
Residence	Rural	122	94.6	229	95.8	85	95.5	0.862
	Urban	7	5.4	10	4.2	4	4.5	
	Doctor	-	-	8	3.3	1	1.1	
Pharmacist	11	8.5	27	11.3	14	15.7		
Dentist	2	1.6	12	5.0	-	-		
Nurse	51	39.5	114	47.7	55	61.8		
Qualification	Technical	63	48.8	70	29.3	19	21.3	0.044*
	Administrator	2	1.6	8	3.3	-	-	
	<10years	72	55.8	146	61.1	59	66.3	
	20---29	45	34.9	63	26.4	15	16.9	
Duration of work (years) g	=>30years	12	9.3	30	12.6	15	16.9	0.055
	Yes	105	81.4	184	77.0	60	67.4	
	No	24	18.6	55	23.0	29	32.6	
Have been infected with COVID-19 virus	Yes	103	79.8	190	79.5	72	80.9	0.961
	No	26	20.2	49	20.5	17	19.1	

*Significant difference between percentages using Pearson Chi-square test (χ^2 -test) at 0.05 level.

4. Discussion

The highest percentage of the sample (45.3%) was in the age group 20-29 years and the lowest percentage (8.8%) was in the age group 50-59 years. In comparison with other studies in some countries, this result is similar to what was reported in China who found that the highest percentage (57.2%) was in the age groups 20-29 years [12], but this result was different from the results of a study conducted online in Ethiopia where found the highest percentage of the sample (54.0%) were in the age group (30-39) years [13], this difference may be due to the fact of the age group that is less than 30 may be less familiar and less interested in the pandemic than older ages.

The proportion of participants of healthcare providers was females (66.5%) higher than males 33.5%, this result is consistent with the result of a similar study conducted in Malaysia who found that the proportion of females was higher than the males as well, the percentage of females was 65.9.4% while the percentage of males was 34.1% [14]. Regarding educational qualifications in the current study, the highest percentage (78.3%) was possessed Bachelor's degree or higher. when compared the current study with similar studies in other countries, this result agreed with the result of a study conducted in Libya which found that majority of participants who had a Bachelor's degree was 80.0% [15], and also, similar to study that conducted in Malaysia reported (74.9%) of participants was possessed Bachelor's degree [14]. In the current study, the highest proportion of the sample (48.1%) was from Nursing Staff, this result was agreed with what was reported in Vietnam who found that the highest proportion of the sample (35.61.9%) from nurse staff [6].

It was observed that with years of experience in this study, the highest percentage (60.6%) of a participant was for those who had equal or greater than 10 years of duration of work. Compared with other countries, this result is similar to what was reported in Congo which found that those with years of work equal to or less than 10 years constitute (53.5%) of the study sample [16]. As well as in line the study was conducted in Cyprus which found that those with years of work of more than 10 years constitute (52.0%) represented a high percentage of the study sample [17].

In the current study 74% were married, this result agrees with what was reported in Ethiopia which found that the highest percentage (68.0%) of the sample was married [18]. Data demonstrated that 76.4% of HCPs were infected with coronavirus and 79.9% of them had immunized cards. This study aimed to investigate awareness among healthcare providers. The findings of the total awareness indicate that most HCPs (71.8%) had acceptable awareness of vaccines, but only a small percentage 28.2% of the studied sample had poor awareness of the COVID-19 vaccine in comparison with other KAP studies, this percentage is higher than findings carried out in Ethiopia which found COVID-19

vaccination awareness was poor (40.8%) [19], and consistent with a study conducted in western India which found the majority of subjects had excellent awareness toward COVID-19 vaccine [20]. Regarding awareness of HCPs about (80.7%) of them see that any person can be infected with coronavirus and even get a vaccine, (36.5%) feel that the COVID-19 vaccine must be taken by all whenever it is available, (44.9%) aware that vaccine can protect from a newly mutated virus. No previous studies to allow comparison.

This study showed that (42.2%) of healthcare providers believed that herd immunity is enough to protect from the coronavirus infection, in comparison with a study conducted in Egypt that about 62% of Egyptians believed that herd immunity is enough to protect from the coronavirus infection [21], while in comparison with a study conducted among different countries which found 60.4% of respondents think COVID-19 vaccine will provide herd immunity [22]. This small percentage of healthcare providers may be because most of them are saw that difficult to achieve herd immunity especially since COVID-19 is respiratory diseases Besides herd immunity, about 70.5% of healthcare providers are aware that after taking the COVID-19 vaccine one can perform work normally, this consist with results conducted in Malaysia which found that 89.8% of participants that feel after vaccination can lead a normal lifestyle [14], while 56.0% of HCPs feel that the government should not provide COVID-19 vaccine only for the high-risk groups this consistent with a study conducted in Ethiopia which found 56.9% of respondents agreed that the COVID-19 vaccine should be fairly distributed [19].

In this study, 29.1% answered that the COVID-19 vaccine can take with immunotherapy, and 76.8% of healthcare providers see the COVID-19 vaccine should be a personal decision this study does not agree with the results of KAP studies, one conducted in different countries which found 68.3% of participants think COVID-19 vaccine should be compulsory [19] and second in Egypt which found that (73%) of respondents believed COVID-19 vaccine should be mandatory, this differences in opinions may be due to that (79.0%) of healthcare providers had knowledge that COVID-19 vaccine never prevents coronavirus and decision of COVID-19 vaccination should be more flexible rather than mandatory in Iraq [21].

The results showed that 68.1% of healthcare providers were aware that subsequent doses of the COVID-19 vaccine should not be taken at any time without adhering to a schedule and 84.2% of them think that all healthcare providers should take training courses about the COVID-19 vaccine to increase awareness among them, this Consistent with findings who found 95.2% of participants thought that awareness about vaccination should be made [22].

A significant association was found between the awareness of the COVID-19 vaccine and lower age group, higher education level, qualifications and duration of work (years), this is similar to what was concluded in Ethiopia found that educational level significantly associated with the level of awareness towards COVID-19 vaccination. Participants who have college and above are more likely to have the awareness of the COVID-19 vaccine and disagree with the same study that found there was no association between age and knowledge [19].

5. Conclusion

The highest percentage of healthcare providers had fair awareness score. Vaccine awareness among healthcare providers was affected by various sociodemographic characteristics, including the education level, age and duration of years of work so significant association was found. According to these findings it is clear there is a need to fill the awareness gap in COVID-19 vaccine among healthcare providers as they play a vital role to increase awareness in reaching acceptable distribution of COVID-19 vaccine for targeted groups. More education and promotion are needed to assure healthcare providers that the vaccine is effective and safe. It is preferable to do further studies on the people as well as on the healthcare providers in other governorates in order to evaluate awareness regarding the COVID-19 vaccine.

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