

Assessment of Perception of Covid-19 Infection and Vaccination among Health Care Workers in Makkah Al-Mokarramah, Saudi Arabia 2022

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Abstract:

Background

COVID-19 still poses a threat to healthcare workers (HCW), COVID-19 vaccines were made available to the public by the end of 2020. However, little is known about COVID-19 vaccine perception and also booster dose (CBD) among healthcare workers (HCW) worldwide. limited COVID-19 vaccination acceptance among healthcare assistants (HCAs) may adversely impact adults and also older , who are at increased risk for severe COVID-19 infections. Saudi Arabia is one of the areas most affected by the COVID-19 pandemic in the Saudi Arabia. Healthcare workers are among those at high risk of contracting the virus, and a vital source of information and trust in vaccines to the community. The COVID-19 pandemic and its associated vaccine have highlighted vaccine hesitancy among healthcare workers (HCWs). Vaccine hesitancy among this group existed prior to the pandemic and particularly centered on influenza vaccination. Being a physician and

nursing having more advanced education and previous vaccination habits are frequently associated with vaccine acceptance. The relationship between age and caring for patients on COVID-19 vaccination is unclear, with studies providing opposing results.

Aim of the study: To assess the perception of Covid-19 infection and vaccination among health care workers in Makkah Al-Mokarramah , Saudi Arabia2022.

Method: Cross sectional study, was conducted among Saudi Arabia health care workers in primary health care centers in Makkah Al-Mukarramah. Data were gathered through the use of a self-administered questionnaire. A convenience sampling technique was utilized to collect the data. has been send to the study participants through social media platforms and email. Our total participants were(135).

Results: the majority of participant (73.3%) have high of the perception towards Covid-19 infection and vaccination followed by (22.2%) of participant average while Range(5-18) and Mean \pm SD(14.733+2.794), while a significantly relation were X^2 103.6 and P=0.001

Conclusion: There is a good perception of some hesitancy in receiving the vaccination among health care workers in all countries. The introduction of personalized education, risk communication, and deliberate policy could help to reduce the number of people who are unwilling to take of Covid-19 infection vaccination, action is needed to enhance COVID-19 vaccine uptake in this important population with health care workers playing an important role to build vaccine confidence and trust among employees.

Keywords: Assessment, perception, Covid-19, vaccination, HCW, Makkah, Saudi Arabia

Introduction

Healthcare workers typically have several qualities that would presumably predispose them to vaccine acceptance; these include advanced education in the sciences, clinical experience, and membership in professional societies that support vaccination. The vaccine's development and deployment is one of the most promising health intervention strategies to mitigate the spread of COVID-19.[1] The world is witnessing a major global humanitarian disaster due to the spread of the Coronavirus disease 2019 (COVID- 19), which has affected all aspects of life across the planet. Countries around the world have implemented strict precautions and controls to contain the outbreak of COVID-19, which, among others, include social distancing and mandatory use of face coverings [2,3]. However, it is recognized that such preventive measures may neither be enough nor sufficient to halt the spread of COVID-19. [4, 5]

The COVID-19 disease caused by the SARS-CoV-2 virus is a respiratory disease with symptoms ranging from asymptomatic to mild or severe complications, such as respiratory distress, pneumonia, and death [6]. Non-pharmaceutical interventions such as facemask wearing, quarantine, and social distancing have shown some effectiveness in containing the spread of the disease [7]. However, a safe vaccination program with broad clinical benefits is considered a suitable long-term solution when implemented globally. The vaccine must substantially reduce morbidity and mortality, which is beneficial for both healthcare workers and the public [8]. To achieve herd immunity and restrain the spread of the disease, extensive vaccination is one of the prerequisites [9]. Multiple COVID-19 vaccines have been developed, with the vaccination process accelerated in a few countries, however, some people are still uncertain regarding the efficacy, dosage, and safety of the vaccine [10]. The need for social distancing and other restrictions to prevent the transmission of COVID-19 have also contributed to worsening mental health and quality of life in older adults.^{3,4} The COVID-19 pandemic has created an unprecedented demand for front-line healthcare workers to provide care under more hazardous conditions with infected patients, putting their own health and safety at risk. This is particularly true of healthcare assistants (HCAs), who provide the majority of direct patient care to functionally impaired older adults residing in both congregate settings and in the community.[11,12] These include certified nursing assistants, home health aides, certified medical assistants, and certified medication technicians.[13]

Despite the early approval of a number of COVID-19 vaccines under emergency use authorization[14,15], and the increasingly encouraging results, comprehensive evidences for their remote safety and efficacy are yet to establish. For this reason, vigilance and adherence to IPC policies to prevent healthcare acquired infection is crucial. Attitude wise, a highest rate of vaccine hesitancy among demographic groups was in persons aged 30-49 (36%), rural residents (35%), and 33% of healthcare providers[16]. many medical professionals are at the forefront of the pandemic, both directly observing the effects of SARS-CoV-2 infection and placing themselves at greater risk of exposure.[17] It may, therefore, seem surprising that some medical professionals have chosen not to receive the vaccine, with some even adopting or promoting incredible theories about the pandemic and the associated vaccine. Proponents of HCW vaccination argue that unvaccinated HCWs place themselves and their patients at increased risk of illness [18]

Literature review:

A study focus involved important COVID-19 aspects, as well as knowledge and perception about exposure prevention and source control. The initial Covid-19 vaccine launches under the emergency authorization umbrella, (WHO, 2020d) extended our focus to address vaccine

acceptance as a specific research inquiry. The predominant participation of our physicians over other HCW staff reflects an interest to take a leading part in the efforts to unveil the plenty of uncertainties around SARS-Cov-2 on scientific evidence basis. Since the pandemic, a state of “survey fatigue” characterized by decreased response rates has been proposed due to a surge in a COVID-19 related survey-based activity, exaggerated by a restriction of other data collection methods [19].

Study in various nations supporting explicit immunizations for vaccination among health care workers execution in inoculation programs. In Bangladesh, the public authority has effectively begun the COVID-19 inoculation carry out [20]

Monrad, et al.(2021) report that the present study is the first survey to evaluate COVID-19 vaccine hesitancy among health care workers, working in nursing homes, assisted living communities, hospitals, and homecare. Although our sample was limited to NAHCA members, the demographic makeup of our sample was comparable to national data on HCAs, with approximately 15%–25% being black and 10%–20% being Latino/a.[21,22] Several prior studies have evaluated the acceptance of COVID-19 vaccines among other groups of healthcare workers. A recent single-state survey[23]

Ferdous, et al .(2020)report that finding is comparable with different examinations in Bangladesh showing no critical sex contrasts in information in regards to COVID-19. Critically, most of members among health care workers (78%) showed attitude and practices about signs and symptoms of the Vaccinate against COVID-19 was not huge regarding participants' sex. [24]

On July 2020 a Cross-Sectional Study in Indonesia was directed to survey perceptions attitude about symptoms of the Vaccinate against COVID-19 and practices of Vaccinate about COVID-19 among health care workers awareness about acceptance of a COVID-19 attitude about symptoms and practices of Vaccinate about COVID-19 in Southeast Asia. They found that among 1,359 respondents, 93.3% of respondents (1,268/1,359) might want to be vaccinated for a 95% successful vaccine, but this acceptance diminished to 67.0% (911/1,359) for a vaccine with half viability. For a 95% compelling vaccine, being a healthcare worker and having a higher seen danger of COVID-19 disease were related with higher acceptance, changed chances proportion (aOR): 2.01; 95%CI: 1.01, 4.00 and an OR: 2.21; 95%CI: 1.07, 4.59, separately; compared to civil servants, being resigned was related with less acceptance, (aOR: 0.15; 95%CI: 0.04, 0.63). For a 50% compelling vaccine, being a medical care specialist was likewise connected with more noteworthy acceptance, aOR: 1.57; 95%CI: 1.12, 2.20. They inferred that acceptance of a COVID-19 immunization was profoundly affected by the pattern viability of the vaccine. Preparing the general population to accept a vaccine with relatively low effectiveness may be difficult.[25]

Wibawa (2021) Vaccines are the main public health measure and best methodology to shield the among health care workers from COVID-19, since SARS-CoV-2 is profoundly infectious infection and influences populaces broadly and universally. The opposition for COVID-19 antibody creation and advancement against the spread and cataclysmic impacts of the sickness is continuous [26].

Rationale

Increasing the vaccination against COVID-19 rates continues to be a challenge for Saudi Arabia. Despite the high infected by COVID-19 rate, there are still many vaccination among health care workers who opt not to get vaccinated and be protected, there are still several factors and reasons have come into play for people who do not get the vaccinate about COVID-19. During the COVID-19 pandemic, communications designed to promote the adoption of preventive behaviors should focus on increasing the perception of seriousness, the risk perception, self-efficacy to cope with the COVID-19 pandemic, and the effectiveness of the adopted behavioral measures for reducing risk. Health education programs that are tailored to various socio demographic categories, to improve vaccination among health care workers awareness, perceptions, and attitudes, are vital for increasing the adoption of outbreak preventive measures.

Aim of the Study

To assess the perception of Covid-19 infection and vaccination among health care workers in Makkah Al-Mokarramah , Saudi Arabia2022.

Objectives:

To assess the perception of Covid-19 infection and vaccination among health care workers in Makkah Al-Mokarramah , Saudi Arabia2022.

Subjects and methods

Study design:

This cross-sectional survey has been conducted among people in the city of Makkah Al-Mukarramah. The study carried for 25 days, from the 1st till the 25 the of September 2022, among health care workers Saudi worker to the PHC centers in Makkah, participants aged between 18 and 60 years old, the study investigators will share the survey and through emails to their primary contacts

Study setting / study area:

A study participant has been recruited on Makkah Al-mukarramh including PHC centers under supervision of Directorate of Health Affairs of Makkah Al-Mukarramah in Saudi Arabia. The study has been carried out in the city of Makkah Al-Mokarramah, Makkah is the holiest spot on Earth. It is the birthplace of the Prophet Mohammad and the principal place of the pilgrims to perform

Umrah and Hajj. The most important cities in Saudi Arabia . It is the holy city for all Muslims, and is located in the western region. It is located in the western area in Kingdom of Saudi Arabia .Contains a population around 2.578 million.

Study population:

The study has been conducted among health care workers in the PHC centers in the Makkah Al-Mokarramah at Saudi Arabia. Including Al-Ka'akya, Al-Adl, Al-Zahir primary healthcare centers.

Selection criteria:

Inclusion Criteria :

- All Saudi health care workers who are more than 18 years of age. A study participant has been recruited from Makkah Al-Mukarramah and they got vaccinated.

Exclusion criteria:

- Saudi health care workers younger than 18 years
- Participants who did not consent to participate in the study, and/or did not answer the questions of the study.
- Health care workers with language barriers .

Study Sample:

The sample size has been calculated by applying Raosoft sample size calculator based on (The margin of error: 5%, Confidence level: 95%, and the response distribution was considered to be 20%) accordingly the Sample size is 135 of health care workers Saudi Population worker in PHC and adding 10 more to decrease margin of error. After adding 5% oversampling, the minimum calculated sample has been 135. Computer generated simple random sampling technique was used to select the study participants.

Sampling technique:

Systematic random sampling technique is adopted. By using systematic sampling random as dividing the total population by the required sample size; (135)

Data collection methods:

The self-administered questionnaire is designed based on previous studies and frameworks to assess of Covid-19 infection and vaccination among health care workers COVID-19 .

The questionnaire was developed in English and was then translated into Arabic. The questions were first pre-tested and were revised and finalized after it was pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. The survey is estimated to take 10 min to complete .

To collect the information, a set of questions were constructed and developed .

The questionnaire consisted of two main sections; the first section focuses on

Socio demographic and background information such as age, education level, outcome and gender of the participants .

The perception of Covid-19 infection and vaccination among health care workers .

A Pilot study

Was carried out at the questions were first pre-tested and were revised and finalized after it was pilot tested. Before completing the survey, participants were required to indicate their consent using a forced response question followed by the survey questionnaires. This study has been conducted and all suggestions taken into consideration.

Data analysis

The Statistical Package for Social Sciences (SPSS) software version 24.0 has been used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics using test for the association and the difference between two categorical variables were applied. A p-value ≤ 0.05 has been considered statistically significant.

Ethical consideration :

- Permission from family medicine program was obtained .
- Permission from the regional Research and Ethical Committee was be given to conduct our study.
- All the subjects has been participate voluntarily in the study .
- Privacy of information and confidentiality has been maintained .
- Full explanation about the study and its purpose was carried out to obtain their participation.

Budget: Self-funded

Results :

Table 1 distribution of demographic characteristics of the research. (n=135)

	N	%
Age		
18-25 years old	3	2.2
26-30 years old	15	11.1
31-40 years old	39	28.9
41-50 years old	54	40.0
50-60 years old	24	17.8
Gender		
Female	126	93.3
Male	9	6.7

Marital status		
Single	36	26.7
Married.	93	68.9
Divorced.	3	2.2
Widower	3	2.2
Number of children:		
Non	3	3.0
1	18	18.2
2	18	18.2
more than 2	60	60.6
level of education you have completed?		
Primary/ Intermediate	9	6.7
Secondary school	18	13.3
Associates degree	24	17.8
Bachelor's degree	84	62.2
Primary Role at Work		
Physician	12	8.9
Nurses	75	55.6
Administrative/clerical staff	3	2.2
Social worker	6	4.4
Other	39	28.9
Location of Work		
Ambulatory care	6	4.4
Emergency Department	6	4.4
Medical and Surgical Inpatient Units	21	15.6
Other	102	75.6
Residence		
Rural	66	48.9
Urban	69	51.1

Table 1 shows that most of the participants (40.0%) were in the age group 41-50 years old years, the majority of them were female (93.3%) while male(6.7%), also regarding the marital stats most of participants married were(68.9%)while single were(26.7%), regarding Number of children the majority of participant are Bachelor's degree were(62.2%), regarding the Primary Role at Work most of participants Nurses were(55.6%) while other were(28.9%), regarding Location of Work the majority of participant are Other were(75.6%), also regarding Residence the majority of participant are Urban were(51.1%) .

Table 2: Distribution of perception of Covid-19 infection and vaccination among health care workers in the study

	No		Yes	
	N	%	N	%
Perception Covid-19 infection and vaccination among health care workers and booster				

without any hesitation.				
1. Have you received all the necessary vaccines in your lifetime?	3	2.2	132	97.8
2. Do you know about the COVID-19 vaccine	3	2.2	132	97.8
3. Have you received two doses of COVID-19 vaccines	0	0	135	100.0
4. Are you willing to take the COVID-19 booster vaccine or take it without any hesitation	15	11.1	120	88.9
Perception about take the vaccine COVID-19 and booster dose among healthcare workers.				
5. Do you believe that the COVID-19 vaccine is safe	24	17.8	111	82.2
6. Do you think that COVID-19 vaccination has adverse reactions	51	37.8	84	62.2
7. Do you encourage your family/friends/relatives to get the COVID-19 vaccine	15	11.1	120	88.9
8. Do you believe the COVID-19 vaccine and booster dose can reduce the spread of COVID-19	12	8.9	123	91.1
9. Do you believe the COVID-19 vaccine and booster dose can reduce the complications associated with COVID-19	21	15.6	114	84.4
10. Do you think that if everyone in society maintains the preventive	21	15.6	114	84.4
11. measures, the COVID-19 pandemic can be eradicated without vaccination	63	46.7	72	53.3
12. Do you think Pharmaceutical companies have developed safe and effective COVID-19 vaccines	24	17.8	111	82.2
13. Have you received COVID- 19 vaccines and booster dose because it is mandatory	21	15.6	114	84.4
14. Do you think Mix-Matching the booster dose is safe and effective	39	28.9	96	71.1
15. Do you believe that only high-risk individuals such as health care workers and elderly persons with other diseases only need COVID- 19 vaccines	81	60.0	54	40.0
16. Do you believe that only high-risk individuals such as health care workers and elderly persons with other diseases no need to COVID- 19 vaccines booster dose	93	68.9	42	31.1
17. Have you recently avoided cultural behaviors, such as shaking hands after vaccinated Against COVID-19	36	26.7	99	73.3
18. Have You're still practicing social distancing after vaccinated Against COVID-19	27	20.0	108	80.0
19. Compliance with the Ministry of Health precautions will prevent signs and Symptoms of the Vaccinate COVID-19	12	8.9	123	91.1
20. The appearance of signs and symptoms of vaccination COVID-19 is rapid and severe, so I do not recommend taking the vaccine COVID-19	84	62.2	51	37.8

The results shown in table (2) represent the **Perception Covid-19 infection and vaccination among health care workers and booster without any hesitation.** The results showed that regarding do you received all the necessary vaccines in your lifetime the majority of

Participant answer Yes were (97.8%), but regarding Do you know about the COVID-19 vaccine the majority of Participant answer Yes were (97.8%), while regarding Have you received two doses of COVID-19 vaccines the majority of Participant answer Yes were (100.0%), also you willing to take the COVID-19 booster vaccine or take it without any hesitation the majority of Participant answer Yes were (88.9%)

Regarding Perception about take the vaccine COVID-19 and booster dose among healthcare workers . The results showed that regarding you believe that the COVID-19 vaccine is safe the majority of Participant answer Yes were (82.2%), but regarding you think that COVID-19 vaccination has adverse reactions the majority of Participant answer Yes were (88.9%) while No were(37.8%), while regarding Do you encourage your family/friends/relatives to get the COVID-19 vaccine the majority of Participant answer Yes were (88.9%), also you believe the COVID-19 vaccine and booster dose can reduce the spread of COVID-19 the majority of Participant answer Yes were (91.1%). While regarding you received COVID- 19 vaccines and booster dose because it is mandatory the majority of Participant answer Yes were (84.4%) answers while No were(15.6%), but regarding you believe that only high-risk individuals such as health care workers and elderly persons with other diseases only need COVID- 19 vaccines the majority of Participant answer No were (60.0%) answers while yes were(40.0%), while regarding The appearance of signs and symptoms of vaccination COVID-19 is rapid and severe, so I do not recommend taking the vaccine COVID-19 the majority of Participant answer No were (62.2%) answers while yes were(37.8%),

Table 3: Distribution of perception of Covid-19 infection and vaccination among health care workers .

Perception			Score	
	N	%	Range	Mean±SD
Weak	6	4.4	5-18.	14.733±2.794
Average	30	22.2		
High	99	73.3		
Total	135	100.0		
X²	103.6			
P-value	<0.001*			

This table 3 shows the majority of participant (73.3%) have high of the perception towards Covid-19 infection and vaccination followed by (22.2%) of participant average while Range(5-18) and Mean \pm SD(14.733 \pm 2.794), while a significantly relation were X^2 103.6 and P=0.001

Figure (1): Distribution of perception of Covid-19 infection and vaccination among health care workers

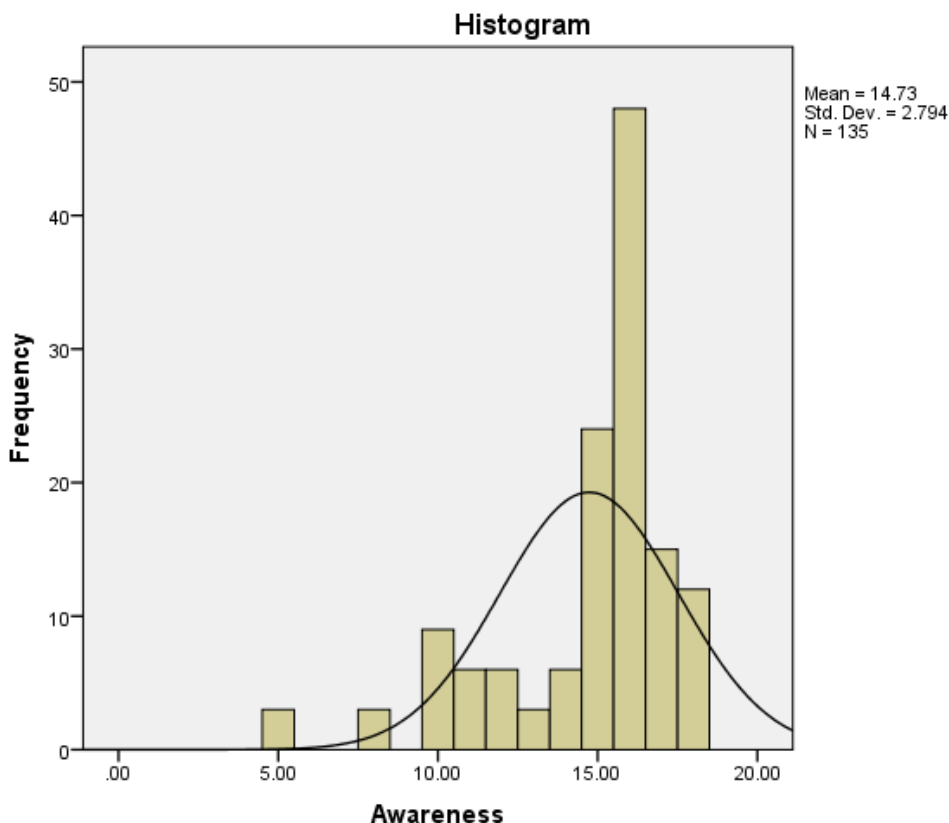


Table 4 Distribution of the associated about Awareness of perception of Covid-19 infection vaccination and socio-demographic characteristics among health care workers

		N	Perception		F or T	ANOVA or T-test	
			Mean	± SD		Test value	P-value
Age	18-25 years old	3	15.321	± 1.442	F	4.740	<0.001*
	26-30 years old	15	14.200	± 2.305			
	31-40 years old	39	13.462	± 2.742			
	41-50 years old	54	15.833	± 1.551			
	50-60 years old	24	14.625	± 4.302			
Gender	Female	126	14.857	± 2.793	T	2.312	0.044*
	Male	9	13.000	± 2.291			
Marital status	Single	36	14.917	± 2.285	F	1.845	0.142
	Married.	93	14.516	± 2.988			
	Divorced.	3	18.215	± 2.100			
	Widower	3	16.218	± 2.317			

Number of children	Non	3	16.000 ± 1.954	F	0.297	0.828
	1	18	14.833 ± 2.407			
	2	18	14.833 ± 1.505			
	more than 2	60	14.500 ± 3.486			
level of education you have completed?	Primary/ Intermediate	9	16.224 ± 2.185	F	5.109	0.002*
	Secondary school	18	15.833 ± 1.724			
	Associates degree	24	13.216 ± 3.648			
	Bachelor's degree	84	14.857 ± 2.644			
Primary Role at Work	Physician	12	10.500 ± 3.729	F	9.597	<0.001*
	Nurses	75	15.160 ± 2.726			
	Administrative/clerical staff	3	16.125 ± 1.885			
	Social worker	6	15.684 ± 2.029			
	Other	39	15.077 ± 1.660			
Location of Work	Ambulatory care	6	15.500 ± 1.643	F	9.118	<0.001*
	Emergency Department	6	10.500 ± 6.025			
	Medical and Surgical Inpatient Units	21	13.286 ± 2.369			
	Other	102	15.235 ± 2.351			
Residence	Rural	66	15.455 ± 2.032	T	3.020	0.003*
	Urban	69	14.043 ± 3.233			

Table 4 show regarding age, results show a significant relation between the Perception and age were $F= 4.740$ and $P\text{-value}=0.001$, increase(above 41-50) years the mean +SD were (15.833 ± 1.551) , regarding gender show a significant relation between the Perception and gender were $T= 2.312$ and $P\text{-value}=0.044$, increase(female), the mean +SD were (14.857 ± 2.793) . Regarding marital status show no significant relation between the Perception and marital status were $F= 1.845$ and $P\text{-value}= 0.142$, increase(Divorced), the mean +SD were (18.215 ± 2.100) , regarding level of Number of children show no significant relation between the Perception and Number of children were $F=0.297$ and $P\text{-value}=0.828$, increase(one and two children) the mean +SD were $(14.833\pm2.407$ and $14.833\pm1.505)$, regarding level of education you have completed show a significant relation between the Perception and level of education were $F=5.109$ and $P\text{-value}=0.002$, increase(Primary/ Intermediate), the mean +SD were (16.224 ± 2.185) , regarding Primary Role at Work show a significant relation between the Perception and Primary Role at Work were $F=9.597$ and $P\text{-value}=0.001$, increase(Administrative/clerical staff), the mean +SD were (16.125 ± 1.885) , regarding location of Work show a significant relation between the Perception and Location of Work were $F=9.118$ and $P\text{-value}=0.001$, increase(Ambulatory care), the mean +SD were (15.500 ± 1.643) , regarding Residence show a significant relation between the Perception and Residence were $T=3.003$ and $P\text{-value}=0.003$, increase(Rural), the mean +SD were (15.455 ± 2.032) .

Discussion

The purpose of this study was to assess the perception of Covid-19 infection and vaccination among health care workers in Makkah Al-Mokarramah , Saudi Arabia 2022. Socioeconomic characteristics of the among health care workers in Makkah to obtain information that could be used awareness campaign and to determine whether HCW perception of Covid-19 infection and vaccination.

that most of the participants (40.0%) were in the age group 41-50 years old years, the majority of them were female (93.3%) while male(6.7%), also regarding the marital stats most of participants married were(68.9%)while single were(26.7%), regarding Number of children the majority of participant are Bachelor's degree were(62.2%), regarding the Primary Role at Work most of participants Nurses were(55.6%) while other were(28.9%), regarding Location of Work the majority of participant are Other were(75.6%), also regarding Residence the majority of participant are Urban were(51.1%) . (See Table 1)

Since the initial outbreak of COVID-19 disease in China, it has spread widely to various countries. According to the MOH update on the 20th of April 2020, the number of COVID-19 cases raised to 10,484 in Saudi Arabia. Many studies have reported the importance of awareness, perceptions of attitude and practice about symptoms of the Vaccinate against COVID-19 society to reduce the spreading rate during epidemics and pandemics [27]. Similarly, lack of awareness contributes to undesirable perceptions about the Vaccinate against COVID-19 which leads to negative impacts on infection-control [28]

Therefore, in this study, the perceptions the Vaccinate against COVID-19 among health care workers. In this study, we found a significant relation between perceptions, indicating that the better the level of education was reflected in there . Data from this study indicated a moderate general awareness level of COVID-19

During the COVID-19 outbreak, a similar the awareness about the perceptions the Vaccinate against COVID-19 among health care workers . Was detected in Riyadh and Al-Jouf [29] . A similar level of perceptions was detected among health care providers in UAE , Vietnam and Uganda [30], also my study is similar to another study the vaccine, and COVID-19 vaccines can cause side effects, most of which are mild or moderate and go away within a few days on their own. As shown in the results of clinical trials, more serious or long-lasting side effects are possible. Vaccines are continually monitored to detect adverse events.[31] Reported side effects of COVID-19 vaccines have mostly been mild to moderate and have lasted no longer than few days. Typical side effects include pain at the injection site, fever, fatigue, headache, muscle pain, chills and diarrhea. The chances of any of these side effects occurring after vaccination differ according to the

specific vaccine. COVID-19 vaccines protect against the SARS-CoV-2 virus only, so it's still important to keep yourself healthy and well [31]

awareness attitude participants had good awareness about Vaccinate against COVID-19 , like other studies [32,33]. On the other hand, other studies showed <80% had poor awareness about symptoms of Vaccinate against COVID-19 [30]

A study in China found that 48% of respondents postponed vaccination before confirmation of the safety of the vaccine, which shows their doubt regarding vaccine safety. Worryingly, the exceptionally rapid pace of vaccine development, the skepticism of certain groups of science and health experts might elevate doubt about COVID-19 vaccine [28]

The participants' the socio-demographic data (Age, gender, nationality, marital status, level of education and region) and attitude and practices about symptoms of the Vaccinate against COVID-19 among health care workers are significantly associated with participants' awareness, as evidenced by this study Participants' age, results show a significant relation between the attitude and age were $P\text{-value}=0.001$. Participants in Saudi Arabia [31] In agreement with this study, other studies found similar findings, as awareness of the perceptions and attitude towards symptoms of the Vaccinate against COVID-19 was significantly among level of education people with higher levels of education were more knowledgeable compared with other categories. Also, marital status was positively correlated with better awareness. [34], China, USA and Nepal [33]. Participants from business and governmental sectors have significantly shown the highest COVID-19 This finding is similar to other studies with higher KAP among married individuals [35]. It was thought that married individuals had a higher level of positive attitudes towards COVID-19 as they cared for close family members, including young children [36].

Conclusion

This study provides valuable information regarding COVID-19 vaccine hesitancy and the potential variables influencing it. The relatively high vaccine acceptability among HCWs could result from earlier COVID-19 vaccination experience, regarding safety, and the high risk of contracting COVID-19 from healthcare facilities. Concerns about vaccine safety, vaccine efficacy, and lack of trust were possible underlying causes of vaccine hesitancy. HCWs are positively influenced by close friends and co-workers who value COVID-19 vaccination, which may encourage the development of cross-departmental interactions to increase vaccination rates. The presented observations and conclusions may serve as tools for building future policies and public health actions designed to increase the COVID-19 vaccination rate.

References

1. Peterson, C. J., Lee, B., & Nugent, K. (2022). COVID-19 Vaccination Hesitancy among Healthcare Workers—A Review. *Vaccines*, *10*(6), 948.
2. Anderson, R. M., Vegvari, C., Truscott, J., & Collyer, B. S. (2020). Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. *The Lancet*, *396*(10263), 1614-1616.
3. Ekizoglu, E., Gezegen, H., Yalınay Dikmen, P., Orhan, E. K., Ertaş, M., & Baykan, B. (2022). The characteristics of COVID-19 vaccine-related headache: Clues gathered from the healthcare personnel in the pandemic. *Cephalalgia*, *42*(4-5), 366-375.
4. Chowdhury, S. D., & Oommen, A. M. (2020). Epidemiology of COVID-19. *Journal of digestive endoscopy*, *11*(01), 03-07.
5. Zhang, J. J., Dong, X., Liu, G. H., & Gao, Y. D. (2022). Risk and protective factors for COVID-19 morbidity, severity, and mortality. *Clinical Reviews in Allergy & Immunology*, 1-18.
6. Anderson, R. M., Vegvari, C., Truscott, J., & Collyer, B. S. (2020). Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination. *The Lancet*, *396*(10263), 1614-1616.
7. Thorakkattil, S. A., Abdulsalim, S., Karattuthodi, M. S., Unnikrishnan, M. K., Rashid, M., & Thunga, G. (2022). COVID-19 Vaccine Hesitancy: The Perils of Peddling Science by Social Media and the Lay Press. *Vaccines*, *10*(7), 1059.
8. Stawicki, S. P., Jeanmonod, R., Miller, A. C., Paladino, L., Gaieski, D. F., Yaffee, A. Q., ... & Garg, M. (2020). The 2019–2020 novel coronavirus (severe acute respiratory syndrome coronavirus 2) pandemic: A joint american college of academic international medicine-world academic council of emergency medicine multidisciplinary COVID-19 working group consensus paper. *Journal of global infectious diseases*, *12*(2), 47.
9. Omer, S. B., Yildirim, I., & Forman, H. P. (2020). Herd immunity and implications for SARS-CoV-2 control. *Jama*, *324*(20), 2095-2096.
10. Iserson, K. V. (2021). SARS-CoV-2 (COVID-19) vaccine development and production: an ethical way forward. *Cambridge Quarterly of Healthcare Ethics*, *30*(1), 59-68.
11. Burgdorf, J. G., Arbaje, A. I., Stuart, E. A., & Wolff, J. L. (2021). Unmet family caregiver training needs associated with acute care utilization during home health care. *Journal of the American Geriatrics Society*, *69*(7), 1887-1895.

12. Al-Metwali, B. Z., Al-Jumaili, A. A., Al-Alag, Z. A., & Sorofman, B. (2021). Exploring the acceptance of COVID-19 vaccine among healthcare workers and general population using health belief model. *Journal of evaluation in clinical practice*, 27(5), 1112-1122.
13. El-Rashid, A., Albarkheel, H., Abahussain, S., Abahussain, F., & Alhassoun, A. (2021). Perception and dental fear toward dental treatment among Saudi population who received Coronavirus disease-19 vaccine. *Med Sci*, 25(117), 2987-2997.
14. Kasemy, Z., Shreif, H., Tantawy, A., Barakat, A., & Sharif, A. (2021). Barriers to managing COVID-19 pandemic: Attitude towards vaccination and implications for public health. *Med Sci*, 25(110), 1010-1019.
15. Pacella-LaBarbara, M. L., Park, Y. L., Patterson, P. D., Doshi, A., Guyette, M. K., Wong, A. H., ... & Suffoletto, B. P. (2021). COVID-19 vaccine uptake and intent among emergency healthcare workers: a cross-sectional survey. *Journal of occupational and environmental medicine*, 63(10), 852.
16. Oliver, S. E., Gargano, J. W., Scobie, H., Wallace, M., Hadler, S. C., Leung, J., ... & Dooling, K. (2021). The advisory committee on immunization practices' interim recommendation for use of Janssen COVID-19 vaccine—United States, February 2021. *Morbidity and Mortality Weekly Report*, 70(9), 329.
17. Wallace, M., Woodworth, K. R., Gargano, J. W., Scobie, H. M., Blain, A. E., Moulia, D., ... & Oliver, S. E. (2021). The Advisory Committee on Immunization Practices' interim recommendation for use of Pfizer-BioNTech COVID-19 vaccine in adolescents aged 12–15 years—United States, May 2021. *Morbidity and Mortality Weekly Report*, 70(20), 749.
18. Kadali, R. A., Janagama, R., Peruru, S., & Malayala, S. V. (2021). Side effects of BNT162b2 mRNA COVID-19 vaccine: A randomized, cross-sectional study with detailed self-reported symptoms from healthcare workers. *International Journal of Infectious Diseases*, 106, 376-381.
19. Ruissen, M. M., Regeer, H., Landstra, C. P., Schroijen, M., Jazet, I., Nijhoff, M. F., ... & de Koning, E. J. (2021). Increased stress, weight gain and less exercise in relation to glycemic control in people with type 1 and type 2 diabetes during the COVID-19 pandemic. *BMJ Open Diabetes Research and Care*, 9(1), e002035.
20. Banik, R., Islam, M., Pranta, M. U. R., Rahman, Q. M., Rahman, M., Pardhan, S., ... & Sikder, M. (2021). Understanding the determinants of COVID-19 vaccination intention and willingness to pay: findings from a population-based survey in Bangladesh. *BMC Infectious Diseases*, 21(1), 1-15.

21. Monrad, J. T., Sandbrink, J. B., & Cherian, N. G. (2021). Promoting versatile vaccine development for emerging pandemics. *npj Vaccines*, 6(1), 1-7.
22. Niznik, J. D., Berry, S. D., Syme, M., Kelley, C. J., Hanson, L. C., & Harrison, J. (2022). Addressing hesitancy to COVID-19 vaccines in healthcare assistants. *Geriatric Nursing*, 45, 169-173.
23. Luo, C., Yang, Y., Liu, Y., Zheng, D., Shao, L., Jin, J., & He, Q. (2021). Intention to COVID-19 vaccination and associated factors among health care workers: A systematic review and meta-analysis of cross-sectional studies. *American journal of infection control*, 49(10), 1295-1304.
24. Ferdous, M. Z., Islam, M. S., Sikder, M. T., Mosaddek, A. S. M., Zegarra-Valdivia, J. A., & Gozal, D. (2020). Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study. *PloS one*, 15(10), e0239254.
25. Stawicki, S. P., Jeanmonod, R., Miller, A. C., Paladino, L., Gaieski, D. F., Yaffee, A. Q., ... & Garg, M. (2020). The 2019–2020 novel coronavirus (severe acute respiratory syndrome coronavirus 2) pandemic: A joint american college of academic international medicine-world academic council of emergency medicine multidisciplinary COVID-19 working group consensus paper. *Journal of global infectious diseases*, 12(2), 47.
26. Wibawa, T. (2021). COVID-19 vaccine research and development: ethical issues. *Tropical Medicine & International Health*, 26(1), 14-19.
27. Islam, M. S., Siddique, A. B., Akter, R., Tasnim, R., Sujan, M. S. H., Ward, P. R., & Sikder, M. T. (2021). Knowledge, attitudes and perceptions towards COVID-19 vaccinations: a cross-sectional community survey in Bangladesh. *medRxiv*.
28. Alboaneen, D., Pranggono, B., Alshammari, D., Alqahtani, N., & Alyaffer, R. (2020). Predicting the Epidemiological Outbreak of the Coronavirus Disease 2019 (COVID-19) in Saudi Arabia. *International Journal of Environmental Research and Public Health*, 17(12), 4568
29. Maleki, S., Najafi, F., Farhadi, K., Fakhri, M., Hosseini, F., & Naderi, M. (2020). Knowledge, attitude and behavior of health care workers in the prevention of COVID-19.
30. Wahed, W. Y. A., Hefzy, E. M., Ahmed, M. I., & Hamed, N. S. (2020). Assessment of knowledge, attitudes, and perception of health care workers regarding COVID-19, a cross-sectional study from Egypt. *Journal of community health*, 45(6), 1242-1251.
31. Setiawan, A. S., & Zubaedah, C. (2020). Covid-19 Pandemic and Challenges of Dentistry: Application of Health Belief Model on Child's Dental Visit Postponement during the COVID-19 Pandemic. *European Journal of Dentistry*, 14(Suppl 1), S7.

32. Akalu, Y., Ayelign, B., & Molla, M. D. (2020). Knowledge, attitude and practice towards COVID-19 among chronic disease patients at Addis Zemen Hospital, Northwest Ethiopia. *Infection and drug resistance*, *13*, 1949.
33. Wang, J., Lu, X., Lai, X., Lyu, Y., Zhang, H., Fenghuang, Y., ... & Fang, H. (2021). The changing acceptance of COVID-19 vaccination in different epidemic phases in China: A longitudinal study. *Vaccines*, *9*(3), 191.
34. Singh, D. R., Sunuwar, D. R., Karki, K., Ghimire, S., & Shrestha, N. (2020). Knowledge and perception towards universal safety precautions during early phase of the COVID-19 outbreak in Nepal. *Journal of community health*, *45*, 1116-1122.
35. Erfani, A., Shahriarirad, R., Ranjbar, K., Mirahmadizadeh, A., & Moghadami, M. (2020). Knowledge, attitude and practice toward the novel coronavirus (COVID-19) outbreak: a population-based survey in Iran. *Bull World Health Organ*, *30*(10.2471).
36. Sun, N., Wei, L., Shi, S., Jiao, D., Song, R., Ma, L., ... & Wang, H. (2020). A qualitative study on the psychological experience of caregivers of COVID-19 patients. *American journal of infection control*, *48*(6), 592-598.