



University of Kerbala
College of Medicine



Department of Family and Community Medicine

**Knowledge and Attitude toward COVID-19 Vaccination
Status among Paramedical and Non-Paramedical staff in
Kerbala City, 2022**

A Thesis

Submitted to the Council of the Faculty of Medicine/University of
Kerbala in Partial Fulfillment of the Requirements for the Degree of
Higher Diploma in Family Medicine

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

” قُلْ هَلْ يَسْتَوِي الَّذِينَ يَعْلَمُونَ وَالَّذِينَ لَا يَعْلَمُونَ
إِنَّمَا يَتَذَكَّرُ أُولُو الْأَلْبَابِ ”


صدق الله العلي العظيم

(سورة الزمر 9)

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Dedication

*To the one who taught me to give without interruption
my venerable father (Thanks and
acknowledgment)*

*To whom her prayer was the secret of my success and
tenderness as a balm for my surgeons my dear mother
..... (Love and honor)*

*To my companion my husband (Pride and
Gratitude)*

*To everyone who harnesses himself as a light to light the
path for others Our best teachers
(Dedication and sincerity)*

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List of Abbreviations

Abbreviations	Full text
COVID -19	Coronavirus disease 2019
CoVs	Coronaviruses
DNA	Deoxyribonucleic acid
mRNA	messenger RNA
PHC	primary healthcare
SARS-COV-2	Severe acute respiratory syndrome coronavirus 2
S protein	Spike protein
SPSS	Statistical Package for the Social Sciences
WHO	World health organization
2019-nCOV	2019 novel coronavirus

Abstract

Background: COVID-19 emerged as one of the largest worldwide public health crises in recent times. In order to stop the pandemic, a number of vaccines have been approved for usage and are distributed globally in various regions. Decisions on vaccines can be influenced by uncertainty, the spread of rumors, and false information, since the delay and refusal of vaccination are obstacles to attaining herd immunity. Therefore, this study aims to assess knowledge and attitude toward vaccination status against COVID-19 in Kerbala city.

Methods: A cross-sectional descriptive study was conducted in Kerbala city, among 400 participants aged 18 years and above. Samples were taken from two categories of working groups, paramedical and non-paramedical staff. The survey was conducted from March 2022 to May 2022 using an anonymous self-administrated structured questionnaire. The statistical analysis was performed using the Statistical Package for Social Sciences software version 22 program. A p-value of less than 0.05 is regarded as significant.

Results: The findings indicate that 66.25% of the study participants had good knowledge about people eligible for COVID-19 vaccines, a higher percentage (90.75%) believed that adults over 18 years are eligible for the vaccine, and a lower percentage believed that pregnant (18%) and lactating women (16.75%) are eligible for the vaccine. 68.3% of participants thought the vaccine would protect people from COVID-19. About 73% of the participants received the COVID-19 vaccine and the Pfizer vaccine was the most popular choice. Besides, 70.75% of participants identified social media as their primary source of knowledge about the COVID-19 vaccines.

Conclusions: About 66.25% of the study's participants had good knowledge, and about 59.2% of them had a good attitude regarding COVID-19 vaccines, with a vaccination acceptance rate of 80%. Good knowledge was significantly correlated with the age groups between 25-34 years, paramedical staff, and living in urban areas. In addition, the good attitude was significantly correlated with the age groups between 18-24 years, females, living in urban areas, and prior COVID-19 exposure.

Chapter One
Introduction and
Literature review

1. Introduction

Coronaviruses (CoVs) are major human and animal viruses. They can infect humans, livestock, birds, bats, mice, and a variety of other wild species. The respiratory, gastrointestinal, and hepatic systems, as well as the nervous system, can be affected by Coronaviruses (Bai *et al.*, 2020). The World Health Organization (WHO) first referred to the current virus outbreak as the 2019 novel Coronavirus (2019-nCoV). Afterward, it was modified to SARS-CoV-2, and the disease's name was changed to Coronavirus disease-2019 (COVID-19). COVID-19 is an extremely communicable disease that continues to plague many countries throughout the world. It first appeared in Wuhan, China, at the end of December 2019, and it spread rapidly over the world. On March 11, 2020, the WHO recognized the COVID-19 outbreak as a pandemic (Yu *et al.*, 2020). The case fatality rate of the virus was 2.3%, according to clinical statistics from China (Huang *et al.*, 2020). Globally, on 12 April 2022, the WHO received reports of 500,130,654 confirmed COVID-19 cases, with 6,206,725 deaths (WHO. C O F, 2022).

The disease is transmitted through saliva and mucus droplets from an infected person (Huang *et al.*, 2020). COVID-19 can cause a variety of symptoms, from mild to severe respiratory disease, pneumonia, and death (Zhou, Zhang and Qu, 2020). The pandemic has had a severe worldwide impact, forcing the deployment of mitigation initiatives to stop the pandemic. A large number of countries employed non-pharmaceutical interventions to decrease the disease's risk of transmission, for instance, imposing mask rules, sanitizing hands, social withdrawal, travel limitations, closing schools, and complete or partial lockdowns. There are no antiviral medications authorized specifically for SARS-CoV-2 (Sestili and Fimognari, 2020).

The COVID-19 outbreak in Iraq has caused major alarm to the country's health infrastructure. According to the Iraqi Ministry of Health, the first verified case of COVID-19 in Iraq was reported on February 24, 2020, in Najaf province for an Iranian student who had traveled from Iran, followed by four cases from one family in Kirkuk on February 25, all of them were from Iran (Lami *et al.*, 2021). Then, more cases were recorded among Iraqis, especially among those who had been from Iran, and the number of reported cases transmitted locally began to climb day by day in other Iraqi towns, including Kerbala, owing to increased laboratory testing capability (Sarhan *et al.*, 2020). On 12 April 2022 numbers of Coronavirus Cases in Iraq are 2,322,081 and the numbers of deaths are 25,186 (WHO.Iraq, 2022). Despite implementing various measures to prevent the spread of the disease, the coronavirus that causes COVID-19, has undergone mutation, causing several virus variations and numerous waves of outbreaks across the world (Schwarzinger *et al.*, 2021).

People's lives have been impacted by the COVID-19 pandemic on a global scale in terms of health, the economy, and society. As a result, everyone is looking for ways to combat the virus and lessen its effects, including developing safe and effective vaccinations. Every year, vaccinations save millions of lives. It currently contributes to preventing 2-3 million infectious disease deaths worldwide (Riad *et al.*, 2021). There are several COVID-19 vaccines available, and they have all undergone human testing. First, there was messenger RNA (mRNA), a synthetic version of coronavirus genetic material that encodes stable spikes, and lipid nanoparticles like Pfizer-BioNTech and Moderna. The non-replicating viral vector is the second immunization technique, which includes Sinopharm whole-inactivated vaccine, Oxford- AstraZeneca, and Sputnik V. The third kind is a protein subunit that includes the full spike (S) protein or S1/S2 subunits, like those present in Novavax, GSK-Sanofi, and Johnson & Johnson. Vaccines have been distributed to a large number of countries (Shin *et al.*, 2020). Pfizer-

BioNTech COVID-19 vaccine and two AstraZeneca /Oxford COVID-19 vaccines, made by AstraZeneca-SKBio (Korea) and the Serum Institute of India, received emergency use listings from the WHO on December 31, 2020, and February 15, 2021, respectively. COVID-19 vaccine (Ad26. COV2. S) was created by Janssen (Johnson & Johnson) on March 12, 2021, the Moderna vaccine on April 31, 2021, and the Sinopharm COVID-19 vaccine on May 7, 2021 (Baden *et al.*, 2020).

Herd immunity, or immunity at the population level against an infectious illness, can be attained by immunization or naturally from the previous infection. The WHO encourages vaccination to achieve herd immunity rather than exposing the population to an infectious illness because the latter has the danger of resulting in avoidable infections and deaths (WHO, 2020). However, the percentage of the population that must be immune to establish herd immunity changes depending on the illness, often between 50% and 90% (Wong *et al.*, 2021). The herd immunity threshold for SARS-CoV-2 would be anticipated to vary between 50% and 67% in the absence of any interventions, assuming no community immunity and that all individuals are equally vulnerable and infectious (Omer, Yildirim and Forman, 2022). However, the population's willingness to receive the vaccine will play a major role in the effectiveness of COVID-19 immunization campaigns on disease transmission, morbidity, and mortality. Despite the existence of vaccination facilities, certain populations may postpone taking an effective vaccine or refuse to accept it (Kumar *et al.*, 2016). On 12 April 2022, a total of 11.4 billion doses of vaccine have been administered all over the world, with at least one dosage administered to 64.5% of the world's population (World Health Organisation, 2022). The WHO established a goal for vaccination coverage to reach 40% of the world's population by the end of 2021 and 70% by the middle of 2022. However, several countries fell short of the 40% mark by the end of 2021 (World Health Organisation, 2022).

The AstraZeneca, Pfizer-BioNTech, and Sinopharm vaccines are being used in Iraq's national immunization program, which began in March 2021. In accordance with the national vaccination deployment strategy and framework, the Ministry of Health provided vaccinations to health facilities around the country to be utilized in safeguarding persons of priority groups (UN Children's Fund WHO, 2022). The World Health Organization and the Iraqi ministry of health accepted the challenge of immunizing as many people as possible to stop the COVID-19 epidemic as quickly as feasible. The aim is to vaccinate at least 40% of the population, especially children aged 12 and upward (WHO EMRO, 2022). By the end of March 2022, just 18% of the Iraqi people have received the COVID-19 vaccine even though the country has adequate vaccine supplies. (WHO. Iraq, 2022).

Despite the great benefits of vaccination for contagious illnesses and better health outcomes, vaccine rejection by people still exists. Since it weakens society's defenses against pathogens that may be prevented through vaccination, this presents a significant barrier to a healthy community (Troiano and Nardi, 2021). The next difficulty will be dealing with vaccination hesitancy when safe and efficient vaccines become more widely available. The definition of vaccine hesitation is a delay in accepting or refusing immunizations regardless of their availability. One of the top 10 threats to global health in 2019 was vaccine hesitancy, according to the WHO (De Figueiredo *et al.*, 2020). The distribution of false information by anti-vaccination advocates against the COVID-19 vaccine through a variety of sources may have had a significant influence on vaccine uptake (Cornwall, 2020). One's prior experiences with vaccinations, degree of information and education, assurance and confidence, perceived relevance of immunization, subjective norms, as well as religious and moral convictions are just a few of the variables that might make one reluctant to get vaccinated (Dubé *et al.*, 2013). Other things could possibly be involved in the COVID-19

vaccination situation. Firstly, the vaccines were developed and granted a license in less than a year, which has greatly raised public worries about their safety. Second, in clinical research, there were still unresolved questions regarding the immune response's length following immunization and the effectiveness of vaccines in preventing the spread of asymptomatic disease (Baldo *et al.*, 2021). Thirdly, when the initial COVID-19 vaccinations were approved, a number of allegations that lacked scientific support were made and publicized on social media, which may have discouraged some individuals from becoming immunized (Loomba *et al.*, 2021). Additionally, myths, rumors, and false information may spread rapidly online, especially on social media. COVID-19 uncertainty, for instance, whether individuals have natural immunity and whether various home remedies including (garlic, vitamins, and rinsing the nose and mouth with saline) will help prevent coronavirus, maybe made worse by people's dependency on social media. Additionally, it could clarify why some individuals are unsure of whether the virus was intentionally manufactured and spread by humans. Uncertainty and often changing information may have contributed to the rising concern about the virus (Abdul and Mursheda, 2020). Other examples of misinformation that the participants were exposed to include one post wrongly claimed that COVID-19 vaccination will change human deoxyribonucleic acid (DNA), while another claimed that 97% of recipients will develop infertility as a result of the vaccine, and others falsely claim that a COVID-19 vaccine could spread an infectious pathogen like the human immunodeficiency virus (HIV) (Puri *et al.*, 2020).

For public health professionals and politicians worldwide, dwindling public faith in vaccinations owing to rumors and conspiracy theories is a significant concern. Decisions on vaccines can be influenced by hesitancy, the spread of myths, and fake news (Kumar *et al.*, 2016). Establishing trust among the general public, health officials, and policymakers will assist promote vaccination,

resulting in improved pandemic management and fewer fatalities. In order to develop policy measures and determine the resources that are available to address COVID-19 and other health concerns and minimize the acute pandemic burden, it is essential to identify adult vaccination acceptability and reluctance. Therefore, in order to achieve the necessary vaccine coverage and stop the current pandemic, it is crucial to evaluate variables that may contribute to hesitation toward COVID-19 immunization (Malik *et al.*, 2020).

Knowing about health concerns is a crucial part of health literacy and is seen as a requirement for the process of making health decisions, including vaccination intentions. Several studies show a positive association between knowledge about the disease as well as knowledge about vaccines as positively associated with vaccine intentions. For example, knowledge reduced the unfavorable relationship between conspiracy theories exposure and vaccination intentions, according to Chinese research (Thaker, 2020). Another study found that vaccine knowledge was one of the best predictors of vaccination intention, even when the immunizations had to be paid for (Liu and Yang, 2021). Several studies show a positive association between attitudes and intentions for vaccination. Krishna (2018), for example, found that negative attitudes toward vaccines were associated with lower intentions for vaccination (Brewer *et al.*, 2017).

COVID-19 vaccination apprehension is linked to sociocultural and sociodemographic characteristics. According to recent research by Arce *et al.*, people in low-income nations or regions, such as Nepal (97%), were more likely to take the COVID-19 vaccination than those in high-income countries or regions, such as the United States (6%) (Solís Arce *et al.*, 2021). In a survey of 1100 Japanese residents conducted in 2021, it was discovered that 65.7% of individuals surveyed expressed willingness to receive vaccinations; Older people, those who live in rural regions, and people who had underlying conditions were more likely

to be willing to get vaccinations, while women were more hesitant (Yoda and Katsuyama, 2021).

People from ethnic minorities, those with lower incomes and educational levels, those who are less aware of COVID-19, and those who are less compliant with government COVID-19 regulations had more suspicious and critical views regarding the vaccination, according to recent research by Paul et al. They also found that people from ethnic minorities are more likely to get COVID-19 and are less eager to get immunized (Paul, Steptoe and Fancourt, 2021). Further research has revealed that people's reservations about the vaccination are connected to unanticipated adverse effects and a general lack of faith in the vaccine's advantages and safety (Barello *et al.*, 2020).

In a worldwide evaluation of potential COVID-19 vaccine uptake, 48% of the sample population expressed uncertainty regarding COVID-19 vaccinations and their likelihood of receiving them (Lazarus *et al.*, 2020). In a separate study of adult Americans, 58% said they planned to be vaccinated, 32% said they weren't sure, and 11% said they didn't plan to get vaccinated. Additionally, younger age, black race, and poorer educational achievement were associated with vaccine hesitancy (Fisher *et al.*, 2020). In another study, it was shown that 31% of the participants in Turkey and 14% in the UK were unsure about getting vaccinated against COVID-19 (Salali and Uysal, 2022), while In China, 54.6% of individuals said they wanted to use the COVID-19 vaccine (Lin *et al.*, 2020). Moreover, a study conducted in Ghana showed that 21% of the participants were refusing to be vaccinated, while 28% had doubts. Besides, this study discovered variations in vaccination hesitation across several sociodemographic traits such as age, gender, and major sources of knowledge (Acheampong *et al.*, 2021). Furthermore, an international cross-sectional study found that the intentions to get the COVID-19 vaccination varied from 43.55% in Egypt to 82.765% in Mauritius. This study also showed that having less education or being male was

connected with lower possibilities of vaccine uptake (Mannan and Farhana, 2020).

In the Arab world, just a few researches have dealt with this subject. A study from Lebanon's general population indicated that 21.4% of the 579 participants were eager to get the vaccination, while 40.9% were against it and the rest were unsure. The study also discovered that married people are more hesitant to get vaccines than single people and that women are more hesitant than males (Kasrine Al Halabi *et al.*, 2021). 642 of the 992 participants in Saudi Arabian research indicated a willingness to adopt the COVID-19 vaccination if it were made accessible. The readiness to get the COVID-19 vaccination was comparatively high in older age groups, married people who have completed a postgraduate degree or higher, non-Saudis, and those working in the public sector (Al-Mohaithef and Padhi, 2020). Low vaccination intent for COVID-19 was observed in Jordan, with just 34.9 % consenting to be vaccinated, 39.6 % refusing to be vaccinated, and 25.5% undecided, Men and students in health schools were more likely to accept the COVID-19 vaccination (Sallam *et al.*, 2021). In accordance with results from different research conducted among Qatar's general population about COVID-19 vaccines, of the 8323 respondents to a phone poll, 42.7% were accepted, 45.2% were reluctant, and 12.1% were resistive. They also discovered that reluctance and resistance were linked to the characteristics of the Arab ethnicity, female gender, immigrant status, and vaccination adverse effects worries (Khaled *et al.*, 2021). In a cross-sectional study of Omanis' knowledge and attitudes, Sabria *et al.* discovered that knowledge about the COVID-19 vaccination was adequate and that it had an impact on vaccine uptake. 57% of the study's participants agreed to get the vaccination. Also, they claimed that social media (67%) and television (56%) were the most popular information sources for vaccinations. Using social media and local influencers to raise knowledge of the

COVID-19 vaccine's safety and effectiveness can increase people's desire to get it (Al-Marshoudi *et al.*, 2021).

A previous study in Iraq showed that 48.3% of people were uncertain about the use of vaccines. In addition, age, gender, and residential area showed a significant association with knowledge and attitude. Besides, the attitude toward the COVID-19 vaccine in this previous study was moderate (Khaffaf, E.S., Noori, 2021). In the Kurdistan area of Iraq, a community-based evaluation study on COVID-19 vaccine hesitancy found that nearly half of the participants had reservations about getting the vaccine, and that vaccine reluctance varied depending on sociodemographic factors (Ahmad, 2021). More than two-thirds of the participants in a different survey in Iraq said that they would accept the vaccination, and there is a significant association between vaccination acceptance and people's employment status (Al-Rawee, 2021).

1.1. Relevance of the study:

The holy city of Kerbala, like any other sacred place, is affected by the pandemic. There are no official studies on adults' knowledge, and attitudes toward COVID-19 vaccination in Kerbala province. The results of this study will enrich the local health authorities with statistics and important information that will help them create strategies to increase public knowledge of and adoption of the COVID-19 vaccine.

1.2. The objectives of the study:

1. To assess knowledge and attitude about COVID-19 vaccination among paramedical and non-paramedical staff in Kerbala city and to analyze demographic variations in knowledge and attitudes regarding the COVID-19 vaccines, in order to identify the need for a vaccine education campaign in Kerbala.
2. To evaluate the vaccination status and the acceptance rate of the vaccines.

Chapter Two
Subjects and
Methods

2. Subjects and Methods

2.1. Study design, setting, and time :

A cross-sectional descriptive study was carried out involving employees in government departments, among 400 respondents aged 18 years and above. The study was conducted from the first of March 2022 to the end of May 2022 using a self-administered structured questionnaire in Kerbala city which is located in central Iraq. The area of the city is about 52,856 square km, and its population is about 1,316,750 people according to 2021 estimates ([Iraqi Ministry of health, 2021](#)) At the time of the current study, the vaccine was available in Iraq and vaccination campaigns had been initiated and the target group was 12 years and older.

2.2. Sample and sampling technique:

Samples were taken from two categories of working groups. The first group is the category of paramedical staff, they were collected from Imam Al- Hussein Teaching Hospital which is located in the city center, Imam Al- Hassan Hospital which is located in the periphery of the city, and five primary healthcare centers (PHC) that were randomly selected including three primary health care center located in the city center which are Almulhaq primary health care center, Al Tahadi primary health care center, al Wafaa primary health care center, and two PHC in the periphery, which are the Alhusania health care center and Aoun bin Abd Allah primary health care center, two hundred and fifty participants were collected from them randomly.

The second group was collected from employees in the government department including (Teachers from 10 different primary schools that were randomly selected including 5 different schools for girls and 5 different schools for boys), Um Al Muminin primary school, Saba primary school, Khaleda primary school, Tabarak primary school, Al Mahaba primary school and Al Khwarizmi primary school, which are located in the city center. Um Alketab

primary school, Al Ebtihal primary school, Al Zahraa primary school, and Aoun bin Abd Allah primary school which are located in the periphery. The samples within each school were selected randomly. The remainder of the second group was chosen from the agricultural and irrigation department and the Karbala water department. One hundred and fifty participants were collected from this group randomly. Data collection was conducted 3 days a week.

To calculate the sample size, The sample size estimate was made based on the supposition that the probability of having sufficient knowledge and a positive attitude about the coronavirus vaccines was 50.0%, with a 95% confidence interval and a 5% margin of error (Paul *et al.*, 2021). Based on the above estimation method, 384 people made up the bare minimal sample size. But by the time the survey was over, 400 samples had been gathered, more than the study's required minimum.

2.2.1. Inclusion criteria:

Eligible study participants were men and women from paramedical staff, teachers, and employers in the agricultural and irrigation department and the Kerbala water department, who are at least 18 years of age.

2.2.2. Exclusion criteria:

Non-employer, Adults who refuse to participate in the study, and participants who did not complete the questions of the survey were excluded from the study.

2.3. Pilot study:

The reliability of the questions (test-retest) and the amount of time required for participant response were examined using a piloted project of 30 participants, it is carried out in March 2022, to address any challenging issues that may develop during data collection. As a result of this pretest, any suggested changes to the questionnaire were considered accordingly, the average time needed to complete filling the questionnaire by the participant is about 5-7 minutes. The final analysis did not include the responses collected during the pilot project.

2.4. Data collection.

After providing verbal consent to 450 employers and after getting informed of the objectives and activities of this study, each participant received an anonymous questionnaire sheet. 50 participants were disqualified from the final analysis because their survey forms were not complete or they did not fit the search criteria. The response rate was 88.0%. A questionnaire was selected from different articles and literature reviews (Khaffaf, E.S., Noori, 2021; Kumari *et al.*, 2021; Anorue *et al.*, 2021), with some modifications. It was first created in English and then translated into Arabic to suit their language. The questionnaire was reviewed many times in both languages by the research team. The supervisor checked the data to ensure that it had been gathered and saved properly.

The questionnaire was designed to include 38 questions divided into 4 parts. Questions about personal and sociodemographic data were included in the first part (section A). Including age (between 18 and 60 years old), gender (male and female), marital status (married, single, divorced, or widowed), educational status (institute, college, and higher education), current residence (rural and urban), study groups (paramedical staff and non-paramedical staff), monthly income (lower, average and high), and previous infection with COVID-19. The second part (Section B) covered the vaccination status which consists of 5 questions with 3 different options. These questions include a question about the desire to be vaccinated, a question about the number of doses obtained, a question about the type of vaccine, a question about whether they are obligated to be vaccinated, and another question about whether the place and time of vaccination were appropriate. The third part (section C) covered the knowledge about COVID-19 vaccines which consisted of 11 questions about the categories of people who are eligible to receive COVID-19 vaccines.

For section C (knowledge), participants were asked questions about the categories of people eligible to be vaccinated with the COVID-19 vaccines, and

they were given three options: eligible, not eligible, and do not know. The correct answers for those eligible for the vaccine were all, except for children under the age of 5, and people with active COVID-19 according to WHO ([World Health Organisation, 2022](#)). In addition, a question concerning their sources of knowledge regarding COVID-19 vaccinations was asked with some options, (healthcare workers, radio/ television, family/friends, social media, and insufficient information they have). Policymakers can utilize the responses to this question to help spread knowledge about COVID-19 immunization in Karbala city in the future.

The fourth part (section D) about the attitude toward the COVID-19 vaccine consists of 13 different questions, 3 answer options were given: yes, no, and do not know. It includes questions about the safety of the vaccine and future complications, about encouraging family and friends to take the vaccine, about following preventive methods after the vaccine, and about the need to vaccinate the largest number of people to reduce the pandemic. It also includes questions about fear of injection pain, fear of side effects, and questions about whether the vaccine is a foreign conspiracy and about the lack of sufficient time to prove the effectiveness of the vaccine, or whether the vaccine causes COVID-19.

2.4.1. Scoring of the questionnaire:

The scoring criteria were taken from prior similar studies ([Abbood and Kareem, 2021](#); [Shareef and Al-Sarray, 2022](#)). Concerning knowledge, there were 11 questions. Each incorrect response received a score of (1), while the correct responses received a score of (3), and the neutral response, "do not know," received a score of (2). Therefore, the knowledge was classified as "Good" if it scored >27 , "Fair" if it scored between (23-27), and "Poor" if it scored ≤ 22 .

For attitude, there were 13 questions, each positive response received (3) mark, and each negative response received (1), while neutral attitude (do not know) responses were received (2). Therefore, the attitude was classified as

"Good" if it scored above 32, "Fair" if it scored between (27-32), and "Poor" if it scored ≤ 26 .

2.5. Statistical analysis

All data were input into a Microsoft Excel spreadsheet prior to being imported and prepared for final analysis in the Statistical Package for the Social Sciences (SPSS) version 22 program. Frequency and percentage were adopted for categorical data, while mean and standard deviation were adopted for continuous data. The Chi-squared test was employed as the statistical test in the current study. We defined knowledge, attitude, and vaccination status as the dependent variable and the demographical characteristic as the independent variable. A P value of less than 0.05 was regarded as statistically significant.

2.6. Ethical consideration

The survey was carried out after ethical approval from the research ethical committee at the College of Medicine-University of Kerbala and Kerbala Health Directorate, dated (2 February 2022). The Faculty of Medicine's Ethical Committee has evaluated and approved the study protocol. As research data were being gathered, participants' consent was obtained. Verbal consent was taken and informed consent was written at the beginning of the questionnaire. In the informed consent, participants were made aware of the goal and aim of the study. Additionally, the participants were made aware that their data would be kept confidential and that their names would be kept anonymous.

Chapter Three

Results

3. Results:

3.1. Socio-demographic characteristics.

A total of 400 participants completed the questionnaire. The mean age of the respondents was (32.95 ± 9.5) years. Females accounted for 57.2% of the participants. The paramedical staff represents 62.5% of the participants. (Table 1)

Table 1: Distribution of participants according to study variables.(n=400)

variables		frequency	percentage
Gender	<i>Male</i>	171	42.8%
	<i>female</i>	229	57.2 %
Residence	<i>urban</i>	314	78.5%
	<i>rural</i>	86	21.5%
Marital status	<i>married</i>	255	63.7%
	<i>single</i>	129	32.3%
	<i>divorced or widowed</i>	16	4.0%
Education	<i>institute</i>	211	52.7%
	<i>College</i>	167	41.8%
	<i>higher education</i>	22	5.5%
Monthly income	<i>Low</i>	47	11.7%
	<i>average</i>	289	72.3%
	<i>high</i>	64	16.0%
Study groups	<i>paramedical staff</i>	250	62.5%
	<i>Non-paramedical staff</i>	150	37.5%
Previous COVID-19 infection	<i>Yes</i>	241	60.2 %
	<i>No</i>	107	26.8%
	<i>Do not know</i>	52	13.0%

Half of the study participants (49.5%) were in the age group 25-34 years old and 18% of them were in the age group 35-44 years old. (**Figure 1**)

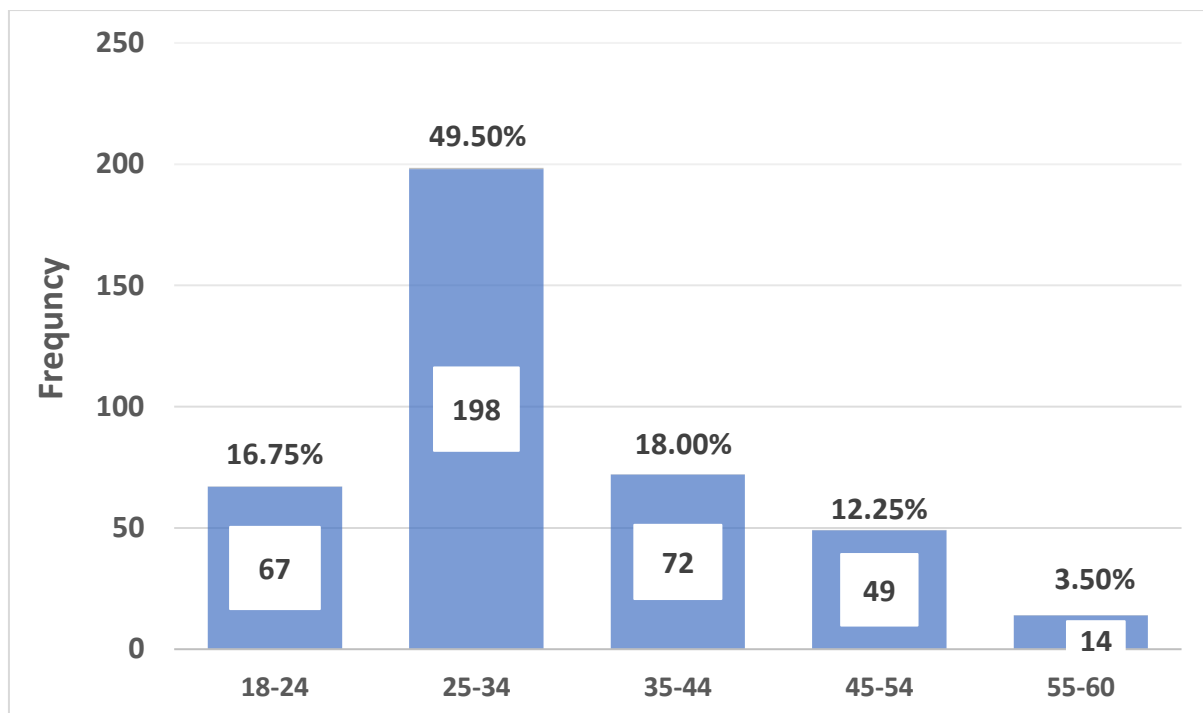


Figure 1: Distribution of the study participants according to age groups.

3.2. Knowledge of study participants toward the COVID-19 vaccination program.

Table 2 shows that the highest percentage of correct answers (90.75%) was related to the eligibility of adults [over 18 years of age] for the COVID-19 vaccines, and the lowest percentage of the correct answers was regarding the eligibility of lactating women and pregnant women for the COVID-19 vaccines, (16.75%) and (18%), respectively.

Table 2: Knowledge of study participants toward the COVID-19 vaccination program.

Categories	Participant response(n=400)		
	Eligible	Not eligible	Don't know
a- Infants and children under 5 years old	15 3.75%	337 84.25%	48 12%
b- Children and adolescents between (5-18 years old)	198 49.5%	130 32.5%	72 18%
c- Adults over 18 years old	363 90.75%	20 5%	17 4.25%
d- Elderly people over 65 years old	264 66%	68 17%	68 17%
e- Pregnant women	72 18%	223 55.75%	105 26.25%
f- lactating women	67 16.75%	219 54.75%	114 28.5%
g- People who have chronic diseases such as diabetes and high blood pressure and heart disease	197 49.25%	112 28%	91 22.75%
h- people having active Coronavirus infection	38 9.5%	303 75.75%	59 14.75%
I- People who have recovered from coronavirus infection	277 69.25%	66 16.5%	57 14.25%
j- People who are allergic to food/medicine	176 44%	109 27.25%	115 28.75%
k- People who have a deficient immune system	156 39%	87 21.75%	157 39.25%

3.3. Attitude of the study participants toward the COVID-19 vaccines.

Table 3 shows that 68.25% of participants agreed that the COVID-19 vaccination will protect those who get it. 78.25% of the participants confirmed that preventive measures must be adhered to even after getting the COVID-19 vaccine. Furthermore, 72.5% of the participants confirmed the need to vaccinate the largest number of populations to reduce COVID-19.

Table3:Attitude of the study participants toward COVID-19 vaccines(n=400).

Questions	Yes	No	Don't know
1-Do you think that the COVID-19 vaccine will help protect the people who take it?	273 68.25%	77 19.2%	50 12.5%
2-Do you think that the COVID-19 vaccine is safe and does not cause serious side effects	172 43%	84 21%	144 36%
3-Do you think that the COVID-19 vaccine may cause health complications in the future?	95 23.75%	134 33.5%	171 42.75%
4-Would you encourage your family /friends/ relatives to get COVID- 19 vaccine?	243 60.75%	102 25.5%	55 13.75%
5-Do you think that after getting the COVID-19 vaccine, you don't need to follow preventive measures such as wearing a mask, sanitization, and social distancing?	66 16.5%	313 78.25%	21 5.25%
6-Do you think it is necessary to vaccinate the largest number of populations to reduce COVID-19?	290 72.5%	62 15.5%	48 12%
7-Do you think that if everyone in the community followed preventive measures, the COVID-19 pandemic could be eradicated without vaccination?	253 63.25%	110 27.5%	37 9.25%
8- Are you afraid of injection pain?	45 11.25%	335 83.75%	20 5%
9-Are you afraid of the side effects of the vaccine?	141 35.25%	235 58.75%	24 6%
10-Do you think that the COVID-19 vaccine is a foreign conspiracy?	87 21.175%	194 48.5%	119 29.75%
11-Do you think that the previous infection with COVID-19 eliminates the need for vaccination?	69 17.25%	301 75.25%	30 7.5%
12-Do you think that the time was too short to test the effectiveness of the vaccine?	230 57.5%	96 24%	74 18.5%
13-Do you think that the COVID-19 vaccine may cause you to get COVID-19?	68 17%	241 60.25%	91 22.75%

3.4 Association between variables and knowledge score about COVID-19 vaccines.

Knowledge of COVID-19 vaccinations is significantly correlated with the age groups of study participants, 70.7% of participants in the age group 25-34 years have good knowledge. Also, there is a significant association between knowledge and study groups, 72% of the paramedical staff have good knowledge regarding COVID-19 vaccines. The relation between residence and knowledge regarding COVID-19 vaccines was also statistically significant, 69.4% of urban have good knowledge. (Table 4)

Table 4: Association between variables of the studied participant and knowledge score about COVID-19 vaccines.

variables		Knowledge score (Q 11)			Total	P-value
		Poor(≤ 22)	Fair(23-27)	Good(>27)		
Age	18-24	3 4.5%	21 31.3%	43 64.2%	67	0.04*
	25-34	1 0.5%	57 28.8%	140 70.7%	198	
	35-44	3 4.2%	23 31.9%	46 63.9%	72	
	45-54	4 8.2%	15 30.6%	30 61.2%	49	
	55-60	0 0.0%	8 57.1%	6 42.9%	14	
	Gender	female	6 2.6%	78 34.1%	145 63.3%	
male	5 2.9%	46 26.9%	120 70.2%	171		
Residence	Urban	9 2.9%	87 27.7 %	218 69.4 %	314	0.02*
	Rural	2 2.3%	37 43.02 %	47 54.6 %	86	
Marital status	Married	7 2.7%	84 32.9%	164 64.3%	255	0.77
	single	4 3.1%	35 27.1%	90 69.8%	129	
	Divorced Or widowed	0 0.0%	5 31.3%	11 68.8%	16	
Education	Institute	5 2.4%	65 30.8%	141 66.8%	211	0.8
	College	6 3.6%	51 30.5%	110 65.9%	167	
	higher education	0 0.0%	8 36.4%	14 63.6%	22	
Monthly income	low	2 4.3%	14 29.8%	31 66.0%	47	0.9
	Average	7 2.4%	90 31.1%	192 66.4%	289	
	high	2 3.1%	20 31.3%	42 65.6%	64	
Study groups	Paramedical staff	6 2.4%	64 25.6%	180 72.0%	250	0.007*
	Non- paramedical staff	5 3.3%	60 40%	85 56.7 %	150	
COVID 19 infection	yes	8 3.3%	71 29.5%	162 67.2%	241	0.4
	no	2 1.9%	31 29.0%	74 69.2%	107	
	Do not know	1 1.9%	22 42.3%	29 55.8%	52	

Statistics: Chi-square test. n =400, * p < 0.05 (significant) compared within groups.

Overall two-thirds (66.25%) of the study participants have good knowledge of COVID-19 vaccines, 31% of them have fair knowledge, and 2.75% have poor knowledge. (**Figure 2**)

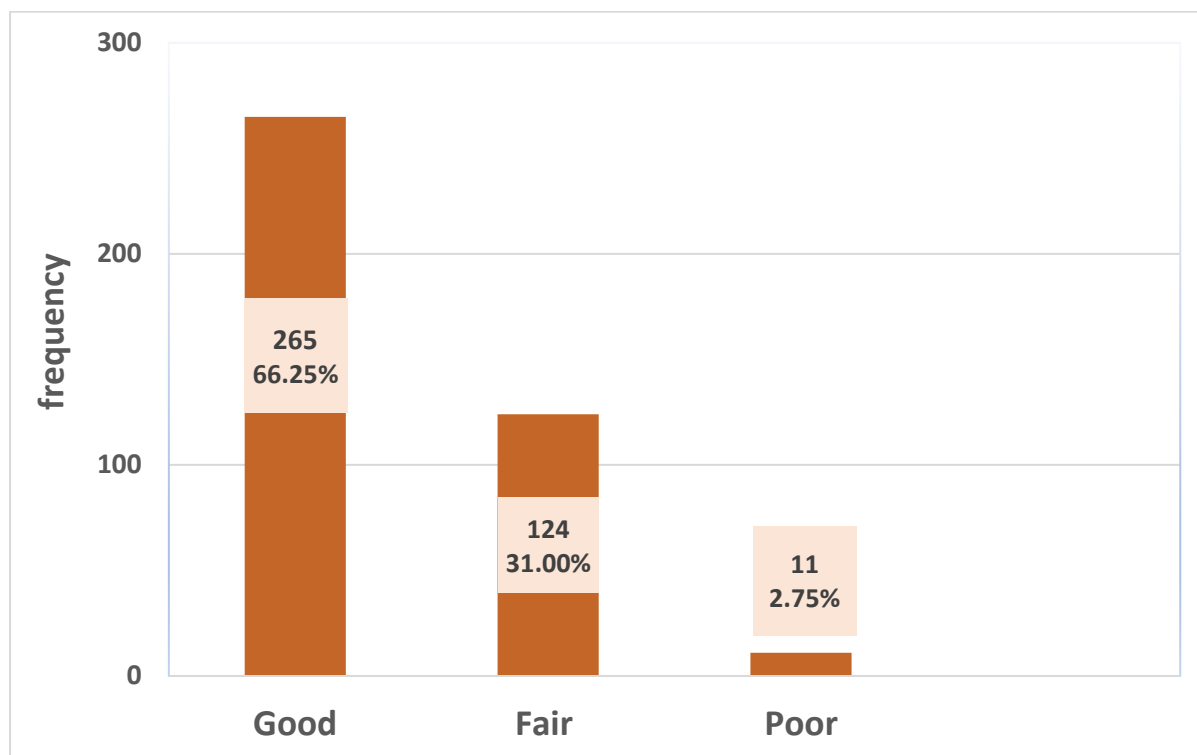


Figure 2: Participants' distribution based on their knowledge of COVID-19 vaccines

3.5. Association between the variables and the attitude score about COVID-19 vaccines.

The attitude toward COVID-19 vaccinations is significantly correlated with the age groups of study participants, 67% of the age group [18-24 years old] have a good attitude. Also, there is a significant association between gender and attitude, 64% of females have a good attitude. The relation between residence and attitude was also statistically significant, 67.8% of urban have good attitudes. Statistically significant associations were also derived between attitude and COVID-19 infection, 67.6% of cases infected previously by COVID-19 have a good attitude. (**Table 5**)

Table 5: Association between variables of the studied participants and attitude score about the COVID-19 vaccines.

variables		Attitude score (Q 13)			Total	P-value
		Poor (≤26)	Fair (27-32)	Good (>32)		
Age	18-24	1 1.5%	21 31.3%	45 67.2%	67	0.002*
	25-34	9 4.5%	58 29.3%	131 66.2%	198	
	35-44	2 2.8%	45 62.5%	25 34.7%	72	
	45-54	3 6.1%	18 36.7%	28 57.1%	49	
	55-60	0 0.0%	6 42.9%	8 57.1%	14	
Gender	Female	9 3.9%	73 31.9%	147 64.2%	229	0.04*
	male	6 3.5%	75 43.9%	90 52.6%	171	
Residence	Urban	9 2.9%	107 29.3%	198 67.8%	314	0.007*
	Rural	6 7.0%	41 47.7%	39 45.3%	86	
Marital status	Married	9 3.5%	93 36.5%	153 60%	255	0.4
	Unmarried	4 3.1%	49 37.98%	76 58.9%	129	
	Divorced Or widowed	2 12.5%	6 37.5%	8 50%	16	
Education	Institute	8 3.8%	82 38.9%	121 57.3%	211	0.8
	College	7 4.2%	58 34.7%	102 61%	167	
	higher education	0 0.0%	8 36.4%	14 63.6%	22	
Monthly income	low	2 4.3%	24 51%	21 44.7%	47	0.06
	average	12 4.2%	107 37.0 %	170 58.8 %	289	
	high	1 1.6%	17 26.6%	46 71.9%	64	
Study groups	Paramedical staff	11 4.4%	68 27.2%	171 68.4%	250	0.9
	Non-paramedic staff	4 2.7%	80 53.3%	66 44%	150	
COVID- 19 infection	yes	10 4.1%	68 28.2%	163 67.6%	241	0.0009*
	no	5 4.7%	51 47.7%	51 47.6 %	107	
	Do not know	0 0.0%	29 55.8 %	23 44.2%	52	

Statistics: Chi-square test. n =400, * p < 0.05 (significant) compared within groups.

Regarding the distribution of the study participants according to their attitude toward COVID-19 vaccines, about 59.2% of the study participants have a good attitude toward COVID-19 vaccines. (**Figure 3**)

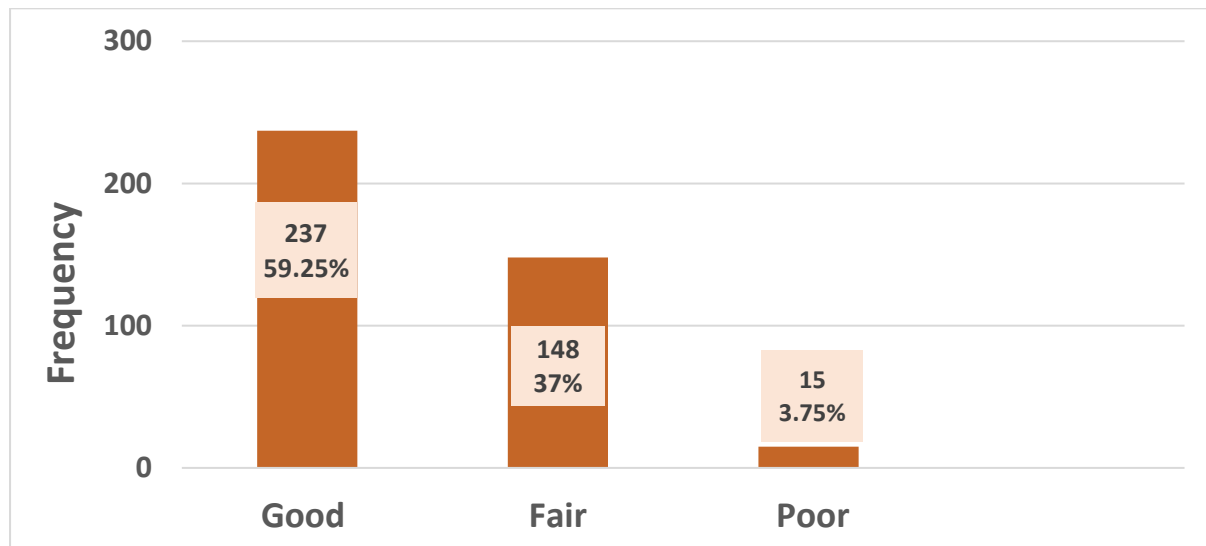


Figure 3: Participants' distribution based on their Attitude toward COVID-19 vaccines.

3.6. Participants' source of knowledge.

The most common source of knowledge about COVID-19 vaccines was social media (70.75%), followed by healthcare workers (42%). (**Figure 4**)

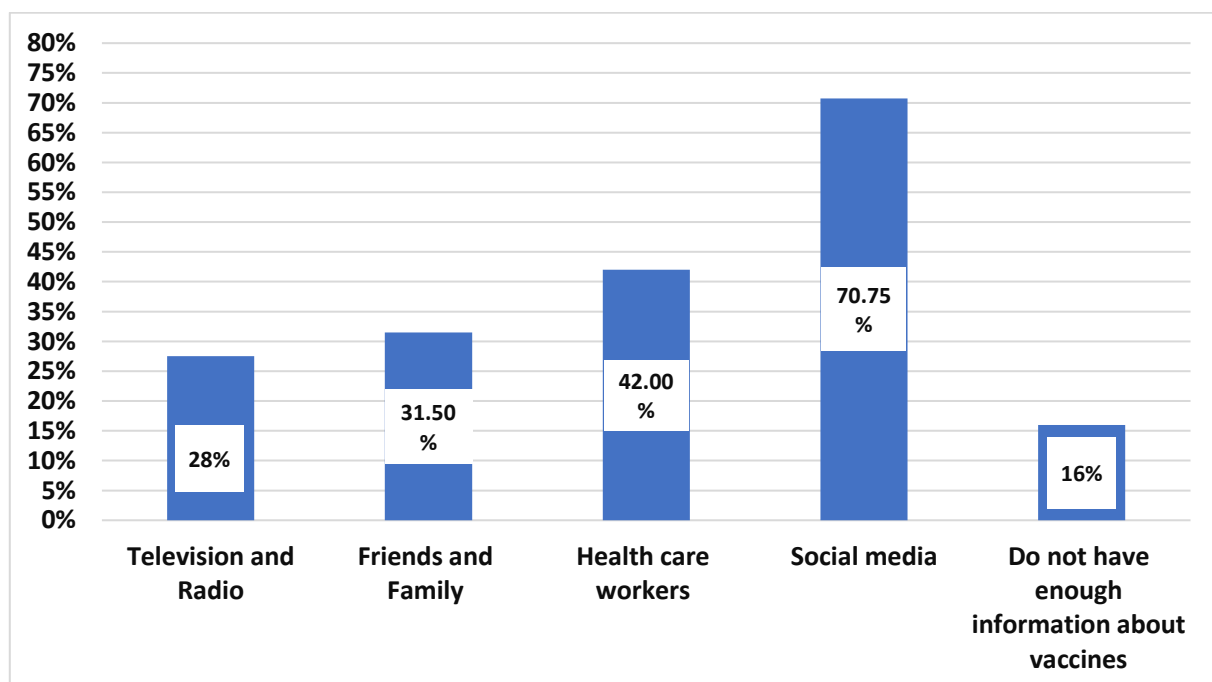


Figure 4: participants' source of knowledge about the COVID-19 vaccines.

3.7. Distribution of the studied participants according to vaccination status.

Figure 5 shows that 73.25% of the study participants are vaccinated. In terms of immunization dosages, only 2.73% of participants received three doses of the COVID-19 vaccine. About the types of COVID-19 vaccines, 66% of the participants were vaccinated with the Pfizer vaccine. 74% of respondents who were asked about being compelled to have the COVID-19 vaccination stated they were not forced to receive it. In addition, the majority of participants (97%) agreed that the timing and place for vaccination were appropriate for them.

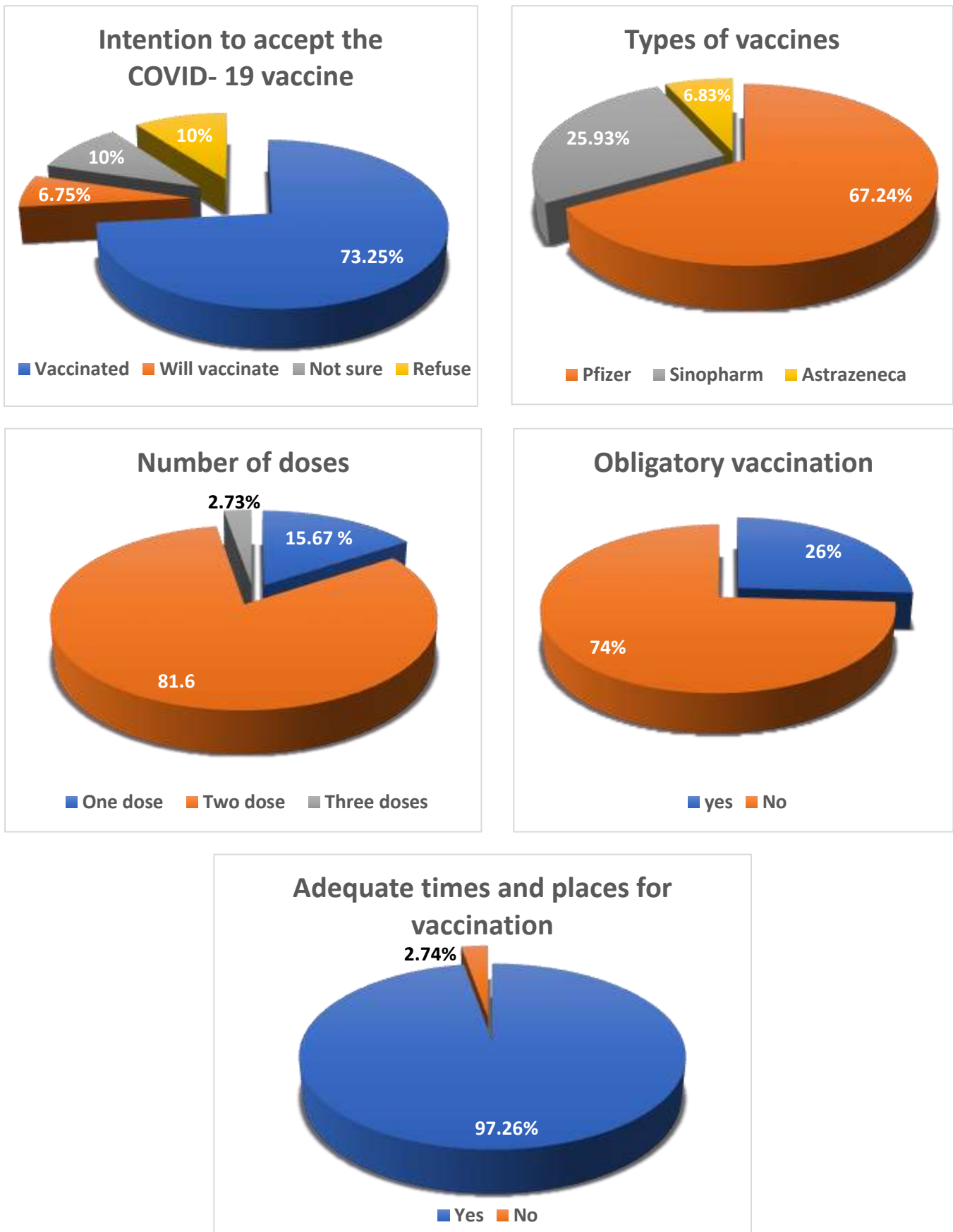


Figure 5: Distribution of the studied participants according to their vaccination status.

3.8. Association between the study groups and vaccination status.

As shown in Table 6, 67.6% of the vaccinated participants are from paramedical staff. 87.5% of participants took 3 doses of vaccine from paramedical staff. 75% of participants who took the *Pfizer* vaccine are from paramedical staff. 67.3% of participants who have a suitable place and date for vaccination were from paramedical staff.

Table 6: Association between the study groups and vaccination status.

Questions		Study groups		total	P-value
		paramedical staff (n=250)	Non-paramedical staff (n=150)		
1-Intension to accept the COVID-19 vaccine.	<i>Refuse</i>	17 42.5%	23 57.5%	40	0.002*
	<i>Not sure</i>	18 45.0%	22 55.0%	40	
	<i>Will vaccinate</i>	17 63.0%	10 37.0%	27	
	<i>vaccinated</i>	198 67.6%	95 32.4%	293	
2-Number of doses had been taken	<i>1 dose</i>	24 52.1%	22 47.8%	64	0.03*
	<i>2 doses</i>	167 69.9%	72 30.1%	239	
	<i>3 doses</i>	7 87.5%	1 12.5%	8	
3- Types of vaccine	<i>Pfizer</i>	149 75.6%	48 24.4%	197	0.0001*
	<i>Sinopharm</i>	38 50%	38 50%	76	
	<i>AstraZeneca</i>	11 55.0%	9 45.0%	20	
4-Obligatory vaccination	<i>Yes</i>	50 65.78%	26 34.2%	76	0.5
	<i>No</i>	148 68.2%	69 31.8%	217	
5-Adequate times and places for vaccination	<i>Yes</i>	192 67.36%	93 32.6%	285	0.01*
	<i>No</i>	6 75%	2 25%	8	

Statistics: Chi-square test. n =400, * p < 0.05 (significant) compared within groups.

Chapter Four
Discussion

Discussion

COVID-19's unanticipated arrival and widespread distribution contributed to the transmission of a lot of knowledge and false information about it, and many people continue to use this information today (Hejaz *et al.*, 2021). Misleading information about the disease affected the vaccine and made people reluctant to take the vaccine. Besides, the rapid development of vaccines due to the pandemic has increased people's fear of getting them (Fadda, Albanese and Suggs, 2020). Now, Vaccine hesitancy is one of the negative results of the myths and conspiracies of COVID-19. The Iraqi government has already begun vaccinating against COVID-19 (WHO EMRO, 2022), which gave hope to solving the global pandemic, three vaccines have been approved in Iraq so far including Pfizer-BioNTech, Oxford-AstraZeneca, and Sinopharm, In preclinical and clinical investigations, these vaccines showed a great effectiveness and safety characteristics (Cai *et al.*, 2021). The results of this study show that many socio-demographic characteristics affect people's knowledge and attitudes regarding the COVID-19 vaccination. The results of this study will be very important in creating COVID-19 vaccination-related awareness and health education campaigns.

In this study, the vaccine acceptance rate was 80%. Research in France revealed a comparable vaccination acceptance rate of 77% (Detoc *et al.*, 2020), which was greater than the study in Saudi Arabia, where 64.7% of participants were eager to get the COVID-19 vaccine (Al-Mohaithef and Padhi, 2020). In addition, a study in Oman found a vaccine acceptance rate of 57% (Al-Marshoudi *et al.*, 2021). On the other hand, the rate of acceptance of the COVID-19 vaccine was found to be 33.4% in research carried out in Iraq (Khaffaf, E.S., Noori, 2021). The poor acceptance rate in previous studies could be due to early research dates (when the possibility of releasing vaccines was uncertain).

The findings in the present study showed a significant association between intention to accept the vaccine and study groups, the paramedical staff showed better acceptability of the COVID-19 vaccination compared with non-paramedical staff. These findings supported earlier research from Iraq (Ghazi *et al.*, 2021a), Bangladesh (Hossain *et al.*, 2021), England (Nafilyan *et al.*, 2022), and Saudi Arabia (Al-Mohaithef and Padhi, 2020), which demonstrated that medical personnel is more receptive to vaccination.

According to this study, there was a significant association between the number of COVID-19 vaccine doses and study groups, about 87.5% of those who took 3 doses of vaccine, and about 69.9% of those who took 2 doses of vaccine were the paramedical staff, this result is consistent with the result of the studies conducted in England (Nafilyan *et al.*, 2022) and United States (Agaku, Adeoye and Long, 2022), which showed that most of those vaccinated with three doses of the vaccine were from the health professionals. In addition, 67.36% of the participants who said that the vaccination place and date is appropriate for them were from paramedical staff, which may be due to the availability of vaccines at their workplace and easily accessible and encouragement by other health workers to receive the vaccine.

Regarding the types of vaccines, about 66.5% of the vaccinated participants chose the Pfizer vaccine, while only 6.82% were vaccinated with the AstraZeneca vaccine. These results are in agreement with the results of research conducted in Iraq (Tahir *et al.*, 2022), and Poland (Rzymiski *et al.*, 2021), which demonstrated that the mRNA-based vaccines including the Pfizer vaccine were the most preferred to the participants, and the AstraZeneca vaccine was the least preferred. The reason for this is that many countries agree that the AstraZeneca vaccination has increased risks of thromboembolic events, including cerebral vein thromboses and thrombocytopenia (Dias *et al.*, 2021).

Regarding the level of knowledge about COVID-19 vaccines, about 66.25% of study participants had good knowledge regarding the categories of people covered by the COVID-19 vaccine. However, the level of knowledge is similar to the earlier study on the knowledge about COVID-19 vaccines in Saudi Arabia which revealed that 68% of the participants had good knowledge regarding the COVID-19 vaccinations (Al-Zalfawi *et al.*, 2021), and the percentage was higher than the results of other research carried out in West India (35.5%), Bangladesh (62.1%), and Iraq (50.6%) (Bhartiya *et al.*, 2021), (Saiful Islam *et al.*, 2021; Khaffaf, E.S., Noori, 2021). These discrepancies in the level of knowledge result from the different governments of countries in the ways they disseminate information and awareness programs regarding the COVID-19 vaccines. Therefore, it is critical to assist members of the community by facilitating simple access to reliable, fact-based vaccination information.

In this study, knowledge was significantly associated with the age groups of study participants. This outcome is in line with a study done in the United Kingdom, showing that people over the age of 51 often had moderate to good knowledge about COVID-19 vaccinations (Najeeb Rahman, 2021). This may be because people tend to be more curious and eager to learn and use new information throughout this period of life, which is regarded as being more productive. In addition, participants who live in urban areas were found to have more knowledge about COVID-19 vaccines, nearly 69.4% of the urban population had good knowledge which is also supported by previous research in Bangladesh (Saiful Islam *et al.*, 2021). That's due to increasing awareness campaigns of vaccination against COVID-19 in the urban compared to the rural area.

Statistically Significant associations were found between knowledge and study groups, nearly 72% of the paramedical staff have good knowledge about COVID-19 vaccines. The explanation of this result is due to the fact that as a

result of their work in the hospitals and various health sectors, as well as their direct contact with COVID-19 patients directly increased their awareness of and concern for their health and well-being, by having access to additional knowledge sources and taking an interest in potential life events.

The participants' gender had no statistically significant impact on their knowledge of the COVID-19 vaccine, This outcome is consistent with that of another study carried out in Bangladesh ([Islam et al., 2021](#); [Saiful Islam et al., 2021](#)). Other variables including marital status, education, monthly income, and previous infection with COVID-19 had no statistically significant association with knowledge. The lack of significant associations between knowledge, gender, social status, and income is due to the fact that knowledge is not acquired only through the level of education received, but rather through the information gained from social media and mass media, the internet, newspapers, and television ([Rumahorbo et al., 2022](#)).

About four-fifths of the participants in this study either did not know or gave false answers, stating that pregnant women (82%) and lactating women (83.25%) were unable to receive the COVID-19 vaccination. The data need to be updated given that COVID-19 vaccination (especially the Pfizer vaccine) is now permitted in Iraq for pregnant women (above 4 months) and children who are older than 12 years old ([WHO EMRO, 2022](#)). More than half of the participants answered either wrong or did not know about the vaccination of people who have chronic disease 50.75%, immune-compromised patients 61%, allergic participants 59%, and children and adolescents (between 5-18 years) 50%. These findings were in agreement with the results of a study carried out in India ([Ghazi et al., 2021b](#)), which found that concerning the vaccination of persons with chronic conditions, those with poor immunity, and people who have allergies, more than half of the participants either replied incorrectly or did not know. It is necessary to establish communication strategies to disseminate all current

information about COVID-19 and the health authorities' intervention techniques for preventing coronavirus infection.

The most common sources of knowledge about vaccines in the current study were social media (70.7%) and health workers (42%). This finding was in agreement with the results of studies in Babylon City (Sahib Khalil, Al-Yuzbaki and Tawfeeq, 2020), and Nigeria (Adetayo, Sanni and Aborisade, 2021), showing that social media was the commonest source of knowledge about COVID -19 vaccines. In addition, the findings of the present study showed that only 16% of study participants had insufficient information about COVID-19 vaccines, while a Polish study revealed that only 4.6% of those polled stated they had not sought out any information regarding vaccines (Rzymiski *et al.*, 2021).

In the present study, the level of good attitude about the COVID-19 vaccines is found to be 59.2%, which is less than the results of a study carried out in Iraq which showed that about 72.59% of the participants had a neutral attitude about COVID-19 vaccines (Khaffaf, E.S., Noori, 2021). However, This result conflicts with a prior study carried out in Ethiopia, where it was shown that more than half the participants had a negative attitude about COVID-19 vaccinations (Tesfaye *et al.*, 2021).

In this study, there is a statistically significant association between attitudes toward COVID-19 vaccines and age groups. This result agreed with the study findings conducted in Jordin which discovered that younger individuals had positive attitudes toward the COVID-19 vaccination (El-Elimat *et al.*, 2021). The result conflicts with research from Australia and Turkey reporting positive attitudes among older age groups (Seale *et al.*, 2021; Lazarus *et al.*, 2020). A possible explanation of the current result is that younger individuals may be more resistant to lockdowns and other social limitations brought on by the COVID-19 pandemic and, as a result, more eager to receive vaccinations. In comparison to

their elder colleagues, they may also be more familiar and at ease with scientific phenomena.

In terms of gender, being a woman was significantly correlated with attitude level, nearly 64% of females have a good attitude, This correlation is in accordance with a prior study on vaccination attitudes carried out in Bangladesh (Islam *et al.*, 2021) and Indonesia (Harapan *et al.*, 2016). Therefore, these findings may be significant because they may eventually improve immunization programs by encouraging women to participate in enticing family members to take part in COVID-19 immunization and education. In addition, the level of attitude in this study is high in paramedical staff than in non-paramedical staff but it is not statistically significant. This was in line with other studies done in Libya (Elhadi *et al.*, 2021), which demonstrated no significant association between attitude and study groups. This suggests that all populations preferred vaccination, indicating widespread interest in getting the vaccine. In the present study, statistical analysis showed a significant association between attitude and place of residence, 67% of individuals who lived in urban areas had positive attitudes. This outcome is consistent with research carried out in India (Danabal *et al.*, 2021).

Also, the correlation between attitude and prior COVID-19 infection was shown to be statistically significant, 67% of the previously infected participants with COVID-19 had a good attitude. This result is in agreement with results from a study carried out in the United States, which found that people with COVID-19 had a positive attitude towards vaccines (Reiter, Pennell and Katz, 2020). This may be due to their exposure to COVID-19, so they had fears of the disease symptom and its complications, which prompted them to follow preventive methods and urged people and their families to get vaccinated.

The current study found that education level had no impact on attitudes about COVID-19 vaccinations, which was corroborated by research from Malta

that found no connection between attitudes and educational attainment (Cordina and Lauri, 2021). Other variables (income level, and marital status) showed no significant association with attitude.

According to the study's findings, 68.3% of the study participants agreed that getting the COVID-19 vaccination is an efficient method to protect people against severe COVID-19 infection. This finding was less than the result of research conducted in China (Wang *et al.*, 2020), which showed that 89.5% of participants thought that receiving the COVID-19 vaccine was an effective method of preventing and controlling COVID-19, and higher than the result of research conducted in Babylon city (Abbood and Kareem, 2021), which showed that half of the participants believed that the vaccine would protect people from COVID -19. Moreover, in the findings on the attitude toward the safety of COVID-19 vaccines, 43% of the respondents think that the vaccine is safe. This finding is consistent with that of different studies carried out in Iraq (Khaffaf, E.S., Noori, 2021), and Nigeria (Anorue *et al.*, 2021), which found that 60.1% of participants believed that newly discovered vaccines could have serious side effects. This might be related to unfounded rumors and misinformation that circulate on social media and in mass media that encourage vaccine reluctance and refusal (Puri *et al.*, 2020; Simas and Larson, 2021). Besides, more than half of the participants 57.5% believe that the time was too short to test the effectiveness of the vaccine. As a result, more information should be conveyed to this population about the efficacy and safety of vaccination.

Limitations of the study:

1- Using a cross-sectional study restricts the generalizability of its results, and the studied sample size does not represent the whole province which might create selection bias.

2-In this study, samples were taken from the working group only, so we could have missed some groups of the population that could have changed the study results, predisposing us to a residual confounding bias.

3-The time of data collection coincided with Ramadan, when the response of the employees was weak, due to high temperatures and fatigue, and this required more effort and time to collect data.

Chapter Five

Conclusions and Recommendations

Conclusions

- About 66.25% of the study participants had good knowledge and (59.2%) of them had a good attitude regarding COVID-19 vaccines. Besides, having aged between 25-34 years old and living in an urban area were significantly associated with knowledge. Moreover, having aged 18-24 years old, being female, having previous COVID-19 infection, and living in urban areas were significantly associated with attitude.
- The knowledge of the paramedical staff was significantly higher than non-paramedical staff. The Paramedical staff shows a high intention to adopt the COVID-19 vaccine.
- Social media is the most significant source of knowledge regarding COVID-19 vaccinations, followed by healthcare workers as a source of information.
- About 66.5% of the vaccinated participants chose the Pfizer vaccine, while only 6.82% were vaccinated with the AstraZeneca vaccine.

Recommendations

- Intersectoral collaboration is required to achieve successful COVID-19 vaccination campaigns.
- Building COVID-19 vaccine trust among the general population is advised through carrying out health educational campaigns about the vaccines, especially in rural regions, as well as dissemination of timely and concise messaging using reliable channels and social media, promoting the effectiveness and safety of the COVID-19 vaccinations.
- Physicians and other healthcare workers should be crucial in spreading knowledge about vaccination among the general public.
- Running a rumor verification program that examines the credibility of the news spread on official websites and social networking sites and indicates whether it is true or false.
- Additional research with a larger number of participants is required to confirm the study findings and offer deeper insights into the underlying causes of vaccine refusal.

Chapter Six
References

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Appendix

جمهورية العراق

وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
كلية الطب
معاون العميد للشؤون العلمية
شعبة الدراسات العليا

العدد: 430 / 617
التاريخ: 2 / 9 / 2022

جامعة كربلاء

الى/مستشفى الامام الحسن المجتبي (ع) التعليمي
م/ تسهيل مهمة

تحية طيبة :

يرجى تفضلكم بتسهيل مهمة طالبة الدراسات العليا/دبلوم
عالي/طب اسرة (ورود مهدي عبد) في مشروع البحث الموسوم:
Knowledge, Attitude, and Vaccination Status of COVID_19
among Adults in Karbala City, 2022)
لغرض اكمال متطلبات البحث، شاكرين تعاونكم معنا خدمة
للحركة العلمية في بلدنا العزيز
... مع التقدير ...

أ.م.د. علي عبد الرضا أبو طحين
معاون العميد للشؤون العلمية
2022/ 9 / 2

**نسخة منه:

- مكتب السيد العميد المحترم للتفضل بالاطلاع مع التقدير.
- مكتب معاون العميد للشؤون العلمية المحترم للتفضل بالاطلاع مع التقدير.
- فرع طب الاسرة والمجتمع. للتفضل بالاطلاع مع التقدير.
- شعبة الدراسات العليا/الحفظ.
- الصادرة.

جمهورية العراق

وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
كلية الطب
معاون العميد لشؤون العلمية
شعبة الدراسات العليا



العدد: 431 / 161

التاريخ: 2 / 9 / 2022

الى/مدينة الامام الحسين (ع) الطبية
م/ تسهيل مهمة
الصادر

تحية طيبة :

يرجى تفضلكم بتسهيل مهمة طالبة الدراسات العليا/دبلوم
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معاون العميد للشؤون العلمية

2022/ 9

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- فرع طب الاسرة والمجتمع. للتفضل بالاطلاع مع التقدير.
- شعبة الدراسات العليا/الحفظ.
- الصادرة.

جمهورية العراق

وزارة التعليم العالي والبحث العلمي
جامعة كربلاء
كلية الطب
معاون العميد لشؤون العلمية
شعبة الدراسات العليا



العدد: 433 / 161

التاريخ: 2022/ 2 / 9

الى/مديرية تربية كربلاء المقدسة
م/ تسهيل مهمة
الصادر

تحية طيبة :

يرجى تفضلكم بتسهيل مهمة طالبة الدراسات العليا/دبلوم
عالي/طب اسرة (ورود مهدي عبد) في مشروع البحث الموسوم:

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أ.م.د. علي عبد الرضا أبو طحين
معاون العميد للشؤون العلمية

2022/ 2 / 9

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- شعبة الدراسات العليا/الحفظ.
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وزارة التعليم العالي والبحث العلمي

جامعة كربلاء/ كلية الطب

فرع طب الاسرة والمجتمع

حضرة الدكتورة ايناس عبد الكريم داغر المحترمة

م/ تقييم استبانة

تحية طيبة

نظرا للمكانة العلمية والخبرة التي تتمتعون بها نرفق لكم استمارة استبانة مقترحة لرسالة طالبة
الدبلوم العالي في طب الاسرة (د. ورود مهدي عبد) المبين عنوانها في ادناه، راجين من
جنابكم الاطلاع عليها واعطاء ملاحظاتكم القيمة بشأنها ... مع فائق التقدير و الاحترام

"Knowledge , Attitude and Vaccination Status of COVID -19 Vaccine
among Adults in Karbala City , 2022"

Objectives of the study:

To assess knowledge and attitude of adults regarding COVID- 19 vaccine.

To assess the vaccination status of adults regarding COVID -19 vaccine.

To describe the COVID- 19 vaccine hesitancy situation and assess
the factors associated with such issue.

اسم الخبير: أ.م.د. ايناس عبد الكريم داغر

اللقب العلمي: د. ورود مهدي عبد

الشهادة: بورد كربلاء / اجازة لم

مكان العمل: كلية الطب / جامعة كربلاء

الاختصاص الدقيق: تخصص طب الاسرة والمجتمع

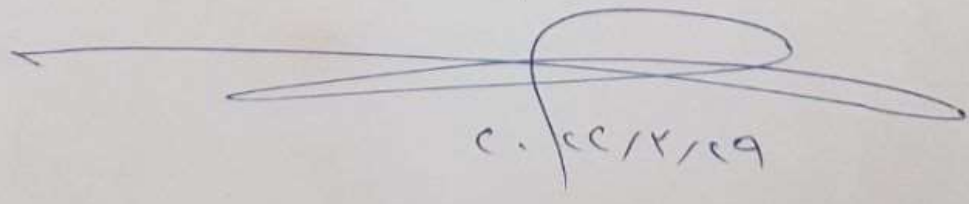
عدد سنوات الخبرة: ٥ سنوات

التوقيع

الملاحظات: يجب تحديد نوع البقاع المتعام من قبل الباحثين

الاهلية لدراسة للأهمية المعقولة في نوع البقاع

٢٠٢٢ . ايناس عبد الكريم



٢٠٢٢/٢/٢٩

ا.م.د. شهرزاد شمخي الجبوري

مع فائق التقدير والاحترام

Questionnaire form

Thank you very much for your consent to participate in this questionnaire on knowledge, attitudes, and vaccination status of COVID-19 vaccines among adults in Karbala province. This questionnaire will be anonymous and the information provided will be used for research purposes only, the data will be treated confidentially with full protection of your privacy. You can specify your answer by placing a mark (✓) in the square.

Section A (Personal data):

Age:.....				
Gender:	Female <input type="checkbox"/>	Male <input type="checkbox"/>		
place of Residence:	Urban <input type="checkbox"/>	Rural <input type="checkbox"/>		
Marital status:	Married <input type="checkbox"/>	Unmarried <input type="checkbox"/>	Divorced or Widow <input type="checkbox"/>	
Education:	Institute <input type="checkbox"/>	College <input type="checkbox"/>	High Education <input type="checkbox"/>	
Monthly income:	Low <input type="checkbox"/>	Average <input type="checkbox"/>	Good <input type="checkbox"/>	
occupation:	Paramedical staff <input type="checkbox"/>	Non-paramedical staff <input type="checkbox"/>		
Have you been infected with COVID-19 disease?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Do Not Know <input type="checkbox"/>	

Section B (vaccination status towards COVID-19 disease):

1-Will you be vaccinated against the coronavirus? yes; I will vaccinate <input type="checkbox"/> I have vaccinated <input type="checkbox"/> I am not sure <input type="checkbox"/> I refuse to vaccinate <input type="checkbox"/>
2-If you were vaccinated with COVID- 19 vaccine, how many doses did you take? One dose <input type="checkbox"/> two doses <input type="checkbox"/> three doses <input type="checkbox"/>
3- if you have been vaccinated, what type of vaccine did you receive? American Pfizer <input type="checkbox"/> Chinese Sinopharm <input type="checkbox"/> British AstraZeneca <input type="checkbox"/>
4-Were you forced to take the COVID-19 vaccine? Yes <input type="checkbox"/> No <input type="checkbox"/>
5-Is the place or date of receiving the COVID-19 vaccine suitable for you? Yes <input type="checkbox"/> No <input type="checkbox"/>

Section C (knowledge about COVID-19 vaccines):

1-Source of your knowledge about COVID-19 vaccines (you can choose more than one source):

Television and Radio <input type="checkbox"/>	Family and Friends <input type="checkbox"/>	Healthcare workers <input type="checkbox"/>
Social media <input type="checkbox"/>	I don't have enough information about the COVID-19 vaccines <input type="checkbox"/>	

2-Do you think that these groups of people are eligible for the COVID-19 vaccine or not?

Categories	Eligible	Not Eligible	Do not know
a- Infants and children under 5 years old			
b- Children and adolescents between (5-18 years old)			
c- Adults over 18 years old			
d- Elderly people over 65 years old			
e- Pregnant women			
f- lactating women			
g- People who have chronic diseases such as diabetes and high blood pressure and heart diseases			
h- people having active Coronavirus infection			
i- People who have recovered from coronavirus infection			
j- People who are allergic to food/medicine			
k- People who have a deficient immune system			

Section D (Attitude toward COVID-19 Vaccines):

1- Do you think that the COVID-19 vaccine will help protect the people who take it?
 Yes No Do Not Know

2- Do you think that the COVID-19 vaccine is safe and does not cause serious side effects?
 Yes No Do Not Know

3- Do you think that the COVID-19 vaccine may cause health complications in the future?
 Yes No Do Not Know

4- Would you encourage your family /friends/ relatives to get COVID- 19 vaccine?
 Yes No Do Not Know

5- Do you think that after getting the COVID-19 vaccine, you don't need to follow preventive measures such as wearing a mask, sanitization, and social distancing?
 Yes No Do Not Know

6- Do you think it is necessary to vaccinate the largest number of populations to reduce COVID-19?
 Yes No Do Not know

7- Do you think that if everyone in the community followed preventive measures, the COVID-19 pandemic could be eradicated without vaccination?
 Yes No Do Not know

8- Are you afraid of injection pain?
 Yes No Do Not Know

9- Are you afraid of the side effects of the vaccine?
 Yes No Do Not Know

10-Do you think that the COVID-19 vaccine is a foreign conspiracy?

Yes

No

Do Not Know

11- Do you think that the previous infection with COVID-19 eliminates the need for vaccination?

Yes

No

Do Not Know

12-Do you think that the time was too short to test the effectiveness of the vaccine?

Yes

No

Do Not Know

13-Do you think that the COVID-19 vaccine may cause you to get COVID-19?

Yes

No

Do Not Know

Do you have any comments or suggestions?

الخلاصة

الخلفية: ظهر مرض كوفيد-19 كواحد من أكبر أزمات الصحة العامة في جميع أنحاء العالم في الآونة الأخيرة. من أجل وقف الوباء، تمت الموافقة على عدد من اللقاحات للاستخدام وتم توزيعها عالمياً في مناطق مختلفة. يمكن ان تتأثر القرارات بشأن اللقاحات بعدم اليقين وانتشار الشائعات والمعلومات الكاذبة، حيث ان تأخير التطعيم ورفضه يشكل عبء امام بلوغ مناعة القطيع. لذلك، تهدف هذه الدراسة إلى تقييم المعرفة والموقف تجاه التطعيم ضد كوفيد-19 في مدينة كربلاء.

طريقة العمل: تم اجراء دراسة مقطعية وصفية في محافظة كربلاء على 400 مشارك تتراوح أعمارهم بين 18 سنة وما فوق، وأخذت العينات من فئتين من مجموعات العمل، الموظفين من الطاقم الطبي والموظفين غير الطبيين. تم إجراء الاستبيان في الفترة من مارس 2022 إلى مايو 2022 باستخدام استبيان منظم ذاتياً بدون ذكر الاسماء. تم اجراء التحليل الاحصائي باستخدام برنامج الحزمة الإحصائية للعلوم الاجتماعية، وتعتبر القيمة الاحتمالية p التي تقل عن 0.05 ذات دلالة احصائية.

النتائج: تشير النتائج إلى أن (66.25%) من المشاركين في الدراسة لديهم معرفة جيدة بالأشخاص المؤهلين للحصول على لقاحات كوفيد-19. اعتقد نسبة اعلى منهم (90,75%) ان البالغين الذين تزيد أعمارهم عن 18 عاما مؤهلون للحصول على اللقاح ونسبه اقل اعتقدت ان النساء الحوامل (18%) والمرضعات (16,8%) مؤهلات للتطعيم. (68,3%) منهم اعتقدوا ان اللقاح سيحمي الناس من كوفيد-19. تلقى (73%) من المشاركين لقاح كوفيد-19، وكان لقاح فايزر هو الاختيار الأكثر شيوعاً. الى جانب ذلك، حدد (70,8%) من المشاركين وسائل التواصل الاجتماعي كمصدر أساسي لمعرفتهم حول لقاحات كوفيد-19.

الاستنتاج: حوالي 66,25% من المشاركين في الدراسة لديهم معرفة جيدة، وحوالي 59,2% منهم كان لديهم موقف جيد تجاه لقاحات كوفيد-19، مع معدل قبول التطعيم بنسبه (80%). ارتبطت المعرفة الجيدة ارتباطاً وثيقاً بالفئات العمرية بين 25-34 عاماً، الموظفين من الطاقم الطبي، والذين يعيشون في المناطق الحضرية. بالإضافة الى ذلك، كان الموقف الجيد مرتبطاً بشكل كبير بالفئات العمرية بين 18-24 عاماً، الاناث، الذين يعيشون في المناطق الحضرية والتعرض السابق لكوفيد-19.



جامعة كربلاء
كلية الطب
فرع طب الأسرة والمجتمع



المعرفة والموقف تجاه التطعيم ضد كوفيد -19 بين الموظفين من الطاقم
الطبي والموظفين غير الطبيين في مدينة كربلاء، 2022

أطروحة

إلى مجلس كلية الطب/ فرع طب الأسرة والمجتمع/ جامعة كربلاء كجزء
من متطلبات نيل درجة دبلوم عالي في طب الأسرة
من قبل

ورود مهدي عبد

بكالوريوس طب وجراحة عامة

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