Knowledge and Attitude of People about Vaccination of Corona Virus Disease in Erbil City

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ABSTRACT

Background and Objective: Vaccine are an effective way to protect people against many infectious diseases. A variety of vaccines have been accepted against Coronavirus disease (Covid-19) and offered all over the world. Having a good level of knowledge and individual attitude regarding vaccination can have an impact on vaccinating against Covid-19. Therefore, the study aimed to investigate the knowledge and attitudes about Covid-19 vaccinations in Erbil City.

Methods: Community-based cross-sectional study was conducted in different areas in Erbil city. A non-probability (convenience) sample was selected for 400 participants from November 1, 2021 to November 1, 2022. The survey was conducted using a structured questionnaire containing informed consent along with three sections (socio-demographic, knowledge, and attitude). Data were analyzed by using descriptive statistics and Chi-squire to determine the level of knowledge and attitude regarding Covid-19 vaccination.

Results: 60.8% of participants had an excellent knowledge regarding the Covid-19 vaccine; education level, income status, and previously being infected with Covid-19 were significantly associated with a high level of knowledge. The majority (58.5%) of participants had a positive attitude toward the Covid-19 vaccine. Having a history of Covid-19 and income status were significantly associated with a positive attitude regarding the Covid-19 vaccine.

Conclusion: Despite the high level of knowledge and positive attitude regarding Covid-19 vaccination, there is still misunderstanding and hesitancy about the Covid-19 vaccine, the ministry of health must distribute and promote more health education and programs regarding Covid-19 vaccination.

Keywords: Knowledge; Attitude; Covid-19 Vaccine, Vaccination.

INTRODUCTION

In January 2020, WHO declared Covid-19 a worldwide health emergency, and on 11 March 2020, this disease was characterized as a pandemic [1]. It brought billions of people into a state of quarantine during national lockdowns, especially those with mental or physical health issues, and negatively affected a range of aspects of life [2]. Newly discovered Covid-19 spreads mostly through contact of respiratory droplets with mucus membranes. It was also found that the virus was able to transmit via direct contact with contaminated surfaces up to 5 days after incubation and that it could stay on materials for up to 5 days depending on the type of contaminated material [3]. According to epidemiological studies, SARS-CoV-2 incubation lasts between 1-14 days, and the virus is also infectious in asymptomatic patients [4].

As a result of infection, some people experience kidney failure, severe pneumonia, acute respiratory syndrome, and even death [5]. There is no approved therapeutic for treating SARS-CoV-2 infection at this time. Existing treatments usually target relieving symptoms or inhibiting the immune response. Existing drugs that are known to be effective against SARS-CoV-2, Ebola, and HIV infections are also being repurposed, but their use is being restricted to patients with severe infections [6].

Various efforts are being made to suppress Covid-19's transmission rate. It involves the practice of social distancing in public to discourage close contact, followed by educated hand washing to help destroy the lipid bilayer of the virus using soap, water, and 62–71% ethanol so that the virus will be less contagious. In addition to staying home, refraining from using public transportation, wearing masks, keeping a safe distance from people when in crowds, and avoiding areas with a high number of Covid-19 infections, various media outlets are socializing these actions [7].A vaccine is a life-saving invention that has played a crucial role in eliminating and controlling many infectious diseases all over the world [8]. Vaccination against Coronavirus is considered to be the ultimate solution to controlling this disease [9]. A vaccine with high effectiveness, a long period of protection, and low adverse reactions was easily accepted by the population [10].However, this study was conducted to assess the knowledge and attitude of people regarding Covid-19 vaccination.

METHODS

A community-based cross-sectional study was used to assess knowledge and attitude of people about Covid-19 vaccination in Erbil City during the period (1st November 2021 to 1st November 2022). A non-probability (convenience) sampling technique was used to collect the data; the sample size was 400 using EpiInfoTM version 7 StatCalc function of a population survey, with the assumption of a 95 % confidence interval, the margin of error was 5 % and the population proportion was 50%.A questionnaire was structured by researchers through a review of literature related to the subject. This questionnaire involved the following parts:

Part I consisted of primary data about participants, including involved socio-demographic characteristics (age, sex, residential status, educational level, occupation, marital status and economic status), family size, number of bedrooms, having a chronic disease, source of knowledge regarding Covid-19 disease, history of Covid-19 disease, and history of death of a member of family due to Covid-19 .Part II Was related to assessment of the knowledge of study participants regarding Covid-19 vaccinations, this part was composed of 12

questions. Comprehensive knowledge of the Covid-19 vaccine was computed from summing up all relevant 12 knowledge-related positive and negative question in the form of "Yes" and "No" questions. Respondents were asked, "Vaccines are all designed to teach the body's immune system to safely recognize and block the virus that causes the disease". Respondents who respond "yes" will score 1 and "No" responses will earn zero scores. For a negative question like (Only elders should vaccinate themselves) the respondent who responds with No will score 1 and Yes will score 0. The correct answer for each item was scored "1" and the incorrect answer was scored "0." The same pattern of questioning and scoring was made for the rest of the 10 knowledge-related items. Accordingly, respondents who scored less than 4 on the sum of knowledge assessment questions were thought to have poor knowledge, and respondents who scored 5-8 on the sum of knowledge assessment questions were thought to have good knowledge. And respondents who scored above 8 on the sum of knowledge assessment questions were thought to have excellent knowledge. Part III: Was related to assessing the attitudes of participants about vaccinations of Covid-19.The attitude of Covid-19 vaccine was computed from summing up all relevant six attitude-related 'Agree, "Not certain and disagree" questions. Respondents were asked, "It is necessary to encourage your relatives to get vaccine". Respondents who responded "agree" will score 2 and Not certain will score 1, and a disagree response will earn zero scores. The same pattern of questioning and scoring was made for the rest of the five attitude-related items. Accordingly, respondents who scored 1-6 value of the sum of attitude-related questions were thought of as having a negative attitude, and respondents who scored 7-12 value of

the sum of knowledge assessment questions were thought of as having a positive attitude. Both (males and females) aged 18 years and above were included in the study. The study proposal was formally approved by scientific and ethical committees in the College of Nursing/Hawler Medical University code number 97 on 7th October 2021. Prior to initiation of the present study, the approval from Erbil governorate was secured. And the permission was taken from each participant and they were informed and explained the purpose of the study and the confidentiality of the information. Data were prepared, organized and entered into a computer file; the statistical package for social science (SPSS, Version 25) was used for data analysis to calculate the descriptive statistical analysis (frequency and percentage) and inferential statistical analysis was used to indicate the significance relationship between the participant's demographical data (variable) with the level of knowledge and attitudes regarding preventive measures and Covid-19 vaccination. A P-value is a statistically significant level of ≤ 0.05.

RESULT

The mean age (± SD) of participants was 32.23 ± 11.74. The male: female ratio was 0.96:1 Table 1 shows that the highest percentage of the study sample was 38.5% aged 18-25, followed by nearly a quarter (24.7%) aged 26-33, and only 9.3% of the study were aged 50 and more. Table 1 also shows that the majority (89.2%) of the study sample was from urban areas. Regarding educational level, the table shows that the highest percentage (58.3%), of the study sample graduated from institutes and colleges, followed by 26.2% who graduated from intermediate and secondary. The highest percentage of the sample (38.5%) was unemployed, followed by (26.3%) were unskilled manual workers,

and only (3%) were retired. The same table shows that (58%) of the sample were married and only 3(0.7%) of the sample were divorced, as shown in table 1. Table 1 also illustrated that close to two-third (66.5%) of the sample have enough income to meet their daily needs, followed by (19.5%) have enough income for daily needs. Regarding family size, results show that the highest percentage (54.8%) of the sample was families consisting of 4 to 6 members,

followed by close to a quarter (24.7%) of families with 7 to 9 members. Table 1 Shows that the majority (78.5%) of the sample live in houses with 1 to 3 bedrooms, followed by (20.2%) with 4 to 6 bedrooms in their houses. The table shows that the majority (76.5%) of the sample owned houses, and (21.3%) were rented. Considering car ownership, results show that (77.2%) of the study sample owned a car.

Table 1: Distribution study sample according Socio-demographic characteristics.

	Variables	F (%)
Age	18-25	154 (38.5)
	26-33	99 (24.7)
	34-41	65 (16.3)
	42-49	45 (11.2)
	50 and above	37 (9.3)
	Total	400(100)
Sex	Male	196 (49.0)
	Female	204(51.0)
	Total	400 (100)
Residence	Rural	9 (2.3)
	Urban	357 (89.2)
	Suburban	34 (8.5)
	Total	400 (100)
Education Level	Illiterate	20 (5)
	Primary	37 (9.2)
	intermediate and secondary	105 (26.2)
	Institute and college	233 (58.3)
	Post graduate	5 (1.3)
	Total	400 (100)

Table 1: Distribution study sample according Socio-demographic characteristics.

Variables		F (%)
Occupation	Unemployment	154 (38.5)
	Retired	12 (3)
	Unskilled Manual Worker	105 (26.3)
	Skilled Manual Worker	89 (22.2)
	Professional Occupation	40 (10)
	Total	400(100)
Marital status	Single	160 (40)
	Married	232 (58)
	Widowed	5 (1.3)
	Divorced	3 (0.7)
	Total	400 (100)
Income Status	Inadequate for daily needs	78 (19.5)
	Enough for daily needs	266 (66.5)
	Extra Saving	56 (14.0)
	Total	400 (100.0)
Family Number	1-3	70 (17.5)
	4-6	219 (54.8)
	7-9	99 (24.7)
	10-12	12 (3)
	Total	400 (100)
Number of bed room	Zero	1 (0.3)
	1-3	314 (78.5)
	4-6	81(20.2)
	7-9	4(1)
	Total	400 (100)
House ownership	Rented	82 (20.5)
	Partial Owned	12 (3)
	Owned	306 (76.5)
	Total	400 (100)
Car Ownership	Rented	85 (21.3)
	Partial Owned	6 (1.5)
	Owned	309 (77.2)
	Total	400 (100)

Table 2 shows only (10.3%) of the study sample mentioned that they have chronic diseases; among them, the highest percentage (29.3%) was hypertension, followed by 24.4% diabetes mellitus.

Table 2: Distribution of the study sample according to past medical history

Variables		F (%)
	No	359 (89.8)
	Yes	41 (10.2)
Do you have any chronic disease?		
	Total	400 (100)
	Thyroid Disease	5 (12.2)
	DM	10 (24.4)
	HTN	12 (29.3)
	HTN+DM	7 (17.1)
Those who answered yes to have chronic disease	Valvular Heart Disease	1 (2.4)
	Psychiatric disorder receive drug	2 (4.9)
	Asthma	3 (7.3)
	Peptic Ulcer	1 (2.4)
	Total	41 (100)

Table 3 shows that nearly half (48.7%) of the study sample mentioned that social media is the main source of their information, followed by (28.5%) of the study sample who mentioned that the TV is the main source of their information, and the lowest percentage, 0.8% is from journal and newspapers.

Table 3: Distribution the study sample according sources of knowledge

Variables		F (%)
	TV	114 (28.5)
	Medical Staff	72 (18)
The key source of knowledge	Social Media	195 (48.7)
	Relatives	16 (4)
	Journal/Newspaper	3 (0.8)
	Total	400 (100)

Table 4, illustrated that (52.3%) of the study sample had been infected by Covid-19, and (26.7%) of the study sample mentioned there were died cases in their peers or families caused by Covid-19.

Table 4: Distribution of the study sample according to history of infection by Covid-19, and family deaths by Covid-19.

Variables		F(%)
Have you infected with Covid-19?	No	191 (47.7)
	Yes	209 (52.3)
Has anyone died in your family caused by Covid-19?	No	293 (73.3)
	Yes	107 (26.7)
	Total	400 (100)

Table 5 shows that the majority (89.3%) of the study sample selected the false in answering the question, which is related to only the elderly exclusively must vaccinate. The table shows that (80%) of the study sample selected a truth when they answered the question, which is related to The side effects of vaccines. Results show that (81%)of the sample answered false about vaccine causes infertility, and only (15.2%) of the study sample answered true for the question of whether one dose of vaccine is enough to keep prevent disease, complication, and death.

Table 5: Distribution study sample according to frequency, percentage, of knowledge in study sample

N	Items	Responses	F(%)
1	Vaccines are all designed to teach the body's immune system to safely recognize and block the virus that causes the disease.	False	121(30.2)
		True	279(69.8)
2	Only elders should vaccinate themselves	False	357(89.3)
		True	43(10.8)
3	Side effects from a vaccine such as a sore arm or mild fever are usually minor and temporary	False	78(19.5)
		True	322(80.5)
4	Covid-19 vaccines are weapon and could kill more people than Covid-19 disease	False	292(73)
		True	108(27)
5	Covid-19 vaccines are safe for most people of 18 years and older	False	179(44.8)
		True	221(55.2)
6	The only effective vaccine against Covid-19 is Pfizer vaccine	False	268(67)
		True	132(33)
7	Getting vaccinated even if you have had Covid-19 means you are more likely to be protected for longer	False	157(39.3)
		True	243(60.7)
8	Vaccination increases transmission of Covid-19.	False	323(80.8)
		True	77(19.2)
9	The Covid-19 vaccines are very effective at preventing serious illness, hospitalization and death	False	130(32.5)
		True	270(67.5)
10	Getting Covid-19 vaccine, causes infertility	False	324(81)
		True	76(19)
11	Even if you have already had Covid-19, you should be vaccinated	False	157(39.2)
		True	243(60.8)
12	Only one dose of vaccine is enough to be taken by people preventing serious illness, hospitalization and death	False	339(84.8)
		True	61(15.2)

Table 6 shows that (60.8%) of the study sample expressed excellent overall knowledge related to the Covid-19 vaccine.

Table 6: Overall Knowledge regarding Covid-19 vaccine

Levels	F (%)
Poor	59 (14.8)
Good	8 (24.5)
Excellent	243 (60.8)
Total	400 (100)

Table 7 shows that (40.25%) of participants who have an educational level between 13 to 18 years expressed excellent level, and (12.75%) of people who have between 7 to 12 years of education expressed excellent level. Statistically significant differences between educational levels, income status, house ownership, car ownership, have you infected with Covid-19 and knowledge (p=0.024, < 0.001, 0.007, 0.007 and 0.008).

Table 7: Significant Association between socio-demographic characteristics and knowledge regarding Covid-19 vaccine in the study sample

Variables		Overall knowledge						P. Value
		Poor	(%)	Good	(%)	Excellent	(%)	
Education Level	1-6	7	(1.75)	12	(3)	18	(4.5)	
	7-12	26	(6.5)	28	(7)	51	(12.75)	
	13-18	22	(5.5)	50	(12.5)	161	(40.25)	0.024 S
	19-24	0	(0)	1	(0.25)	4	(1)	
	Total	55	(13.75)	91	(22.75)	234	(58.5)	
Income Status	Inadequate for daily needs	22	(5.5)	23	(5.75)	33	(8.25)	
	Enough for daily needs	35	(8.75)	65	(16.25)	166	(41.5)	<0.001 VHS
	Extra Saving	2	(0.5)	10	(2.5)	44	(11)	
	Total	59	(14.75)	98	(24.5)	243	(60.75)	
House Ownership	Rented	22	(5.5)	22	(5.5)	38	(9.5)	
	Partial Owned	2	(0.5)	3	(0.75)	7	(1.75)	0.007 S
	Owned	35	(8.75)	73	(18.25)	198	(49.5)	
	Total	59	(14.75)	98	(24.5)	243	(60.75)	
Car Ownership	Rented	22	(5.5)	22	(5.5)	41	(10.25)	
	Partial Owned	2	(0.5)	1	(0.25)	3	(0.75)	0.007 S
	Owned	35	(8.75)	75	(18.75)	199	(49.75)	
	Total	59	(14.75)	98	(24.5)	243	(60.75)	
Have you infected with Covid-19?	No	35	(8.75)	55	(13.75)	101	(25.25)	
	Yes	24	(6)	43	(10.75)	142	(35.5)	0.008 S
	Total	59	(14.75)	98	(24.5)	243	(60.75)	

Table 8 shows that the highest percentage, 54.4% of the sample selected agree when they expressed their attitude in question, which is related to the Covid-19 vaccine as social responsibility. The table shows that 53% of the sample agreed about the intention to get a vaccine. Results show that 34.2% of the study sample disagreed about encouraging relatives to get the vaccine, and 38.2% of the study sample disagreed for the question related to the danger of the Covid-19 vaccine.

Table 8: Distribution of the study sample according to their attitudes regarding Covid19 vaccine

N	Items	Responses	F(%)
1	It is dangerous to use Covid-19 vaccine	Disagree	153(38.2)
		Not Certain	131(32.8)
		Agree	116(29.0)
		Total	400(100)
2	It is necessary to encourage your relatives to get vaccine	Disagree	137(34.2)
		Not Certain	129(32.3)
		Agree	134(33.5)
		Total	400(100)
3	It is not possible to reduce the incidence of Covid-19 without vaccination.	Disagree	118(29.5)
		Not Certain	149(37.2)
		Agree	133(33.3)
		Total	400(100)
4	People being vaccinated against Covid-19 will be helpful in controlling the pandemic.	Disagree	96(24.0)
		Not Certain	96(24.0)
		Agree	208(52.0)
		Total	400(100)
5	I believe that taking Covid-19 vaccine is social responsibility	Disagree	77(19.3)
		Not Certain	105(26.3)
		Agree	218(54.4)
		Total	400(100)
6	I have intention to get vaccine // or I am vaccinated.	Disagree	135(34.7)
		Not Certain	53(13.3)
		Agree	212(53.0)
		Total	400(100)

Table 9 indicated that (58.5%) of participants have a positive attitude regarding the Covid-19 vaccine.

Table 9: Overall attitudes regarding Covid-19 vaccine

Overall Attitude	F (%)
Negative	166 (41.5)
Positive	234 (58.5)
Total	400 (100)

Table 10 shows that statistically significant differences between income status, house ownership, car ownership, have infected with Covid-19 and attitudes (P=0.002, < 0.001, 0.013 and 0.001).

Table 10: Significant association between socio-demographic characteristics and attitudes regarding Covid19 vaccine in the study sample

Variables		Overall Attitudes				P. Value
		Negative	(%)	Positive	(%)	
Income Status	Inadequate for daily needs	45	(11.25)	33	(8.25)	0.002 S
	Enough for daily needs	105	(26.25)	161	(40.25)	
	Extra Saving	16	(4)	40	(10)	
	Total	166	(41.5)	234	(58.5)	
House Ownership	Rented	50	(12.5)	32	(8)	<0.001 VHS
	Partial Owned	7	(1.75)	5	(1.25)	
	Owned	109	(27.25)	197	(49.25)	
	Total	166	(41.5)	234	(58.5)	
Car Ownership	Rented	43	(10.75)	42	(10.5)	0.013 S
	Partial Owned	5	(1.25)	1	(0.25)	
	Owned	118	(29.5)	191	(47.75)	
	Total	166	(41.5)	234	(58.5)	
Have you infected with Covid-19?	No	95	(23.75)	96	(24)	0.001 S
	Yes	71	(17.75)	138	(34.5)	
	Total	166	(41.5)	234	(58.5)	

Discussion

Knowledge regarding Covid-19 vaccine Results of the present study showed that the majority, 60.8% of participants had excellent information regarding the Covid-19 vaccine. This finding was higher than the studies in Bangladesh, Ethiopia and Malaysia, which were 57%, 40.8%, and 38% of their study participants who had good knowledge regarding the Covid-19 vaccine [11] , [12] , [13].However, this high percentage of knowledge regarding the Covid-19 vaccine could be due to differences in sample size, time of the study, higher educational level of participants, vaccine campaigns, and differences in socio-economic, governmental and political differences. Results of the present study showed that participants with higher educational levels, having cars, house ownership and have been infected with Covid-19 previously were significantly more knowledgeable regarding Covid-19 vaccine than other participants. Likewise, a study in Bangladesh [11] conducted as an online cross-sectional study to evaluate knowledge, attitude and perception

regarding the Covid-19 vaccine showed that the level of knowledge was significantly higher among participants who stated having university/ higher levels of education. This finding is also supported by [12] which conducted a cross-sectional survey to find out awareness and attitude regarding the Covid-19 vaccine showed that the mean score of knowledge regarding the vaccine was high among participants who described having College/ higher educational level. This could be due to people with a high level of education having more access to get the information and more understanding abilities will help them to know and react toward the Covid-19 vaccine [14],[15]. While the present study did not find a relationship between knowledge regarding the Covid-19 vaccine with age or gender in Palestine [16] showed that (being female, being in a younger age group, having a higher educational level and being infected with Covid-19 previously were statistically significant. Another study in Malaysia supported the finding of the current study [13] showed that higher education level and higher income status were significantly associated with higher knowledge regarding the Covid-19 vaccine. Attitude regarding Covid-19 vaccine The finding of the current study mentioned that 58.5% of participants had a positive attitude toward the Covid-19 vaccine; this finding was in line with and slightly higher than the study in Palestine,[16] which conducted a cross-sectional study among 6226 participants to measure knowledge, attitude, and acceptance toward the Covid-19 vaccine and reported that 55.1 of participants had a positive attitude toward the Covid-19 vaccine. The result of the current study regarding attitude toward the Covid-19 vaccine was lower than the study in Bangladesh,[11] which conducted a web-based cross-sectional study including 1658

participants to examine the knowledge, attitude and perception regarding Covid-19 vaccine, showing that the majority, 78% of participants had a positive attitude toward the Covid-19 vaccine. The finding of the present study was higher than the study in Ethiopia,[12] conducted an online cross-sectional study to measure awareness and attitude toward the Covid-19 vaccine on 425 Ethiopian people, showing that the overall score of positive attitude toward the Covid-19 vaccine was 24.2% .
However, the present study showed that participants with higher income status who were infected with Covid-19 previously, had a significantly positive attitude toward Covid-19 vaccine. This result was similar to the study in Turkey,[17] which conducted a cross-sectional study among adults to find out knowledge and attitude and perception regarding the Covid-19 vaccine, showing that having a previous history with Covid-19 disease was significantly associated with a positive attitude regarding the Covid-19 vaccine. On the contrary, [18] conducted a cross-sectional study in Oman including 3000 participants to examine the knowledge and attitude regarding the Covid-19 vaccine and reported that gender (being male) and people with chronic diseases were more likely to get the Covid-19 vaccine than others. Another study in Syria,[19] conducted an online cross-sectional study on 3402 participants to examine the factors associated with intention to accept the Covid-19 vaccine, showed that males were more likely to get the Covid-19 vaccine that female, income status had an impact on the acceptance of the vaccine. The study also showed that younger people were more likely to accept the vaccine than older people.in India [20] conducted a web-based cross-sectional study among 3145 participants to examine the attitude toward Covid-19 vaccine and showed that

the religion, occupation, and monthly income were the factors that affect the attitude toward intention toward the Covid-19 vaccine. These disparities might be attributed to the nature of the population and varying questionnaire design.

Limitations :The survey was conducted during the mass vaccination period in Erbil city, so this may affect the results of the study.

CONCLUSION

Depending on the results of the present study, despite the high percentage of knowledge and positive attitude regarding Covid-19 vaccination; there is still misunderstanding and less information regarding Covid-19 vaccination, thirty point two percent of participants did not know about the vaccine. The present study found a significant association between participants' knowledge and their educational level, income, house ownership, and history of being infected by COVID-19. The study also concluded that there was a significant association between participants' attitudes and their income status, house ownership, car ownership, and history of being infected by COVID 19.

RECOMMENDATIONS

1- It is recommended that health authorities distribute and promote more accurate health education programs and information.

2- By confirming adequate knowledge and positive attitudes toward Covid-19 vaccinations, policy-makers can reduce vaccine hesitancy facilitated and encouraged by misinformation.

CONFLICT OF INTEREST

There are no conflicts of interest or sources of financial support for any of the authors.

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