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RESEARCH ARTICLE

Knowledge, Attitude, and Perception of Nurse Students Regarding Coronavirus Vaccines at the University of Sulaimani.

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ABSTRACT

Background: Several vaccines have been approved for use against Coronavirus and distributed globally in different regions. However, general community knowledge, attitudes, and perceptions towards Coronavirus vaccinations are poorly understood.

Aim: The aim of the study was to assess the levels of knowledge, perception, and attitude toward the Coronavirus vaccine among nurse students.

Methodology: Two hundred forty-three nursing students at the University of Sulaimani were recruited to present a descriptive study. The data were collected through a self-administrated questionnaire which includes participants' characteristics, Coronavirus infection and its vaccine status, Knowledge regarding, perception of, and attitude toward vaccine sections. Statistic Package of Social Science 24 software was used for statistical analysis.

Results: Most of the participants were 20 - 24 years (70%), female almost (69%), single, lived in a dormitory (56.45%), had Coronavirus infection, and were immunized against it (64.2%). The levels of knowledge were poor for nearly (45%), (70.7%) had a good perception, and the attitude of (59.1%) was positive toward the vaccine. Participants' knowledge, perception, and attitude were correlated positively with a p-value of 0.01 among them.

Conclusion: The levels of nursing students' knowledge was poor, the attitude for more than half was positive and perception of majority was good toward the Coronavirus vaccine, but still more work is required to enhance them.

Keywords: Nurse Student; Coronavirus; Vaccine

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INTRODUCTION

Coronavirus disease (COVID-19) is a vary significantly in mortality disease that continues to affect many countries in the world. This is caused by the new coronavirus strain severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which has become a serious public health concern worldwide (Islam et al, 2021). The World Health Organization (WHO) declared the COVID-19 outbreak as a pandemic on 11 March 2020 (Cucinotta & Vanelli 2020).

In the university setting, students alike face numerous challenges including the change in teaching and learning modes, implementation and observance of strict measures when required to be on campus, not to mention the lifestyle adjustments needed to mitigate the risk of COVID-19 infection and managing the resultant mental stress. (Lee et al, 2020). Numerous studies conducted among the Asian population had pointed to some of these factors including knowledge, perception and practice in relation to COVID-19. Overall, with respect to the university community, the level of knowledge was found to be related to educational level, nature of courses pursued and gender (Saefi et al, 2020; Soltan et al, 2020). Further, it appeared that COVID-19 knowledge was positively correlated with risk perception and preventive behavior (Siramaneerat, 2021).

Vaccines are the most important public health measure and most effective strategy to protect the population from COVID-19 since SARS-CoV-2 is a highly contagious virus and affects populations globally (Abd Al-Qader et al., n.d.).

The competition for COVID-19 vaccine invention and development against the spread and catastrophic effects of the disease is ongoing, and new, more effective vaccines are likely to be developed as we move through the pandemic (Eibawa, 2021). With the distribution of vaccines underway, it is very important to examine community acceptance of COVID-19 vaccinations (Reiter et al, 2020).

A global survey of potential COVID-19 vaccine acceptance shows that (48%) of their study population were confused about the COVID-19 vaccinations and remained unsure about whether they would have the vaccination (Lazarus et al, 2020). Similarly, a Chinese study found that only just over half of their participants (54. %) to have the vaccination (Lin et al, 2020). These relatively low proportions of people willing to have the vaccine are potentially worrying, it is also necessary to vaccinate the general people as soon as possible (Xiao & Torok, 2020).

Willingness to receive a COVID-19 vaccine is a challenge in many countries (WHO, 2020). COVID-19 vaccine acceptance rates in the general population were highest in Vietnam (98%), India (91%), China (91%), Denmark (87%), and South Korea (87%) and lowest in Serbia (38%), Croatia (41%), France (44%), Lebanon (44%), and Paraguay (51%) (Wouters et al, 2021). A review of 35 studies revealed that vaccination hesitancy rates varied from 4.3% to 72% worldwide. Major concerns of health workers were vaccine safety, efficacy, and potential side effects. Higher socioeconomic status, directly working with patients, perceived risk and fear of COVID-19, and a history of influenza vaccination were associated with higher vaccine uptake (Biswas et al, 2021).

These high rates of vaccination were associated with good knowledge regarding the severity of COVID-19, health care workers trust in the vaccines, and earlier study dates than in Adane et al, study, the researchers fond a high rate of not intending to be vaccinated were associated with negative attitude and low perception about COVID-19 vaccine, they showed that being a nurse and midwife was significantly associated with acceptance to be vaccinated for COVID-19 (Adane et al, 2022). Therefore, the aim of this study was to assess nurse student knowledge, attitude and perception regarding Coronavirus vaccine and find out correlation among them.

METHOD

A Descriptive design with a quantitative approach was used to determine the levels of knowledge, perception, and attitude toward the COVID-19 vaccine among nursing students at the University of Sulaimani. All students at the College of Nursing, University of Sulaimani were invited to participate in the study. Out of 345 students, 277 students agreed to participate in the study, which reflects (80.2%) of the total students. The inclusion criteria were nursing students at the University of Sulaimani and willing to participate in the study. The proposal of the study was approved by the scientific committee at the College of Nursing and the Ethical Committee at the College of the Medicine University of Sulaimani and informal consent was obtained from participants.

The data for the present study were collected through constructed questionnaire by asking the student to fill the questionnaire which was prepared by the researchers for this reason from (April,1st, to April, 15th, 2022) and consisted of; students' characteristics and two questions regarding COVID-19 and its vaccine.

The knowledge section comprised 5-items with three possible responses (i.e., "Yes", "No" and "Don't know") (e.g., Does vaccination increase allergic reactions?). The 'yes' response (correct answers) was coded as (1), while the 'No/ Don't know (incorrect) responses were conducted as (0). The total score was obtained by summating the raw scores of five items and ranged from 0 to 5, the scores transmitted (0 - 100) with the higher score indicating a greater level of knowledge regarding COVID-19 vaccinations. The perceptions section included 6-items regarding participant's perceptions of the COVID-19 vaccine, including 4 items as "yes/no" questions (e.g., Do you think the vaccine should be administered free of charge?) and additional 2 items related to the application of COVID-19 vaccine in the multiple chose form (e.g., Which population groups should be prioritized for vaccinations?), the response of each item indicated (yes /correct answer =1 and No/incorrect answer = 0) scores ranged from (0 - 6). The total score was calculated by summating the raw scores of the six items ranging from (0 to 6), in order to be easy for understanding, the scores have been transmitted to (0 - 100) with an overall greater score indicating better perception of the COVID-19 vaccine.

The attitude section consisted of 6-items (e.g., The newly discovered COVID-19 vaccine is safe; I will take the COVID-19 vaccine without any hesitation.), and the response of each item was indicated on a three-point Likert scale (i.e., 0 = Disagree, 1 = Undecided, and 2 = Agree). The total score was calculated by summating the raw scores of the six items ranging from (0 to 12), in order to be easy for understanding, the scores have been transmitted to (0 - 100) with an overall greater score indicating more positive attitudes toward the COVID-19 vaccine.

Out of 277 questionnaires distributed, 251 questionnaires were returned, the data of 8 questionnaires were incomplete and have been excluded from the study, and 243 participants with complete questionnaires were recruited for the study. The data were analyzed with Statistical Package for the Social Sciences (SPSS) version (25.0) for the window. Different statistical tests have been used in order to achieve the objectives of the study. Descriptive statistics were used, starting with exploratory data analysis, such as participants' characteristics, and levels of knowledge regarding, perception of, and attitude toward the COVID-19 vaccine. The inferential statistical method (Parson's Correlation Coefficient) was used to establish a correlation among the participants' scores of knowledges, perception, and attitude. The p-value is considered significant at levels of (≤ 0.05).

RESULTS

Two hundred forty-three nursing students in the University of Sulaimani recruited to present study to find out the levels of their knowledge, perception, and attitude toward COVID-19 vaccine and determine correlation among them. The age of (70%) of participants was between 20 to 24 years and (23.5%) was less than 20 years. Most of them (68.7%) were female, almost all (97.9%) were not married, and (56.4%) live in dormitories. More than half (51.5%) were infected with coronavirus previously and (64.2%) were vaccinated against coronavirus, as shown in Table 1.

The knowledge of students regarding the Coronavirus vaccine is illustrated in Figure 1 and indicates that almost (45%) of students have poor knowledge, the proportion of fair (acceptance) knowledge was (33.9%) and the percentage of good knowledge was (22.2%) only, the overall correct answer proportion was 53.1%.

The students' perception of the COVID-19 vaccine is presented in Table 2 and it indicates that the majority (78.6%) percept that the vaccine may have side effects. Most (60.1%) of students thought if everyone in the society maintains preventive measures, the COVID-19 pandemic can be eradicated without vaccination. Moreover, almost two-thirds (66.7%) prioritize health workers taking the vaccine first, and (65.4%) of them were ready to afford the vaccine at their own expense if not provided for free by the government. Furthermore, more than half (53.9%) percept that everyone in society should vaccinate. In addition, almost all (99.2%) believe that the vaccine should be administered free of charge. The proportion of overall correct answers perception regarding the COVID-19 vaccine was (70.7%).

The proportion of participants who believes that the COVID-19 vaccine is safe was (37%) only. Most (60.1%) considered the vaccine essential for them, and (39.5%) of participants were ready to take the vaccine without hesitation. Furthermore, (65%) were ready to encourage their family, relatives, and friends to vaccinate. Moreover, (64.2%) of participants think the spread of COVID-19 cannot be stopped without a vaccine.

Furthermore, the percentage of participants who believes that the COVID-19 vaccine should distribute was the vast majority (88.8%). The proportion of overall positive attitude toward

vaccines was 59.1%, the proportion of those who were doubtful was (29.1%) and (11.8%) had a negative attitude toward COVID-19 vaccines, as shown in Table 3.

Knowledge regarding the COVID-19 vaccine correlated with each perception of and attitude toward it, as presented in Table 4. The correlation between knowledge and attitude was strongest (r: 0.505; $p < 0.01$), followed by the correlation between knowledge and perception (r: 0.462; $p < 0.01$), and the correlation between perception and attitude (r: 0.378; $p < 0.01$).

Table 1. Distribution of participants characteristics

Students Characteristics	Frequency	Percentage
Age Groups		
18 – 19 Years	57	23.5
20 – 24 Years	170	70.0
≥ 25 Years	16	6.5
Gender		
Female	167	68.7
Male	76	31.3
Marital Status		
Married	5	2.1
Single	238	97.9
Living Arrangement		
In Dormitory	137	56.4
With Family	106	43.6
Have you had COVID-19?		
No	50	48.5
Yes	193	51.5
Do you have been Vaccinated against Coronavirus?		
No	82	35.8
Yes	147	64.2
Total	229	100

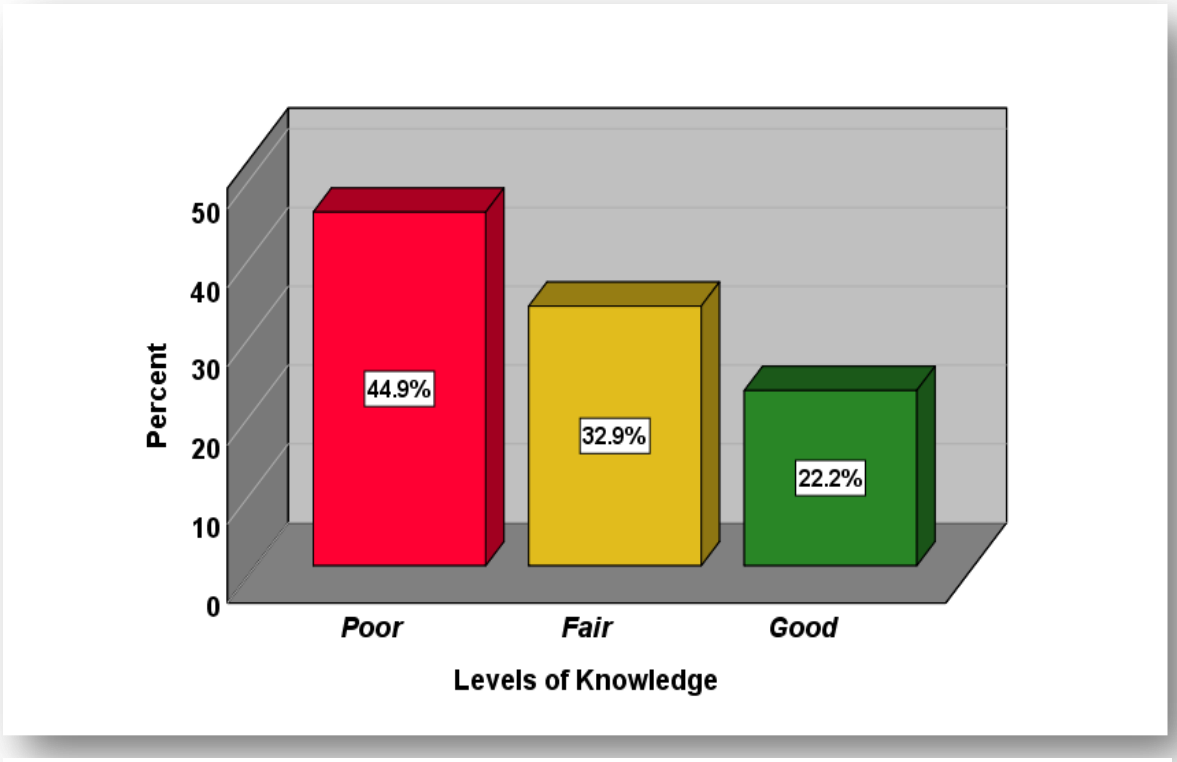

Figure 1. the levels of students' knowledge regarding COVID-19 Vaccine

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Table 2. Distribution of students' perceptions of Coronavirus vaccine

Perception Items	Yes		No	
	F	*%*	*F*	*%*
Do you think the newly discovered COVID-19 vaccine may have side effects?	**191**	**78.6**	52	21.4
Do you think that if everyone in the society maintains the preventive measures, the COVID-19 pandemic can be eradicated without vaccination?	**146**	**60.1**	97	39.9
Do you think the vaccine should be administered free of charge?	**241**	**99.2**	2	0.8
Would you afford the vaccine at your own expense if it was not provided free by the government?	**153**	**65.4**	90	34.6
Who should have been vaccinated?				
Those who have not yet been infected	46	18.9		
People infected with COVID-19	61	25.1		
Newly recovered from COVID-19	5	2.1		
Everyone	**131**	**53.9**		
Which population groups should be prioritized for vaccinations?				
General public	17	7.0		
Health worker	**162**	**66.7**		
Teacher/ student	61	25.1		
Others	3	1.2		
Mean of correct answer percentage		**70.7**		**29.3**

Table 3. Distribution of attitude items score

Attitude Statements	Disagree		Undecided		Agree	
	F	*%*	*F*	*%*	*F*	*%*
The COVID-19 vaccine is safe.	**28**	**11.5**	**125**	**51.2**	**90**	**37.0**
The COVID-19 vaccine is essential for us.	**21**	**8.6**	**76**	**31.3**	**146**	**60.1**
I take the COVID-19 vaccine without any hesitation	**36**	**14.8**	**111**	**46.6**	**96**	**39.5**
I will also encourage my family/ friends/ relatives to get vaccinated.	**28**	**11.5**	**57**	**23.5**	**158**	**65.0**
It is not possible to reduce the incidence of COVID-19 without vaccination.	**46**	**18.9**	**41**	**16.9**	**156**	**64.2**
The COVID-19 vaccine should be distributed fairly to all of us.	**13**	**5.4**	**14**	**5.8**	**216**	**88.8**
Total Mean		**11.8**		**29.1**		**59.1**

Table 4 Correlation among knowledge, perception, and attitude toward COVID-19 Vaccine.

Dependents Variables		Perception	Attitude
Knowledge	r	0.462	0.505
	p	0.000	0.000
Perception	r	1	0.378
	p		0.000

DISCUSSION

The results of the present study revealed that most of the participants were 20-24 years old, female, and unmarried. The proportion infected with coronavirus previously was more than half, and nearly two-thirds were vaccinated against Coronavirus. The finding regarding vaccination is supported by Adane et al (2022) study, which reported that (64.0%) of the participants in their study have been vaccinated, and (36.0%) refused to do so. A similar vaccine acceptance rate (61.7%) was reported by a study in Iraq conducted by Al-Metwali et al (2021) which was higher than in two studies in the USA, (Gadoth et al, 2021; Shekhar et al, 2021). Studies in Nigeria by (Tobin et al, 2021) and Saudi Arabia by (Qattanet al,2021) reported intended vaccine uptake rates of 50.2% and 50.52% respectively. The acceptance rate of COVID-19 vaccine among Shahwan et al. (2022) study participants was (56.3%).

The knowledge of students regarding the Coronavirus vaccine was poor for almost half of the students, the proportion of fair (acceptance) knowledge was nearly one-third, and less than one-quarter have good knowledge. This finding is supported by a study undertaken in Egypt by Abdelhafiz et al, (2020) and Islam et al, (2021) in Bangladesh indicating high knowledge of COVID-19. However, other studies have much higher knowledge rates with the vast majority (99.5%) of those surveyed in Northern Nigeria having good knowledge of COVID-19 (Alzoubi, et al 2020) with similarly high rates (90%) among students in Jordan with social media and the internet key information sources (Reuben et al, 2020).

We believe the numerous awareness campaigns regarding coronavirus that the university has undertaken contributed to the high scores in our study. Of concern though, is that 44.9% of the students surveyed had poor knowledge, which we believe came from non-scientific resources given the level of misinformation circulating regarding the vaccines (Haque & Godman 2021.; Islam et al, 2021; Salam et al, 2021; Chowdhury et al, 2021) Higher rates of poor knowledge though were seen in a study in Nigeria where 96.0% of those surveyed had poor knowledge of the disease, with again social media as the main source of information (Enitan et al, 2020). Furthermore, the overall good knowledge rate of the health care worker about COVID-19 and its vaccine was (62.5%) in Adane et al (2022) study.

The results revealed that majority of participants percept that the vaccine may have side effects. Most of them thought if everyone in the society maintains preventive measures, the COVID-19 pandemic can be eradicated without vaccination, almost two-thirds prioritize health workers taking the vaccine first, and nearly two-thirds were ready to afford the vaccine at their own expense if not provided for free by the government, more than half thought that everyone in society should vaccinate, and almost all believe that the vaccine should be administered free of charge.

Previously Islam et al (2021) who used same questionnaire, reported that (52%) of participants thought everyone should be vaccinated. 61% responded that health workers should be vaccinated first. Almost 95% of participants responded that the vaccine should be administered free of charge. In addition, most participants believed that the newly discovered COVID-19 vaccine may have side effects (89%). Over half of participants (56%) responded that if everyone in the society maintains the preventive measures, the COVID-19 pandemic can be eradicated without vaccination, and about a third (35%) responded that they would not purchase the vaccine at their own expense if it was not provided free of charge by the government.

In a recent Turkish study, conducted by Sonmezer et al (2022), (62.7%) of participants believed that the COVID-19 vaccination would produce an immune response against COVID-19. In addition, (80.8%) of the respondents thought that everyone should get vaccinated to end the COVID-19 pandemic, and (83.8%) of them were worried about family members becoming ill with COVID-19. About a quarter of participants also had another misconception: that the vaccine protection is achieved immediately after getting the COVID-19 vaccine. Their study revealed that 62.7% of participants had positive perceptions of COVID-19 vaccines. The overall rate of good perception about the COVID-19 vaccine was 60.5% among health care worker participated in Adane et al (2022).

The current study found that nearly two-thirds had positive attitude toward vaccine, one-third of despondence consider the vaccine is safe, this may result from that the vaccine being newly discovered. Furthermore, more than half were unable to take the vaccine without any hesitation, our explanation for this because most of them were not sure whether the vaccine was safe or not. Moreover, Nearly, two-thirds of participants thought the vaccine is essential, and it is not possible to reduce the incidence of COVID-19 without vaccination, also they were ready to encourage their family, relatives, and friends to get vaccinated. In addition, almost 9 of 10 think that the COVID-19 vaccine should be distributed fairly to all.

Our findings are in line with result of study conducted in Bangladesh by Islam et al (2021)

who found (25.5%) of participants in their study thought that the COVID-19 vaccine is safe, two-thirds (73.3%) believe it is essential, (65.5%) they are ready to encourage their family, relatives, and friend to get the vaccine, (63.4%) it is not possible to reduce the incidence of COVID-19 without vaccination, and the majority (89.8%) reported that the COVID-19 vaccine should be distributed fairly to all. While the attitude toward taking the -19 vaccine without any hesitation was more positive than our finding, this may lead to the variation of cultural norms between Bangladesh and Kurdistan society.

Recent study conducted by Shahwan et al (2022) found that (65.5%) of participants worried about unforeseen impacts of vaccine, (35.1%) have general mistrust of the benefits of vaccines and (47.3%) reported the preference of natural immunity. Furthermore, our results are consistent with a systematic review worldwide on willingness to receive vaccines, which found that about 66% had a positive attitude regarding COVID-19 vaccination (Nehal et al, 2021). Adane et al (2022) reported overall positive attitude rate about the COVID-19 vaccine as (52.3%)

According to the above result, students with higher knowledge have a more positive perception of and attitude toward the COVID-19 vaccine, and they have better acceptance to take it. Furthermore, students who believes the vaccine is safe have a more positive attitude toward it. This finding was in line with previous study in this field. The results of Islam et al (2021) showed individuals with good knowledge about COVID-19 were more likely to accept the vaccine (OR 1.9; 95% CI 1.2–2.94). The participants with overall good knowledge have a good perception, and positive attitudes about COVID-19 vaccination in Adane et al (2022) and Sonmezer et al (2022) studies.

CONCLUSIONS

Almost half of the nurse students had poor knowledge, the attitude of more than half was positive and the perception of the majority was good regarding the Coronavirus vaccine. Focusing on scientific ways in the teaching and advising students regarding vaccination may enhance their knowledge and they behave more positively toward the Coronavirus vaccine.

ETHICAL CONSIDERATIONS COMPLIANCE WITH ETHICAL GUIDELINES

The proposal of the study was approved by the ethical committee at the College of Medicine / University of Sulaimani, The participants were informed about the nature and objectives of the study, the involvement was voluntary, and they were informed that data would be treated anonymously and confidentially and they have right to withdraw when they want.

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AUTHOR'S CONTRIBUTIONS

Ali Dlawar Noori, Dr. Muhammad Rashid Amen, and Mariwan Qadir Hamarash contributed to the design, implementation, and conducting of the research, to the analysis of the results, and to the writing of the manuscript.

DISCLOSURE STATEMENT:

None to be declared

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