



Effects of a Simulation-Based Training Course on Nurses' Knowledge and Attitude Towards Covid-19 Vaccine in Sulaimani Health Care Centers

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Abstract

Background: One of the most effective ways to decrease the burden of communicable diseases such as COVID-19 is vaccination but these days despite the availability of vaccine services the hesitancy of the vaccine and the delay of acceptance or rejection of vaccine from most developing countries remain as protection to initiate effective antibody. The aim of this study to assess nurses' knowledge and attitude regarding COVID-19 vaccination before and after the training course of the health care centers in Sulaimani city.


Materials and Methods: we have done a descriptive quantitative design study with a non-probability purposive sample of 74 nurses, The reliability instrument was decided using the internal consistency (Split half) approach. The collection of the data was revealed by using the interview technique, then presenting the training course to the participants and on the last day of the training the post-test was performed.

Results: Most of the participants aged between 31-40 years old and were governmental employee's female which graduated from the institute of nursing, had not been vaccinated yet; and were not trained regarding COVID-19 vaccination (82.4%, 81.1%, 54%, 91.9%, and 97.3%) respectively. (95.9%) of the participant's knowledge and attitude before the training course regarding COVID-19 vaccination was low level, whereas after the training course the knowledge and attitude of them reach to the highest level 100%.

Conclusion: The participant's level of knowledge before the training course regarding COVID-19 vaccination was low levels, whereas after the training course their knowledge reach the highest level because of that the researchers recommended focusing on more training courses regarding COVID-19 vaccination by the Ministry of health/infection control department to develop their level of knowledge and attitude.

Keywords: effect, simulation-based training course, covid-19 vaccine, nurse's staff, knowledge, attitude

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Introduction

Most of the coronavirus pneumonic patients were unidentified in China, Wuhan; Hubei Province on Dec. 31, 2019, and manifested initially as COVID-19. [1] It was considered and identified as a new train of SARS-CoV-2 that had not been earlier seen in humans. [2] This epidemic disease was named a coronavirus disease 2019 by World Health Organization (WHO) named and then stated coronavirus outbreak a Public Health Emergency of Worldwide Concern on January 30th. [3] The main ways for transmission from human to human were through respiratory droplets especially, by direct contact according to the current evidence. The most common signs and symptoms of this disease were headaches, harsh cough, fever, and dyspnea. [4] The number of confirmed deaths worldwide after a corona infection is now more than 4 million – twice as many as at the end of January. Experts are assuming higher unreported numbers of both infections and deaths worldwide. According to the WHO, the number of corona vaccinations administered worldwide is now more than three billion. [5] The riskiest people who are at the front line of the COVID-19 outbreak fight are healthcare workers. [6] The high-risk group confirmed death cases are old age and adults who were with chronic diseases. [7] Particularly, during the incubation period, asymptomatic carrier patients could be a vector for spreading or transmitting the virus among the community. [8] All humanity hoped to control the COVID-19 pandemic when the vaccine developed, like the same previous vaccines which is an important role in the prevention, control, and eradication of earlier infectious diseases around the community such as other vaccines. Nowadays, several vaccines were being developed by countries for COVID-19 such as the European Union, Unite Kingdom and the United States of America; the first vaccinations began directly after authorizations were granted, with priority given to high-risk elderly adults, such as frontline health care professionals and long-term care facility residents. [9]

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One of the best options to prevent this disease from spreading is vaccines, with more virulent mutant strains being constantly identified. Most countries have started their vaccination programs. Presently, some vaccines are already, whereas some are awaiting approval. For reducing the severity of complications, the vaccination has been shown to be effective. [10] Because the healthcare given by the healthcare givers were directly contacted to the patients for managing to diagnosis and treatment, they are at risk for contamination. [11] According to a previous study, more than half percent of the community reported that to get strong body immunity were from a vaccinated person. The hesitancy among the people in the community to be vaccinated against the COVID-19 pandemic is created by the agreement of unwarranted COVID-19 vaccine information. [12] Whereas, more types and many vaccines against COVID-19 are obtainable with different storage and spreading logistics and probable side effects such as fever, harsh cough, dyspnea, body pain, and tiredness. [13. 14] At the end of January 2021, more than 100 million infections and 2.5 million deaths globally by severe acute respiratory syndrome-coronavirus-2. [15] In any case of the brilliant advance made in a few nations, the value of getting antibodies by powerless populaces remains a challenge especially those in low- and middle-income nations. Without a viable worldwide inoculation reaction, defenseless populaces will proceed to involvement in preventable dreariness, financial recuperations are likely to slow down, and border closures will stay. The drive to immunize expansive populaces started sincere in Mild Europe 12, 2020, the Center East and North of United States of America. Also, in February, Israel inoculated most of its population. [16] To succeed in the process, the health care workers and government has been attributed to a high level of radical and political commitment together in Israel. [17] The WHO has produced a framework for building vaccination rules domains with coordination, planning, vaccination strategies, access, and community engagement. [18] Dispersal of existing national rules for mass vaccination will help nations to create possess nearby techniques. [19] So, the knowledge of the nurse's staff is very important about the severity of the disease, and they need to respond quickly and closely to coronavirus-infected patients in a strict area within the emergency vehicles and at hospitals. Therefore, the knowledge and awareness of insufficiency to COVID-19 especially, inside the hospitals will increase the risk being of spared the infection. So, these conditions negatively affect the nurse's level of despondency and the appropriateness of the health decisions. [20] In the vaccine uptake procedure, the nurses play a prominent role. They settle extensive time counseling clients, relationships, relatives, and the community about the advantages, dangers, and security of the vaccines and then administering them. [21] Health care staff located in the frontline area among the community plays a major role in reassuring people, clients, and all of society that vaccines are safe and effective. [22] The purpose of the current study is to assess socio- demographic data of the nurses' staff, to find out their knowledge and attitude before and after the training course, regarding the COVID19 vaccine, finally to find out the level of their knowledge before and after the training course.

Materials and Methods

Design of the study: A descriptive quantitative design study

Sampling Technique: Non-probability purposive sample was used.

Administrative Arrangements: An approval letter was taken from the department of science of Health Development and training center to the Directorate of Health in Sulaimani city.

Sample of the study: Non-probability purposive sample of 74 nurses (60 females and 14 males) who worked in immunization departments in health care centers that gave COVID 19 vaccine to the population inside the Sulaimani city.

The Study Instrument: For the purpose of data collection, the study tool was designed and based on an extensive review of related literature and studies to assess the knowledge, attitude, and nurses in health care centers/immunization departments in Sulaimani city. The questionnaire consisted of (15) items before and (16) items after the training course, and the study tool is composed of three parts which were distributed through the followings:

Part one is dealing with socio-demographic data such as (age, gender, level of education, type of employment, and number of training courses regarding covid19 vaccine).

Part two is the knowledge and attitude of the nurses toward the Covid19 vaccine before and after the training course.

Setting of the study: The study was conducted in eight governmental health care centers inside Sulaimani City. Their name is:

1. Health care center of (Ibrahim Ahmed).
2. Health care center of (Shahid Rafiq Hamajan).
3. Health care center of (Shahid Shamal).
4. Health care center of (Shahid Sardar).
5. Health care center of (Sarchnar).
6. Health care center of (Zerenok).
7. Health care center of (Ibrahim Ahmed).
8. Health care center of (Raparin).

Inclusion Criteria: Both adult males and female nurses working in the immunization department of the health centers/ immunization department that gave COVID-19 vaccine.

Exclusion Criteria: Those nurses who do not work in the immunization department. Those nurses who refused to participate in the study sample and those nurses who took official leave and did not attend their health institution.

Validity of the study tool: The content validity of the tool was determined through a panel of (5) experts in various fields of science (Nursing, Medicine, public health, and microbiology), to investigate the clarity, relevancy, and adequacy of the items of the questionnaire. Experts were provided the instrument by their suggestion about the possibility of the items included in the form. The majority of the experts agreed upon the items of the study with some comments and suggestions. So far, the modifications are employed, and the final copy of the questionnaire is completed and become valid to be an appropriate tool for data collection.

Pilot Study: A pilot study was conducted on 10 male and female nurses who work in health care centers on 23th May 2021.

Reliability of the questionnaire: Reliability was conducted by the application of internal consistency reliability (split half), which was conducted at eight health care centers from 10 nurses gathered for such reliability estimation. The reliability of the current study was ($r = 0.79$) for the knowledge and attitude of nurses which indicated acceptable reliability for the instrument.

Methods of data collection: The data were collected through the utilization of the adopted and constructed tool, and the interview technique performed before and after the training course. The data collection process and presenting the training course were performed from the period of 25 May to 31 May – 2021, (1st day for the pre-test before, and the last day for the post-test after the training course). The training course took five days in 5 groups; each group consisted of 15 nurses; only one group was 14 nurses. All these processes (pre-test, training course, and post-test) were performed in the (Health

Development and Training Center); which is the vital center for the health training course in Sulaimani city. The questionnaire was divided among the participants, and they answered it before and after the training course which took about 10-15 minutes for each nurse. The training course was presented and explained by PowerPoint and diagram toward the definition, types, and aspects of the action of the COVID 19 vaccine in the body for each type of the COVID 19 vaccine especially (Sino farm, AstraZeneca, and Pfizer) because they are present in our country, the presentation took four hours for each group. 35 nurses did not participate in the study sample because some of them refused, and others were taking an official leave from their health care centers.

Data Collection: The data was collected through the utilization of an adopted and construct tool by interviewing the nurse's staff themselves.

Data Management and Statistical Analysis:

The collection of the data was revealed by using the interview technique and organized then coded into spreadsheet files. Data analysis was done by SPSS 26.0 version.

Results

In this study, 74 nurses participated from different health centers and hospitals inside Sulaimani city. Out of 74 nurses, 60 (81.1%) were females and 14 (18.9%) males. Their age was between 20-60 years old as shown **Table – 1**. Nearly half of them were between 20-30 years old (43.2%), most of them were female governmental employees which graduated from institute of nursing and most of them had not been trained regarding COVID-19 as shown in **Table – 2**

Table – 1 Distribution of socio-demographic characteristics of the participants (N = 64)

Socio-demographic data	Classifications	Frequency	Percentage
Age	20-30	32	43.2
	31-40	20	27
	41-50	17	23
	51-60	5	6.8
Gender	Female	60	81.1
	Male	14	18.9
Level of education	Secondary school of Nursing	23	31.1
	Institute of Nursing	40	54
	College of Nursing	11	14.9
Type of Employment	Voluntary employee	10	13.5
	Contract employee	3	4.1
	Governmental employee	61	82.4
Training course regarding COVID19 vaccination	Trained	2	2.7
	Not trained	72	97.3

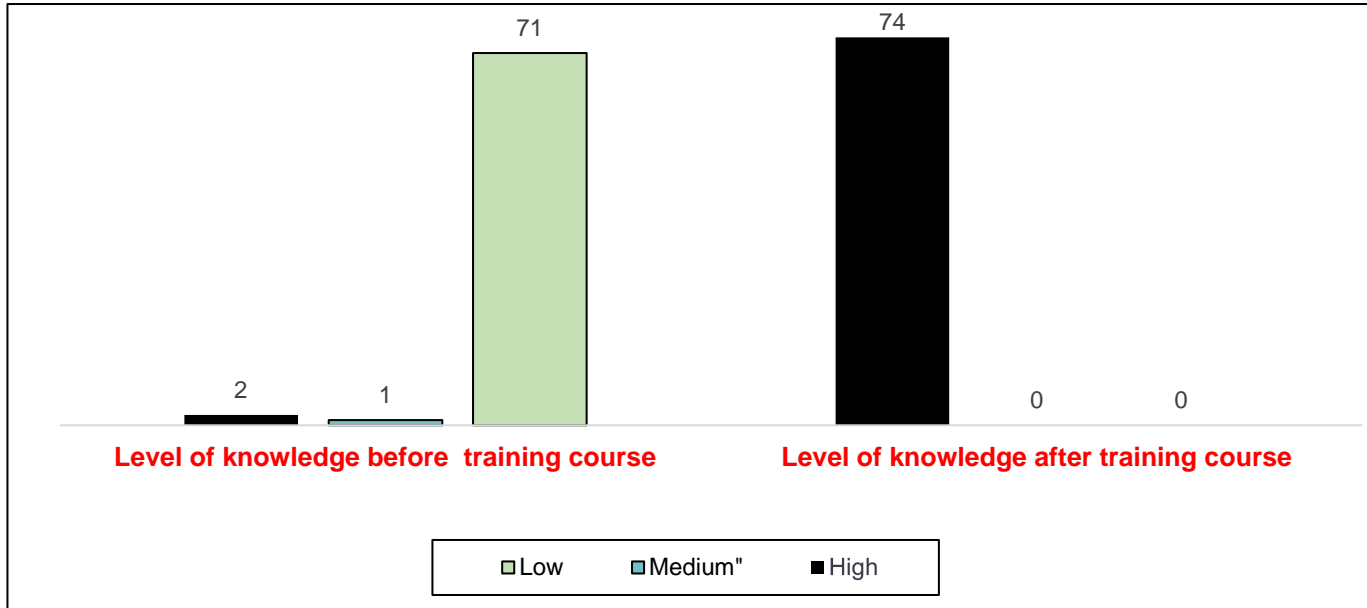
Table – 2 Distribution of Knowledge and Attitude of the participants regarding COVID-19 vaccine before training course

No.	Questions	Classifications	Frequency	Percentage
Knowledge about COVID 19 vaccine Before Training Course				
1.	Where coronavirus did first break out?	I don't know	2	2.7
		China	72	97.3
2.	When coronavirus did break out?	I don't know	6	8.1
		2020	19	25.7
		2019	49	66.2
3.	Which month coronavirus spread in Kurdistan?	I don't know	45	60.8
		March	29	39.2
4.	Enumerate the types of COVID 19 vaccine which present in Kurdistan	I don't know	34	46
		Pfizer	16	21.6
		AstraZeneca	2	2.7
		Pfizer, AstraZeneca, Sino pharm	22	29.7
5.	How many types of COVID19 vaccines are present in Kurdistan?	I don't know	12	16.2
		Pfizer	8	10.8
		AstraZeneca	19	25.7
		Sino Pharm	35	47.3
6.	What are the names of their country?	I don't know	54	73
		Pfizer –USA	7	9.5
		All these types are correct	13	17.5
7.	What is the main action of each type of COVID19 vaccine?	I don't know	19	25.7
		Increase immune system	55	74.3
8.	What are the most common symptoms of people after getting COVID19 vaccination?	I don't know	12	16.2
		Diarrhea and vomiting, the difficulty of breathing, fainting, fever, rigger, headache,	3	4.1
		Body aches, swelling and pain on the site of injection, allergy	59	79.7
9.	How long should the person stay away from crowded places after getting COVID19 vaccination?	I don't know	56	75.7
		No need	5	6.8
		14 days	13	17.5
10.	Does COVID 19 vaccine lead to coronavirus infection after vaccination?	I don't know	22	29.7
		Yes	7	9.5
		May be	25	33.8
		No	20	27
Attitude toward COVID 19 vaccine Before the training Course				
1.	Have you been vaccinated for COVID 19?	Yes	6	8.1
		No	68	91.9
2.	If Yes, Why?	To protect myself from coronavirus and for the symptoms to be easier on me if I get infected with the virus in the future	6	8.1
3.	If No or Uncertain, Why?	I did not complete 6 months after Getting infected by Coronavirus	10	13.5
		I do not believe in the vaccine for COVID-19	18	24.3
		I am scared of the possible consequences of the vaccine	21	28.3
		I am scared of vaccines because of social media's propaganda about it	19	25.8
4.	In your mind which type of vaccine present in Kurdistan is best?	I don't know	43	58.1
		AstraZeneca	4	5.4
		Pfizer	20	27
		Sino pharm	1	1.4
		All of them	6	8.1
5.	Do you believe COVID 19 vaccination?	No	37	50
		Yes	14	19
		Uncertain	23	31

Table – 3 Distribution of knowledge and attitude of the study participants regarding COVID 19 vaccine after the training course

No	Questions	Classifications	Frequency	Percentage
Knowledge toward COVID 19 vaccine after Training Course				
1.	Where coronavirus did first break out?	I don't know	1	1.4
		China	73	98.6
2.	When coronavirus did break out?	2020	3	4.1
		2019	71	95.9
3.	Which month coronavirus spread in Kurdistan?	March	74	100
4.	Enumerate the types of COVID 19 vaccine present in Kurdistan region	Pfizer, AstraZeneca, Sinopharm	74	100
5.	How many types of COVID 19 vaccines are present in Kurdistan?	Three types	74	100
6.	What are the names of their country?	Pfizer-USA, AstraZeneca-British, Sino pharm-China	74	100
7.	What is the main action of each type of COVID19 vaccine?	Increase immune system	74	100
8.	What are the most common symptoms of people after getting COVID19 vaccination?	I don't know	2	2.7
		Body aches, swelling and pain on the site of injection, allergy	72	97.3
9.	How long should the person stay away from crowded places after getting COVID19 vaccination?	I don't know	1	1.4
		No need	1	1.4
		14 days	72	97.2
	Does COVID 19 vaccine lead to coronavirus infection after vaccination?	Uncertain	1	1.4
No		73	98.6	
Attitude toward COVID 19 vaccine after the training Course				
1.	In your mind which type of vaccine present in Kurdistan is best?	I don't know	1	1.4
		Pfizer	1	1.4
		All types of; Pfizer, AstraZeneca, Sino pharm	72	97.2
2.	After you got this course do you have a plan to get a vaccination for COVID19?	No	3	4.1
		Uncertain	4	5.4
		Yes	67	90.5
3.	If Yes, why?	To protect me from coronavirus and for the symptoms to be easier on me if I get infected with the virus in the future	67	90.5
4.	If No or Uncertain why?	I think my immunity is fine and I don't need a vaccination	2	2.7
		I do not believe in the COVID 19 vaccine	1	1.4
		I am awful of the possible consequences of the vaccine	1	1.4
		I am awful the vaccines because of social media's propaganda about it	1	1.4
		I think I do not need it because I have been affected by a coronavirus	2	2.7
5.	Do you believe COVID 19 vaccination now after the training course regarding COVID-19 vaccination?	No	1	1.4
		Uncertain	5	6.7
		Yes	68	91.9
6.	Do you think this training course has benefits to change your mind regarding COVID 19 vaccine?	No	1	1.4
		Yes	73	98.6

Figure – 1 Distribution of Level of knowledge of the participants before and after the training course



vaccination and had been not vaccinated yet (81.1%, 82.4%, 54%, and 97.3% and 91.9%) respectively as shown in **Table – 3**. Out of 74 nurses, 71 (96%) of the participant's knowledge and attitude before the training course regarding COVID19 vaccination was low level, while after the training course was reached to the peak of 100% (74 nurses) as shown **Figure – 1**.

Discussion

The main purpose of every type of vaccination program is to decrease complications and death among people in the community. By submitting protection to persons and depending on the mode of action of the vaccine, decreasing public transmission. [23]

Concerning socio-demographic characteristics: Seventy-four nurses' staff from several health centers and hospitals inside Sulaimani city participated in the present study. The lowest level of their age was twenty years, and the highest level was sixty years old, so the result revealed that nearly half of them were less than twenty-five years. In the current study, the female gender was more than male, employment of them was consist of three types which are voluntary, contract and governmental employee but the last one had the highest rate, more than half of the contributors was graduated from medical institute whereas most of them did not train regarding COVID-19 vaccination process.

Knowledge and attitude of the participants regarding COVID19 vaccination before the training course:

The second part of the study tool was detailed with some important questions regarding nurses' knowledge regarding COVID-19 vaccination before the training course; nearly all of them knew that coronavirus was first breaking out in China. Less than half of them knew about the month spreading coronavirus in Kurdistan, and only a bit more than a quarter of the participants could enumerate the names of three

types of vaccination present in Kurdistan Region, however, nearly half of them knew the numbers of the vaccination that present in Kurdistan region, while more than quarter of them can not mention the name of their manufacture countries but they identified that main action of vaccination is enhancing immune system whereas most of them did not vaccinate yet because of these reasons:

- i) The participant did not complete six months after getting infected by Coronavirus {13.5% }.
- ii) Do not believe in the vaccine of COVID-19 {24.3% }.
- iii) Scared of the possible consequences of the vaccine {28.3% }.
- iv) The contributors feared the vaccines because of social media's propaganda {25.8% }.

The researchers believe that these rates of unvaccinated health care workers are very high and full afraid because they are the riskiest group for affecting the COVID-19 disease, as well as this outcome, is opposite to a study which mentioned that three-quarters percent of the people should be vaccinated to achieve good immunity [12] but this result nearly agrees with the study done by [10] which mentioned that only one - third of their participants were accepted to receive the vaccination and the main reason of other people who refused the vaccination was due to their hesitancy of lack of safety of the vaccine. This outcome again disagrees with the study done in Vietnam [9] and, they recognized that the proportion of willingness to get a vaccine against COVID-19 among the participants was relatively good 76.1%, and the reason for their intention to have COVID-19 vaccination were the education of healthcare workers that spread through mass media message and braid to action from nurse's staff suggestions to promote vaccine acceptance however one of the rejection points of our health care workers regarding vaccination against COVID-19 was process is

a bad social media propaganda about the vaccine while this is the major disaster for health care workers in a health care setting. There were only six people 8.1% were administered the COVID-19 vaccine to protect themselves from coronavirus and for the symptoms to be easier on them if they get infected with the virus in the future. Also, the result of this study also demonstrated that nearly most of them knew about the clinical manifestation after administering COVID-19 vaccination. Nearly most of them did not know about the time that should the person stay away from crowded places after getting COVID-19 vaccination. No types of immunization have a hundred percent success rate because of that the person should not think that there are completely immune to COVID-19 after immunization and the person may contract COVID-19 even after being immunized but chances are the infection would be much slighter. After two-three days of the vaccination process, the person should avoid putting stress and do strenuous physical activity because their body requires a period of time to improve from the side effects of the vaccine. Because of that, there are several most important points that should be done after vaccination such as: continuing and remain wearing masks, providing hand hygiene, using alcohol hand rub, keeping physical and social distance, especially in crowded areas, and avoiding touching surfaces. [24] A little bit more than a quarter percent of the participants answered correctly about COVID-19 vaccine did not lead to coronavirus infection after the vaccination process while more than half percent of them answered maybe and did not know infected the disease after the vaccination.

The COVID-19 vaccine can't lead to the disease because the mRNA vaccine is not a virus. And then it activates the human's immune system, resulting in this activation can cause minor signs and symptoms in some persons (such as fatigue and fever). Pain at the injection site, fatigue, headache, and muscle aches according to the data from the clinical trials are the most common body responses to the vaccine after immunization. Whereas these clinical manifestations are very common with other vaccines, such as the flu vaccine, and other approved vaccine uses an altered virus that does not lead to any sickness and can't replicate including the COVID-19 vaccine. Factually this vaccine is produced to provide defense against the COVID-19 virus but won't avoid infection forever. So, it's very important to continue and remain wearing a mask, wash hands perfectly, and social distance even after getting fully vaccinated because the person who is vaccinated may still be able to spread the virus to others. So, of that everyone should aware that the current vaccines are effective and active in avoiding COVID-19, hospitalizations. For reducing the risk of illnesses, severe complications, hospitalization, and even mortality rate immunization play a major role. Reducing the risk of disease also prevents the health care system from being overcome. [25] The last question was regarding the best type of vaccine in Kurdistan region but more than half percent of them did not know the answer, while nearly a quarter percent of them answered Pfizer is the best one. In the part of attitude half percent of the participants did not believe COVID-19 vaccination. Unexpected attainment, effectively vaccinating the worldwide population presents many trials, from manufacture to spreading, deployment, and significantly, receiving is the quick progress of COVID-19 vaccines. A vital point in the vaccine is full trust by the population and this is judgmentally dependent on the capability of the governments to connect the benefits of immunization and distributes the vaccination carefully and efficiently. This brief address is achieved by the effective role of governments in promoting confidence in the usefulness and protection through actual communication, as well as belief in their capacity to

obtain and distribute them professionally and justifiably. In many countries there is only a minor section of the people hold strong anti-vaccination opinions, hesitancy, and caution about COVID-19 vaccination. As well as the impact of vaccines is extensive and across-the-board, though not reliably calculable, examined, or connected. Habitually, the perceived assistances of vaccination were to decrease complications and death from contagions. [26]

Knowledge and attitude of the participants regarding COVID19 vaccination after the training course:

The results showed that a hundred percent of the participants knew the month coronavirus spread in Kurdistan, the main action of each type of COVID-19 vaccine, the numbers of the vaccination, and can able to enumerate the types of COVID-19 vaccine present in Kurdistan and the names of their countries, also nearly all of the participants knew that Body aches, Fever Headache, swelling and pain on the site of injection are the most common symptoms of people after getting COVID-19 vaccination, the person should stay away from crowded places after getting COVID-19 vaccination for 14 days, COVID-19 vaccine is not lead to coronavirus infection after vaccination process, they responded that all types of (Pfizer, AstraZeneca, Sino pharm) have benefit for increasing immune system against COVID-19 outbreak.

Regarding the participant's attitude, most of them changed their mind and they put the plan to administer the COVID-19 vaccine to protect themselves from coronavirus and for the symptoms to be easier on me if they get infected with the virus in the future before the training course only 8.1% had this idea. And 91.9% believe COVID-19 vaccination now after the training course regarding COVID-19 vaccination while before the training only 19% of them had this belief, finally, 98.6% think this training course has benefits to change your mind regarding COVID-19 vaccine. Health care workers especially nurses are playing an important and vital role in the immunization process because they spend a significant period counseling the community such as the clients, parents, families, and relatives, concerning the benefits, dangers, and protection of vaccines, as well as controlling or administering them. Regardless of possible unwillingness and hesitancy of the member's community to receive and accept any immunization such as the influenza vaccine, nurses' staff continue to remain as the most reliable consultant and influencer of immunization decisions and conclusions. Furthermore, nurse staffs who immunized themselves are more expected to mention immunization to their clients. [27]

Level of knowledge of the participants before and after training course regarding COVID19 vaccine:

The participant's knowledge and attitude before the training course regarding COVID-19 vaccination were at a low level of 96%, while after the training course their knowledge and attitude of them reach to a high level of 100%. So, a healthy lifestyle and living are considered very important points for increasing knowledge and education in every group of society. Because of that recommended by the researchers' training course regarding COVID-19 vaccination by infection control department in the ministry of health to develop their level of knowledge and attitude. Lack or insufficient awareness, attitudes, and scientific practices lead to increase the rate of hesitancy for the people especially, health care workers or nurse's staff and it influenced on their healthiness. So

the main aim of this research was to estimate nurse's knowledge, attitude regarding COVID-19 vaccine. [27]

Conclusion

The participant's knowledge and attitude before the training course regarding COVID-19 vaccination were low levels, whereas after the training course their knowledge and attitude reach the highest level. It revealed that the training course has an important and vital role in modifying the level of knowledge and attitude of nurses' staff. So, we recommended that continuous training courses regarding COVID-19 vaccination should be done by the ministry of health/infection control department to maintain and increase their level of knowledge and attitude toward medical staff and the community.

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Here, BOS – Bayan O Sharif; KJR – Kamal Jalal Rashid; SNM – Sara Noori Mohammad, and ZRA – Zhino Raouf Ali

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