

Assessment of the Nursing Practice in COVID-19 Vaccination

Lobna Mohamed Abu Negm⁽¹⁾, Eman Sobhy El Said Hussein⁽²⁾ 

(1) Lecturer of Medical Surgical Nursing, Faculty of Nursing, Ain Shams University, Egypt

(2) Assistant professor of Medical Surgical Nursing, Faculty of Nursing, Ain Shams University, Egypt

Abstract

Background: Coronavirus vaccines may protect people from getting infected with coronavirus or developing severe symptoms by motivating the immune system to produce antibodies. Nurses manage everything involved in the vaccination process pre, during, and post-administration. **Study Aim:** This study aimed to assess nursing practice in COVID-19 vaccination. **Methods:** Descriptive design was used; the study was conducted on outpatients at Ain Shams University Hospital in Cairo, Egypt. Simple Random sampling of adult participants was enrolled in the study with inclusive criteria, which included patients able to read and write and able to use social media, two different web designed questionnaires on Google forms used to assess socio-demographic characteristics of the participants, health history, sides effects related to COVID-19 vaccine and assess nursing practice for people undergoing COVID-19 vaccination. **Results:** It showed a mean age of 47.19 ± 14.82 years, more than half of them were males (59.8%), and 48.2% were suffering from fever, headache (44.2%), ortho pain (37.8%), and pain on site of injection (43.5%) respectively. Concerning nursing care for participants before vaccination, 98.8 % of nurses took personal data. Most of them (85.5%) asked about chronic diseases regarding vaccination. Near two-thirds of them (70.2%) asked about using medication for chronic disease or allergy (55.2%) and were given instructions about the current effect of the vaccine (46.5%). The majority (96.25%) were not given instructions about the vaccination. While after vaccination, nearly two-fifths were instructed on the side effect (38.5%) and how to deal with side effects (42.2%), respectively. In comparison, the majority of the 98.8% and 93.75% did not take vital signs and observed the allergic effect. **Conclusion:** COVID-19 vaccination's most common negative effects were fever, headache, ortho pain, and pain at the injection site. More than half of the participants were taken analgesics after vaccination and before vaccination. The majority of nurses were taken personal data. Regarding vaccination, the majority of nurses asked about chronic diseases. Near two-thirds of them and 46.5% asked about using medication for chronic disease and allergy, and the majority of them did not take vital signs and were not observed for the allergic effect. **Recommendations:** Periodic educational programs for nurses regarding nursing intervention (pre, during, post) COVID-19 vaccines. Further nursing studies on the COVID-19 vaccine to better understand the nursing management of COVID-19 vaccine side effects.

Keywords: COVID-19 vaccines, side effects, nursing practice.

Introduction

Since the World Health Organization declared Coronavirus Disease 2019 (Covid-19) a pandemic on March 11, 2020, it has afflicted millions of individuals worldwide. According to recent findings, infection with the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and Covid-19 are growing in various populations, including younger adults. Safe and effective prophylactic vaccinations are urgently needed to contain the pandemic, with severe medical, economic, and social implications. (Polack, et al. 2020)

Vaccination is one of the most effective and low-cost approaches to preventing COVID-19. Nine COVID-19 vaccines have been approved for marketing internationally, and more than 360 million doses of COVID-19 vaccinations have been delivered globally as of March 15, 2021. (WHO₁, 2021). The vaccination rate is directly linked to herd immunity, and population immunity can only be obtained if most people are vaccinated. (Jiang, N., et al. 2021)

The delivery and widespread distribution of COVID-19 vaccinations is a significant step forward in the coronavirus pandemic. As more

people are vaccinated, families and communities can return to a more normal routine. Vaccines with excellent efficacy, long protection periods, and low adverse response rates were well received by the public. (Kreps, S., et al. 2020) (Reiter, P.L. et al 2020).

Safe and effective vaccines became an important preventive tool against novel coronavirus disease infection (Shehata, W.M. et al. 2022). Vaccination could be considered one of the most reliable protective public health interventions, saving millions. Several vaccines include Pfizer/BioNTech, AstraZeneca/AZD1222, and Janssen/Ad26.COV 2.S, Moderna COVID-19, and Sinopharm COVID-19 are listed in the WHO emergency use listing, and optimism has increased that the pandemic will end through achieving herd immunity (Ehret, J., et al .2003) (Rodrigues, C.M.C. and S.A. Plotkin,2020).

There are certain negative effects to all vaccines and treatments. These negative effects must be constantly weighed against the predicted advantages in terms of disease prevention. The vast majority of suspected adverse response reports confirm the safety profile established in clinical trials following extensive use of these vaccinations across the UK. Most reports concern injection-site reactions (for example, a hurting arm) and generalized symptoms such as a 'flu-like' illness, chills, fever, headache, fatigue, nausea, disorientation, weakness, aching muscles, and a rapid heartbeat. Mostly, these symptoms are unrelated to more serious sickness and are most likely a natural immunological response to the immunizations. Cases of an extremely rare specific type of blood clot with low blood platelets continue to be investigated, and updated advice has been provided (Alfaleh, A., et al.,2022) (Elgendy, M.O., et al., 2022).

During the COVID-19 pandemic, nurses have significant duties and responsibilities. They will continue to be on the front lines of patient treatment in hospitals and actively participate in community evaluation and monitoring. Nurses must guarantee that all patients, regardless of their infectious condition, receive tailored, high-quality care. They will also prepare for

potential COVID-19 breakouts, which will boost demand for nursing and healthcare services, potentially overloading systems. Nurses must also ensure that sanitary materials and personal protective equipment are available and that they are being used properly and provide screening information, confinement guidelines, and triage protocols that are up to date. A global pandemic necessitates strong nursing staff involved in clinical management, public safety, and awareness and knowledge exchange. (Fawaz, M., H. 2020) (Jackson, D., et al., 2020).

Nurses play a critical role in vaccine administration and organization, particularly during the COVID-19 pandemic. Nurses assist in educating vaccine recipients and the physical administration of immunizations. A nurse's function in the immunization process is **communication**: For the past 18 years, nurses have led the list of professions that Americans regard as trustworthy. Nurses provide communication and care to the general public, ultimately informing personal and parental healthcare decisions. Nurses can educate patients about vaccine efficacy and safety by staying informed about the importance and procedure of required vaccinations. As a result, the most important function nurses play in the vaccination process is communication—and the resulting public awareness. **Another challenge is that nurses' competence is needed in** ensuring the safe handling, storage, and administration of immunizations. In order to ensure a safe immunization process, nurses must also take patients' medical histories and be aware of any allergies. **Follow-up**: Nurses are also in charge of overseeing all aspects of the vaccination process after being administered. They are in charge of post-vaccination monitoring, which includes identifying and managing any physical or emotional reactions to immunizations. This follow-up may also entail giving medical care to individuals with underlying medical issues, compiling vaccination statistics, and maintaining patient records. (The Chicago School. 2021)

Significance of the study:

Since December 2020, Egypt began to receive shipments of anti-COVID-19 vaccines, such as Sinopharm (BBIBP-CorV),

AstraZeneca vaccine, and Sputnik V. Priority groups for vaccination are (A) medical staff at quarantine, fever, and chest hospitals, (B) patients with cancer or kidney or immunity problems (Fares, S., et al., 2021) patients with chronic diseases, and the elderly, and (C) eventually all citizens above 18 years. As of March 2021, Egypt has started COVID-19 vaccine rollouts. Although the country aims to vaccinate 40% of its population against COVID-19 by the end of 2021, Egypt suffers from vaccine hesitancy due to misinformation and false claims about vaccines used in Egypt (Nabeth, P., et al., 2021) (Saied, S., et al., 2021).

Vaccination, an effective public health intervention, is a ray of hope for eliminating the pandemic by achieving herd immunity. During the COVID-19 Vaccine, nurses have crucial roles and duties. Nursing practices (NPs) have given the COVID-19 vaccination to patients, and more than half believe their practices will be able to store and administer it once it is widely available. NPs work in various settings, including underserved populations, and will be critical in ensuring that immunizations are administered and that vaccination schedules are followed. While NPs reported having a little difficulty getting the immunization, their patients did not always have the same experience. About half of the patients who qualified for the vaccine, according to NPs, had trouble finding it in their communities. So, this study was conducted aiming to assess nursing practice in COVID-19 vaccination.

Aim of the Study:

This study aimed to assess nursing practice in COVID-19 vaccination.

Research Questions

- What is the nursing practice in COVID-19 vaccination?

Subjects & Methods

1- Research Design:

Descriptive design was used to achieve the aims of the study.

2- Setting:

The study was conducted on Ain Shams University Hospital **outpatients in Cairo, Egypt.**

3- Subjects:

Simple Random samples of adult participants were enrolled in the study with inclusive criteria, including patients who can read and write and use social media (what's-up, Facebook, and telegram). The sample size was calculated by using the Steven K. Thompson equation (Thompson, S.K., 2012) with the following formula:

$$n = \frac{N * P(1 - P)}{[(N - 1 * \left(\frac{d^2}{Z^2}\right)] + P(1 - P)}$$

In which n=sample size, N= population size, Z= confidence level at 95% (1.96), d= Error proportion (0.05) and P= probability 50%, which gave calculated sample size was 385 participants. So, our objective was to reach 400 participants to represent the population.

4- Tools of Data Collection:

Two tools were used to collect data pertinent to this study. They included the following:

Structured questionnaire:

This questionnaire was developed by the researcher on Google forms in a simple Arabic language; it contains three parts:

Socio-demographic characteristics of the participants, such as gender, marital status, work status, and history related to smoking.

Health history Sheet about Coronavirus disease (COVID-19) pandemic. It was developed by the researcher in a simple Arabic language. It was designed to assess the respondents diagnosed with COVID-19 previously, contact with an infected person, chronic disease, medication-related to chronic diseases and assess the allergy state, and (2 items) about vaccination as types of vaccination and number of doses, which cover by questions that the answer by Yes, or No.

C. The side effects assessment sheet related to the COVID-19 vaccine.

It was designed to assess the side effects of the COVID-19 vaccine. It includes (4 items) (general side effects, sides effect likely to flu symptoms, specific sides effect, and specific site of injection), duration of side effects after the vaccine, the effect of the vaccine on daily living, and (6 items) about traditional management that used to relieve sides effects of the vaccine. All of these elements are answered by yes or no, based on the related

literature (Boivin, Z. and J. Martin, 2021; Fernandez-Nieto, D., et al., 2021; Riad, A., et al., 2021)

The nursing practice questionnaire about COVID-19 vaccination. The researcher developed this tool in a simple Arabic language based on the related literature (Saied, S., et al., 2021). It is designed to assess the nursing practice pre, during, and post-vaccination. It included two questions in pre-vaccination, nine questions during vaccination, and six questions post-vaccination, in which these elements are answered by no (0), yes (1), and not applicable (2), related to the scoring system.

Procedures

5- Validity

Face and content validity was used to inspect the tools for clarity, comprehensiveness, simplicity, and applicability. Slight adjustments were made for tools reviewed by five nursing professors in the Medical-Surgical Nursing Department at the Faculty of Nursing, Ain Shams University.

6- Ethical consideration of the study

The head of the department granted official approval, and the purpose of the study was explained to the participants at the top of the questionnaire. The researcher considers the online informed consent process, privacy and confidentiality protections, and strategies necessary for conducting internet research studies ethically. Allowing participants to resign from the study, retract their data, and ensure that data is not used for non-research purposes in the future.

7- Pilot study

A pilot study was conducted on 5 participants to test the feasibility of the research process and applicability of the tools and the maneuvers of the interventions and to estimate the time needed to answer the questions. The final forms were created and modified, and various details were omitted based on the results. Participants in the pilot study were not involved in the study sample.

Study Maneuver:

The data was obtained via an electronic questionnaire created by the researchers between August 2021 and January 2022. The surveys were given to professional doctors for content and face validity checks, and certain points were changed

and reordered before being posted online using Google Forms. Participants were asked to fill out and submit a survey. Inviting participants to share in the study was conducted through simple random sampling. The instruction and information to studied participants include the ethical side of scientific research and not disclose any data about them before joint approval of the questionnaire. From those points, participants started to spread the link of the questionnaire to cover more participants. The questionnaire ended at the end of January when the number of participants exceeded the sample size. Collect the data in an excel sheet to enter SPSS for data analysis.

Statistical Analysis

The statistical analysis was carried out using (SPSS) version 20 windows and was presented in tables and graphs. Data were analyzed using appropriate statistical methods. i.e., percentage, arithmetic mean (X), and standard deviation (SD).

Results

Table (1) shows the mean age of the participants was 47.19 ± 14.82 years, with a range between 18 years and 70 years; more than half of them were males (59.8%), and two-thirds of them were married (60.8%). More than two-thirds (73.0%) of them had no corona previously, and (65.8%) had no contact with corona infected person.

Table (2): shows that medical past history of the participant, one-fifth (20.5%) of them have diabetes mellitus, near to one-tenth of them (12.2%, 10.2%, and 12.2%) were suffering from hypertension, anemia, and obesity respectively. As regarding suffering from allergy, nearly one-tenth of the 6.2% and 7.8% were suffering from food and perfume allergies, respectively.

Table (3) shows that one-third of participants (28.5%) were taking a vitamin, near one-tenth (15.5%, 12.0%, 11.8%, and 14.2%) were taking regular medication as antidiabetic drugs, antihypertension, anticoagulation, and drugs treatment for anaemia.

Figure (1) shows the percentage distribution of the participant according to types of vaccination. Nearly half (49.5%) took the AstraZeneca vaccine, and one-quarter (25.2%) received Sinovac.

Table (4) shows the percentage distribution of the participant according to the number of doses; two-thirds of the 66.0%

received the second dose, and 35.5% from them with the same side effects as the first dose.

Table (5) shows the percentage distribution of the participant according to side effects. Near two-fifths of them (48.2%, 44.2%, 37.8%, and 43.5%) suffered from fever, headache, ortho pain, and pain on the injection site, respectively. Near one-fifth of the 16.8%, 27.0%, 28.8%, and 30.8% suffer from sleep insomnia, long sleep, redness of injection site, and swelling in the injection site, respectively.

Figure (2) Regarding the duration of side effects and the effect of the vaccine on daily living activities, more than half (52.2%) of participants have side effects for one day. About the effect of vaccines on activities of daily living, more than half of 53.5% of participants were affected for one day.

Table (6) shows the percentage distribution of the participants related to traditional

management for vaccination. Regarding analgesics, more than half of the participants (56%) were taken after vaccination, and one-tenth of 9.5% of them were taken before vaccination. At the same time, 4.8% and 5.2% of them have applied cold and warm compression, respectively.

Table (7) shows the percentage distribution of nursing care for participants before vaccination; 98.8% took personal data. Regarding nursing care during vaccination, the majority (85.5%) asked about chronic disease, near two-thirds (70.2%, 55.2%, and 46.5%) asked about used medication for chronic disease and allergies and were instructed about the current effect of the vaccine. The majority (96.25%) were not given instructions about the vaccination. While after vaccination, nearly two-fifth (38.5% and 42.2%) were instructed about the side effect and how to deal with side effects, respectively, while most of the 98.8% and 93.75 did not take vital signs or observe the allergic effect.

Table (1): Frequency and Percentage distribution of the participant concerning socio-demographic (NO=400)

Items	Total	%
Age		
Mean \pm SD	47.19 \pm 14.82	
Minimum	18	
Maximum	70	
Sex		
Male	239	59.8
Female	161	40.2
Marital status		
Single	95	23.8
Married	243	60.8
Widow	47	11.8
Divorced	15	3.8
Work status		
Student	59	14.8
Employee	161	40.2
Worker	36	9.0
Not worker	34	8.5
Retired	76	19.0
Housewife	34	8.5
Smoking		
Yes	49	12.2
No	351	87.8
Do you have corona previously?		
Yes	108	27.0
No	292	73.0
Do you contact with corona infected person?		
Yes	137	34.2
No	263	65.8

Table (2): Frequency and Percentage distribution of the participant's medical history (No = 400)

Items	Yes (%)	No (%)
History of comorbid disease		
Diabetes mellitus	82 (20.5)	318 (79.5)
Hypertension	49 (12.2)	351 (87.8)
Cardiac diseases	12 (3.0)	388 (97.0)
Cancer	10 (2.5)	390 (97.5)
Anemia	41 (10.2)	359 (89.8)
Bleeding disorders	17 (4.2)	383 (95.8)
Thrombosis	13 (3.2)	387 (96.8)
Renal failure	3 (0.8)	397 (99.2)
Obesity	49 (12.2)	351 (87.8)
Neurological impairment	10 (2.5)	396 (97.5)
Endocrine disorders	3 (0.8)	397 (99.2)
Skin disorders	20 (5.0)	380 (95.0)
Memory disturbance	10 (2.5)	390 (97.5)
Other disorders ...	56 (14.0)	344 (86.0)
History of allergy		
Food allergy	25 (6.2)	375 (93.8)
Disinfects allergy	8 (2.0)	392 (98)
Plastic allergy	3 (0.8)	397 (99.2)
Perfume allergy	31 (7.8)	369 (92.2)

Table (3): Frequency and Percentage distribution of the participants' regular medication (No = 400)

Items	Yes (%)	No (%)
Regular drug intake		
Antidiabetic drugs	62 (15.5)	338 (84.5)
Antihypertension drugs	48 (12.0)	352 (88.0)
Cardiac drugs	5 (1.2)	395 (98.8)
Anticoagulation	47 (11.8)	353 (88.2)
Drugs treatment for anemia	57 (14.2)	343 (85.8)
Vitamins	114 (28.5)	286 (71.5)
Other medication	44 (11.0)	356 (89.0)

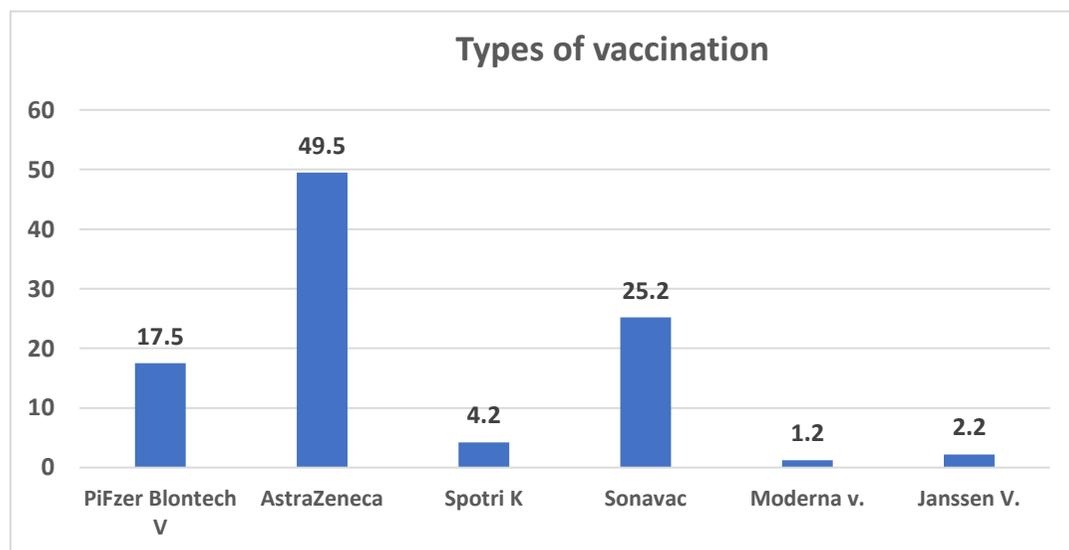
**Figure (1):** Percentage distribution of the participants' types of vaccination (No = 400)

Table (4): Frequency and Percentage distribution of the participants' number of vaccine doses.

Items	Yes (%)	No (%)	NA
Number of doses			
Frist dose	136 (34.0)		
Second dose	264 (66.0)		
The second dose is the same as the first dose	251 (62.3)	13 (3.2)	136 (34)
The same side effects of the first dose	142 (35.5)	122 (30.5)	136 (34)

Table (5): Frequency and Percentage distribution of the participant concerning Side effects of COVID 19 Vaccine (No = 400)

Items	Yes (%)	No (%)
General sides effect:		
Fever	193 (48.2)	207 (51.8)
Headache	177 (44.2)	223 (55.8)
Dizziness	27 (6.8)	373 (93.2)
Sleep insomnia	67 (16.8)	333 (83.2)
Long sleep	108 (27.0)	292 (73.0)
Itching	6 (1.5)	394 (98.5)
Sides effect likely to flu symptoms:		
Nose congestion	54 (13.5)	346 (86.5)
Sort congestion	48 (12.0)	352 (88.2)
Rung nose	40 (10.0)	360 (90.0)
Eye redness	7 (1.8)	393 (98.2)
Mouth pain	6 (1.5)	394 (98.5)
Lips swelling	2 (0.5)	398 (99.5)
Face swelling	3 (0.8)	397 (99.2)
Swelling in another part of body	7 (1.8)	393(98.2)
Specific sides effect		
Difficulty in breathing	24 (6.0)	376 (94.0)
Nausea	18 (4.5)	382 (95.5)
Abdominal pain	46 (11.5)	354 (88.5)
Diarrhea	29 (7.2)	371 (92.8)
Constipation	19 (4.8)	381 (95.2)
Ortho pain	151 (37.8)	249 (62.2)
Vision disturbance	16 (4.0)	384 (96.0)
The specific site of injection		
Pain on site of injection	174 (43.5)	226 (56.5)
Redness of injection site	115 (28.8)	285 (71.2)
Swelling in injection site	123 (30.8)	277 (69.2)

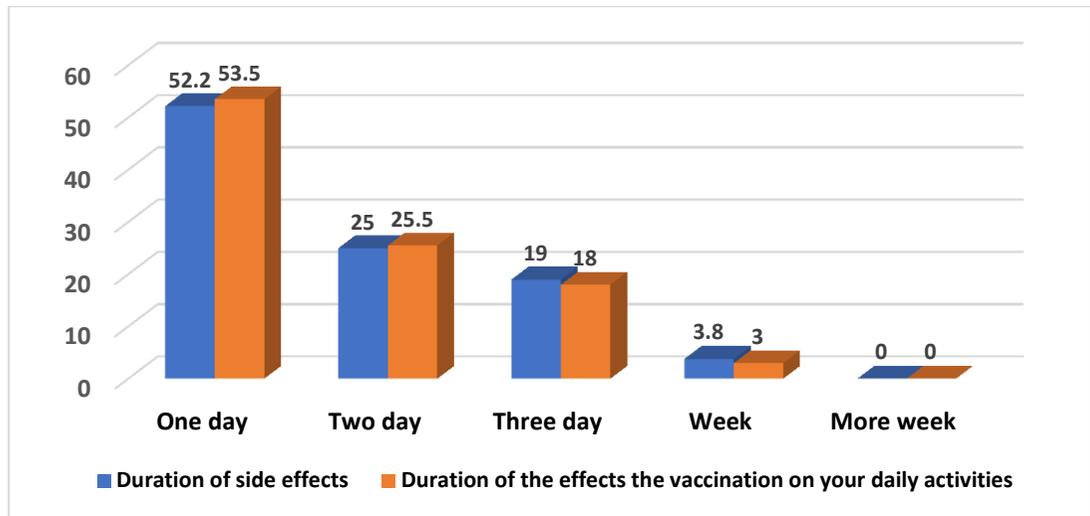


Figure (2): Percentage distribution for the duration of side effects and effect of the vaccine on activities of daily living.

Table (6): Frequency and Percentage distribution of the participants related to traditional management for vaccination (No = 400)

Items	Yes (%)	No (%)
Analgesic before vaccination	38 (9.5)	362 (90.5)
Analgesic after vaccination	224 (56)	176 (44)
Take traditional medication	159 (39.8)	241 (60.2)
Other medication	27 (6.8)	373 (93.2)
Cold compression	19 (4.8)	381 (95.2)
Worm compression	21 (5.2)	379 (94.8)

Table (7): Frequency and Percentage distribution related to nursing care for participants before, during, and after vaccination (No = 400)

Items	Yes (%)	No (%)
Before vaccination		
Take personal data	395 (98.8)	5 (1.2)
Take the health instruction about the vaccine	20 (5.0)	380 (95.0)
During vaccination		
Take personal data	368 (92)	32 (8)
Take vital signs	4 (1.0)	396 (99.0)
Measure weight	3 (0.8)	397 (99.2)
Measure height	3 (0.8)	397 (99.2)
Ask about chronic disease	342 (85.5)	58 (14.5)
Ask about the used medication for chronic disease?	281 (70.2)	119 (29.8)
Ask about allergy	221 (55.2)	179 (44.8)
Instruct about the current effect of the vaccine	186 (46.5)	214 (53.5)
Instruct about the vaccination	15 (3.75)	385 (96.25)
After vaccination		
Take vital signs	5 (1.2)	395 (98.8)
Observe the allergic effect	25 (6.25)	375 (93.75)
Give instruction about signs and symptoms of the side effect	154 (38.5)	246 (61.5)
Give instruction about how dealing with side effects	169 (42.2)	231 (57.8)
Give telephone number can you call with it when increase side effects	6 (1.5)	394 (98.5)
Do you inform about the second dose?	307 (76.8)	93 (23.2)

Discussion

The COVID-19 pandemic is a global public health crisis that has seriously impacted the international community. Vaccination is one of the most effective and low-cost measures to prevent COVID-19. Currently, nine COVID-19 vaccines have been approved for marketing worldwide. Nurses have important roles and responsibilities during the COVID-19 vaccine. A global pandemic needs strong nursing staff engagement in clinical management, awareness and knowledge exchange, and public safety. Therefore, this study aimed to assess nursing practice in COVID-19 vaccination.

Regarding the demographic characteristics of the study group, the results of the present study illustrate that the mean age of the participant was 47.19 ± 14.82 years, with a range between 18 years and 70 years; more than half of them were males, two-thirds of them were married and more than two-thirds of them no have corona previously, and no contact with corona infected person. While (Riad, A., et al., 2021) found in their research that most participants were females, and more than one-tenth were males. Their mean age was 42.56 ± 10.5 years old, and it ranged between 19 and 78 years, with a median of 43 years old.

The present study found that one-fifth of participants have diabetes mellitus, and nearly one-tenth of them suffer from hypertension, anemia, and obesity, respectively. Also, less than one-tenth of them have cardiac diseases, cancer, bleeding problem, thrombosis, renal failure, neurological impairment, endocrine disorders, skin disorders, and memory disturbance. This finding might be because the study was conducted on outpatients and the International Diabetes Federation (IDF) listed Egypt among the world's top 10 countries in the number of patients with diabetes. These results were in agreement with (Riad, A., et al., 2021) who reported that (36.9%) reported chronic hypertension, (25.6%) thyroid disease, (21.8%) asthma, (8.5%) diabetes mellitus type-2, (5.9%) cardiac disease, (5.9%) allergy, (4.8%) rheumatoid arthritis, (4.4%) bowel disease, (4.1%) blood disease, (4.1%) neurologic disease, (3%) psychological distress, (2.2%) renal disease, (1.8%) chronic obstructive pulmonary disease (COPD), (1.5%) cancer, (1.1%) diabetes

mellitus type-1, (0.7%) hepatologic disease, and (0.4%) ophthalmologic disease.

Our study shows that nearly one-tenth of those suffering from allergies were suffering from food and perfume allergies, respectively. This result was in the same line with (Team, C.C2021), who reported that for (60%) of case reports, allergies or allergic responses in the past, mostly to foods and drugs, were documented.

The present study reveals that one-third of them were taken a vitamin. More than one-tenth of participants took the regular medication as antidiabetic, antihypertension, anticoagulation, and drug treatment for anemia. These results in the present study might be related to all persons in this time of prevalence COVID 19 taking vitamins to increase their immunity and that participants of the study sample have chronic diseases that need these medications. This finding was following (Riad, A., et al., 2021), who revealed that out of all the regularly taken drugs, antihypertensive drugs were taken by (25.5%), antidiabetics (3.6%), anticoagulants (1.6%), and other drugs (4.7%), including, vitamin D, and interferon.

Regarding the percentage distribution of the participant according to types of vaccination, this result shows that near to half took the AstraZeneca vaccine and one-quarter received Sonovac. While (Hammam, N., et al. 2021), found that the rheumatology staff members would prefer to consider the Pfizer vaccine 40.3%, Sinopharm 38.7%, Astra 26.5%, Moderna 11.6%, Sputnik 2.8%, Johnson and Johnson 2.8%, covivax 1.4%, Sinovac 1.1%, novavax 0.6% and 14.9% were not sure.

Our study reveals the percentage distribution of the participants according to the number of doses; two-thirds of them received a second dose, and more than one-third of them had the same side effects as the first dose. This result was in line with (Saeed, B.Q., et al., 2021), who reported that the first and second doses of the Sinopharm COVID-19 vaccination had minor and predictable side effects. Another study (Andrzejczak-Grzadko, S., et al. 2021) shows that the first dose of the AstraZeneca vaccine causes side effects more often than either dose of the Pfizer vaccine. This result disagrees with another reported study, (Parkash, O., et al. 2021), which claims that some of the recipients reported that

serious adverse effects were observed between the first and second doses, which were given one month apart.

Regarding the percentage distribution of the participants according to side effects, the present study reveals that nearly two-fifths of them suffered from fever, headache, ortho pain, and pain on site of injection, respectively. Nearly one-fifth of them suffer from sleep insomnia, long sleep, redness of the injection site, and swelling in the injection site, respectively. This result was in agreement with (Kadali, R.A.K., et al. 2021), who concluded that the main generalized symptoms that were reported were generalized weakness or fatigue (58.9%), headache (44.83%), chills (35.99%), fever (22.04%), sweating (9.22%), dizziness (8.34%) and flushing (7.1%). Localized symptoms: approximately 88.04% of HCWs reported a sore arm or pain at the injection site as their primary localized side effect, followed by localized swelling at the injection site (5.48%), itching (5.35%), lymphadenopathy (axillary or regional) (3.36%), rash (2.49%), residual skin discoloration (1.25%) and bleeding (0.37%).

Regarding the general side effects' duration, more than half of the participants had side effects for one day and had the vaccine effect on daily living for one day. This result was in agreement with (Riad, A., et al., 2021), who revealed that 45.1% of participants lasted for one day, while 35.8% lasted for three days, 9.4% lasted for five days, 5.3% lasted for one week, 3% lasted for over a week, and 1.4% for over a month.

Vaccination is critical for such efforts to be prioritized in everyday practice. In nursing vaccination practices, nurses should assert their supervisory role by contributing to the service's organization, planning vaccination strategies, continuing nursing staff education, evaluating vaccination coverage, working with the population, and contributing to the body of knowledge about vaccination.

The study's finding reported that percentage distribution related to nursing care for participants before vaccination, most of them took personal data. Regarding nursing care during vaccination, most of them asked about chronic diseases. Near two-thirds of them asked about used medication for chronic diseases and allergies and were given instructions about the current effect of the vaccine. The majority of them did not give

instructions about the vaccination. While after vaccination, nearly two-fifths were instructed about the side effect and how to deal with side effects, respectively, while most of them did not take vital signs and observed the allergic effect. These results might be related to the All nurses take the personal history, chronic diseases, and current medications to complete the papers and ask about allergies to avoid the main side effects of vaccines that may lead to death. However, concerning health education about vaccination, most nurses may have relied on the media that give many instructions about vaccination due to a shortage of time for nurses because of many people who need the vaccine.

These results align with (Deem, M.J. 2018), who report that nurses play a prominent role in the vaccine uptake process. They spend considerable time counseling patients, parents, families, and the public about the benefits, risks, and safety of vaccines, as well as administering them, (Manning, M.L., et al. 2021) mentioned that Nurses will play a critical role in educating patients about the dangers and benefits of COVID-19, and (Ahmed, G., et al. 2021) stated that the role of healthcare providers through newly developed COVID-19 vaccines was taken the history as gender, age, presence of chronic illnesses, and allergy were significant predictors of accepting the vaccine.

Our study reveals that the percentage distribution of the participants related to traditional management for vaccination. Regarding analgesics, more than half of the participants were taken after vaccination, and one-tenth of them were taken before vaccination. At the same time, around half of a tenth of them were applied cold and warm compression, respectively. This finding was in line with (Ooi, E.E., et al. 2022), who revealed that younger vaccine recipients were more likely than older vaccine recipients to use antipyretic or pain medicine, and both age groups were more likely to use these medications after BNT162b2 vaccination than placebo. Efficacy rates of mRNA vaccines remain quite high, despite up to one-fifth of vaccine recipients reporting usage of analgesic or antipyretic medicine, according to data from studies of vaccines currently licensed for emergency use. Public health officials still recommend using these medications to treat post-COVID-19 immunization effects.

The strength of this study was concerned with the role of practical nurses during the COVID-19 vaccine among Egyptian people and nursing care pre, during, and post COVID19 vaccine, agree with (Al-Amer, R., et al., 2022) To promote vaccine acceptance and maximize their effect on vaccination decisions in the community, nurses' concerns about vaccine safety and efficacy must be addressed. Concerns about vaccine safety and efficacy, as well as misinformation, are major factors in vaccine apprehension. Addressing these variables, particularly among nurses, who are regarded as trustworthy community influencers of vaccination decisions, is a key strategy for pandemic preparedness.

Conclusion:

Based on the findings of the present study, it can be concluded that:

The most common side effects of the COVID19 vaccine were fever, headache, ortho pain, pain on the injection site, sleep insomnia, long sleep, redness of the injection site, and swelling in the injection site. More than half of the participants have side effects for one day, and also more than half of the participants have effects of the vaccine on daily living for one day. Concerning nursing care for participants before vaccination, most participants were taken personal data. Regarding nursing care during vaccination, most of them asked about chronic disease. Near two-thirds of them and 46.5% asked about using medication for chronic disease and allergies and were given instructions about the current effect of the vaccine. The majority of them were not given instructions about the vaccination. While after vaccination, nearly two-fifths were instructed on the side effect and given instructions about dealing with side effects. At the same time, most of them did not take vital signs and were observed for the allergic effect.

Recommendation:

Based on the finding of the present study, the researcher recommended:

- Continuous training and educational programs must be designed for nurses to get updated knowledge about COVID-19 vaccines and nursing care to people during COVID-19 vaccines.

- Further research is necessary on a larger sample size that involves participants and nurses from other regions in Egypt to establish the generalizability of the findings in this study.

Consent for Publication:

Informed consent was obtained from all participants.

Availability of data and materials:

The data sets analyzed during the current study are available from the corresponding author, EH, upon request

FUNDING

None.

Conflict of Interest

The authors declare no conflict of interest, financial or otherwise.

Acknowledgments

Researchers would like to thank all participants who participated in the study.

References:

- Ahmed, G., et al., Healthcare Provider Attitudes toward the Newly Developed COVID-19 Vaccine: Cross-Sectional Study. *Nurs Res*, 2021. **11**(1): p. 187-194.
- Al-Amer, R., et al., COVID-19 vaccination intention in the first year of the pandemic: A systematic review. *J Clin Nurs*, 2022(1-2): p. 62-86.
- Alfaleh, A., et al., Adverse drug reactions from two COVID-19 vaccines reported in Saudi Arabia. *Drugs Ther Perspect*, 2022: p. 1-9
- Andrzejczak-Grzadko, S., Z. Czudy, and M. Donderska, Side effects after COVID-19 vaccinations among residents of Poland. *Eur Rev Med Pharmacol Sci*, 2021. **25**(12): p. 4418-4421.
- Boivin, Z. and J. Martin, Untimely Myocardial Infarction or COVID-19 Vaccine Side Effect. *Cureus*, 2021. **13**(3): p. e13651.
- Deem, M.J., Nurses' Voices Matter in Decisions About Dismissing Vaccine-

- Refusing Families. *Am J Nurs*, 2018. **118**(8): p. 11.
- Ehreth, J., The value of vaccination: a global perspective. *Vaccine*, 2003. **21**(27-30): p. 4105-17.
- Elgendy, M.O., et al., Side Effects and Efficacy of COVID-19 Vaccines among the Egyptian Population. *Vaccines (Basel)*, 2022. **10**(1).
- Fares, S., et al., COVID-19 Vaccination Perception and Attitude among Healthcare Workers in Egypt. *J Prim Care Community Health*, 2021. **12**: p. 21501327211013303.
- Fawaz, M., H. Anshasi, and A. Samaha, Nurses at the Front Line of COVID-19: Roles, Responsibilities, Risks, and Rights. *The American journal of tropical medicine and hygiene*, 2020. **103**(4): p. 1341-1342.
- Fernandez-Nieto, D., et al., Skin manifestations of the BNT162b2 mRNA COVID-19 vaccine in healthcare workers. 'COVID-arm': a clinical and histological characterization. *J Eur Acad Dermatol Venereol*, 2021. **35**(7): p. e425-e427.
- Hammam, N., et al., Rheumatology University faculty opinion on coronavirus disease-19 (COVID-19) vaccines: the vaXurvey study from Egypt. *Rheumatol Int*, 2021. **41**(9): p. 1607-1616.
- Jackson, D., et al., Life in the pandemic: Some reflections on nursing in the context of COVID-19. *J Clin Nurs*, 2020. **29**(13-14): p. 2041-2043.
- Jiang, N., et al., Nursing students' attitudes, knowledge and willingness of to receive the coronavirus disease vaccine: A cross-sectional study. *Nurse education in practice*, 2021. **55**: p. 103148-103148.
- Kadali, R.A.K., et al., Side effects of BNT162b2 mRNA COVID-19 vaccine: A randomized, cross-sectional study with detailed self-reported symptoms from healthcare workers. *Int J Infect Dis*, 2021: p. 376-381.
- Kreps, S., et al., Factors Associated With US Adults' Likelihood of Accepting COVID-19 Vaccination. *JAMA Network Open*, 2020. **3**(10): p. e2025594-e2025594.
- Manning, M.L., et al., COVID-19 vaccination readiness among nurse faculty and student nurses. *Nurs Outlook*, 2021. **69**(4): p. 565-573.
- Nabeth, P., et al., New COVID-19 resurgence in the WHO Eastern Mediterranean region. *Lancet*, 2021. **397**(10282): p. 1348-1349.
- Ooi, E.E., et al., Use of analgesics/antipyretics in the management of symptoms associated with COVID-19 vaccination. *NPJ Vaccines*, 2022. **7**: p. 31.
- Parkash, O., et al., Acute Pancreatitis: A Possible Side Effect of COVID-19 Vaccine. *Cureus*, 2021. **13**(4): p. e14741.
- Polack, F.P.T., S. J. Kitchin, N. Absalon, J. Gurtman, A. Lockhart, S. Perez, J. L. Pérez Marc, G. Moreira, E. D. Zerbini, C. Bailey, R. Swanson, K. A., et al., Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. *N Engl J Med*, 2020. **383**(27): p. 2603-2615.
- Reiter, P.L., M.L. Pennell, and M.L. Katz, Acceptability of a COVID-19 vaccine among adults in the United States: How many people would get vaccinated? *Vaccine*, 2020. **38**(42): p. 6500-6507
- Riad, A., et al., Prevalence of COVID-19 Vaccine Side Effects among Healthcare Workers in the Czech Republic. *Journal of Clinical Medicine*, 2021. **10**(7): p. 1428.
- Rodrigues, C.M.C. and S.A. Plotkin, Impact of Vaccines; Health, Economic and Social Perspectives. *Frontiers in Microbiology*, 2020. **11**.
- Saeed, B.Q., et al., Side effects and perceptions following Sinopharm COVID-19 vaccination. *Int J Infect Dis*, 2021. **111**: p. 219-226.
- Saied, S., et al., Vaccine Hesitancy: Beliefs and Barriers Associated with COVID-19 Vaccination among Egyptian Medical

- Students. Journal of Medical Virology, 2021.
- Shehata, W.M., A.A. Elshora, and M.M. Abu-Elenin, Physicians' attitudes and acceptance regarding COVID-19 vaccines: a cross-sectional study in mid Delta region of Egypt. Environ Sci Pollut Res Int, 2022. **29**(11): p. 15838-15848.
- Team, C.C.-R., Food, and A. Drug, Allergic Reactions Including Anaphylaxis After Receipt of the First Dose of Moderna COVID-19 Vaccine - United States, December 21, 2020-January 10, 2021. MMWR Morb Mortal Wkly Rep, 2021. **70**(4): p. 125-129.
- The Chicago School, What Role Do Nurses Play in the Vaccination Process?, in Last updated: December 7, 2021. <https://www.thechicagoschool.edu/insight/health-care/what-role-do-nurses-play-in-the-vaccination-process/>.
- Thompson, S.K., Sampling Wiley, 2012: p. 59-60.
- World Health Organization, (WHO) Vaccine Explained' series features illustrated articles on vaccine development and distribution. <https://www.who.int/news-room/feature-stories/detail/the-effects-of-virus-variants-on-covid-19-vaccines>, 2021. **March 1, 2021**.