

# Impact of COVID-19's Vaccines on Woman's Health

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**Abstract:** **Background:** The novel coronavirus infection (COVID-19) is a global public health emergency. Vaccines work an infectious agent – viruses, bacteria or other microorganisms that can cause a disease. Common side effects to COVID-19 vaccines are fatigue, headache, chills, abdominal crumb, pain at the injection site, menstruation disorder and uterine bleeding. The current study *aimed* to study the impact COVID-19 vaccine on the women's health **Design:** Descriptive study will be used to fulfill the aim of the study. **Purposive sample** was used to recruit 1200 females. **Tool:** Females data assessment tool were used to fulfill the aim of the study. **Results:** The main results of the study demonstrated that The most of the studied women had two doses of covid-19 vaccine, most type of vaccine were AstraZeneca, also the most side effect appeared after first dose.. The most common side effect were pain of site injection, abdominal crumb, sore throat, aye redness, toothache, tingling of limbs, dysuria and show low knowledge about covid-19 vaccine in addition source of information television and change of menstruation as: amount, pain intensity & interval. **Conclusion:** The common side effect on woman health especially their reproductive system and show unsatisfactory level of knowledge about covid-19 vaccine and some side effect revisable. **Recommendations:** Replication the current study for large scale after 5years for more information regarding impact Covid-19 vaccine on woman's health especially reproductive system side effect or on woman infertility.

**Keywords:** Covid-19, vaccine.

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## I. INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) continued to mutate and spread in 2022 despite the introduction of safe, effective vaccines and medications. The Coronavirus Disease 2019 (COVID-19) pandemic persists despite reductions in disease severity, hospitalizations and deaths since the introduction of multiple vaccines that protect against COVID-19 and pharmaceuticals to treat its symptoms [1].

Global rates of COVID-19 vaccination are gradually improving, albeit unevenly. Evidence suggests that the humoral response to vaccination is substantially reduced within 6 months, necessitating additional doses (that is, boosters) to achieve adequate levels of protection [2].

However, vaccine hesitancy and refusal continue to impede the effectiveness of these interventions. Drivers of vaccine hesitancy are context-specific and include lower education, mistrust in science and governments and misinformation. Around two-thirds of the world's population had received at least one dose of a COVID-19 vaccine as of 30 June 2022, but only 17.4% of people in low-income countries had received a first dose. [3].

Some obstacles to effective vaccine science communication for lay audiences may include the need to continuously disseminate new safety and efficacy data in simple, understandable terms; to explain the justification for newly authorized or reformulated products; and to introduce changes in vaccination schedules, especially for new or expanded authorizations of childhood vaccinations. Failure to convey this information clearly and consistently during

the current pandemic may have confused audiences, eroded confidence in the science and reduced vaccine acceptance. The ongoing ‘infodemic’ of voluminous, high-speed information—accurate or not—further impedes vaccine literacy [4].

Approximately most of adverse effects after receiving the first, second, or third dose vaccine. The most commonly adverse effects were fever, chills, headache, fatigue, pain and swelling at the injection site, muscle pain, and joint pain. Allergic reactions following vaccination, such as allergic skin reactions (itching, burning, and rash), angioedema, shortness of breath, coughing, uterine bleeding & menstruation disorder, and significant swelling of the tongue or lips. Rare and severe side effects such as myocarditis and thrombocytopenia [5].

Role of the Nurse regarding the covid-19 vaccine Nurses have critical roles and responsibilities during the COVID-19 pandemic. They will continue to be at the front line of patient care in hospitals and actively involved with evaluation and monitoring in the community. Nurses have to ensure that all patients acquire personalized, high-quality services irrespective of their infectious condition. They will also engage in planning for anticipated COVID-19-related outbreaks, which increase the demand for nursing and healthcare services that might overload systems [6].

### Significance of the study

The COVID-19 outbreak is increasing around the world in the number of cases, deaths, and affected countries. Currently, the knowledge regarding the clinical impact of COVID-19 on maternal, fetal, and placental aspects of pregnancy is minimal [7].

### Aim of the study

This study aim to study the impact COVID-19 vaccine on the women`s health *through the following objective*;

- Asses female` knowledge about COVID-19 & it`s different type of COVID-19 vaccination.
- Asses different body reaction after receive COVID-19 vaccine.
- Analyze body reaction according to type of COVID -19 vaccine on each body system.
- Assess the effect of COVID-19 on Woman`s health mainly reproductive system.
- Asses method to over com the body reaction.
- Illustrate the different body side effect among female after received COVID-19 vaccine.

### Research question

- What is the effect of COVID-19 on Woman`s health mainly reproductive system.
- What is the serious type of complicated side effect of different type of COVID-19 vaccine.
- Are the side effect of different type of COVID-19 vaccine reversible.

## II. SUBJECTS AND METHODS

### 2.1 Research design:

The study design was descriptive study to fulfill the aim of the study.

- **Research setting:**

The study was designed to conducted at Health faculties – Helwan University (Nursing- medicine- pharmacy) to collect the data.

### 2.2 Subjects:

Egyptian`s female in Health faculties in Helwan University.

### 2.3 Sampling type technique:

Purposive sample. 1200 females from Helwan health faculties. and collect data within 3 months, first month almost 300 females, second month 450 females an third month 450.

**Tools of data collection:**
**The data were collected through using the following tool:**

**Tool I:** - structure interviewing questionnaire, designed by the researcher consisting of: -

Personal characteristics of the woman as name, age and educational level and vaccination history such as: number of vaccination doses, taking the vaccination, type of vaccination, Source of information about vaccination and reason to get vaccinated

**Part II:** - Knowledge assessment sheet about of COVID-19 such as: have any information about vaccination, vaccination effective, have knowledge of the type of vaccination in your country and know the type of vaccination used for you.

**Scoring system for Knowledge:**

Yes= 1

No= 0

Total knowledge was classified as follow

Unsatisfactory level of knowledge less than 75%

Satisfactory level of knowledge more than 75%

**Part III:** Effect COVID-19 Vaccine on Woman's health:

Side effect on body system such as: respiratory system, nervous system, urinary system, digestive system, circularity system, eye and teeth and side effect on Woman's health mainly reproductive such as: menstruation, breast, itching in perineal area, pregnancy and labor.

**Validity**

The study tools were tested for content and face validity by jury of three expertise's as expertise in maternal and new born health nursing and community health nursing to evaluate the items as well as the entire instrument as being relevant and appropriate to test what wanted to measure. The face validity of the questionnaire was calculated based on experts' opinion after calculating content validity index (%) of items and was 94%. The experts were asked to evaluate the items on the study tools in relation to its relevance and appropriateness in terms of the construct and if the items adequately measure all dimensions of the construct. Tools were reviewed by jury of 3 expertise (1 professor) of community Health Nursing Faculty of Nursing – Helwan University, (2 professor) of Maternity and Neonatal Health Nursing faculty of Nursing –Cairo University.

**2.4 Reliability**

The study tools were subjected to assessment of internal consistency reliability using:

**Reliability analysis**

Items	Cronbach alpha	P -value
Part II : Vaccination history	0.893	0.001*
Tool II: Knowledge assessment sheet about of COVID-19:	0.965	0.001*
Tool III: Effect COVID-19 Vaccine on Woman's health	0.856	0.001*

**2.5 Pilot study**

a pilot study was conducted on 10% of subject which was 120 Female from the studied sample to test the clarity, applicability & feasibility & relevance of the tools used to fulfill the aim of the study. Also the aim of the pilot study was to determine the needed time for fill the study tool (10-20minutes). The Female who were included in the pilot study were included to the sample because there was no modification needed for the tool.

## 2.6 Field work

The actual field work was carried out through 3 months starting from the mid of September 2022 to the mid of December 2022 in the health faculties – Helwan university. The researcher visit the sitting 3 days /week from 9 am -3pm to collect data. The first step, in every sitting the researcher introduced herself to the females and explained the purpose of the study to gain their cooperation and trust and informed them that information is confidential and for scientific purpose only. Each female in the sample was interviewed individually in suitable place as: ground floor classes and explain any question it needed. Each interview lasted about 10-20 minutes and collect data within 3 months, first month almost 300 , second month 450 an third month 450 .

- **Ethical considerations:**

An official permission to conduct the proposed study was obtained from the Scientific Research Ethics Committee. Participation in the study is voluntary and subjects were given complete full information about the study aim and their role before signing the informed consent. The ethical considerations include explaining the purpose and nature of the study, stating the possibility to withdraw at any time, confidentiality of the information where it was not be accessed by any other party without taking permission of the participants. Ethics, values, culture and beliefs were respected

## 2.7 Statistical analysis:

Numerical data were presented as mean and standard deviation (SD) values. Qualitative data were presented as frequencies (n) and percentages (%). Reliability of the questionnaire was assessed using Cronbach's alpha reliability coefficient. Cronbach's alpha reliability coefficient normally ranges between 0 and 1. Higher values of Cronbach's alpha (More than 0.7) denote acceptable reliability. Chi Square test was used to compare between study variables. Spearman's correlation coefficient was used to determine correlations between different variables. The significance level was set at  $P \leq 0.05$ . Statistical analysis was performed with IBMSPSS Statistics Version 26 for Windows.

## Limitation of the study:

Each female can refuse to writing the assessment and answer the question.

## III. RESULTS

**Table 1:** Shows that, Mean  $\pm$  SD of the studied women age is  $27.87 \pm 2.54$  years old and 43% of them their age are less than 25 years old, while 24.5% of them their age from  $>35 > 45$ . Regarding women level of education, 66.3 % of them are secondary educated, while 1.3% are primary education. 60.3% of the studied females are students,. All the studied women are not smokers.

**Table 2:** indicates that, 73.6 % of the studied women received two doses of vaccines, while 10.4% received 3 doses of vaccine. 90.9% of them receive the vaccine obligatory and 70.9% of them infected with the virus before vaccination, while 9.9% of them infected with the virus after vaccination. Further more 55.1% of the studied women receive AstraZeneca, 27.4 receive Sinovac while 17.4% receive unrecognized vaccine (Health worker not tell them the type of vaccine).

**Table 3:** reveals that, 70.8% of the studied women have unsatisfactory level of knowledge, while 29.2% have satisfactory level of knowledge. 72.3% of them didn't know any information about vaccine and 99.7% didn't mode of action of vaccine. Further more, 69.1 show vaccination not effective. All of them need more information.

**Figure 1:** reveals that, 78.2% of the studied women have their information about vaccination from television, while 6.2% have their information from family members.

**Table 4:** indicates that, there are highly statistically significant difference between the studied women regarding side effects after receiving vaccine, gastrointestinal side effect, and respiratory effect with p-value = (0.000, 0.02, and 0.04 respectively). About half 49% of women received AstraZeneca vaccine have tenderness at injection site. 66.1% of women received Sinovac vaccine have abdominal pain, while 0.8% of women received AstraZeneca have vomiting. About half 44.6% of women received AstraZeneca vaccine have sore throat, while 11.8 % of women received Sinovac vaccine have sneezing.

**Table 5:** illustrates that, there was highly statistically significant difference between the studied women regarding side effects after receiving vaccine, on circulatory system, nervous system, and urinary system symptoms with p-value = (0.000, 0.000, and 0.000 respectively). About one quarter 16.8% of women received AstraZeneca vaccine have hypertension. 53.9 % of women received Sinovac vaccine have tingling in the limb, while 70.8% of women received AstraZeneca have dysuria.

**Table 6:** demonstrates that, there are highly statistically significant difference between the studied women regarding side effects after receiving vaccine, on tooth and eye problems with p-value = (0.000, and 0.000 respectively). More than half 54.2% of women received AstraZeneca vaccine have toothache, while of women received Sinovac vaccine have 57.6 %. In addition, 31.6% of women received AstraZeneca vaccine are redness in eye.

**Table 7:** shows that, there was a highly statistically significant difference between the studied women regarding regularity of menstruation, pain intensity, change in amount of menstruation and interval with p-value = (0.001, 0.001, 0.001, 0.005, 0.005, 0.001, and 0.000 respectively).

**Table 8:** clarifies that, there are a highly statistically significant difference between the studied women regarding pain in breast, itching in perineal area, and used medication with p-value = (0.000, 0.000, 0.001, and 0.05 respectively). Don't registered change of breast or secretion or uterine bleeding. Further more, show itching from perineal area > 7dayes and use vaginal washing.

**Table 9:** demonstrates that, there are statistically significant difference between the studied women regarding side effects of get pregnant after vaccination, time of pregnancy after vaccination, and some women are miscarriage with p-value = ( 0.129, 0.518, and 0.251 respectively).

**Table 10:** reveals that, 89.7% of the studied women have normal delivery after AstraZeneca vaccine, while 85% have normal delivery after Sinovac vaccine and 91% after unrecognized type. All studied women haven't any side effect during and after labor.

**Table 11:** shows that, there is a highly statistically significant correlation between the studied womens' knowledge, age, marriage age, level of education, marital status, and type of work with p- value = (0.03,0.000, 0.000, 0.000, and 0.000 respectively). Also, there is no statistically significant correlation between the studied women s' knowledge, and residence , with p- value = (0.08).

**Table (1): Distribution of personal characteristics for the studied women (n=1200).**

Items		
	N	%
<b>Age: Mean ± SD</b>	27.87±2.54	
<b>Age group:</b>		
• 18 < 25 years	516	43
• 25-35 years	390	32.5
• 35 ≥ 45	294	24.5
<b>Marital status:</b>		
• Single	532	44.3
• Married	668	55.7
<b>Age at marriage:</b>		
• <20	104	15.5
• 20>30	464	69.5
• 30>40	100	15

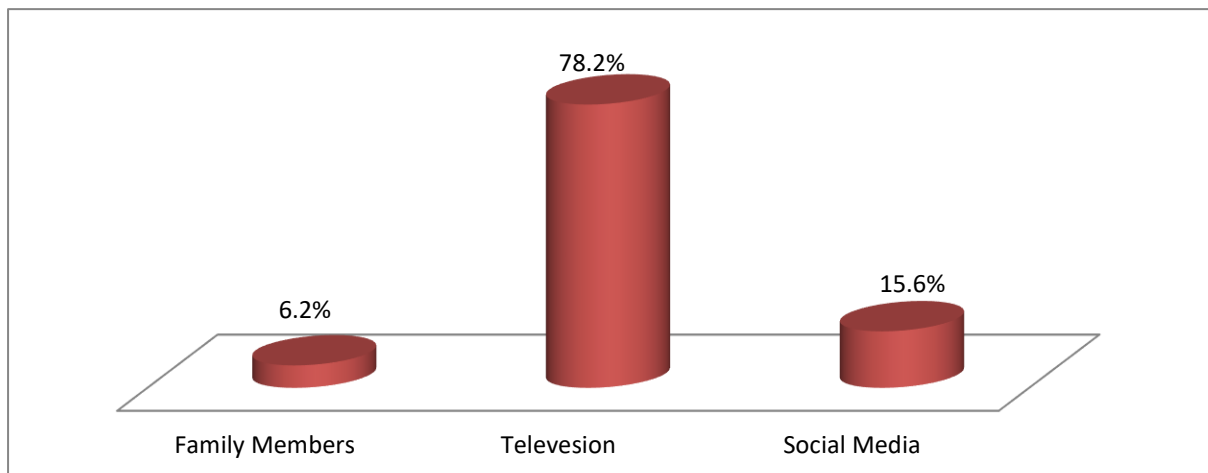
<b>Level of education:</b>		
<ul style="list-style-type: none"> <li>• Illiterate</li> <li>• Can read and write</li> <li>• Primary education</li> <li>• Secondary education</li> <li>• University education</li> </ul>	0 20 15 724 441	0 1.7 1.3 60.3 36.8
<b>Type of work :</b>		
<ul style="list-style-type: none"> <li>• Student</li> <li>• Worker</li> <li>• Administrative personal</li> <li>• Teaching staff</li> </ul>	724 34 202 240	60.3 2.9 16.8 20

**Table (2): Distribution of the studied women vaccination history (n=1200).**

Items	The studied mothers	
	N	%
<b>Number of vaccine doses:</b>		
<ul style="list-style-type: none"> <li>• 1</li> <li>• 2</li> <li>• 3</li> </ul>	125 883 192	10.4 73.6 16
<b>The period after the last vaccination:</b>		
<ul style="list-style-type: none"> <li>• less than a week</li> <li>• &gt; 3 week</li> <li>• ≤ 3 weeks</li> </ul>	0 125 1075	0 10.4 89.6
<b>Taking vaccination</b>		
<ul style="list-style-type: none"> <li>• Obligatory</li> <li>• Elective</li> </ul>	1091 109	90.9 9.1
<b>Infected with the virus before vaccination:</b>		
<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>	851 349	70.9 29.1
<b>Infected with the virus after vaccination:</b>		
<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>	119 1081	9.9 90.1
<b>Delay taking the vaccination for any reason other than allergies and illness</b>		
<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>	0 1200	0 100
<b>Type of vaccination.</b>		
<ul style="list-style-type: none"> <li>• AstraZeneca</li> <li>• Sinovac</li> <li>• Un Recognized vaccine</li> </ul>	661 330 209	55.1 27.5 17.4

**Table (3): Distribution of the studied women`s knowledge about vaccine (n=1200):-**

Items	N	%
	<b>Have any information about vaccination</b>	
• Yes	867	72.3
• No	333	27.7
<b>Need more information about vaccination</b>		
• Yes	1200	100
• No	0	0
<b>Vaccination is effective</b>		
• Yes	371	30.9
• No	829	69.1
<b>Vaccination reduce the chances of infection</b>		
• Yes	929	77.4
• No	271	22.6
<b>Have knowledge of the type of vaccination in your country</b>		
• Yes	846	70.5
• No	354	29.5
<b>Have knowledge of the type of vaccination in world</b>		
• Yes	800	66.6
• No	400	33.4
<b>Know the type of vaccination used for you</b>		
• Yes	867	72.3
• No	333	27.7
<b>Don`t know how vaccination mode of action</b>		
• Yes	3	0.3
• No	1197	99.7
<b>There is no risk to increase the dose of the vaccine</b>		
• Yes	65	5.4
• No	1135	94.6
<b>Total Knowledge</b>		
• Unsatisfactory	850	70.8
• Satisfactory	350	29.2



**Figure (1): source of information about vaccination of the studied women:**

**Table (4): Comparison of side effect of vaccination among the studied women on gastrointestinal system, and respiratory system (n=1200):**

Variable	Types of Vaccine						X2	P -value
	AstraZeneca		Sinovac		Unrecognized Type			
	N	%	N	%	N	%		
<b>General side effects after receiving vaccine</b>								
a. Tenderness at the injection site	324	49	155	47	139	66.5	3.50	0.000*
b. Physical pain	252	38.1	0	0	69	33		
c. High temperature and shiver	85	12.9	175	53	1	0.5		
d. Throat pain	4	0.6	1	0.3	2	1		
e. Headache	0	0	6	1.8	0	0		
f. Nausea	11	1.7	0	0	1	0.5		
<b>Gastrointestinal side effect (n=917):</b>							16.98	0.02*
• Abdominal pain and cramps	336	50.8	218	66.1	73	34.9		
• Diarrhea	56	8.5	0	0	46	22		
• Constipation	83	12.6	34	10.3	6	2.9		
• Vomiting	5	0.8	0	0	0	0		
• Nausea	30	4.5	0	0	0	14.4		
<b>Respiratory side effect ( n= 663):</b>							87.89	0.04*
• Sore throat	154	44.6	109	43.3	82	39.2		
• Sneezing	56	8.5	39	33	0	0		
• Difficulty breathing	39	5.9	0	0	0	0		
• Chest pain	96	14.5	39	11.8	49	49		

\*: Significant at P ≤ 0.05

**Table (5): Comparison of side effect of vaccination among the studied women on circulatory system, nervous system and urinary system (n=1200):-**

Variable	Types of Vaccine						X2	P-value
	AstraZeneca		Sinovac		Unrecognized Type			
	N	%	N	%	N	%		
<b>Circulatory system (n=307):</b>							13.81	0.000*
• DVT	80	12.1	0	0	0	0		
• Increase blood pressure	111	16.8	35	10.6	81	38.8		
<b>Nervous system side effect (n=667):</b>							43.16	0.000*
• Tingling in limb( upper & lower extremities)	328	49.6	178	53.9	86	41.1		
• Inability to move or difficult movement	40	6.1	35	10.6	0	0		
<b>Urinary system side effect (n=603):</b>							41.21	0.000*
• Dysuria	468	70.8	0	0	135	64.6		

\*: Significant at P ≤ 0.05



Table (6): Comparison of side effect of vaccination among the studied women on tooth and eye (n=1200).

Variable	Types of Vaccine						X2	P-value
	AstraZeneca		Sinovac		Unrecognized Type			
	N	%	N	%	N	%		
<b>Dental side effect (n=882):</b>								
• Toothache	358	54.2	190	57.6	89	42.6	31.66	0.000*
• Falling teeth	35	5.3	0	0	0	0		
• Tooth decay	50	7.6	35	10.6	115	55		
<b>Eye side effect (n= 467):</b>								
• Blurred vision	55	8.3	42	12.7	41	19.6	32.12	0.000*
• Redness	209	31.6	67	20.3	53	25.4		

Table (7): Comparison of side effect vaccination among the studied women on menstrual cycle (n=1200).

Variable	Types of Vaccine						X2	P-value
	AstraZeneca		Sinovac		Unrecognized Type			
	N	%	N	%	N	%		
<b>Regularity of menstruation</b>								
• Regular	20	3	49	14.8	17	8.1	46.60	0.001*
• Irregular	641	97	281	85.2	192	91.9		
<b>Pain intensity during menses:</b>								
• Yes	641	97	281	85.2	192	91.9	44.58	0.001*
• No	20	3	49	14.8	17	8.1		
<b>If Yes?</b>								
• Decrease	20	3	0	0	0	0	46.60	0.001*
• Increase	621	97	281	100	192	100		
<b>Change in amount of menses</b>								
• Yes	636	96.2	281	85.2	192	91.9	38.57	0.005*
• No	25	3.8	49	14.8	17	8.1		
<b>If Yes?</b>								
• Increase	630	95	281	1000	183	95.3	38.57	0.005*
• Decrease	6	5	0		9	4.7		
<b>Changes of the interval:</b>								
• Yes	641	97	281	85.2	192	91.9	46.60	0.001*
• No	20	3	49	14.8	17	8.1		
<b>If Yes?</b>								
• Increase	528	82.3	264	94	185	96.4	86.75	0.000*
• Decrease	113	17.7	17	6	7	3.6		

Table (8): Comparison of side effect vaccination among the studied women on breast & uterus (n=1200).

Variable	Types of Vaccine						X2	P-value
	AstraZeneca		Sinovac		Unrecognized Type			
	N	%	N	%	N	%		
<b>Pain in breast:</b>								
• Yes	87	13.2	28	8.5	64	33.3	52.97	0.000*
• No	574	86.8	302	91.5	128	66.7		
<b>Itching in the perineal area after vaccination :</b>								
• Yes	497	75.2	201	60.9	192	100	62.85	0.000*
• No	164	24.8	129	39.1	0	0		
<b>How long time of itching :</b>								
• <2 days	164	33	129	64	18	9.3	63.64	0.001*
• 2-7days	98	19.7	35	17.4	40	20.8		
• >7days	235	47.3	37	18.6	134	69.7		
<b>Used treatment for itching :</b>								
• Yes	497	100	201	100	192	100	9.827	0.05*
• No	0	0	0	0	0	0		
<b>if yes :</b>								
• Vaginal washing	252	50.7	104	51.6	58	30.4	2.01	0.355
• antiseptics such as Flagel	223	45	96	48	128	66.6		
• Antibiotics	22	4.3	1	0.4	6	3		

Table (9): Comparison of side effect vaccination among the studied women on pregnancy (n=1200).

Variable	Types of Vaccine						X2	P-value
	AstraZeneca		Sinovac		Unrecognized Type			
	N	%	N	%	N	%		
<b>Pregnant after the vaccination :</b>								
• Yes	185	28	133	40.3	67	32.1	15.32	0.129
• No	476	72	197	59.7	142	67.9		
<b>Time of pregnancy after vaccination:</b>								
• Less than a month	100	54	97	72.9	60	89.6	25.662	0.518
• From 1 to 3 months	40	21.6	30	22.6	7	10.4		
• More than 3 months	45	24.4	6	4.5	0	0		
<b>Miscarriage occur after vaccination:</b>								
➤ Yes	3	1.7	0	0	1	1.4	16.105	0.251
➤ No	182	98.3	133	100	66	98.6		

Table (10): Comparison of side effect vaccination among the studied women on of delivery (n=1200):-

Variable	Types of Vaccine						X2	P-value
	AstraZeneca		Sinovac		Unrecognize-zed Type			
	N	%	N	%	N	%		
<b>Type of delivery :</b>								
• Normal	162	89	113	85	60	91	32.3	0.000*
• Cesarean section	20	19	20	5	6	9		

**Table (11): Relation between the studied women’ knowledge about vaccine and personal characteristic:**

Items	Total knowledge				X2	P-value
	Unsatisfactory		Satisfactory			
	No	%	No	%		
<b>Age group:</b>						
• 18 < 25 years	356	41.9	160	45.7	6.118	0.03*
• 25-35 years	269	31.6	121	34.6		
• 35≥45	225	26.5	69	19.7		
<b>Age at marriage:</b>						
• >20	74	8.7	30	8.6	43.62	0.000*
• 20>30	449	52.8	115	32.9		
<b>Level of education:</b>						
• Can read and write	15	1.8	5	1.4	43.926	0.000*
• Primary education	10	1.2	5	1.4		
• Secondary education	463	54.5	261	74.6		
• Higher education	362	42.5	79	22.6		
<b>Marital status:</b>						
• Single	327	38.5	205	58.6	40.58	0.000*
• Married	523	61.5	145	41.4		

**IV. DISCUSSION**

The nurse has main role in covid-19 for the contractual side of this issue, nursing managers and supervisors are expected to enable nurses to assert the right to withdraw from a job arrangement if they have fair reasons to conclude that their assignments require a significant threat to their life or safety. If a health worker practices this privilege, then they should be shielded from any adverse effects. Furthermore, nurses should be owed the right to reimbursement, psychological counseling, and therapeutic care if they are diagnosed with COVID-19 through contact at work [8].

Regarding to personal characteristic data the present study revealed that, slightly less than half of the studied females aged <25 years, About more than half of them live in urban area. Two third females educational level was secondary education. The study not agree by Nachtigall, et al., (2022), in Germany, entitled `` Effect of gender, age and vaccine on reactogenicity and incapacity to work after COVID-19 vaccination: a survey among health care workers`` That not agree with about half of sample females age were 45-50 years, while the previous study coordinate with another socio-demographic parameters as, females live in urban. The females’ education level was higher education[9].

The finding of current study revealed that, the majority of the studied females have two doses of vaccine, period after last vaccination 3 or more than 3 weeks, vaccination & most of them receive vaccination obligatory. While, in the study prepared by Samanta, et al., (2022) entitled `` Awareness, knowledge and acceptance of COVID-19 vaccine among the people of West Bengal, India: A web-based survey`` it reported that 12.08% of participants do not believe that vaccination against COVID-19 is necessary, but among the rest of the population, 44.33% of individuals are willing to be vaccinated once the vaccine is available, whereas 39.60% of the population responded that they will not be vaccinated immediately but will do so later[10].

The findings of the current study show that, more than two third of studied females not infected with virus before vaccination. In the study done by Ghuraibi ,et al., (2023) entitled`` The socio-cultural factors behind the Saudi attitude toward COVID-19 vaccination: A survey-based study`` more females (15.23%) refused the vaccine than males (4.5%). More than one-third of the vaccine-hesitant respondents had limited knowledge of COVID-19 symptoms. Personal characteristics associated with vaccine confidence were described as the following: do not fully trust vaccines produced in a short time (42.1%), fear of the future results of the vaccine (30.4%), reluctance to allow a foreign material to enter the body (17.6%), no interaction with others, so no need for the vaccine (11.5%), low interaction with people (67.8%), and reluctance to make decisions (11.3%).[11]

The current study showed that, More than two third of females have unsatisfactory level of knowledge & more than two third didn’t know any information about vaccine. in the study done by Sharma, et al., (2018). entitled `` COVID-19 Vaccine

Acceptance and Its Determinants in the General Population of Delhi, India: A State Level Cross-Sectional Survey, study observed the lack of vaccine acceptance in nearly one in three individuals with considerable delays in second-dose vaccination.[12]

According to the present study, majority of female source of information was television. In the study prepared by *Papini, et al., (2022)* entitled ``Healthcare Workers Attitudes, Practices and Sources of Information for COVID-19 Vaccination: An Italian National Survey`` Nurses and auxiliary nurses had a higher likelihood of using digital media (web sites and social media), traditional media (e.g., television and newspapers), advice from family and friends, and institutional sources to obtain information on COVID-19. [13]

The findings of the present study clarified that, about half of females have congestion at site of injection & sore throat. In the study done by *Omeish, et al., (2022)* in Jordanian, entitled ``Reported COVID-19 vaccines side effects among Jordanian population: a cross sectional study``. most participants (78.4%) suffered from pain in addition to swelling and redness at the injection site[14].

The present study finding, about half of studied females gastrointestinal (GI) symptoms such as abdominal pain and cramp in AstraZeneca & Sinovac. In the study done by *Omeish, et al., (2022)* in Jordanian, entitled ``Reported COVID-19 vaccines side effects among Jordanian population: a cross sectional study`` study shown that the first dose of AstraZeneca vaccine was significantly associated with higher reports of bone and muscle pain, flu-like symptoms, gastrointestinal (GI) symptoms abdominal cramp & nausea & vomiting, psychological symptoms, cardiac symptoms, and dizziness.[15]

Regarding the studied females with respiratory symptoms side effect about half of females have sore throat & minority was chest pain. The present findings were not similar to some extent to those of the study of *Orebi, et al., (2022)* in EGYPT, entitled ``Perceptions and experiences of COVID-19 vaccines' side effects among healthcare workers at an Egyptian University Hospital: a cross-sectional study``.[16]

Regarding the studied females with respiratory symptoms side effect about half of females have sore throat & minority was chest pain. The present findings were not similar to some extent to those about sore throat but similar to another result the study of *Elgendy et al., (2022)* in EGYPT, entitled ``Side Effects and Efficacy of COVID-19 Vaccines among the Egyptian Population`` In this study, we demonstrated that the most common postvaccination side effects were pain, redness, or swelling at the site of vaccine injection; muscle and joint pain; fatigue and lethargy; dizziness; fever; and headache.[17]

The findings of present study showed that, minority of studied females have hypertension & thrombosis (leg clots & lung clots). The present findings were not similar to some extent to those about thrombosis but similar to hypertension. In the study done by *Freise, et al., (2022)* entitled ``Acute cardiac side effects after COVID-19 mRNA vaccination: a case series`` clinical information system and analyzed. To support diagnosis of hypertension, myocarditis or pericarditis, cardiac magnetic resonance imaging (MRI) was performed shortly after the onset of symptoms, with further investigations in severe cases. Symptoms were defined as dyspnea, chest pain and cardiac arrhythmia as determined by electrocardiography. [18]

The findings of present study showed that, minority of studied females have hypertension & thrombosis (leg clots & lung clots). The present findings were not similar to some extent to those about hypertension but similar to thrombosis, by **mark et al., (2021)**, entitled ``Outcomes of patients with thromboembolic events following coronavirus disease 2019 AstraZeneca vaccination: a systematic review and meta-analysis`` Forty-five AstraZeneca studies reporting on thromboembolism as an adverse event post vaccination [19]

The present study show that, more than two third of studied females have dysuria. These finding agree with **Kalra et al., (2022)** entitled, ``COVID-19 Vaccine as a Potential Triggering Factor for Anti-Glomerular Basement Membrane (GBM) Disease: A Case Report and Literature Review``.[20]

Regarding of studied females, the findings of the present study clarified that, more than half had toothache. These findings came in line with **Chun et al., (2022)**. Entitled ``Various painful oral adverse reactions following COVID-19 vaccination: a case series``The author report the findings This case series suggest oral mucositis, ulceration, and neuropathic pain triggering as possible orofacial adverse reactions following COVID-19 vaccination.[21]

The current study show that, about one third of studied females hade eye redness. These finding agree with **Yeduve, et, all, (2023)**. entitled `` Retinal vascular occlusions in COVID-19 infection and vaccination: a literature review``.that show redness eye ate vaccination covide-19.[22]

The present study show that, most of studies females had irregular menstruation. These finding agree with **Pourmasumi et al., (2023)** entitled `` Effects of COVID-19 Infection and Vaccination on the Female Reproductive System: A Narrative Review`` Several studies have reported the involvement of COVID-19 infection in oocyte quality, ovarian function, and dysfunctions in the uterine endometrium and the menstrual cycle. The findings of these studies indicate that COVID-19 infection negatively affects the follicular microenvironment and dysregulate ovarian function.[23]

The current study show that, majority in the current study didn`t have breast pain. These finding not agree with **Hromić-Jahjefendić, et al., (2023)** entitled `` Can COVID-19 Vaccines Induce Premature Non-Communicable Diseases: Where Are We Heading to? ``.[24]

## V. CONCLUSION

Based on the study finding, can be concluded that:-

The most of the studied females had two doses of covid-19 vaccine, majority type of vaccine were AstraZeneca, also the most side effect appeared after first dose. The majority of the studied woman had vaccine and type of vaccine obligatory. Three quarters of studied woman unsatisfactory knowledge about vaccines. The most common side effect were tenderness at the injection site, physical pain, abdominal pain & cramps, sore throat, chest pain, eye redness, toothache, tingling of limb, hypertension, dysuria. Woman under study registered return some side effect but with out permanent complication. The study answer the research question.

## VI. RECOMMENDATIONS

In the light of the current study finding, the following recommendations are suggested:

- Replication the current study for large scale after 5 years for more information regarding the impact of Covid-19 vaccine on woman`s health especially reproductive system side effect or on female fertility.

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