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## **Menstrual abnormalities after COVID-19 Vaccine**

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**2022 م**

**1443 هـ**

## **Acknowledgment :**

We would like to show our gratitude to the ( Dr Suhaila fadhil Al-Shaikh , University of Babylon College of Medicine ) for sharing their pearls of wisdom with us during the course of this research.

## **Dedication :**

I wish to acknowledge certain institutions and individuals for their contributions towards the production of this research report I would like to thank my colleagues with sincere gratitude for their unconditional support My sincere thanks also go to my sponsors..

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## Summary

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Most people infected with the virus will experience mild to moderate disease and don't need hospitalization however many people passed away due this disease so equitable access to safe and effective vaccines is critical to end the COVID-19 pandemic

Pfizer , AstraZeneca and sinopharm all have proved their effectiveness in decreasing the incidence of the disease regardless their side effects which menstrual changes are part of them.

The study utilized a cross-sectional self-administered survey from April 1st to May 1st 2022 targeting females above the age of menarche who had received vaccine and were or were not pregnant or lactating, and do not have a history of primary ovarian insufficiency, hypothalamic menopause, or have undergone a hysterectomy. The survey was distributed regionally via social media and paper forms.

(600) female of reproductive age group were included in this study and the majority of the participants were from Iraq . (85.2%) had regular menstrual cycles before taking the vaccine for the last three months and (14.8%) had irregular menstrual cycles. (82.2%) of participants were disease-free and The vast majority (91.2) do not use any drugs . The vast majority (91.2) do not use any drugs . However (3.8%) of participants use contraceptive drugs , and ( 5%) take hormonal therapy and those are excluded.

After receiving the COVID-19 vaccination 92.33% reported side effects, including fever, headache, and arm pain, In addition

31.7% of women experienced menstrual abnormalities after vaccination. 8.9% of participants complained from change in the usual number of days of bleeding. 12.1% have complained from decreased the usual amount of bleeding and 1% have complained from intermenstrual bleeding after being vaccinated significantly impacted their quality of life.

Some women reported late periods, some reported early periods, some reported heavy bleeding and also lighter bleeding. There was a large

number of women who reported no changes at all . There is a potential link between COVID-19 vaccination and menstrual cycle.

## Introduction

Over the past year and a half, the COVID-19 pandemic has taken the world by storm, affecting every aspect of human life. As a response, numerous vaccines were developed and approved in less than a year from when the virus was first identified [1] . By mid-2021, three billion doses had been administered around the world[2].

The Common side effects of covid-19 vaccination (by the UK's Medicines and Healthcare ) involve a sore arm, fever, fatigue, and myalgia[3].

The studying of experts confirm that after mRNA and adenovirus covid 19 vaccines administration that there is change in menstrual cycle[3]. This result from immune response to vaccine , in other side menstrual cycle can be effected by any immune activation like viral infection. in other studying detect that any women infected with sar covid have menstrual disruption[4].

The mechanisms that link the immune stimulation with menstrual changes are immunological influences on the hormones which responsible for menstrual cycle. Or effect by immune cells in the lining of the uterus[5,6].

The reason why girls refrain from using the Corona vaccine is that , this vaccine prevents their chances of having children in the future[7].

If the relationship between menstruation and the corona vaccine is confirmed, this will allow people to potentially altered cycles

Reliable information is important for people who rely on abilities to predict their menstrual cycles to achieve pregnancy.

Therefore, this study attempts to investigate the menstrual cycle abnormalities and their relation to the different types of COVID-19

vaccines, which will help us provide better medical care to achieve a satisfactory outcome for these patients by alleviating their concerns and helping them deal with their symptoms, thus improving their quality of life. Nevertheless, this rapid worldwide use of the vaccines led the Centers for Disease Control and Prevention (CDC) to utilize a real-time Vaccine Adverse Event Reporting System called V-Safe to track potential side effects of the vaccine[8].

## Methods and Materials

### Study design:

The study utilized a descriptive cross-sectional online self administered survey from

April fifth 2022 to may fifth 2022. The aim of the study is to explore the impact of COVID- 19 vaccine on menstrual cycle.the survey was targeting females in reproductive age group living predominantly in Iraq and lower percentage in Egypt and Jordan. Vaccinated , married and not married ,pregnant and lactating and positive and negative past medical history women were involved in the survey. The survey were distributed via social media and did not involve direct contact with participants.

The study investigated three main associations. Firstly , the association between COVID-19 vaccine and menstrual abnormalities. Secondly , the association between COVID-19 infection and menstrual abnormalities.

### Study tool

The study used an online based questionnaire created through google forms. The questionnaire was first developed in English then to Arabic to suit the targeted population and to ensure comprehensibility then translated back to english to ensure content validity.

The questionnaire ( link attached below) consists of questions asking first about demographics including age and marital state . The second section contains questions about menstruation and menstrual cycle

before the vaccine . Third section contains questions about the infection if it occurred and details about vaccination including number of doses, vaccine type and date of vaccination. Fourth section includes questions about menstruation and menstrual cycle after vaccination. And the fifth section includes questions about past medical history and past drug history.

A pilot study was conducted that included 30 participants to find any fault that might exist and to ensure the validity and reliability of the overall questionnaire. The 30 participants were excluded from the main study and subsequent analysis.

### **Data collection procedure:**

An anonymous free online survey was used to collect responses over 4 weeks directed at women who have received at least one dose of COVID-19 vaccine and living in Iraq, Egypt and Jordan. The questionnaire was distributed and advertised across several social media platforms and groups , and participants were encouraged to share it with their peers and social circles in order to maximize the sample size. It took approximately 3 minutes to complete all the questions.

## Results

**Table 1 : Average age .**

Age	Number of participants	percentage%
15-20	115	19.16%
21-25	420	70.00%
26-30	42	7%
31-35	16	2.66%
36-40	4	0.66%
40-45	3	0.50%
Average age is 24 years		

**Table 2 : Types of vaccine .**

Type	Number	Percentage
Pfizer	461	76.80%
AstraZeneca	74	12.30%
Sinopharm	65	10.80%

**Table 3 : Number of doses .**

Vaccine Doses	Number of participants	Percentage%
1	59	9.80%
2	509	84.80%
3	32	5.30%



**Table 4 : Characteristics of menstrual cycle .**

Characteristics of menstrual cycle		Pre Vaccination	Post Vaccination
Regularity	Regular	511(85.2%)	460(76.7%)
	Irregular	89(14.8%)	140(23.3%)
Days of bleeding	3	25(4.2%)	38(6.3%)
	4	77(12.8%)	73(12.2%)
	5	213(35.5%)	211(35.2%)
	6	127(21.2%)	129(21.5%)
	7	132(22%)	108(18%)
	8	24(4%)	35(5.8%)
Amount of bleeding	Heavy	60(10%)	55(9.2%)
	moderate	519(86.5%)	487(81.2%)
	light	21(3.5%)	58(9.7%)
Intermenstrual bleeding	present	19(3.2%)	25(4.2%)
	not present	581(96.8%)	575(95.8%)

**Demographics :**

Out of the (649) participants who completed the questionnaire, (49) were excluded because they did not meet the eligibility criteria. Eventually, (600) female respondents were included in this analysis. The participants are of reproductive age group with average age ( 24 ). The participants were from Iraq , Egypt and Jordan and the majority of the participants were from Iraq .

Most respondents (89.7%) were unmarried. The majority of participants received Pfizer-BioNTech, AstraZeneca and Sinopharm (76.8%, 12.3%, and 10.8% , respectively), and the majority (84.8%) received two doses. Table 2 and table 3 demonstrate the types and doses number of the vaccine .

**Clinical Characteristics:**

Among the participants, (85.2%) had regular menstrual cycles before taking the vaccine for the last three months and (14.8%) had irregular

menstrual cycles. The vast majority (82.2%) of participants were disease-free. However, PCOS, Hypertension , Diabetes , Hormonal changes and Hysterectomy were present in (10.8%, 0.5%, 0.3%, 11.2%, 0% )of participants, respectively. The vast majority (91.2) do not use any drugs . However (3.8%) of participants use contraceptive drugs , (1.8%) on steroid therapy and ( 5%) take hormonal therapy .

### **Menstrual Cycle Abnormalities After COVID-19 Vaccination:**

Overall, (31.7%) of women experienced menstrual abnormalities after vaccination. (8.5%) with regular cycle before being vaccinated have irregular cycle after vaccination (4.2%) have complained from increased the usual number of days of bleeding, however ( 4.7%) have complained from decreased number of days of bleeding. (12.1%) have complained from decreased the usual amount of bleeding and (1%) with absent intermenstrual bleeding prior to vaccine have complained from it after being vaccinated.

### **Lifestyle and Mental Health Change After COVID-19 Vaccination:**

After receiving the COVID-19 vaccination, (92.33%) reported side effects, including fever, headache, and arm pain, In addition to common post-vaccination side effects, (31.7%) of participants reported that the gynecological abnormalities they experienced after vaccination significantly impacted their quality of life. Table 4 demonstrates the different ways participants coped with post-vaccine menstrual abnormalities.

## Discussion

-Regarding table 1 most of our participants (70%) were from 21-25 age group because the target sample was university students.

-Regarding table 2 most of our participants (76.8%) were vaccinated by Pfizer because it has least side effect and the highest import by the ministry of health was for Pfizer.

-Regarding table 3 most of our participants (84.80%) has taken two doses of vaccine according to the recommendation of the WHO and the 3rd dose was taken by high risk group (10.80%).

-Regarding table 4 our study demonstrated that 31.7% of our sample have complained from menstrual changes after being vaccinated against COVID-19 ,

8.5% with regular cycle before being vaccinated have irregular cycle after vaccination

4.2% have complained from increased the usual number of days of bleeding, however 4.7% have complained from decreased number of days of bleeding.

12.1% have complained from decreased the usual amount of bleeding and 1% with absent intermenstrual bleeding prior to vaccine have complained from it after being vaccinated.

The menstrual bleeding pattern is an important indicator of reproductive health [9].

These menstrual changes can impact women's quality of life, leading to work and school limitations, hindering achievements, and affecting social and professional activities, which can further cause stress[10,11].

One source of stress that has taken the world by storm was the COVID-19 pandemic, such that several studies showed an increase in menstrual cycle abnormalities during the pandemic compared to before.<sup>47</sup> In our study, nearly (16.31%) of the participants experienced menstrual changes during the COVID-19 pandemic before vaccination. However, 31.7% of women experienced abnormal periods after vaccination. Even after accounting for changes in menstrual bleeding during the COVID-19 pandemic, there is a significant difference between the menstrual

changes during the COVID-19 pandemic and menstrual abnormalities after the vaccination. Our results are consistent with a recent preprint study of 636 participants in the Iraq and other countries .

## **Conclusion & Recommendation**

- 1- The study demonstrated a possible relationship between the COVID-19 vaccine and menstrual irregularities that affected their quality of life.
- 2- Recommended larger sample size.

### **Limitation of the study :**

short time for collection of data.

## **References**

- 1- Bok K, Sitar S, Graham BS, Mascola JR. Accelerated COVID-19 vaccine development: milestones, lessons, and prospects. *Immunity*. 2021;54(8):1636–1651. doi:10.1016/J.IMMUNI.2021.07.017
- 2- Ndwandwe D, Wiysonge CS. COVID-19 vaccines. *Curr Opin Immunol*. 2021;71:111–116. doi:10.1016/j.coi.2021.07.003
- 3- [\\_https://www.gov.uk/government/publications/coronavirus-covid-19-vaccine-adverse-reactions/coronavirus-vaccine-summary-of-yellow-card-reporting#annex-1-vaccine-analysis-prin](https://www.gov.uk/government/publications/coronavirus-covid-19-vaccine-adverse-reactions/coronavirus-vaccine-summary-of-yellow-card-reporting#annex-1-vaccine-analysis-prin)
- 4- Li K, Chen G, Hou H, et al. Analysis of sex hormones and menstruation in COVID-19 women of child-bearing age. *Reprod Biomed Online* 2021;42:260-7. doi:10.1016/j.rbmo.2020.09.020 pmid:33288478OpenUrlCrossRefPubMed

- 5-** Karagiannis A, Harsoulis F. Gonadal dysfunction in systemic diseases. *Eur J Endocrinol*2005;152:501-13. doi:10.1530/eje.1.01886  
pmid:15817904Abstract/FREE Full TextGoogle Scholar
- 6-** Monin L, Whettlock EM, Male V. Immune responses in the human female reproductive tract. *Immunology*2020;160:106-15. doi:10.1111/imm.13136  
pmid:31630394CrossRefPubMedGoogle Scholar
- 7-** Speed B. Young women are the unlikely new face of covid-19 vaccine resistance. *i News* 2021 Jan 6. <https://inews.co.uk/news/health/coronavirus-latest-experts-debunk-vaccine-fertility-myths-women-819783>
- 8-** Centers for Disease Control and Prevention. V-safe after vaccination health checker. Available from: <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html>, Accessed August 27, 2021mmmm
- 9-** Dasharathy SS, Mumford SL, Pollack AZ, et al. Menstrual bleeding patterns among regularly menstruating women. *Am J Epidemiol.* 2012;175(6):536–545. doi:10.1093/aje/kwr356
- 10-** Kadir RA, Edlund M, Von Mackensen S. The impact of menstrual disorders on quality of life in women with inherited bleeding disorders. *Haemophilia.* 2010;16(5):832–839. doi:10.1111/j.1365-2516.2010.02269.x
- 11-** Karlsson TS, Marions LB, Edlund MG. Heavy menstrual bleeding significantly affects quality of life. *Acta Obstet Gynecol Scand.* 2014;93(1):52–57. doi:10.1111/aogs.12292