



Original Article

THE IMPACT OF COVID-19 BOOSTER VACCINATION ON CHANGES IN MENSTRUAL CYCLE OF TEENAGE GIRLS IN SUB-DISTRICT OF LUENG BATA, BANDA ACEH CITY, 2023

Cut Ditta Indria Putri¹, Satrinawati Berkat², Gustiana Gustiana³

^{1,2,3}: Department of Midwifery, Poltekkes Kemenkes Aceh, Aceh Besar, Indonesia

*Corresponding dittaindria@gmail.com

Abstract

Background: Several studies have shown changes in the menstrual cycle in women of childbearing age (WUS) after receiving the COVID-19 vaccination. The menstrual cycle is a monthly hormonal cycle marked by menstruation every month. The menstrual cycle is calculated from the first day of menstruation to the day before the next menstrual period.

Research Objective: To determine the effect of COVID-19 vaccination on changes in the menstrual cycle of adolescent girls in Lueng Bata District, Banda Aceh City.

Method: This study employs a quantitative approach with a descriptive survey design. The research design is cross-sectional. The sample in this study consisted of teenage girls from sub-district Lueng Bata, Banda Aceh City. Total sample: 100 girls. Data analysis using SPSS with Fisher's Exact Test

Results: All adolescent girls have received the 1st and 2nd vaccinations (100%), and Booster vaccinations as many as 19%. around 72% of respondents who have had the 1st vaccination were vaccinated with the Sinovac vaccine. As many as 56% of respondents who had received the second vaccination were immunized with the Sinovac vaccine. The vaccine used in the Booster vaccination is the Pfizer vaccine. Based on the results of Fisher's Exact Test, the obtained p-value was 0.006 ($p < 0.05$).

Conclusion: The COVID-19 vaccination booster affects changes in the menstrual cycle of teenage girls in the sub-district of Lueng Bata, Banda Aceh City.

Suggestion: Further research is expected to be conducted on other factors, such as vaccine content or stress that affects the menstrual cycle.

Keywords: Covid-19, vaccination, menstrual cycle, teenage girls, Lueng bata

Introduction

The Coronavirus Disease Pandemic, also known as COVID-19, is a health issue that has captured the world's spotlight and garnered attention from health scientists and the general public. Globally, as of May 28, 2023, from 235 countries, there are 766,895,075 confirmed

Covid-19 cases, and the death toll stands at 6,935,889 people (1).

One of the efforts to break the chain and prevent the spread of Covid-19 is to provide understanding to the public through socialization and counseling such as wearing

masks, maintaining distance, washing hands, avoiding crowds and vaccination (2).

According to Indriyanti, the purpose of the COVID-19 vaccination is to maintain the body's immune system so that it can recognize and fight antigens that cause infection quickly. Covid-19 vaccination also aims to encourage the formation of herd immunity, also known as group immunity (3).

In Indonesia, 86 per 100 residents are the target of the COVID-19 vaccination and have received one dose of immunization. The number of recipients of the first dose of the COVID-19 vaccine in Aceh has reached 89.81% of the provincial target, which is 4,141,136 doses. Adolescents who have received the first vaccination in Aceh have reached 90.80%, which is 523,954 people. Banda Aceh City, the capital of Aceh Province, has also reached its target of 242,277 first-dose vaccine doses (4). The number of recipients of the second vaccine in Aceh Province is 3,406,660, and the percentage of adolescents who have received the second vaccination is 73.62%, which translates to 2,504,807 (4).

Salem et al.'s (2022) study on the relationship between the COVID-19 vaccine and menstrual irregularities found that the majority of respondents experienced menstrual irregularities after receiving the second dose of the COVID-19 vaccine.

The menstrual cycle is a monthly hormonal cycle characterized by menstruation every month. The menstrual cycle is calculated from the first day of menstruation to the first day of the next menstrual period. According to the National Institutes of Health, the normal menstrual cycle is 21-35 days. However, every woman experiences a different cycle. Generally, the average woman experiences a 28-day menstrual cycle, with a duration of 4-6 days (5).

Victoria Male, quoted from the UK's Medicines and Healthcare Products Regulatory

Agency, stated that most women who have been vaccinated experience shorter menstrual cycles, with over 30,000 reports of this effect. A cohort study by the Norwegian Institute of Public Health observed 5,688 people who received the Pfizer, Janssen, Moderna, or Novavax vaccines. This study reported changes in the menstrual cycle among vaccinated individuals compared to those who had not received the vaccination (6).

According to Pratama, among the 71 female respondents of childbearing age, the majority (84.5%) did not experience changes in their menstrual cycle after vaccination, while 15.5% did. It was reported that changes in the menstrual cycle and volume occurred after immunization (7). Therefore, the author is interested in examining the effect of the COVID-19 vaccine on menstrual cycle changes in young women. The purpose of this study was to see the impact of the COVID-19 vaccination booster on changes in the menstrual cycle of teenage girls in the sub-district of Lueng Bata, Banda Aceh City.

METHOD

The design of this study is cross-sectional, meaning it was conducted at a single point in time. This study was conducted in the sub-district of Lueng Bata, Banda Aceh City, namely in Lamdom Village, Cot Mesjid Village, Batoh Village, Lueng Bata Village, Blang Cut Village, Lampaloh Village, Sukadamai Village, Panteriek Village, and Lamseupeung. The research was conducted from January to June 2023. The sampling technique used was a non-probability sampling technique, specifically purposive sampling. The sample in this study was teenage girls who met the inclusion and exclusion criteria. The total sample was 100 people. The research instrument was a questionnaire.

Table 1: Characteristics of respondents

Characteristics of Respondents	f	%
Age		
<15 years old	8	8
15-18 years old	28	28
>18 years old	64	64
Total	100	100
Menarche		
>14 years old	3	3
<10 years old	8	8
10-14 years old	89	89
Total	100	100
Menstrual cycle before Covid-19 vaccination		
Regular	100	100
Irrigular	0	0
Total	100	100
Vaccination Frequency		
1x	0	0
2x	100	100
3x	0	0
Total	100	100
Vaccine type 1		
Sinovac	72	72
Biofarma	15	15
Moderna	13	13
Total	100	100
Vaccine type 2		
Sinovac	56	56
Biofarma	19	19
Moderna	25	25
Total	100	100
Type of Booster Vaccine		
Pfizer	19	19
Did not boost	81	81
Total	100	100
Reasons for getting vaccinated against COVID-19		
required by the school	53	53
Follow others	9	9
Travelling requirment	38	38
Personal awareness	0	0
Total	100	100

Table 1 explains that the average age of the sample in this study was >18 years, which was 64 people (64%). On average, adolescent girls got their first menstruation (menarche) in the age range of 10-14 years, which was 89 people (89%). The menstrual cycle of all adolescent girls before vaccination was smooth (100%). The frequency of vaccination that had been obtained by adolescent girls was 100% for the

first and second vaccinations. Only 19% had received a Booster Vaccination. The type of vaccine most widely used during the 1st vaccination was the Sinovac vaccine (72%), around 56% of adolescent girls who had received the 2nd vaccination received the Sinovac vaccine. Booster Vaccination 19 people, with the Pfizer vaccine type. Around 53

adolescent girls (53%) said that they got vaccinated because of school regulations

Table 2: Frequency Distribution of Menstrual Cycle Changes After Vaccination of COVID-19

Menstrual Cycle Changes	f	%
After 1st vaccination		
Change	13	13
Did not change	87	87
Total	100	100
After 2nd vaccination		
Change	13	13
Did not change	87	87
Total	100	100
After the Booster vaccination		
Change	3	15,8
Did not change	16	84,2
Total	100	100

Based on Table 2 above, it is evident that out of 100 female adolescents who received their first vaccination, 13 (13%) experienced changes in their menstrual cycle. Then, there was the second

vaccination, after which 13% of female adolescents experienced changes in their menstrual cycle. As many as 15.8% of female

adolescents experienced changes in their menstrual cycle after the booster vaccination.

1. Bivariate Analysis

Bivariate analysis will examine the effect of the COVID-19 vaccination booster on changes in the menstrual cycle of teenage girls.

Table 3: The Effect of COVID-19 Vaccination Booster on Changes in the Menstrual Cycle of Teenage Girls

COVID-19 Vaccination Booster	Menstrual Cycle Changes						<i>p- value</i>
	Change		Did not change		Total		
	f	%	f	%	f	%	
Vaccination	3	15,8	16	84,2	19	19	0,006
Did not vaccination	0	0	81	100	81	81	

Table 3 shows that out of 19 respondents who had received the Booster vaccine, three respondents (15.8%) experienced changes in their menstrual cycle. The data from this study did not meet the requirements for the chi-square test, because there were two cells (50%) that had an expected value of <5 , so an alternative test was carried out, namely Fisher's Exact Test. Based on the results of Fisher's Exact Test, the result was $p = 0.006$ ($p < 0.05$), so it can be concluded that there is an effect of the Covid-19 Booster vaccination on changes in the menstrual cycle of teenage girls in the Sub-district of Lueng Bata, Banda Aceh City, in 2023.

DISCUSSION

The study results showed a significant effect of the COVID-19 booster vaccination on changes

in the menstrual cycle of adolescent girls, with a p-value of 0.006. The results of this study are consistent with those of Lagana (2022), which reported that approximately 50–60% of women of childbearing age who received the first dose of the COVID-19 vaccine experienced menstrual cycle irregularities, regardless of the type of vaccine administered (8).

Salem's study (2022) also found that the majority of respondents experienced menstrual irregularities after receiving the second dose of the COVID-19 vaccine. Based on the researcher's assumption, the menstrual cycle generally varies from month to month, so not all adolescent girls will realize that their menstrual cycle has changed. The reasons for teenage girls to get the COVID-19 vaccination vary; no adolescent girls were vaccinated of their own accord (0%). Therefore, it is necessary to increase knowledge about

COVID-19 vaccination so that teenage girls do not feel pressured to get vaccinated. In this study, it was found that most teenage girls got the COVID-19 vaccination because the school required it, which triggered stress for them. This situation can cause changes in the menstrual cycle.

Based on the study results, it was found that several young women experienced an extension of their menstrual cycle after receiving the COVID-19 vaccination. Still, no special treatment or medication was administered to correct the cycle changes. The study's results concluded that COVID-19 vaccination affects the Menstrual Cycle of Young Women. However, it must also be understood that changes in the menstrual cycle can occur due to various factors, such as stress, changes in lifestyle during the COVID-19 pandemic, nutritional status, BMI, physical activity, and others.

CONCLUSION

There is an effect of Covid-19 booster vaccination on changes in the menstrual cycle of adolescent girls in Lueng Bata District, Banda Aceh City, with a p-value of 0.006.

Ethics approval

Ethical approval for this research was obtained from the Health Research Ethics Commission (KEPK) of the Poltekkes Kemenkes Aceh, with the number: NO. LB. 02.03/056/2023 and the date of issue: July 3, 2023

Conflict of interest

There is no conflict of interest in this research

Acknowledgments

Thank you to Poltekkes Aceh, the community in the sub-district of Lueng Bata, the Banda Aceh City Education Office, all the respondents, and other related parties who have helped me carry out this research.

Funding

This research is independent and does not receive any financial assistance from any institution.

Authors' Contribution

1st : Prepare research proposals, conduct research, complete final reports, prepare a manuscript for publication, and submit to the journal

2nd: Guide the preparation of proposals and final reports, supervise the research, translate the manuscript into English, and revise the article

3rd Guide the preparation of proposals and final reports

REFERENCES

1. Kemenkes RI. SITUASI GLOBAL (Data sampai dengan tanggal 28 Mei 2023). Published 2023. <https://covid19.who.int/data>.
2. Al-Amin M, Jannah W, Kamal M, Renaldy A. Penguatan Kesadaran Masyarakat dalam Upaya Pencegahan Penyebaran Covid-19 Taat Prokes dan Vaksinasi di Gampong Ateung Cut Kecamatan Simpang Tiga Kabupaten Aceh Besar. *BAKTIMAS Jurnal Pengabdian pada Masyarakat*. 2021;3(4). <https://covid19.go.id/peta-sebaran>
3. Indriyanti D. Persepsi Petugas Puskesmas terhadap Pelaksanaan Vaksinasi Covid-19 pada Era New Normal Perceptions of Public Health Center Officers on the Implementation of Covid-19 Vaccination in the New Normal Era. *Jurnal Inspirasi*. 2021;12(1):29.
4. Kemenkes RI. Vaksinasi COVID-19 Nasional. Published August 2022. Accessed January 10, 2023. <https://vaksin.kemkes.go.id/#/vaccines>
5. Badzlina F, Septiarani K, Rahayu NS. Medihealth: Jurnal Ilmu Kesehatan dan Sains Faktor yang berhubungan dengan Siklus Menstruasi pada Mahasiswa Tingkat Akhir di DKI Jakarta. *Medihealth: Jurnal Ilmu Kesehatan dan Sains*. 2022;1:1-8.
6. Male V. Menstruation and covid-19 vaccination. *The BMJ*. 2022;376. doi:10.1136/bmj.0142
7. Romadhan Laksono Pratama A, Magglin C, Jufrie H, et al. KARAKTERISTIK KEJADIAN IKUTAN PASCA IMUNISASI

MODERNA PADA TENAGA KESEHATAN DI SAMARINDA. Jurnal Kedokteran Mulawarman. Vol 9.; 2022.

8. Laganà AS, Veronesi G, Ghezzi F, et al. Evaluation of menstrual irregularities

after COVID-19 vaccination: Results of the MECOVAC survey. Open Medicine (Poland). 2022;17(1):475-484. doi:10.1515/med-2022-0452