



Menstrual Cycle Patterns in Final Year Student, Faculty of Medicine, Universitas Sriwijaya

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ARTICLE INFO

Keywords:

Final year student
Menstrual cycle
Physical activity

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All authors have reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/amcr.v4i2.304>

ABSTRACT

Normal menstrual cycles occur every 25-30 days, with the length of menstruation with an average cycle duration of 28 days. If the menstrual cycle is less than 21 days or more than 35 days, it is considered a cycle of irregular menstruation. Irregular menstruation is caused by changes in female hormone levels associated with health behavior, obesity, stress, and physical activity. This study aimed to describe the pattern of the menstrual cycle in final-year female students of the Faculty of Medicine, Universitas Sriwijaya. The research design used a cross-sectional study with a total study population of 144 people. Data were obtained from questionnaires filled out by students via the Google form and then analyzed using the chi-square test. The results of the study showed that most students experienced normal menstrual cycles, as much as 62.1%. The most common menstrual disorder experienced by female students was dysmenorrhea, as much as 61.3%. Based on the chi-square test, it was found that there was no relationship between physical activity and the menstrual cycle ($p=0.648$). In conclusion, there is no relationship between physical activity and the menstrual cycle.

1. Introduction

Menstruation is a cyclical and regular process of shedding the lining of the uterus in response to the interaction of hormones reproduced by the hypothalamus, pituitary, and ovaries. Menstruation is a natural condition experienced by a woman, and this condition is a sign that the woman has entered puberty. The menstrual period is important in a woman's reproductive process because this process will affect a series of changes in the system of female reproduction.¹ Normal menstrual cycles occur every 25-30 days, with the length of menstruation with an

average cycle duration of 28 days. If the menstrual cycle is less than 21 days or more than 35 days, it is considered a cycle of menstruation that is irregular.² Menstrual cycles that occur with intervals of less than 21 days are called polymenorrhea, while menstrual cycles that occur more than 35 days are called oligomenorrhea.³

One of the reasons for a woman to check her condition with the gynecology department and the doctor together is because the person has irregular menstrual cycles.⁴ The menstrual cycle is said to be irregular if there is a change in frequency and



irregularity of onset, duration of flow, and blood volume from the usual menstrual cycle.⁵ Changes in the menstrual cycle that you experience can cause major health issues such as cardiovascular disease, infertility, diabetes, and osteoporosis.⁶⁻¹⁰ A study conducted in Korea found that 4,788 women experienced irregular menstruation, which was caused by several factors, namely body mass index, stress, and smoking status.¹¹ Irregular menstrual cycles can increase the risk of anxiety and depression.¹² In 2019, it was found that the prevalence of irregular menstruation was 11.83%.⁹ As many as 80.7% of nursing students in Lebanon experiences irregular menstrual cycles.¹³ A study in Jeddah, Saudi Arabia, found that 60.9% of medical students at King Abdulaziz University experienced dysmenorrhea.¹⁴

The existence of problems with menstruation has an impact on the quality of life of women. Female students who experience menstrual disorders can cause various obstacles, such as absence from learning activities and poor academic performance. Based on research conducted by Anindita et al. 2016 it was found that as many as 73.3% of female students of the Faculty of Medicine, Universitas Andalas experienced menstrual disorders. The most common menstrual disorder is dysmenorrhea, as much as 63.3%.¹⁵ Other research was also conducted on female students of the Faculty of Community Medicine, Universitas Diponegoro, and found that 85.5% of students experienced menstrual disorders. Menstrual disorders experienced include polymenorrhea, hypermenorrhea, and dysmenorrhea. The cause of menstrual disorders experienced by this female student was due to excessive physical activity.¹⁶

Irregular menstruation is influenced by hormonal imbalances in the female reproductive system. These hormones are secreted by the anterior pituitary gland. Without these hormones, the monthly sex cycle of the ovaries will not occur normally. The occurrence of this hormonal imbalance can result in chronic disease, including infertility, heart disease¹⁷, and diabetes type

2.¹⁰ Previous research has shown that irregular menstruation is caused by changes in female hormone levels, which are associated with health behaviors, obesity, stress, and physical activity. This study aims to describe the menstrual cycle in female students at the end of the Faculty of Medicine, Universitas Sriwijaya.

2. Methods

This research is a descriptive research observational with a cross-sectional study design. The population in this study were all final-year female students at the Faculty of Medicine, Universitas Sriwijaya. Sampling used a total sampling technique with a total sample of 124 people. The inclusion criteria were active students at Universitas Sriwijaya and willing to be respondents in the study. Exclusion criteria were female students who had a history of reproductive disorders (PCOS, endometriosis, cancer, and other disorders confirmed by a doctor). This study has received approval from the medical ethics and health research committee of the Faculty of Medicine, Universitas Sriwijaya (Protocol Number: 174-2022).

The instrument used was a demographic questionnaire made by researchers, which included basic data (age, weight, height, age of menarche) and additional data containing menstrual cycles, menstrual disorders, menstrual duration, and student physical activity data as measured using International physical activity questionnaire (IPAQ). IPAQ is a questionnaire that can be used to measure physical activity by assessing physical activity over the last 7 days. Based on the IPAQ score criteria, physical activity can be divided into light, moderate, and heavy physical activity. Data collection was carried out by distributing questionnaires via Google Forms. Univariate analysis was used to display the frequency distribution of age, weight, height, age at menarche, menstrual cycle, and menstrual disorders. Bivariate analysis used the chi-square test to assess the



relationship between physical activity and the menstrual cycle.

3. Results and Discussion

Table 1 shows the characteristics of the sample according to the age of the research criteria, namely the age of most respondents 21-22 years (63.7%), most bodyweight 35-55 kg (58.1), most height 156-162 cm

(46%) the highest body mass index is 18.5-25 (66.9%), and the average age of menarche is 12 years. Based on Table 2, it is known that the majority of female students experience normal menstrual cycles, namely as many as 77 people (62.1%). Table 3 shows that the disorder that occurs most frequently in female students at the Faculty of Medicine, Universitas Sriwijaya is dysmenorrhea (61.3%).

Table 1. Characteristics of research subjects.

Variable	Frequency	Mean ± SD
Age		
19-20	45 (36,3%)	
21-22	79 (63,7%)	
Weight		
35-55 kg	72 (58,1)	
56-80 kg	52 (41,9)	
Height		
145-155 cm	35 (28,2%)	
156-162 cm	57 (46%)	
163-173 cm	32 (25,8%)	
BMI		
<18,5%	11 (8,9%)	
18,5-25	83 (66,9%)	
>25	30 (24,2%)	
Menarche age		12

Table 2. Distribution of the frequency of the respondents' menstrual cycles.

No	Menstrual cycle	Frequency (n)	Percentage (%)
1	Normal	77	62,1%
2	Abnormal	47	37,9%
	Total	124	100%

Table 3. Frequency distribution of respondents' menstrual disorders.

No	Menstrual disorders	Yes		No		Total	
		N	%	N	%	N	%
1	Dysmenorrhea	76	61,3	48	38,7	124	100%
2	Hypomenorrhea	4	3,2%	120	96,8%	124	100%
3	Hypermenorrhea	30	24,2%	94	75,8%	124	100%

Table 4. Distribution of respondents based on the relationship between physical activity and the menstrual cycle.

Physical activity	Menstrual cycle						p	α
	Abnormal		Normal		Total			
	N	%	N	%	N	%		
Light	9	34,6%	17	65,4%	26	100%	0,648	0,05
Medium	26	41,9%	36	58,1%	62	100%		
Heavy	12	33,3%	24	66,7%	36	100%		
Total	47	37,9%	77	62,1%	124	100%		



Table 4 shows that the results of the study showed that from a total of 26 respondents with light physical activity, 9 respondents (34.6%) experienced an abnormal menstrual cycle while 17 respondents (65.4%) experienced normal menstrual cycles, then out of a total of 62 of respondents with moderate physical activity there were 26 respondents (41.9%) experiencing menstrual cycle disorders while 36 respondents (58.1%) experienced normal menstrual cycles, and 36 respondents with heavy physical activity obtained the results of 12 respondents (33.3) experienced menstrual cycle disorders while 24 respondents (66.7%) experienced normal menstrual cycles.

Most female students experienced normal menstrual cycles, namely 62.1%. The results of this study are in line with previous research conducted by Trisina in 2022. It was found that 93.2% experienced normal menstrual cycles.¹⁸ There are many factors that affect the menstrual cycle. One of them is the body mass index (BMI). In this study, it was found that most of the respondents had a normal body mass index (BMI) status (18.5-25) of 66.9%. This is what causes the respondent's menstrual cycle, in general, to be categorized as normal. Weight and height can be used as a measure of someone's fulfillment of nutrition to assess whether nutritional status is good or not.¹⁹ Adequate nutrition can maintain and regulate a woman's reproductive pattern.²⁰ On the other hand, poor nutrition can reduce neuropeptide Y which results in a decrease in GnRH. A decrease in GnRH can result in a decrease in gonadotropin levels, especially in the LH hormone.²¹ Women who are malnourished have a thin BMI can cause disturbances in the menstrual cycle.

The most common disorder experienced by respondents was dysmenorrhea (61.3%). In the 2016 Qoriaty study, it was found that 76% of female students at the Uniska Public Health Faculty experienced dysmenorrhea.²² In Anindita's 2016 study, it was found that 63.3% of female students at

the Faculty of Medicine, Universitas Andalas, experienced dysmenorrhea. Primary dysmenorrhea that appears without any reproductive disorders or abnormalities often occurs in adolescence, and its incidence decreases with increasing age.¹⁵ In this study, respondents who experienced dysmenorrhea had an age range of 19-22 years, and the average age of menarche was 12 years. It is feared that dysmenorrhea that appears at a much longer age after the age of menarche may become secondary dysmenorrhea that occurs due to diseases or abnormalities in the female reproductive system.²³ The research showed that most female students who experienced abnormal menstrual cycles had moderate physical activity (41.9%). This research is in line with Anindita's 2016 study, which found that most female students who experience menstrual disorders have activity adequate daily physical activity (74%).¹⁵ The study used the WHO's physical activity criteria to distinguish someone who is active or not.

Physical activity is a movement that can expend energy that produces energy or calorie-burning. Physical activity can be divided into daily activities or sports. Physical activity can be categorized based on the intensity of physical activity, light, moderate, and heavy, which can be seen from the energy consumption used for physical activity. Activity measurement daily was done using the IPAQ (Internasional physical activity questionnaire) by using a questionnaire which can assess activity in the past week by changing the number of minutes to the form of a number which can then be seen in numbers to find out whether the physical activity carried out is light, medium, or heavy.

Physical activity can be influenced by environmental factors and can easily modify as now we can easily buy something just by using a cell phone without us go alone to place them. It can also affect the physical activities that can be done and, of course, can change daily habits. Coupled with that now, the habits of female students are also slowly starting to



change as a result of restrictions on activities carried out due to the pandemic, and now they are slowly starting to be able to carry out outdoor activities easily, and lectures can also be carried out partially face to face. This can also be a factor in changes in physical activity in female students of the Universitas Sriwijaya Medical Education class of 2019.

Changes in habits can affect physical activity as well and can be caused by the opportunity to be able to do outdoor activities freely after being restricted for approximately 2 years, thus making outdoor activities such as sports, traveling, playing, shopping, and others do, thus making a change in the physical activity carried out from the previous one. Even so, not many female students did strenuous physical activity. Many of them did moderate activities such as cleaning the house, walking at a speed of about 5km/hour, shopping, assembling light items, washing, and gardening with the greatest amount. After testing using Chi-square analysis who square with a 95% confidence level $\alpha = 0.05$, the result is $p = 0.645$. With this, it can be concluded that the value of $p > \alpha$ ($p > 0.05$), thus means H_0 is accepted and H_1 is rejected, which means there is no relationship between physical activity and the menstrual cycle in female students at the end of medical education Universitas Sriwijaya class of 2019.

The results of this study are in line with previous research by Anindita about the relationship between daily physical activity and the menstrual cycle in students of the Faculty of Medicine, Universitas, Andalas, in 2016. The absence of a relationship between physical activity and the menstrual cycle could be due to the large number of respondents who did a physical activity with high intensity but no disturbance of the menstrual cycle. There is no relationship between physical activity and the menstrual cycle factor of hormones, nutritional status, and sleep patterns.

Hormones are very influential in the process of menstruation. Hormones GnRH (gonadotrophin-

releasing hormone) serves to secrete the hormone FSH (follicle stimulating hormone) dan LH (luteinizing hormone), which is used to produce hormones estrogen and progesterone which then causes menstruation.²⁴ Even though doing physical activity with high intensity, if it doesn't cause disruption to the hormone system, this can be the cause of no disturbance in menstruation so that cause. There is no relationship between physical activity and the menstrual cycle.

4. Conclusion

Most female students experience normal menstrual cycles (62.1%). The most common menstrual disorder is dysmenorrhea, as much as 61.3%. Most female students have moderate activity, namely 41.9%. There is no relationship between physical activity and the menstrual cycle.

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