

RESEARCH

The Relationship Between Stress Level And Menstrual Cycle In Final Level Of Sriwijaya University Medical Education Batch 2019

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Abstract

Background: Menstruation is the discharge of blood and mucous tissue through the vagina from the uterus periodically every month with a span of 24-35 days. Menstruation can be affected by stress. The burden of working on the final assignment coupled with learning that has started to be done face to face makes students have to adjust to their daily habits. The purpose of this study was to find out whether there is a relationship between stress levels in final year students of Sriwijaya University Medical Education class of 2019.

Methods: This study uses a type of observational research, namely correlation analysis with a cross sectional approach. Data collection was carried out in October 2022 and obtained 124 student data, then an analysis was carried out using the SPSS program and analyzed using the Chi Square test.

Results: From the results of the study, it was found that 124 respondents who experienced menstrual disorders were 47 (37.9%) while 77 (62.1%) experienced normal menstruation, then the most stress was severe stress, namely 43 (34.7). Then an analysis of the relationship between stress and the menstrual cycle was carried out, the result was $p = 0.009 / p < \alpha (0.05)$, which means that there is a relationship between stress and the menstrual cycle.

Conclusion: There is a relationship between stress levels and the menstrual cycle

Keywords: Menstrual Cycle, Stress Level

INTRODUCTION

Menstruation is the discharge of blood and mucous tissue through the vagina from the uterus periodically every month.¹ Menstrual cycles last between 24 to 35 days each time they occur. If the menstrual cycle occurs less than 24 days or more than 35 days it is considered an irregular menstrual cycle.² The duration of menstruation is usually 2 to 7 days after each menstruation. Irregular menstrual cycles occur due to hormonal imbalances which have a major effect on ovulation.³ There are several factors that can affect the menstrual cycle, one of which is stress.⁴

Stress is a feeling that originates from internal or external sources that can cause emotions and even cause physiological changes that can affect health and survival.⁵ Students often experience stress related to their academic activities. In final year students who undergo a very solid lecture process, plus having to complete a final project or thesis is the main factor that can cause fatigue and stress in students.⁶

Stress can cause increased secretion of Adrenocorticotrophic Hormone (ACTH). This condition is caused by increased activity of the limbic system, especially in the amygdala and hippocampus, which then sends signals to the posterior medial hypothalamus. Nearly all of the pituitary secretions are regulated by hormones and nerve signals from the hypothalamus. When the pituitary gland is removed from its normal location under the hypothalamus and spread to other parts of the body, the rate at which various hormones (except prolactin) are secreted is greatly reduced. Stress affects the hypothalamus which can affect Follicle Stimulating Hormone (FSH) production through inhibition of the release of Gonadotropine-releasing hormone (GnRH) thereby affecting the disruption of estrogen and progesterone production which causes menstrual cycle irregularities.⁷

Based on research on the relationship between stress and the menstrual cycle in medical students at the Muhammadiyah University of North Sumatra conducted by Aldiba in 2022, the results showed that there was a relationship between stress and the menstrual cycle. Of the total respondents who experienced stress, 42 (68.9%) students experienced menstrual cycles. abnormal while 19 (31.1%) experienced normal menstrual cycles.⁸

Due to the heavy academic activities carried out by students of the final year of medical education at Sriwijaya University 2019 plus entering the face-to-face system, this will make students adjust to new habits compared to before. Therefore this research was conducted aiming to find out whether there is a relationship between stress levels and the menstrual cycle in final year students of Sriwijaya University Medical Education batch 2019.

METHODS

This study uses the type of observational research, namely correlation analysis with a cross sectional approach. The data used is primary data taken from medical students at Sriwijaya University class of 2019 using the Depressions Anxiety Stress Scales 42 questionnaire (DASS 42). The sample used in this study was female students of the final year of medical

education at Sriwijaya University class of 2019 with criteria set by the researchers. The data taken in this study were female students in the final year of medical education at Sriwijaya University class of 2019, totaling 144 people.

In the study, the amount of data that matched the criteria was 124 respondents, while the other respondents did not meet the criteria as samples used in the study because there were 12 people who were not willing to be respondents and there were 8 respondents who filled out the research did not meet the requirements in the study, namely having a disorder reproduction that was confirmed by the previous doctor so that the number of samples obtained was 124. The data obtained were then managed using excel software and analyzed univariately, bivariately and multivariately using SPSS Statistics 24 software, the analysis used in this study was Chi-Square.

RESULT

Univariate analysis

Table 1 Distribution based on Respondent Characteristics

Data	Frequency	Percentage
Age		
19-20 years	45	36,3 %
21-22 years	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 %

In this study, which was conducted on 124 respondents, the results showed that the age of the respondents was 19 to 22 years with the highest number of ages being 21-22 years with a total of 79 (63.7%) respondents, then the weight of the respondent with the highest body weight was obtained. amount is 35-55 kg with a total of 72 (58.1%) respondents, then for height data the most obtained height is 156-162 cm with a total of 57 (46%) respondents,

then from these data obtained BMI the most respondents were 18.5-24 as many as 83 (66.9%) respondents.

Table 2 Distribution of Respondents Based on Stress Levels

Stress Level	Frequency	Percentage
	(n)	(%)
Normal	33	26,6%
Mild	15	12,1%
Moderate	33	26,6%
Severe	43	34,7%
Total	124	100%

Based on the results of the research conducted, it was found that 33 respondents (26.6%) did not experience stress, while for mild stress there were 15 respondents (12.1%), moderate 33 respondents (26.6%) and heavy as many as 43 respondents (34.7%) of a total of 124 respondents.

Bivariate Analysis

Table 3 Distribution of Respondents Based on the Relationship between Stress Levels and the Menstrual Cycle

Stress Level	Menstrual Cycle				Total	p	α
	Abnormal		Normal				
	N	%	N	%	N	%	
Normal	8	24,2%	25	75,8%	33	100%	
Mild	7	44,7%	8	53,3%	15	100%	
Moderate	8	24,2%	25	75,8%	33	100%	0,009
Severe	24	55,8%	19	44,2%	43	100%	0,05
Total	47	37,9%	77	62,1%	124	100%	

Based on the results of research conducted with 124 normal respondents, there were 8 (24.2%) respondents who experienced menstrual cycle disorders while 25 (75.8%) experienced normal menstrual cycles, then those who experienced stress obtained results where 7 respondents (44.7%) with mild stress levels experienced menstrual cycle disturbances while 8 respondents (53.3%) did not experience menstrual cycle disturbances, then there were 8 respondents (24.2%) with moderate stress levels experiencing menstrual cycle disturbances while 25 respondents (73, 5%) did not experience menstrual cycle disturbances, then 24 respondents (55.8%) with severe stress levels experienced menstrual cycle disturbances while 19 respondents (44.2%) did not experience menstrual cycle disturbances

DISCUSSION

The Relationship between Stress Levels and the Menstrual Cycle of Medical Students at Sriwijaya University Batch 2019

Based on the results of the research written in the distribution table between the relationship between stress levels and the menstrual cycle of female students at the end of the 2019 class of Doctoral Education at Sriwijaya University, the results obtained for respondents with normal stress levels were that 8 (24.2%) experienced menstrual disorders, then mild stress experienced menstrual cycle disturbances were 7 respondents (44.7%), moderate stress experienced menstrual cycle disturbances 8 respondents (24.2%), and severe stress experienced menstrual cycle disturbances were 24 respondents (55.8%).

After testing using Chi Square analysis with a confidence level of 95% $\alpha = 0.05$, the results obtained were $p = 0.009$. Thus it can be concluded that the value of $p < \alpha$ ($p < 0.05$) thus means that H^0 is rejected and H^1 is accepted, which means that there is a relationship between physical activity and the menstrual cycle in female students at the end of the 2019 class of Doctoral Education at Sriwijaya University.

The menstrual cycle is the distance from the start of menstruation the previous month to the start of menstruation the following month. The menstrual cycle is said to be normal if it occurs within a span of 24-35 days. The menstrual cycle can be influenced by several factors including physical activity, stress, lack of sleep, nutritional status. Physical activity can be seen from daily activities such as walking or sports activities, doing physical activity can cause disruption of the menstrual cycle.⁹

This is consistent with the theory that stress can be a factor that can affect the menstrual cycle, stress can cause physiological responses that can cultivate the hippocampus and amygdala in the limbic system which sends signals to the hypothalamus. Stress can cause disruption of menstruation because it can inhibit the reproduction of GnRH in producing Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH), disruption of FSH production can cause disruption of the production of the hormones estrogen and progesterone, causing disruption of the menstrual cycle.⁷ The cause of stress can come from yourself or the environment.¹⁰

When the body responds to stress, the adrenal glands produce a glucocorticoid hormone called cortisol. The production of this hormone is regulated by the pituitary in the secretion of Adrenocorticotrophic Hormone (ACTH). Stress inhibits reproductive function by blocking the hypothalamic-pituitary-gonadal pathway by blocking the release of gonadotropin-releasing hormone (GnRH). At the pituitary level, cortisol's effects are secondary to suppression of GnRH secretion in the form of decreased FSH production, and at the ovarian level, cortisol directly inhibits steroid hormone production and causes cell death. Stress affects the production of follicle-stimulating hormone (FSH) by inhibiting the release of gonadotropin-releasing hormone (GnRH), which in turn affects the disruption of the production of estrogen and progesterone, causing irregularity in the menstrual cycle.⁷

In final year female students who have to complete their final assignment coupled with the tight schedule of lectures can be a trigger for stress, coupled with adjusting to new habits that have entered lectures directly which begin to be carried out, this can be a factor that influences the occurrence of stress in female students End of Medical Education at Sriwijaya University batch 2019. This is in accordance with previous research by Hatmanti regarding stress levels and menstrual cycles in college students in 2019 which stated that there was a relationship between stress and the menstrual cycle.³ However, this research is not in accordance with Yudita's research on the relationship between stress and menstrual cycle patterns of female students at the Faculty of Medicine, Andalas University in 2017 which stated that there was no relationship between stress and the menstrual cycle.¹¹

Based on the description above, the researcher can conclude that stress can be a factor in disrupting the menstrual cycle. Judging from the results obtained, female students who experience stress are more likely to experience abnormal menstrual cycles.

CONCLUSION

The level of stress that was most commonly experienced by students of the final year of the Sriwijaya University Medical Education class of 2019 was the severe level of 43 respondents (34.7%) The proportion of menstrual cycle patterns experienced by female students of the final year of Doctoral Education at Sriwijaya University class of 2019 was normal as many as 77 respondents (62.1%) while those who were not normal were 47 respondents (37.9%) There is a relationship between stress levels and the menstrual cycle in female students at the end of the 2019 class of Doctoral Education at Sriwijaya University with a value of $p=0.009 < \alpha=0.05$

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REFERENCES

1. Dorland WA. Kamus Kedokteran Dorland. 31st ed. Mahode AA dkk, editor. EGC Medical Publisher; 2012. 1321 p.
2. Taylor, H.S, Lubna Pal ES. Speroff's Clinical Gynecologic Endocrinology and Infertility. Vol. 59, Department of Obstetrics, Gynecology and Reproductive Sciences Yale School of Medicine New Haven, Connecticut. Wolters Kluwer; 2019.
3. Mawarda Hatmanti N. Tingkat Stres Dengan Siklus Menstruasi Pada Mahasiswa. Journal of Health Sciences. 2018;8(1):58–67.
4. Sinaga, Ernawati, Nonon S, Suprihatin, Nailus S, Ummu S, Yulia .A. M, Agusniar T SL. Manajemen Kesehatan Menstruasi. Vol. 59, Diterbitkan oleh : Universitas Nasional IWWASH Global One. 2017.

5. Koh KB. Stress and Somatic Symptoms: Biopsychosociospiritual Perspectives. Springer International Publishing; 2018. 3 p.
6. Gamayanti W, Mahardianisa M, Syafei I. Self Disclosure dan Tingkat Stres pada Mahasiswa yang sedang Mengerjakan Skripsi. *Psychopathic : Jurnal Ilmiah Psikologi*. 2018;5(1):115–30.
7. Setiyono A, Prasetyo B, Maramis M. Pengaruh Tingkat Stres dan Kadar Kortisol dengan Jumlah Folikel Dominan pada Penderita Infertilitas yang Menjalani Fertilisasi Invitro. *Majalah Obstetri & Ginekologi*. 2015;23(3):128.
8. Aldiba K. Hubungan Tingkat Stres dengan Siklus Menstruasi pada Mahsiswi Program Pendidikan Profesi Dokter Fakultas Kedokteran Universitas Muhammadiyah Sumatera Utara. Universitas Muhammadiyah Sumatera Utara; 2022.
9. Ranny Patria Yolandiani , Lili Fajria ZMP. Faktor – faktor yang mempengaruhi ketidakteraturan Siklus menstruasi pada remaja. *Jurnal Keperawatan Indonesia*. 2020;68(02):1–10.
10. Musradinur. Stres Dan Cara Mengatasinya Dalam Perspektif Psikologi. *JURNAL EDUKASI: Jurnal Bimbingan Konseling*. 2016;2(2):183.
11. Yudita NA, Yanis A, Iryani D. Hubungan antara Stres dengan Pola Siklus Menstruasi Mahasiswi Fakultas Kedokteran Universitas Andalas. *Jurnal Kesehatan Andalas*. 2017;6(2):299