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RELATIONSHIP BETWEEN STRESS LEVELS AND MENSTRUAL CYCLE OF FEMALE STUDENTS

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ABSTRACT

Background: Adolescents are highly susceptible to menstrual cycle disorders, especially during the initial year after menarche. A consistent menstrual cycle is significant for women, as it can be related to fertility. The Central Java Provincial Health Office reported that 13.1% of women experienced menstrual cycle disorders. This study analyzed the correlation between stress levels and the menstrual cycle of female students at Madrasah Putri At-Taqwa Karanganyar.
Methods: This study used a cross-sectional design conducted at Madrasah Putri At-Taqwa Karanganyar, with a sample of 63 respondents. Data were collected through questionnaires and interviews. The analysis showed that most respondents' menstrual cycles fell into the regular category (68.2%), and most had normal stress levels (39.7%). A correlational analysis was conducted using Spearman's Rho test.
Results: Correlational analysis was conducted using the Spearman Rho test, resulting in a p-value of 0.259 (P>0.05). The results showed no significant relationship between stress levels and menstrual cycles of female students at Madrasah Putri At-Taqwa Karanganyar.
Conclusion: Suggestions for respondents to better understand how to manage stress and reproductive health, and can carry out activities that are expected to reduce stress levels, and seek information related to stress management and reproductive health.
Keywords: female student, menstrual cycle, stress level

INTRODUCTION

The onset of menstruation or menarche usually occurs in adolescent girls between the ages of 12 and 16 years, which can affect the nature and behavior of adolescents. Some adolescents often experience menstrual irregularities, especially during the first year after menarche. The menstrual cycle is defined as the interval from the start of one menstruation to the beginning of the next, with cycle duration measured from the start date of the last menstrual period to the start of the next. In women, a regular menstrual cycle generally lasts from 21 to 35 days, with considerable variation among individuals. Moreover, differences in menstrual cycles can be observed across different racial and cultural backgrounds. Even among identical twins, variations in menstrual cycles can also occur (Arma, Bakar and Yosmiryanti, 2023).

The regularity of the menstrual cycle is essential for women, as it can be related to fertility levels. Disruptions in the menstrual cycle serve as an important indicator of potential reproductive system disorders, which can be associated with an increased risk of various reproductive health problems, including uterine cancer and infertility (Putrizalda *et al.*, 2022).

Globally, menstrual cycle disorders in women are reported to exceed 75%, with the highest prevalence of 94.9% observed in adolescents aged 12-17 years. According to the Indonesian Ministry of Health, an introductory health survey conducted in 2018 revealed that 11.7% of adolescents in Indonesia experienced menstrual disorders (Riskesdas, 2018),

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while the Central Java Provincial Health Office reported 13.1% of women experienced menstrual cycle irregularities (Central Java, 2019).

Several factors affect the menstrual cycle, including hormones, psychology, physical activity, nutrition, and diet. The duration of the menstrual cycle is also related to age, weight, stress levels, genetic predisposition, and nutritional intake. A study by Syahrani, Yuswatiningsih, and Wibowo showed that menstrual irregularities tend to increase along with the emergence of various mental health disorders (Syahrani, Yuswatiningsih and Wibowo, 2024). Adolescents who have started menstruating often experience disorders related to the menstrual cycle, especially when changes in their life circumstances occur. Such changes may manifest as prolonged or more frequent menstrual cycles, irregular cycles, or complete cessation of menstruation. The three main types of menstrual disorders related to cycle irregularity are polymenorrhoea, oligomenorrhoea, and amenorrhoea (Islamy and Farida, 2019). Hormonal dysfunction, systemic abnormalities, stress, adenoids, and excessive levels of the hormone prolactin influence menstrual cycle disorders.

Stress is a physiological, psychological, and behavioral response that individuals exhibit to adapt to and manage internal and external stressors. These stressors can affect all aspects of a person's life and result in mental distress, behavioral changes, difficulties in social interactions, and menstrual cycle irregularities. The effects of stress during menstruation involve the neuroendocrinological system, which plays an important role in women's reproductive health by (Ekajayanti and Purnamayanthi, 2020).

Stress can be attributed to three primary sources: environmental factors, physiological conditions, and cognitive processes. Environmental stressors include hearing loss, overcrowding, temporal constraints, achievement standards, threats to personal safety and self-esteem, and challenges in interpersonal relationships with friends, partners, and family dynamics. Physiological stress arises from bodily changes, including those that occur during puberty, menstruation, aging, accidents, malnutrition, and sleep deprivation. Cognitive stress is characterized by an individual's internalization of self and environmental stimuli, which affects the interpretation and processing of change-associated experiences by (Nur and Mugi, 2021).

According to Indrayani and Aniroh, 19.4% of Korean adolescents surveyed reported experiencing irregular menstrual cycles (Indrayani and Aniroh, 2023). Several factors, including body weight, frequency of physical activity, stress levels, and sleep duration, significantly influence menstrual cycle regularity. Elevated stress levels, depressive symptoms, and hormonal changes correlated with an increased likelihood of menstrual irregularities. In addition, research by Islamy and Farida showed that nutritional status and stress levels are important factors affecting menstrual cycle regularity, accounting for 40.2% of the observed sample on menstrual irregularities (Islamy and Farida, 2019).

In contrast, in a study by Mayasari Bety, Arismawati Fitra Dian titled "The Effect of Stress on Menstrual Cycles in Girls," involving 65 participants, it was found that 44 (67.69%) adolescents experienced menstrual irregularities while 21 (32.31%) experienced regular cycles. The analysis revealed a significant impact of stress on the menstrual cycles of adolescent girls living in Pungging Mojokerto village. Specifically, adolescents who experienced stress during stages V and VI of their menstrual cycle showed irregularity. In contrast, some respondents who reported stress during stages I to IV showed a regular cycle (Mayasari Bety, Arismawati Fitra Dian, 2021).

A study by Ekajayanti and Purnamayanthi, titled "The Relationship between Stress Levels and Changes in Menstrual Patterns in Adolescents," identified a significant correlation between stress levels and adolescent menstrual patterns. The study concluded that increased stress levels are associated with more significant changes in menstrual

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patterns, as increased stress disrupts hormonal fluctuations and alters the regularity of the menstrual cycle (Ekajayanti & Purnamayanthi, 2020).

In conducting a field study on the relationship between stress levels and menstrual cycles of female students at Madrasah Putri At-Taqwa Karanganyar, the author conducted interviews, which revealed that 4 of 12 students reported experiencing stress due to excessive activities and peer-related problems. Among the four nuns interviewed, 3 showed changes in their menstrual cycle. This prompted the researchers to investigate the potential relationship between stress levels and adolescent menstrual cycles. Given this context, the researchers linked the relationship between stress levels and menstrual cycles of female students at Madrasah Putri At-Taqwa Karanganyar.

RESEARCH METHOD

This study used a quantitative methodology with a cross-sectional analytical framework to examine the correlation between stress levels and menstrual cycles of female students at Madrasah Putri At-Taqwa Karanganyar. This approach was chosen for its ability to simultaneously facilitate the measurement of variables, thus allowing the identification of potential interrelationships. The target population consisted of all female students at the madrasah, and a sample was drawn using the Slovin formula to ensure accurate and reliable representation. The study included female students who had menstruated and agreed to participate as respondents. In contrast, those who were not present during the study were excluded.

Data were collected through a questionnaire method that had undergone rigorous validation and reliability testing. Stress level assessment used a modified version of the Depression Anxiety Stress Scale (DASS-42) to evaluate respondents' stress levels, and the menstrual cycle was determined from the one menstrual cycle questionnaire completed by participants. Data analysis was conducted in two phases: first, univariate analysis was conducted to characterize the respondents and describe the data distribution, followed by bivariate analysis using the Spearman Rho correlation test to determine the relationship between stress level and menstrual cycle.

Ethical considerations were carefully observed in conducting the study, including obtaining approval from the Health Research Ethics Commission under certificate number 2558/UKH.L.02/EC/II/2025. Each participant received a thorough explanation of the study's purpose and was asked to sign a consent form before participating. Confidentiality and anonymity of respondents' information were strictly maintained to protect the data provided. This study aims to increase understanding of the factors influencing adolescents' menstrual cycle, especially in the madrasah environment.

RESULTS

The following table presents the research findings on stress levels, menstrual cycles, and their relationship among the respondents.

Table 1. Stress level of female students at Madrasah Putri At-Taqwa (n=63)

Stress Level	Frequency (f)	Percentage (%)
Normal	25	39.7
Lightweight	18	28.6
Medium	15	23.9
Weight	4	6.3
Very Heavy	1	1.5
Total	63	100.0

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Based on Table 1, most female students experience normal stress, as many as 25 female students (39.7%), and one female student experiences severe stress (1.5%).

The following table shows data analysis of the menstrual cycle of Female Students at Madrasah At-Taqwa Karanganyar.

Table 2. Menstrual cycles of female students in Madrasah Putri At-Taqwa (n=63)

Menstrual Cycle	Frequency (f)	Percentage (%)
Regular	43	68.2
Irregular	20	31.8
Total	63	100.0

Based on Table 2, 43 female students (68.2%) experienced regular menstrual cycles, and 20 (31.8%) female students experienced irregular menstrual cycles.

Table 3 Tabulation of Data on Stress Levels of Female Students at Madrasah Putri At-Taqwa Karanganyar

Variable Level Stress Question	Never		Sometimes		Often		Always	
	0		1		2		3	
	f	%	f	%	f	%	f	%
Getting angry over small/ trivial things	6	9.5	38	60.3	19	30.2	0	0
Tend to overreact to situations	14	22.2	39	61.9	9	14.3	1	1.5
Trouble relaxing/relaxing	20	31.7	29	46	12	19	2	3.1
Easily irritated	3	4.7	32	50.8	22	34.9	6	9.5
Feeling a lot wasting energy due to anxiety	20	31.7	20	31.7	16	25.4	7	11.1
Impatient	5	7.9	39	61.9	15	23.8	4	6.3
Easily offended	6	9.5	26	57.1	16	25.4	5	7.9
Difficult to rest	28	44.4	25	39.7	8	12.7	2	3.1
Irritable	6	9.5	42	66.7	13	20.6	2	3.1
Difficulty in calming down after something that interferes	10	15.9	24	38.1	22	34.9	7	11.1
It is difficult to tolerate disruptions to things that are being done	18	28.6	27	42.9	15	23.8	3	4.7
You are in a calm state	1	1.5	38	60.3	21	33.3	3	4.7
Can't understand what prevents you from completing what you are doing	20	31.7	31	49.2	12	19	0	0
Easily agitated	14	22.2	24	38.1	20	31.7	5	7.9

Based on Table 3, a tabulation of stress level data, most Female Students answered sometimes. The last answer given is always.

Table 4 Tabulation of Menstrual Cycle Data of Female Students at Madrasah Putri At-Taqwa Karanganyar

Menstrual Cycle Variable Question	Yes		No	
	f	%	f	%
My menstrual cycle ranges from 21 to 35 days	21	33.3	42	66.7
In one menstrual cycle, the length of my period ranges from 2 to 7 days	15	23.8	48	76.2
My period is once every month	21	33.3	42	66.7
I never menstruated for three consecutive months	22	35.0	41	65.0

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Menstrual Cycle Variable Question	Yes		No	
	f	%	f	%
In the year of the onset of menstruation (menarche), my menstrual cycle experienced interruptions (irregular)	45	71.6	18	28.5
When I do strenuous activity/excessive exercise, my menstrual cycle becomes irregular	13	20.7	50	79.3
During menstruation, the volume of blood that comes out is enormous, which causes my activity to be distracted	37	58.7	26	41.3
I change my sanitary pads around more than 4 times per day	18	28.5	45	71.5
When menstruation occurs, I don't experience pain/ cramps in the abdomen	42	66.7	21	33.3
I often take smoothies menstruation when my menstrual cycle is irregular/ not menstruating	0	0	63	100

Based on Table 4, a tabulation of menstrual cycle data for female students at Madrasah At-Taqwa, the majority answered yes to statements that support a smooth menstrual cycle and vice versa.

This study's results show the relationship between the independent variable, stress level, and the dependent variable, menstrual cycle. The relationship between variables was tested using Spearman's rank correlation, which yielded the following results.

Table 5 Relationship between Stress Levels and Menstrual Cycle at Madrasah Putri At-Taqwa Karanganyar

Correlations

			Stress Level	Menstruation cycle
Spearman's rho	Stress Level	Correlation Coefficient	1.000	-.144
		Sig. (2-tailed)	.	.259
		N	63	63
	Menstruation cycle	Correlation Coefficient	-.144	1.000
		Sig. (2-tailed)	.259	.
		N	63	63

Based on Table 5, the results obtained are significant. (2-tailed) 0.259. $p = 0.259$ ($p > 0.05$); the p-value is greater than α, so it can be concluded that there is no relationship between stress levels and the menstrual cycle of female students at Madrasah At-Taqwa Karanganyar.

DISCUSSION

Characteristics of Female Students at Madrasah Putri At-Taqwa Karanganyar

This study involved 63 female students from Madrasah Putri At-Taqwa, aged 13 to 18 years, according to the World Health Organization (WHO) classification of adolescents. The WHO defines adolescents as individuals aged 10 to 19 years. During this time, they undergo a transition from childhood to adulthood, marked by significant physical, emotional, and social changes. According to the data collected in this study, 22 respondents (35%) were in the 13-14 age group, 23 respondents (36.5%) were in the 15-16 age group, and 18 respondents (28.5%) were in the 17-18 age group. This grouping determines potential correlations between age, stress levels, and menstrual cycles, given that each stage of development presents different challenges. The changes from early to late adolescence

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are crucial for biological and psychological growth. Therefore, understanding the factors that affect reproductive health is paramount. In this regard, the hormonal fluctuations that adolescents experience often lead to imbalances that can significantly affect their menstrual cycle and the level of stress they face (Tua & Gaol, 2016).

Previous research has shown that adolescents aged 16 to 19 years are at a higher risk of having irregular menstrual cycles compared to younger women. Menstrual disorders in adolescents can appear as irregular cycles, altered menstrual blood volume, or increased menstrual pain (Zalni, 2020). In addition, the WHO reported that approximately 75% of adolescent women face menstrual irregularities, especially in the early years after menarche or the onset of menstruation (WHO, 2017). This underscores that the hormonal shifts during adolescence are important determinants of menstrual regularity. In this study, most participants were in early adolescence, a phase during which adolescents need to adapt to hormonal changes. It is important to realize that external influences, such as stress and academic pressure, can exacerbate menstrual irregularities, although they are not the only contributors to this disorder.

Beyond age-related factors, academic stress can significantly influence respondents' levels of stress. The findings of this study also included categorization by educational attainment, revealing that 23 respondents (36.6%) were in grades VII-VIII, 20 respondents (31.7%) were in grades IX-X, and 20 respondents (31.7%) were in grades XI-XII. Academic stress is often associated with heightened levels of anxiety in adolescents, as articulated by Tua and Gaol, who asserted that academic responsibilities, the accumulation of assignments, test preparation, and expectations for stellar performance are substantially stressful for female students (Tua and Gaol, 2016). This academic pressure can directly affect mental and physical well-being, leading to disrupted sleep, increased anxiety, and reduced concentration during study periods. The situation is further exacerbated by teenagers' tendency to neglect healthy lifestyle practices, such as poor sleep and erratic eating habits, which can further disrupt their hormonal balance and reproductive health.

Overall, this study shows that age and academic pressure can influence the level of stress and the regularity of the menstrual cycle among female students. Although not all adolescents experience menstrual disorders due to stress, understanding the triggering factors is still important so that prevention and treatment can be done early. A more comprehensive approach to managing academic stress and reproductive health is needed, especially in educational environments such as madrasahs. One effort is to provide education on mental and reproductive health to female students, so they better understand the importance of balancing academic pressure with their health. In addition, school policies that support female students' mental well-being, such as balancing academic load and providing counseling services, can be an important step toward creating a healthier environment for female students. With a more targeted approach, it is hoped that female students can be better prepared to face academic and social challenges without experiencing health problems that affect their overall well-being.

Stress Level of Female Students at Madrasah Putri At-Taqwa

In this investigation, stress levels among participants were classified according to scores from the Depression Anxiety Stress Scale (DASS-42), an empirical instrument used to evaluate the psychological condition of the surveyed individuals. Participants who scored 0-14 were considered to have normal stress levels, while those who scored 15-18 were classified as having mild stress. Moderate stress was defined by scores falling from 19 to 25, while severe stress was indicated by scores between 26 and 33, and scores exceeding 33 were categorized as very severe stress. The results of the univariate analysis revealed that 25 respondents (39.7%) were identified in the normal stress category. In

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contrast, the majority, precisely 33 individuals (52.4%), were identified as experiencing stress in the mild to moderate range.

Furthermore, five respondents (7.9%) reported experiencing severe to very severe stress. This finding illustrates that, although a significant number of female students experience stress in the mild to moderate range, a subset experience stress at very high levels. This condition can affect their physical and psychological well-being, especially if stress is not adequately managed daily.

Most of the respondents in this study reported experiencing mild to moderate stress, with a percentage of 52.4%, suggesting that psychological stress in academic settings can substantially affect adolescents' stress levels. This observation is in line with Suhri's study on the relationship between stress and the menstrual cycle of female students at the Faculty of Medicine and Health Sciences, UIN Alauddin Makassar, which showed that a significant majority, comprising 200 respondents or approximately 65.1% of the total participants, experienced moderate levels of stress. This percentage underscores the prevalence of mild to moderate stress among adolescents, especially in academic contexts characterized by multiple demands (Suhri, 2022). Elements such as academic pressure, social interactions, and future-related anxiety may act as significant stressors for this demographic. Although mild to moderate stress is often considered normative, if not managed effectively, it can escalate into severe stress, which adversely affects mental and physical health. As a result, individuals must implement effective stress management strategies to prevent detrimental impacts on their emotional well-being and overall health.

Beyond academic and social influences, many additional factors contribute to adolescent stress levels, as described in a study by Nurwela, Sri and Israfil (2022). These factors include the fulfillment of emotional developmental tasks, environmental conditions, internet addiction, and parenting styles that can affect adolescents' psychological well-being. Within the framework of this study, female students inhabit the Madrasah environment, which presents different life dynamics compared to those who live in a family environment. According to El-Azis, adolescents transitioning to boarding schools often experience increased stress due to social pressure, peer interactions, and the strict regulations imposed in an educational environment grounded in boarding principles. In addition, other contributing factors, such as family stress, increased academic demands, and changing living conditions, can further exacerbate the stress that boarding school students face (El-Azis, 2017).

Since poorly managed stress can negatively impact mental and physical health, individuals need effective stress management strategies. Prolonged stress can cause various physiological disorders, such as increased blood pressure, cardiovascular system disorders, and hormonal imbalances that affect the menstrual cycle. If cortisol levels increase due to excessive stress, the production of reproductive hormones such as estrogen and progesterone may also be disrupted, ultimately affecting menstrual regularity. In addition, uncontrolled stress can cause sleep disturbances, changes in diet, and a weakened immune system, ultimately impacting overall health. Therefore, implementing effective strategies to manage stress, such as maintaining a good sleep pattern, engaging in regular exercise, practicing relaxation techniques, and building healthy communication with those closest to you, are important steps in preventing the negative impact of stress on health. With a better understanding and awareness of stress management, female students are expected to adapt to their various pressures to live a more balanced and healthy life.

Menstrual Cycle of Female Students at Madrasah Putri At-Taqwa

Evaluation of menstrual cycles among participants was conducted using a structured questionnaire, in which scores ranging from 6 to 10 indicated regular cycles, while scores

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from 0 to 5 indicated irregular cycles. The data analysis revealed that 43 respondents (68.2%) had regular menstrual cycles, whereas 20 respondents (31.8%) had irregular cycles. This result corroborates Maulia's findings, who reported that 52.2% of adolescent women maintained regular menstrual cycles, while 47.8% experienced irregular cycles (Maulia, 2021). Despite the predominance of regular cycles among respondents, some individuals continue to experience menstrual irregularities, potentially caused by various influencing factors.

Menstrual cycle abnormalities can arise from various determinants, including nutritional status, physical activity, psychological stress, eating habits, and sleep duration. As stated by Asiyah, individuals classified as overweight have a 27.2-fold higher likelihood of experiencing menstrual disorders, while those considered underweight face a 5.8-fold increased risk (Asiyah, 2018). Furthermore, excessive physical activity may interfere with the secretion of gonadotropin-releasing hormone (GnRH), an important component in regulating the menstrual cycle (Suhri, 2022). As a result, adherence to a balanced diet and appropriate physical activity levels is essential for maintaining a regular menstrual cycle.

In the current study, hormonal medication use was not identified as a contributing factor to menstrual patterns, as none of the participants reported its use. Nevertheless, sleep quality exerts a considerable impact on the menstrual cycle. A study conducted by Siregar et al. showed that individuals who suffered from inadequate sleep quality were 4.773 times more likely to experience menstrual disturbances than those who enjoyed restorative sleep (Siregar et al., 2022). Insufficient sleep duration can disrupt the balance of reproductive hormones, ultimately resulting in irregularities in the menstrual cycle.

Maintaining a healthy lifestyle is a significant factor in maintaining regular menstrual cycles. A nutritious diet, consistent but moderate exercise, and effective stress management strategies can facilitate the maintenance of hormonal balance in the body. In summary, while most respondents demonstrated regular menstrual cycles, external variables such as nutritional status, physical activity, sleep quality, and stress levels require careful consideration. Individuals can cultivate greater awareness of their reproductive health by gaining a deeper understanding of these determinants.

Relationship between Stress Level and Menstrual Cycle in Madrasah Putri At-Taqwa

The Spearman Rho analysis yielded a p-value of 0.259 ($p > 0.05$), indicating no statistically significant correlation between stress levels and menstrual cycles among female students at Madrasah Putri At-Taqwa Karanganyar. Consequently, the alternative hypothesis ($H\alpha$) was rejected, while the null hypothesis (H0) was affirmed. Despite the general association of stress with hormonal fluctuations, this study did not identify stress as a major contributor to menstrual cycle irregularities. Other variables that were not examined, such as dietary habits, nutritional status, physical activity, socioeconomic conditions, sleep duration, and stress management methods, may exert a more pronounced influence on menstrual cycle regularity. Therefore, these variables must receive further attention in future research endeavors to gain a more in-depth understanding of the determinants of menstrual irregularity.

An important element influencing the menstrual cycle is how individuals manage stress. Damayanti et al. noted that individuals with effective coping strategies are generally better at managing stress without hormonal disruption. In contrast, chronic stress can increase cortisol levels in the body, potentially inhibiting the synthesis of reproductive hormones such as estrogen and progesterone (Damayanti et al., 2022). This disruption of hormonal balance can lead to menstrual disorders and may affect fertility in the long run. As such, proficient stress management through relaxation techniques, proper sleep patterns,

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and adequate social support are important components of maintaining reproductive hormone balance.

In addition to stress management, other determinants, such as nutritional status, physical activity, and sleep patterns, significantly influence the menstrual cycle. Yolandiani, Fajria, and Putri confirmed that individuals who exhibit suboptimal nutritional status, whether overweight or underweight, face an increased risk of menstrual disorders (Yolandiani, Fajria and Putri, 2021). In addition, Asiyah found that individuals classified as overweight had a 27.2-fold increased risk of experiencing menstrual irregularities compared to their peers with an ideal weight, while underweight individuals faced a 5.8-fold higher risk (Asiyah, 2018). Excessive physical activity can also disrupt hypothalamic hormone regulation, which is integral to the release of reproductive hormones. Therefore, a balanced approach to nutrition, exercise, and sleep patterns is essential to maintaining the regularity of adolescent menstrual cycles.

Several studies conclude that stress does not significantly impact the menstrual cycle. Indrayani, Aniroh, and Made found no significant correlation between stress levels and menstrual regularity (Indrayani and Aniroh, 2023) (Made, 2020). However, this finding contradicts research conducted by Damayanti and Syahrani, Yuswatiningsih and Wibowo, which showed that stress can cause an increase in cortisol levels, thus disrupting the balance of reproductive hormones and the menstrual cycle (Damayanti et al., 2022) (Syahrani, Yuswatiningsih and Wibowo, 2024). Although this study did not establish a significant association, maintaining a healthy lifestyle, managing stress effectively, and considering additional factors such as diet, physical activity, and sleep duration remain important. Further research covering a broader scope is needed to achieve a more comprehensive understanding of the interaction between stress and the menstrual cycle among adolescents.

CONCLUSION

These findings indicate that stress is not a significant determinant of menstrual irregularities among female students. Other factors that have a major influence on the menstrual cycle include eating habits, physical activity, nutritional status, and hormonal balance. Menstrual cycle disorders can be caused by various factors that interact in complex ways within the body. Factors such as inadequate or excessive nutrient intake, irregular sleep patterns, and insufficient or excessive physical activity can significantly affect the secretion of hormones that regulate the menstrual cycle.

RECOMMENDATIONS

Stress can affect hormonal balance, which in turn can affect a person's menstrual cycle. Although the results of this study do not show a significant association between stress levels and menstrual regularity, healthcare providers should still provide information on stress management and menstruation. Adolescents should be informed that maintaining physical and mental balance is important for supporting their reproductive health. Effective stress management techniques—including relaxation exercises, moderate physical activity, and adequate sleep can reduce the negative impact on the hormonal system.

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