



The Relationship Between Academic Stress and Menstrual Cycle Disorders in Adolescents

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ABSTRACT

Adolescence is a developmental phase that is highly vulnerable to physiological and psychological changes, including disturbances in the menstrual cycle. Academic stress is suspected to be one of the contributing factors to menstrual irregularities among female students. The purpose of this study was to analyze the relationship between academic stress and menstrual cycle disorders in adolescents. This research employed a quantitative design with a cross-sectional approach and total sampling technique, involving 136 first-year female students. The study was conducted at STIKes RS Husada Jakarta during April–May 2025. Academic stress was measured using the 42-item Depression Anxiety Stress Scale (DASS) with a scoring range of 0–3. The results showed that 93 respondents (68.4%) experienced severe to very severe stress, and 87 respondents (64.0%) had abnormal menstrual cycles. The Chi-Square test yielded a p-value < 0.001, indicating a significant relationship between academic stress and menstrual cycle disorders. These findings emphasize that academic stress has a strong influence on adolescents' menstrual patterns and should be a priority for educational institutions when strengthening stress management programs and psychosocial support to maintain reproductive health. In conclusion, the higher the level of academic stress, the greater the risk of menstrual cycle disturbances among adolescents.

Keywords: Academic Stress, Menstrual Cycle, Menstrual Disorders, Adolescents, Mental Health.

ABSTRAK

Masa remaja merupakan fase perkembangan yang rentan terhadap perubahan fisiologis dan psikologis, termasuk gangguan pada siklus menstruasi. Stres akademik diduga menjadi salah satu faktor yang berkontribusi terhadap ketidakteraturan siklus haid pada mahasiswa. Tujuan penelitian ini adalah menganalisis hubungan antara stres akademik dan gangguan siklus menstruasi pada remaja. Penelitian menggunakan desain kuantitatif dengan pendekatan cross-sectional dan teknik total sampling, melibatkan 136 mahasiswi tingkat 1. Penelitian dilaksanakan di STIKes RS Husada Jakarta pada April–Mei 2025. Instrumen pengukuran stres akademik menggunakan Depression Anxiety Stress Scale (DASS) 42 item dengan skala penilaian 0–3. Hasil penelitian menunjukkan bahwa 93 responden (68,4%) mengalami stres berat hingga sangat berat, dan 87 responden (64,0%) memiliki siklus menstruasi yang tidak normal. Uji Chi-Square menghasilkan nilai $p < 0,001$, menandakan adanya hubungan signifikan antara stres akademik dan gangguan siklus menstruasi. Temuan ini menegaskan bahwa stres akademik merupakan faktor yang berpengaruh kuat terhadap pola menstruasi remaja dan perlu menjadi perhatian institusi pendidikan dalam memperkuat program manajemen stres serta dukungan psikososial guna menjaga kesehatan reproduksi remaja. Kesimpulannya, semakin tinggi tingkat stres akademik, semakin besar risiko terjadinya gangguan siklus menstruasi pada remaja.

Kata Kunci: Stres Akademik, Siklus Menstruasi, Gangguan Menstruasi, Remaja, Kesehatan Mental.

INTRODUCTION

Adolescence is a transitional period from childhood to adulthood characterized by physical, emotional, and psychological changes. The WHO defines adolescents as those aged 12–24 years, while the Indonesian Ministry of Health defines adolescents as individuals aged 10–19 years, and the National Population and Family Planning Agency (BKKBN) also classifies this age range as adolescents (Badan Kependudukan dan Keluarga Berencana Nasional, 2023). During this phase, reproductive organs develop, or puberty occurs, one of the signs of which is the onset of menstruation in adolescent girls (Putri & Utama, 2024).

Globally, menstrual irregularities are still commonly found. The WHO (2020) reports that approximately 68% of women aged 10–59 years worldwide experience irregular menstrual cycles. These disorders can include menstruation that is too early, too late, too light, too heavy, or absent (Ilham et al., 2022). Factors contributing to irregular menstrual cycles include physical activity, nutritional status, hormonal imbalances, and psychological stress (Maedy et al., 2022). Stress is one of the factors most often associated with menstrual cycle disorders, especially in adolescents (Handayani et al., 2024; Revi et al., 2023).

In Indonesia, there are approximately 45.3 million adolescents aged 10–19 years, and the prevalence of menstrual disorders remains high. As many as 75% of adolescent girls in Central Jakarta are reported to experience irregular menstrual cycles (Badan Pusat Statistik, 2021). At the same time, the prevalence of stress among Indonesian adolescents reaches 10%, especially among those aged 15–24 years (Kementerian Kesehatan Republik Indonesia, 2024). Academic stress is one of the most common forms of stress due to academic demands, school or college assignments, exams, grade targets, and the expectations of parents and teachers (Fiqih & Ratnawati, 2023). When the body experiences stress, cortisol levels increase and disrupt the balance of reproductive hormones such as estrogen, progesterone, FSH, and LH, causing irregular menstrual cycles (Handayani, 2021). A preliminary study at STIKes RS Husada Jakarta showed that out of 136 first-year female students, 93 (68.4%) experienced severe to very severe academic stress, and 87 (64.0%) experienced abnormal menstrual cycles.

Several previous studies have also shown a significant relationship between academic stress and menstrual disorders. The study by Yuliana & Nurrohmannudin (2023) reported a p-value of 0.031, Wahyuni & Aisyara (2021) reported a p-value of 0.000, while studies by Kumalasari et al. (2019), Damayanti et al (2022), and Puspasari et al. (2023) also reinforced these findings. Most studies have not confirmed the extent of the influence of academic stress compared to other factors such as age and nutritional status, and have not highlighted the context of female college students who face academic pressure and a more complex adaptation process. In addition, research related to adolescents in health education institutions is still limited. The novelty of this study lies in its focus on analyzing adolescent female students in higher education in health institutions who theoretically have a higher risk of academic stress. The purpose of this study was to analyze the relationship between academic stress and menstrual cycle disorders in adolescent female students at STIKes RS Husada Jakarta.

RESEARCH METHODS

This study used a quantitative approach with a cross-sectional design. This design was chosen because it allowed researchers to analyze the relationship between academic stress levels and menstrual cycle disorders at the same measurement point, making it relevant to observe patterns of interrelationships between variables without direct intervention from researchers.

The study population consisted of all 136 first-year female students at STIKes RS Husada. This study used total sampling because the entire population met the criteria as respondents and allowed for a comprehensive examination of the relationship between variables. The inclusion criteria were: first-year female students, within the adolescent age range as defined by the Ministry of Health and WHO, having menstruated for at least the last three months, and willing to participate in the study and sign an informed consent form. Meanwhile, exclusion criteria were respondents who had a history of medically diagnosed reproductive disorders, were currently using hormonal therapy that could affect the menstrual cycle, and did not complete the questionnaire.

Academic stress was measured using the 42-item Depression Anxiety Stress Scale (DASS) questionnaire developed by Lovibond & Lovibond, which has been widely used to measure stress in adolescent populations. This instrument has been modified for the Indonesian context by Purwati (Rus & Agustina, 2023). The response scale uses a 0–3 Likert scale (0 = never, 1 = sometimes, 2 = often, 3 = always). The DASS instrument has good reliability, with a Cronbach's Alpha value > 0.85 in previous studies, indicating adequate internal consistency.

Menstrual cycle disturbance variables were measured using a single question item regarding menstrual cycle length, then categorized as normal (21–35 days) and abnormal (<21 days or >35 days) according to WHO standards cited by Syahrani (2024). The researchers acknowledged that measurement using a single item has limitations, particularly in capturing the variation in clinical menstrual symptoms, but it was still chosen to suit the focus of the analysis and the simplicity of measurement in a large population.

Data collection was conducted in April–May 2025. Before filling out the questionnaire, respondents were given an explanation of the purpose and procedures of the study, and then asked to sign an informed consent form. The questionnaire was filled out independently within 10–15 minutes with the assistance of researchers to ensure clarity and completeness of the answers.

The data were analyzed univariately and bivariately. Univariate analysis was used to describe the frequency distribution and percentage of each variable. Bivariate analysis was performed to test the relationship between academic stress and menstrual cycle disorders in adolescents using the Chi-Square test with a significance level (α) of 0.05. A p-value < 0.05 was considered to indicate a statistically significant relationship between the variables studied.

The research has also obtained ethical approval from the health research ethics committee: Faculty of Health Sciences, Muhammadiyah University Surakarta, with No.1149/KEPK-FIK/V/2025.

RESULTS

Table 1. Frequency Distribution of Respondents Based on Age (n=136).

Variable	Minimum	Maximum	Mean	Std Deviation
Age	17	24	19.26	0.991

Based on Table 1, the distribution of respondents shows that the majority of respondents are aged 19.26, with a minimum age of 17 years, a maximum age of 24 years, and a standard deviation of 0.991.

Table 2. Frequency Distribution of Respondents Based on BMI (n=136).

BMI	Frequency	%
Underweight	26	19.1
Normal	64	47.1
Overweight	37	27.2
Obese	9	6.6
Total	136	100

Table 2 shows that most respondents had a normal BMI status, namely 64 people (47.1%). Meanwhile, the smallest category was obesity, with 9 people (6.6%). This study shows that almost half of the respondents had an ideal weight according to their BMI, although there were still respondents who were underweight or overweight.

Table 3. Frequency Distribution of Respondents Based on Academic Stress (n=136).

Level of Academic Stress	Frequency	%
Normal	4	2.9
Mild	8	5.9
Moderate	31	22.8
Severe	29	21.3
Extremely Severe	64	47.1
Total	136	100

Table 3 shows that 136 respondents experienced academic stress levels classified as very severe, namely 64 people (47.1%). Meanwhile, 4 respondents (2.9%) experienced normal stress levels. These results indicate that the majority of respondents experienced quite high academic pressure.

Table 4. Frequency Distribution of Respondents Based on Menstrual Cycle (n=136).

Number of Menstrual Cycles	Frequency	%
Normal	49	36.0
Abnormal	87	64.0
Total	136	100

Table 4 shows that most respondents had abnormal menstrual cycles, namely 87 people (64.0%). Meanwhile, 49 people (36.0%) had normal menstrual cycles. These data indicate that the rate of adolescents with menstrual cycle disorders or irregularities was higher than that of adolescents with normal menstrual cycles.

Table 5. The Relationship Between Age and Menstrual Cycle Disorders in Adolescents at STIKes RS Husada (n=136).

Age	Menstrual Cycle		Odd Ratio	p-value
	Normal	Abnormal		
17-20 years old	46 (33.8%)	79 (58.1%)	1.553	0.391
21-24 years old	3 (2.2%)	8 (5.9%)		

Table 5 shows that 79 respondents (58.1%) aged 17-20 years had abnormal menstrual cycles, while 46 respondents (33.8%) had normal menstrual cycles. Meanwhile, among adolescents aged 21-24 years, 8 individuals (5.9%) experienced abnormal menstrual cycles, and 3 individuals (2.2%) experienced normal menstruation. From the above analysis, a p-value of 0.391 was obtained, which is greater than 0.05. Therefore, it can be concluded that there is no significant relationship between age and menstrual cycle disorders among adolescents at STIKes RS Husada.

Table 6. The Relationship Between BMI and Menstrual Cycle Disorders in Adolescents at STIKes RS Husada (n=136)

BMI	Menstrual Cycle		OR	p-value
	Normal	Abnormal		
Underweight-Normal	29 (21.3%)	64 (44.9%)	0.618	0.135
Overweight-Obese	20 (14.7%)	26 (19.1%)		

Table 6 shows that the Body Mass Index (BMI) of respondents was categorized into two BMI groups: underweight-normal and overweight-obese. Most respondents in the underweight-normal BMI group, 61 people (44.9%), had abnormal menstrual cycles, and 29 people (21.3%) had normal menstrual cycles. Meanwhile, in the overweight-obese BMI group, 26 people (19.1%) had abnormal menstrual cycles and 20 people (14.7%) had normal menstrual cycles. From the above analysis, a p-value of 0.135 was obtained, which is greater than ($p < 0.05$), so it can be concluded that there is no significant relationship between BMI and menstrual cycle disorders in adolescents at STIKes RS Husada. The analysis yielded an OR value of 0.618, meaning that respondents with a normal BMI had a 0.618 lower chance of experiencing menstrual cycle disorders compared to respondents with an overweight-obese BMI.

Table 7. The Relationship Between Academic Stress and Menstrual Cycle Disorders in Adolescents at STIKes RS Husada (n=136).

Academic Stress	Menstrual Cycle		OR	p-value
	Normal	Abnormal		
Normal - Moderate	7 (5.1%)	37 (27.2%)	0.225	< 0.001
Severe - Very Severe	42 (30.9%)	50 (36.8%)		

Table 7 shows a significant relationship between academic stress and menstrual cycle disorders in adolescents at STIKes RS Husada (n = 136). In the group with normal to moderate academic stress, 7 respondents (5.1%) had a normal menstrual cycle and 37 respondents (27.2%) had an abnormal cycle. Meanwhile, in the group with severe–very severe academic stress, 42 respondents (30.9%) had normal menstrual cycles and 50 respondents (36.8%) experienced abnormal cycles.

P-value of <0.001 indicates that there is a statistically significant relationship between academic stress levels and menstrual cycle disorders. An Odds Ratio (OR) value of 0.225 indicates that adolescents with normal to moderate academic stress are 77.5% less likely to experience abnormal menstrual cycles than adolescents with severe to very severe academic stress. Thus, these results confirm that the higher the level of academic stress, the greater the risk of menstrual cycle disorders in adolescents.

DISCUSSION

The results of the study show a significant relationship between academic stress and menstrual cycle disorders in adolescents at STIKes RS Husada. Based on data analysis, the majority of respondents experienced high academic stress, namely 93 people (68.4%). In addition, 87 people (64.0%) also experienced menstrual cycle disorders. After conducting a statistical analysis using the Chi-Square test, the result was $p < 0.001$, which means that there is a significant relationship between academic stress and menstrual cycle disorders.

This study is consistent with previous research. Previous studies conducted by Yuliana & Nurrohmannudin (2023) and Wahyuni & Aisyara (2021) also reported a significant relationship between academic stress and menstrual cycle irregularities. The similarity in these results is likely influenced by the characteristics of the respondents, who were all in the early stages of higher education, a phase characterized by academic adaptation demands, increased workload, and assessment pressure. Additionally, research by Kumalasari et al. (2019) and Damayanti et al (2022) also supports these findings by showing that psychological conditions play a dominant role in the stability of the reproductive system in adolescents. Although consistent, several other studies show different results. These differences may be due to variations in measurement instruments, respondent age characteristics, or other conditions such as physical activity and nutritional status that can influence biological responses to stress. Research conducted by Rismatiti & Liyanovitasari (2022) in a high school setting showed a weaker influence of academic stress, possibly because the intensity of stress in a college environment tends to be higher and requires greater independence in learning.

This study also found that age and nutritional status variables did not show a significant relationship with menstrual cycle irregularities. These findings are in line with research conducted by Wanggy et al (2022) on female students at Sultan Agung 1 Islamic High School in Semarang, which also reported that nutritional status and nutrient consumption had no significant relationship with menstrual cycle disorders in adolescent girls. This indicates that menstrual irregularities in adolescents are often more influenced by other factors, such as stress, sleep patterns, and physical activity, than by variations in nutritional status. In addition, the relatively narrow age range of the respondents in this study, who were in the late adolescent phase, may also explain why no significant differences were found, given that at that age range, the reproductive organs have generally reached functional maturity.

This study has several limitations that need to be considered. First, the measurement of menstrual cycle disorders only used one question item, so it was not able to describe the variation in clinical symptoms such as the duration of bleeding, pain, and menstrual volume. Second, the cross-sectional design did not allow causal conclusions to be drawn, so longitudinal studies are recommended to assess the dynamics of stress and changes in the menstrual cycle on an ongoing basis. Third, data related to stress and menstruation were obtained through self-report, so the potential for subjectivity bias still exists. Fourth, other factors such as sleep quality, caffeine consumption, or physical activity were not included as research variables, even though these variables also have the potential to affect the menstrual cycle.

The findings of this study have important implications for adolescent reproductive health interventions and policies. First, educational institutions need to improve psychological support

services, such as academic counseling, stress management, and support for new students' adaptation. Second, the results of this study can be used as a basis for developing promotional and preventive programs, including training in emotional regulation and academic planning, which can help female students manage academic pressure in a healthier way. Third, these findings can encourage the integration of reproductive health and mental health education into the campus health curriculum so that adolescents can recognize the relationship between stress and reproductive function from an early age. Overall, this study reinforces the evidence that academic stress is an important factor in influencing adolescent reproductive health, and strengthening psychosocial support in the college environment is a strategic step in maintaining the physical and mental health balance of students.

CONCLUSION

This study shows that there is a significant relationship between academic stress and menstrual cycle disorders in female students at STIKes RS Husada. Academic stress has been proven to be a more significant factor than other factors, such as age and nutritional status, indicating that the higher the level of academic stress, the greater the likelihood of menstrual cycle irregularities in adolescents.

Based on these findings, the researchers recommend that adolescents, especially female students, pay more attention to their mental health and learn to manage stress effectively, such as through light exercise, time management, and seeking support from friends, family, or campus counseling services. Educational institutions are also expected to provide mentoring and education programs on mental and reproductive health so that students can undergo the learning process in a physically and emotionally healthy manner.

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