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The Relationship Between Academic Stress Levels and Menstrual Cycles Among Undergraduate Midwifery Students at STIKes Akbidyo Yogyakarta

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Abstract: Introduction: Menstrual cycle irregularities are a common reproductive health problem affecting approximately 32% of women of reproductive age in Indonesia, with academic stress considered a contributing factor. **Objective:** This study aimed to analyze the relationship between academic stress levels and menstrual cycle patterns among undergraduate midwifery students at STIKes Akbidyo Yogyakarta. **Methods:** This study used an analytic cross-sectional design with total sampling of 65 active students. Academic stress was measured using the ASSESS questionnaire (22 valid items, Cronbach's Alpha = 0.896), and menstrual cycle data were collected through a single-time questionnaire asking respondents to retrospectively report their menstrual cycle patterns over the preceding three months (November 2025–January 2026). Data were analyzed using Chi-Square and Spearman's Rank Correlation tests ($\alpha = 0.05$). **Results:** The majority of respondents experienced moderate academic stress (81.5%), with Worry About Grades as the most dominant dimension (72.8%). Most respondents had regular menstrual cycles (66.2%), with a mean cycle length of 31.8 days and mean menstrual duration of 6.1 days. There was no statistically significant relationship between academic stress and menstrual cycle regularity ($\chi^2 = 0.876$; $p = 0.646$), cycle length ($r = -0.033$; $p = 0.801$), or menstrual duration ($r = 0.027$; $p = 0.833$). **Conclusion:** The absence of a significant relationship may be attributed to predominantly moderate stress levels, good social support, and limited observation duration. Institutions are recommended to provide accessible counseling services, balance academic workloads, and conduct regular mental health and reproductive health screenings.

Keywords: academic stress; cross-sectional; menstrual cycle; midwifery students

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Introduction

Women's reproductive health is one of the primary targets of the Sustainable Development Goals (SDGs), particularly goal 3 on health and well-being, and goal 5 on gender equality. One of the fundamental aspects of reproductive health is the regularity of the menstrual cycle, which serves as a vital indicator of hormonal and reproductive health in women. In the context of higher education, menstrual cycle disturbances can affect class attendance, concentration, and overall academic performance (Chrisler et al., 2021; Ba-Saddik et al., 2022). The prevalence of menstrual cycle disorders in Indonesia reaches 32% among women of reproductive age, with stress identified as the dominant contributing factor (Kementerian Kesehatan RI, 2017).

Academic pressure experienced by female students is frequently identified as one of the main triggers of menstrual health disturbances. Academic stress is defined as a condition in which students perceive academic demands to exceed their coping capacity and available resources (Bedewy & Gabriel, 2015; Reddy et al., 2018). Recent research indicates that the prevalence of academic stress among university students reaches 51.1%, with excessive assignments, limited time, and difficulty with course materials as the primary stressors. Academic stress specifically refers to pressure arising from the educational environment, encompassing excessive workload, evaluation pressure, difficulties in time management, and concerns about academic performance and career prospects (Estrada-Araoz et al., 2024; González-Fernández et al., 2025).

Mechanistically, academic stress triggers activation of the Hypothalamic-Pituitary-Adrenal (HPA) axis, increasing cortisol production that suppresses the Hypothalamic-Pituitary-Ovarian (HPO) axis, inhibiting secretion of

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GnRH, LH, and FSH, thereby disrupting ovulation and menstrual cycle regularity (Mulyani et al., 2020). Although empirical evidence links stress to menstrual disturbances, research findings remain inconsistent. Some studies have found a significant relationship (Sari, 2017; Nadzifa et al., 2022; Yulianti et al., 2025), while others found no significant association (Martini et al., 2021; Sari, 2020).

Research specifically examining the undergraduate midwifery student population remains very limited, as most prior studies have focused on diploma-level or other health science students. A preliminary study conducted among 17 students at STIKes Akbidyo revealed that 11 students (64.7%) experienced moderate to high academic stress, and 6 students (35.3%) reported menstrual cycle disturbances in the preceding three months. Therefore, this study aimed to analyze the relationship between academic stress levels and menstrual cycle patterns among undergraduate midwifery students at STIKes Akbidyo Yogyakarta.

Method

This study employed a quantitative approach with an analytic cross-sectional design. The study was conducted at STIKes Akbidyo Yogyakarta, located at Jl. Parangtritis KM.6, Glondong, Panggungharjo, Sewon, Bantul Regency, Special Region of Yogyakarta, from December 2025 to January 2026. The study population comprised all active students of the Regular Undergraduate Midwifery Study Program in the 2024/2025 academic year, totaling 65 students. The sampling technique used was total sampling (saturated sampling), in which the entire population served as the sample (Sugiyono, 2019).

The independent variable was the academic stress level, and the dependent variable was the menstrual cycle. Research instruments included: (1) the Academic Stress Scale for College Students (ASSESS) questionnaire, which measures five dimensions of academic stress: Pressure from Study, Workload, Worry About Grades, Self-Expectation, and Despondency (Lin & Chen, 2009). Following validity and reliability testing on 36 students at STIKes Guna Bangsa Yogyakarta, 22 items from the original 26 were retained as valid (r-table = 0.329), with a Cronbach's Alpha of 0.896. Stress was categorized as mild (score 22–44), moderate (45–77), or severe (78–110). (2) A menstrual cycle characteristics questionnaire that collected data on regularity, cycle length, and menstrual duration based on respondents' recollection of the preceding three months.

Data were analyzed using univariate analysis (frequency distributions and descriptive statistics) and bivariate analysis. The Chi-Square test was used to examine the relationship between academic stress level (categorical) and menstrual cycle regularity (categorical), while the Spearman's Rank Correlation test was used to examine the relationship between the total stress score (numerical) and cycle length and menstrual duration (numerical). The significance level was set at $\alpha = 0.05$. Ethical clearance for this study was obtained from the authorized ethics committee.

Results and Discussion

Based on the study results, the distribution of academic stress levels among undergraduate midwifery students at STIKes Akbidyo is presented in Table 1. The majority of respondents experienced moderate academic stress (81.5%), with a mean ASSESS score of 61.88 (SD = 10.93). This finding is consistent with those of Damayanti (2023), Nadzifa et al. (2022), and Yulianti et al. (2025), who consistently identified moderate stress as the largest category among health science students. González-Fernández et al. (2025) highlight that an imbalanced academic workload is the primary driver of stress, particularly in health science programs that combine theoretical coursework with clinical competency development. Sub-dimension analysis revealed that the Worry About Grades dimension had the highest percentage score (72.8%), falling into the severe category, as presented in Table 2. The high pressure in the Worry About Grades dimension is consistent with the characteristics of undergraduate midwifery programs, which require both high academic achievement and the development of clinical competencies as prerequisites for graduation and professional careers (Souto-Gestal et al., 2019). The distribution of menstrual cycle regularity is presented in Table 3. The majority of respondents (66.2%) had regular menstrual cycles, with a mean cycle length of 31.8 days (SD = 4.19) and a mean menstrual duration of 6.1 days (SD = 1.63), both of which remain within the normal range (Barbieri & Ehrmann, 2024).

The proportion of cycle disturbances (33.8%) is close to data from the Indonesian Ministry of Health (2017), which reported a 32% prevalence among women of reproductive age in Indonesia. Several confounding factors were identified as contributing: 26.2% of respondents were underweight, 18.5% were obese, 35.4% had insufficient sleep, and 44.6% never exercised all of which are known to contribute to hormonal disturbances through different pathways (Mulyani et al., 2020; Novita, 2018). The statistical test results examining the relationship between academic stress and menstrual cycle are presented in Table 4. No significant relationship was found between academic stress level and menstrual cycle regularity ($\chi^2 = 0.876$; $p = 0.646$), cycle length ($r = -0.033$; $p = 0.801$), or menstrual duration ($r =$

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0.027; p = 0.833). The null hypothesis (H_0) was accepted. These findings differ from several studies that identified a significant relationship (Sari, 2017; Nadzifa et al., 2022; Yulianti et al., 2025), but are consistent with Martini et al. (2021) and Sari (2020). Nguyen and Le (2024), through multivariate analysis, similarly confirmed that academic stress is not a significant independent predictor of cycle irregularity, and that body mass index (BMI) and sleep patterns are more dominant determinants.

Several factors may explain the absence of a significant relationship. First, the predominance of moderate stress (81.5%) suggests that stress intensity may not have reached the physiological threshold necessary to substantially disrupt the HPO axis, as stress-induced cycle disturbances occur when HPA activation is sufficiently intense to elevate cortisol to levels that inhibit GnRH pulsatility (Mulyani et al., 2020). Second, relatively good social support from family (mean 3.17), peers (3.12), and lecturers (3.06) may have served as a psychological buffer moderating the impact of stress on reproductive function (Bakhsh et al., 2023). Third, the three-month observation period may have been insufficient to detect cumulative cycle changes. Fourth, the diversity of adaptive coping strategies employed by students — including problem-focused coping, religious coping, and social support — may have moderated physiological stress responses (Lazarus & Folkman, 1984; Reddy et al., 2018).

A deeper analysis revealed that BMI played a dominant role in cycle disturbance cases, with 56.1% of respondents having a BMI outside the normal range. Overweight and obesity cause relative hyperestrogenism due to androgen aromatization in adipose tissue, while underweight suppresses reproductive hormone production through reduced leptin levels (Novita, 2018; Attia et al., 2023). These factors independently disrupt cycle regularity even in the absence of high academic stress.

Table 1. Distribution of Academic Stress Levels Among Undergraduate Midwifery Students at STIKes Akbidyo (n = 65)

Academic Stress Category	Score Range	n	(%)
Mild	22–44	2	3,1
Moderate	45–77	53	81,5
Severe	78–110	10	15,4
Total	–	65	100,0

Source: Primary Data, 2026

Table 2. Score Distribution by ASSESS Sub-Dimension (n = 65)

ASSESS Dimension	Valid Items	Max Score	% Score	Category
Pressure from Study	6	30	54,4%	Moderate
Workload	5	25	53,4%	Moderate
Worry About Grades	5	25	72,8%	Severe
Self-Expectation	2	10	52,9%	Moderate
Despondency	4	20	43,7%	Moderate
Total	22	110	56,3%	Moderate

Source: Primary Data, 2026

Table 3. Distribution of Menstrual Cycle Regularity Among Undergraduate Midwifery Students at STIKes Akbidyo (n = 65)

Menstrual Cycle Regularity	n	(%)	Cumulative (%)
Regular (21–35 day cycle)	43	66,2	66,2
Irregular	22	33,8	100,0
Total	65	100,0	–

Source: Primary Data, 2026

Table 4. Statistical Test Results of the Relationship Between Academic Stress and Menstrual Cycle (n = 65)

Variable	Value	p-value	Description
Chi-Square (Academic Stress × Menstrual Cycle Regularity)	χ^2 = 0,876	0,646	Not Significant
Spearman Rank (Stress Score × Cycle Length)	r = –0,033	0,801	Not Significant
Spearman Rank (Stress Score × Menstrual Duration)	r = 0,027	0,833	Not Significant

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Conclusion

Study This show that giving Benson -based relaxation dhikr contribute in lower level anxiety in mothers third trimester of pregnancy. Intervention This help increase condition psychological Mother from level more anxiety tall become more adaptive approaching childbirth, so that objective study for analyze influence Benson -based relaxation dhikr to decline level anxiety can achieved. Findings This strengthen that combination technique relaxation and spiritual approach are intervention non-pharmacological that is effective, safe, and easy implemented as part from care midwifery complementary. Based on findings said, Benson relaxation is based on dhikr recommended for considered as one of the intervention supporters in antenatal care for Mother third trimester of pregnancy. Research furthermore recommended use design study with group control, amount more samples big, and consider other factors that can influence anxiety, such as support family, characteristics mother, and condition psychosocial, so that obtained proof more scientific strong about effectiveness intervention this.

Declaration of Generative AI

This manuscript was authored independently without the use of generative AI tools.

Authors' Contribution

All authors contributed equally to the research, analysis, writing, and final approval of this manuscript.

Conflict of Interests Statement

The authors declare no conflicts of interest regarding this work.

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Data Availability

Data will be made available by the corresponding author upon reasonable request.

Informed Consent

Informed consent was obtained from all individual participants in the study.

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