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THE RELATIONSHIP BETWEEN STRESS LEVELS AND THE INCIDENCE OF PRIMARY DYSMENORRHEA IN GRADE 10 FEMALE STUDENTS

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ABSTRACT

This study aim was to determine the relationship between stress levels and the incidence of primary dysmenorrhea in tenth-grade female high school students. The research method used an observational analytic approach with a cross-sectional approach. A sample of 129 female students was drawn using a total sampling technique. The results showed that 50 (38.8%) female students had severe stress levels, 30 (23.3%) had mild stress, and 96 (74.4%) had primary dysmenorrhea. Bivariate analysis showed a significant relationship between stress levels and primary dysmenorrhea (p-value = 0.001). In conclusion, the majority of tenth-grade female students at SMA Negeri 4 Bengkulu City in 2013 had severe stress levels (38.8%), and the majority experienced primary dysmenorrhea (74.4%). The results of the bivariate analysis using the Chi-Square test showed a significant relationship between stress levels and the incidence of primary dysmenorrhea, with a p value of 0.001 (p < 0.05). This finding indicates that the higher the stress levels experienced by adolescent girls, the greater the likelihood of primary dysmenorrhea. The results of this study emphasize the importance of promotive and preventive efforts through reproductive health education and stress management in adolescents to reduce the incidence of primary dysmenorrhea.

Keywords: Primary Dysmenorrhea, Stress Level

INTRODUCTION

Adolescent reproductive health is a crucial element in creating a healthy and productive young generation. As a strategic group investing in the nation's future, adolescents often face various health challenges, one of which is primary dysmenorrhea. Globally, dysmenorrhea is no longer simply an individual clinical problem but has become a public health issue due to its significant impact on decreased academic performance and high absenteeism rates in educational institutions (WHO, 2024).

In Indonesia, data from the 2023 Indonesian Health Survey (SKI) shows that menstrual disorders remain a major complaint among adolescent girls requiring serious attention (Ministry of Health, 2023). The prevalence of dysmenorrhea in Indonesia reaches 55% in the productive age group and ranges from 45-95% among women of childbearing age. Severe menstrual pain forces female students to suspend daily activities, which directly impacts academic achievement. This phenomenon is exacerbated by psychological pressure (stress) resulting from curriculum demands and stringent Minimum Completion Criteria (KKM) targets.

A preliminary survey at SMA Negeri 4 Bengkulu City found that 9 out of 10 female students reported menstrual pain, which impacted class attendance.

Several studies consistently show that psychological factors are strongly correlated with the intensity of menstrual pain. The highest incidence of dysmenorrhea occurred in women with moderate and high levels of stress. Contemporary literature also emphasizes that stress in adolescents is the result of a complex interaction between the school environment, social support, and individual coping mechanisms (Hidayat & Setyowati, 2023). Furthermore, psychological stressors have been shown to trigger an imbalance in the hormone prostaglandin, which is the primary cause of excessive uterine contractions (Smith et al., 2022).

Based on this background, this study aims to analyze the relationship between stress levels and the incidence of primary dysmenorrhea in adolescent girls in a school environment. This mapping was conducted to determine the extent to which psychological factors contribute to physical disorders experienced by female students in urban Bengkulu City.

The novelty of this research lies in its comprehensive analysis linking psychosocial aspects to reproductive disorders within the scope of school health nursing. Unlike purely clinical studies, this research lays the foundation for developing a more holistic approach based on the phenomena of stress and dysmenorrhea. This includes integrating mindfulness-based stress management and health education relevant to the needs of female students in the school environment (Andrianto & Herawati, 2026).

This research is crucial for providing an empirical basis for school policymakers and health professionals in designing programs that focus not only on curative pain management but also on preventive efforts. The research findings are expected to improve the quality of life of adolescent girls, reduce school absenteeism, and support the creation of a reproductively and psychologically healthy young generation.

RESEARCH METHOD

This research was an observational analytical study with a cross-sectional design conducted at SMA Negeri 4 Bengkulu City from May 20 to June 20, 2013. The study population was all 160 female students in grade 10 of the 2012/2013 academic year, with a final sample of 129 respondents drawn using a total sampling technique after considering the inclusion criteria (female students who were menstruating and willing to participate) and exclusion criteria (suffering from anemia, chronic illness, migraines, and asthma). Primary data collection was conducted using a modified Rahe and Holmes questionnaire to measure stress levels (ordinal scale: severe, moderate, mild) and a structured questionnaire for primary dysmenorrhea (ordinal scale: yes/no). Data collected through editing, coding, processing, and cleaning were processed computerized. Data analysis includes univariate analysis for frequency distribution and bivariate analysis using the Chi-Square statistical test (Pearson Chi Square test for tables more than 2x2) to determine the relationship between variables with a significance level of alpha = 0.05%.

RESEARCH RESULT

Respondent Characteristics

Table. 1
Respondent Age Characteristics (n = 129)

Age (Year)	n	%
15	40	31,0
16	70	54,3
17	19	14,7
Total	129	100,0

Based on Table 1, the majority of respondents were 16 years old, as many as 70 people (54.3%), followed by 15 years old, as many as 40 people (31.0%), and 17 years old, as many as 19 people (14.7%).

Distribusi Tingkat Stres

Table. 2
Distribution of Stress Levels among Respondents (n = 129)

Stress Level	n	%
Severe	50	38,8
Moderate	49	38,0
Light	30	23,3
Total	129	100,0

The results of the univariate analysis showed that the majority of respondents had severe stress levels, namely 50 respondents (38.8%). Respondents with moderate stress levels numbered 49 (38.0%), while respondents with mild stress levels numbered 30 (23.3%).

Distribution of Primary Dysmenorrhea Incidence

Table 3
Distribution of Primary Dysmenorrhea Incidence (n = 129)

Primary Dysmenorrhea	n	%
Experiencing	96	74,4
Not experiencing	33	25,6
Total	129	100,0

The majority of respondents experienced primary dysmenorrhea, as many as 96 people (74.4%), while 33 people (25.6%) did not experience primary dysmenorrhea..

The Relationship Between Stress Levels and the Incidence of Primary Dysmenorrhea

Table. 4
Relationship between Stress Levels and the Incidence of Primary Dysmenorrhea (n = 129)

Stress Level	Experiencing Dysmenorrhea n (%)	Not Experiencing n (%)	Total n (%)
Severe	44 (88,0)	6 (12,0)	50 (100,0)
Moderate	37 (75,5)	12 (24,5)	49 (100,0)
Light	15 (50,0)	15 (50,0)	30 (100,0)
Total	96 (74,4)	33 (25,6)	129 (100,0)

Bivariate analysis using the Chi-Square test showed that the proportion of respondents experiencing primary dysmenorrhea increased with increasing stress levels. In the group with high stress levels, 44 respondents (88.0%) experienced primary dysmenorrhea. In the group with moderate stress levels, 37 respondents (75.5%) experienced primary dysmenorrhea. Meanwhile, in the group with mild stress levels, the proportions of respondents experiencing and not experiencing primary dysmenorrhea were equal, with 15 respondents each (50.0%).

The statistical test results showed a p-value of 0.001 ($p < 0.05$), indicating a significant relationship between stress levels and the incidence of primary dysmenorrhea in 10th-grade female students at SMA Negeri 4, Bengkulu City.

DISCUSSION

Relationship between stress levels and the incidence of primary dysmenorrhea

The results of this study on 10th-grade female students at SMA Negeri 4, Bengkulu City, showed a very high prevalence of primary dysmenorrhea, reaching 74.4%. Based on the frequency distribution, it was found that 50 female students with high levels of stress experienced primary dysmenorrhea, of which almost all (88%) experienced primary dysmenorrhea. Meanwhile, of the 49 respondents with moderate stress, more than half (75.5%) also experienced similar complaints. Bivariate analysis using the Chi-Square test confirmed a statistically significant relationship between stress levels and primary dysmenorrhea, with a p-value of $0.001 < \alpha$ (0.05). This finding confirms that psychological stressors are a strong predictor of menstrual pain in adolescent girls.

Physiologically, high levels of stress trigger an increase in the hormone cortisol and activation of the sympathetic nervous system. This is consistent with Wiknjosastro's (2011) opinion, which states that in women experiencing anxiety or stress, prostaglandin levels increase, leading to increased dysrhythmic uterine contractions. The combination of stress hormones from the adrenal glands and steroid hormones increases uterine muscle tension, thereby increasing the perceived pain threshold. This condition stimulates the excessive release of prostaglandins in the myometrium, causing vasoconstriction of uterine blood vessels and triggering strong uterine contractions (Smith et al., 2022).

These findings align with Kusmiran (2012), who stated that psychological factors such as stress and anxiety are the primary causes of primary dysmenorrhea. Stress causes emotional tension that disrupts the body's hormonal balance. Furthermore, research by Sriati (2008) shows that the incidence of dysmenorrhea can increase up to tenfold in women with a history of high stress compared to

those without. Lazarus and Folkman, as cited in Nasution (2007), also argue that stress is an internal response to environmental demands, such as academic pressure, conflict, and frustration experienced by female students in the school environment.

From a community nursing perspective, these high rates of stress and dysmenorrhea indicate an urgent need to strengthen the role of community nurses in schools (School Health Nursing). School nurses play a crucial role as educators and counselors in helping adolescents manage stressors through adaptive coping strategies. Modern community nursing interventions no longer focus solely on curative measures such as analgesics, but rather on a holistic, community-based approach. This approach includes relaxation techniques, mindfulness-based stress management, and nutrition education based on local wisdom, such as the use of traditional herbal drinks proven to naturally reduce pain intensity (Andrianto & Herawati, 2026). Therefore, strengthening adolescent reproductive health programs at the school community level is expected to sustainably improve the quality of life and productivity of the younger generation.

Several studies consistently show that psychological factors are strongly correlated with the intensity of menstrual pain. Sriati (2008) found that the highest incidence of dysmenorrhea occurred in women with moderate and high levels of stress. Contemporary literature also emphasizes that stress in adolescents is the result of a complex interaction between the school environment, social support, and individual coping mechanisms (Hidayat & Setyowati, 2023). Furthermore, psychological stressors have been shown to trigger an imbalance in the hormone prostaglandin, which is the primary cause of excessive uterine contractions (Smith et al., 2022).

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CONCLUSION

Based on the research results, it can be concluded that the majority of 10th-grade female students at SMA Negeri 4 Bengkulu City in 2013 had severe stress levels (38.8%), and the majority experienced primary dysmenorrhea (74.4%).

Bivariate analysis using the Chi-Square test showed a significant relationship between stress levels and the incidence of primary dysmenorrhea, with a p-value of 0.001 ($p < 0.05$). This finding indicates that the higher the stress levels experienced by adolescent girls, the greater the likelihood of primary dysmenorrhea. These results emphasize the importance of promotive and preventive efforts through reproductive health education and stress management for adolescents to reduce the incidence of primary dysmenorrhea.

SUGGESTION

Based on the research results, schools and health professionals are advised to increase education on reproductive health and stress management for adolescent girls through outreach activities or school health programs. Furthermore, students are expected to be able to implement effective stress management strategies, such as maintaining a healthy lifestyle, regular exercise, and relaxation, which can help reduce the risk of primary dysmenorrhea.

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