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The Relationship Between Stress Levels and Premenstrual Syndrome in Nursing Students of the Bachelor's Degree Program at Harapan Bangsa University

Nur Khoerotun Nisa[1*], Siti Haniyah[2], Feti Kumala Dewi [3]
[1,2,3] Program Studi Keperawatan Program Sarjana Fakultas Kesehatan Universitas Harapan Bangsa, Jl. Raden Patah No 100 Ledug, Purwokerto 53182, Indonesia
[1]nurkhoerotunnisa99@gmail.com*; [2]haniwiyana56@gmail.com; [3]vettykumala@gmail.com

ABSTRACT

During the luteal phase of the menstrual cycle, which begins 7-10 days before menstruation and ends at the time of menstruation, women of childbearing age often experience a number of physical, behavioral and emotional symptoms and complaints known as premenstrual syndrome. One factor that can cause premenstrual syndrome is stress levels. The aim of this study was to see whether there was a relationship between stress levels and premenstrual syndrome. The research was carried out on 20 to 27 January 2023, at Harapan Bangsa University. The type of research used is quantitative research using descriptive correlation methods with a cross sectional approach, statistical analysis using the Spearman Rank Test, with a sample size of 62 respondents. Data was taken through the Shorted Premenstrual Assessment Form (SPAF) and Perceived Stress Scale (PSS) questionnaires. The results of the Spearman Rank test obtained p value = 0.000, where p-value < a value (0.05) which means there is a significant relationship between stress levels and premenstrual syndrome in students of the Harapan Bangsa University Nursing Study Program. So it can be concluded that high levels of stress indicate the severity of the premenstrual syndrome that is felt. Female students are expected to be able to avoid stressors and manage stress to minimize the occurrence of premenstrual syndrome symptoms.

Keywords : stress, premenstrual syndrome, female student

1. INTRODUCTION

Adolescence is an extraordinary period of personal development. Higher levels of mental and emotional development are observed in young women. Physical and mental shifts often occur in adolescent girls and young women. In this context, "physical changes" refer to the maturation of women's reproductive organs, manifested through menstruation (the shedding of the uterine lining when an egg is not fertilized). Women of reproductive age typically have regular monthly menstrual cycles (Parahats et al., 2019). As a woman's menstruation approaches, she may experience symptoms that constitute Premenstrual Syndrome (PMS).

During the luteal phase of the menstrual cycle, which occurs 7-10 days before menstruation and disappears as menstruation begins, women of reproductive age often undergo various discomforts and actions, both emotional and physical, collectively known as Premenstrual Syndrome (Hutasuhud, 2018). Menstruation involves the monthly discharge of blood. However, in some women, symptoms can start within 24 to 48 hours of the beginning of menstruation and then dissipate in the following days (Puji et al., 2021).

* **Nur Khoerotun Nisa.**
Email: Nurkhoerotunnisa99@gmail.com

Around 70% to 90% of women of reproductive age experience Premenstrual Syndrome (PMS). Women of reproductive age (WRA) are defined by the National Population and Family Planning Board (BKKBN) as those aged between 18 and 49 years, whether unmarried, married, or widowed. Women between the ages of 20 and 30 are at a higher risk of experiencing PMS (Rachmatika, 2018).

The World Health Organization (WHO) has found that the prevalence of PMS is greater in Asian countries compared to Western countries. The results of a study conducted by Hou & Zou tahun 2021 among female students at a comprehensive university in China revealed that out of 701 respondents, 451 (64.3%) did not experience PMS, 157 (22.4%) experienced mild premenstrual syndrome, 85 (12.1%) experienced moderate premenstrual syndrome, and 8 (1.1%) experienced severe premenstrual syndrome.

Based on research conducted by the Indonesian Friendly Youth Health Service (Pelayanan Kesehatan Ramah Remaja Indonesia or PKRR) in 2020, it was found that 90% of women of reproductive age experience Premenstrual Syndrome (Husna et al., 2022). A study by Daniartama et al pada tahun 2021 involving women aged 18 to 25 who were studying at Diponegoro University, revealed that 63.6% of the sample experienced mild premenstrual syndrome, while 36.4% had moderate symptoms.

Symptoms of Premenstrual Syndrome commonly affect women before their menstruation, including weight gain, swelling in specific body parts (legs, fingers, and abdomen) due to fluid retention, muscle pain, especially in the lower back, breast tenderness and enlargement, reduced urination, acne, nausea, dizziness, and increased appetite (Apriliyandari & Istiyati, 2018). These symptoms can manifest in various ways, including the development of common mental health issues such as irritability, forgetfulness, difficulty concentrating, feelings of worthlessness, and depression. (Apriliyandari & Istiyati, 2018).

Hormonal factors, such as the imbalance of increased estrogen and decreased progesterone, have been associated with the development of Premenstrual Syndrome. Premenstrual Syndrome has several risk factors, including genetics, age at menarche, sleep habits, age, lifestyle variables related to vitamin deficiency, dietary patterns, and finally psychological issues such as stress (Lestari, 2020).

Anger, anxiety, and mood swings are examples of stress reactions that occur when someone feels overwhelmed by the demands placed upon them (Hutasuhud, 2018). Prolonged exposure to the stress hormone cortisol can lead to a decrease in serotonin and other neurotransmitters in the brain. Breast pain and bloating are physical symptoms of Premenstrual Syndrome that may be caused by low serotonin levels, which can lead to early ovulation and an imbalance in estrogen and progesterone levels. Symptoms of Premenstrual Syndrome (PMS) may be exacerbated by stress (Ritung & Olivia, 2018).

Stress is a common issue among students. Student stress can be caused by both external and internal factors. Internal factors are within the student's control, such as health, motivation, and character. Elements like one's family, workplace, facilities, environment, faculty, and so forth all fall into the category of external variables.

The results of a pre-survey conducted on 10 Nursing undergraduate students at Harapan Bangsa University on November 1, 2022, confirm the presence of Premenstrual Syndrome among female students. Students' complaints range from digestive disturbances to lower back pain and excessive weight gain. Furthermore, 8 out of 10 students reported experiencing some form of mental health issue, with the most common being stress, depression, or anxiety. The students discussed the sources of their stress, which included academic assignments, peer pressure, and personal problems.

Based on the information provided, the researcher intends to investigate the "Relationship Between Stress Levels and Premenstrual Syndrome (PMS)."

2. RESEARCH METHODS

The researcher applied a quantitative research approach and a descriptive correlational design using a cross-sectional approach. There are two variables involved: stress levels as the dependent variable and premenstrual syndrome as the independent variable. The research was conducted at the Faculty of Health, Harapan Bangsa University. The research population consists of all 7th-semester female nursing students at Harapan Bangsa University, totaling 63 students. The sampling technique applied was total sampling, involving all 63 female students. Inclusion criteria included 7th-semester nursing students and students who experienced menstruation in December to January, while exclusion criteria were pregnant students and those with menstrual disorders. Based on the inclusion and exclusion criteria, only 62 respondents were included.

This research utilized two instruments: the Perceived Stress Scale (PSS) questionnaire and the Shortened Premenstrual Assessment Form (SPAF) questionnaire. The results of the validity test for the PSS questionnaire showed a calculated "r" ranging from 0.565 to 0.879, which is greater than the tabulated "r" of 0.482. Similarly, the validity test results for the SPAF questionnaire showed a calculated "r" ranging from 0.328 to 0.738, which is greater than the tabulated "r" of 0.312. Both of these instruments were used for data collection.

The data were analyzed through univariate and bivariate analysis. Univariate analysis was used to determine the frequency distribution of respondent characteristics, stress levels, and premenstrual syndrome. Bivariate analysis was employed to investigate the relationship between stress levels and premenstrual syndrome using the Spearman rank correlation test. The research ethics approval letter is numbered B.LPPM-UHB/1508/02/2023.

3. RESULT AND DISCUSSION

3.1. Results

3.1.1. Respondent Characteristics

Table 1. Characteristics of Respondents Based on Body Mass Index (BMI) and Age at Menarche

Variable	Frequency	Percentage
Body Mass Index (BMI)		
1. Underweight	14	22.6
2. Normal	41	66.1
3. Overweight	7	11.3
Age at Menarche		
1. Early Menarche	0	0.0
2. Normal Menarche	57	91.9
3. Late Menarche	5	8.1
Total	62	100%

Table 1 explains that out of 62 respondents, the majority had a normal BMI, with 41 respondents (66.1%). The majority of respondents also had a normal menarche, with 57 respondents (91.9%).

3.1.2. Variable Characteristics

Table 2. Frequency Distribution of Stress Levels

Stress Level	Frequency (f)	Percentage (%)
Mild	7	11.3
Moderate	50	80.6
Severe	5	8.1
Total	62	100

Table 2 shows that the majority of respondents experienced moderate stress, with 50 respondents (80.6%).

Table 3. Frequency Distribution of Premenstrual Syndrome (PMS)

Category	Frequency	Percentage (%)
No or Mild Symptoms	43	69.4
Moderate to Severe Symptoms	19	30.6
Total	62	100

Table 3 explains that 43 out of 62 respondents (69.4%) experienced Premenstrual Syndrome (PMS) without symptoms or with mild symptoms. Meanwhile, 19 respondents (30.6%) experienced premenstrual syndrome with moderate to severe symptoms.

3.1.3 Bivariate Analysis

Tabel 4. The Relationship Between Stress Level and *Premenstrual Syndrome*

Stress Level	PMS				Total		Correlation Coefficient	p-*value*
	No symptoms - mild symptoms		Moderate - severe symptoms					
	F	%	F	%	f	%		
Light	7	11.3	0	0.0	7	11.3		
Moderate	35	56.5	15	24.2	50	80.6	0.456	0.000
Serve	1	1.6	4	6,5	5	8.1		

Table 4 explains that the majority of respondents experienced moderate stress, with 50 (80.6%) respondents having no or mild symptoms of premenstrual syndrome, while 33 (53.5%) respondents had moderate to severe symptoms. Based on the Spearman rank correlation test, the p-value is 0.000, where p-value < a (0.05), and the correlation coefficient is 0.456, indicating a positive relationship. This means that there is a significant correlation between stress and PMS among female students in the Nursing Bachelor's Program at Harapan Bangsa University, with a moderate strength of correlation.

3.2 Discussion

3.2.1 Stress Levels

Table 2 shows the results that 7 respondents (11.3%) experienced mild stress, 50 respondents (80.6%) experienced moderate stress, and 5 respondents (8.1%) experienced severe stress. These results indicate that the majority of final-year female students in the Nursing Bachelor's Program at Harapan Bangsa University experienced moderate stress, with 50 respondents (80.6%).

These findings align with the study by (Hanin et al., 2021), which reported that the majority of respondents experienced moderate stress, with 398 (79.4%) female students falling into this category. Another congruent study is the research by Fidora & Yuliani (2020), which revealed that almost all respondents

experienced moderate stress, with 50 (94.3%) female students in this category. However, these results differ from the findings of Bohari et al (2020), which showed that the majority of respondents experienced mild stress, with 65 respondents (83.3%).

Stress among female students is often a result of academic pressures. This can be predicted by the learning process during exams, the pressure to study, demands for classroom performance, and the ability to cover a lot of material in a short time. Generally, female students experience prolonged stress that initially lasts for hours to days, as they encounter challenging issues leading to moderate stress symptoms.

Moderate stress symptoms, according to the Psychology Foundation of Australia, include becoming easily angered, feeling offended, difficulty in getting rest, having exaggerated reactions to things, impatience when facing interruptions, being unable to tolerate anything that obstructs their progress, and experiencing restlessness (Fidora & Yuliani, 2020).

According to the findings, nearly all 7th-semester female students in the Nursing Bachelor's Program at Harapan Bangsa University experience symptoms such as feeling anxious and stressed, with 62 respondents (100%), frequently getting angry due to unexpected events, with 61 respondents (98.4%), and often experiencing overwhelming difficulties that they cannot overcome, with 60 respondents (96.8%).

Stress can have a positive effect if the pressure does not exceed their stress tolerance or their skills and talents. The positive effects

of stress on students include feeling challenged to self-improve and fostering creativity. The negative effects can manifest as difficulty concentrating during classes, especially during thesis guidance sessions with their professors, a decrease in interest in activities they used to enjoy, a decline in motivation, and even negative behaviors.

3.2.2. *Premenstrual syndrome* (PMS)

Table 3 shows the results indicating that the majority of female students in the Nursing Bachelor's Program at Harapan Bangsa University experience premenstrual syndrome without symptoms or with mild symptoms, with 43 respondents (69.4%). These results align with the findings of Hanin et al (2021), which also showed that the majority of respondents experience premenstrual syndrome within the category of no symptoms to mild symptoms, with 348 respondents (69.5%).

According to the American College of Obstetricians and Gynecologists (ACOG), premenstrual syndrome occurs when a woman has only one physical and psychological symptom during three consecutive menstrual periods (Zuhana & Suparni, 2020). According to Suparman, common symptoms of premenstrual syndrome include headaches, breast pain, joint pain, back pain, bloating, muscle pain, irritability, fatigue, overeating, difficulty concentrating, and sleep disturbances (Ani & Purwati, 2020).

The research results indicate that almost all respondents experience premenstrual syndrome, with symptoms including easy irritability (98.4%), difficulty concentrating and having a restless mind (93.5%), joint and hip pain (95.2%), and increased appetite (90.3%).

In various studies, psychological factors have been identified as the primary influencers of premenstrual syndrome due to hormonal imbalances of progesterone and estrogen in the body before menstruation. These hormones affect serotonin levels in the brain, which in turn directly influence mood, leading to changes in premenstrual behavior, both physical and psychological (Lumingkewas et al., 2021).

3.2.3. The Relationship Between Stress Levels and Premenstrual Syndrome (PMS)

Table 4 explains that the majority of respondents experienced moderate stress, with 50 respondents (80.6%), and in terms of premenstrual syndrome, 33 respondents (53.2%) had no or mild symptoms, while 17 respondents (27.4%) experienced moderate to severe symptoms.

According to the Spearman Rank test, the significance level (α) is 0.05, or a 95% confidence level. The obtained p-value is 0.000, where p-value < the value of α (0.05), and the correlation coefficient is 0.456, indicating a meaningful positive relationship. This signifies a significant correlation between stress levels and PMS among female students in the Nursing Bachelor's Program at Harapan Bangsa University, with a moderate level of correlation.

These findings are consistent with the study conducted by Andiarna (2018), which revealed a p-value of 0.040, indicating a highly significant correlation between stress levels and premenstrual syndrome. This consistency is also in line with the findings of Puji et al. (2021), who reported a p-value of 0.001, signifying a relationship between stress levels and Premenstrual Syndrome.

Hapsari explains that stress can trigger premenstrual syndrome by activating the Hypothalamus-Pituitary-Ovarium (HPO) axis, which are interconnected and exacerbate each other (Lestari, 2020). The results indicate a p-value of 0.000 (< 0.05) with a correlation coefficient of 0.456, signifying a moderate correlation with a positive direction. From this, it can be concluded that higher stress levels lead to more severe premenstrual syndrome symptoms.

This is because when women experience prolonged stress, hormones such as cortisol and prostaglandin can increase, while neurotransmitters in the brain, like serotonin and dopamine, can decrease. Premenstrual syndrome is caused by low serotonin levels, and low serotonin can lead to mood changes, which are one of the symptoms of premenstrual syndrome.

Serotonin is a key factor involved in many processes and cycles within the body. It contributes to sleep patterns and carbohydrate metabolism, which can affect the regulation of estrogen and progesterone. Women experiencing premenstrual syndrome often have varied and low serotonin levels, which can result in early or delayed ovulation. This leads to the release of progesterone and estrogen, causing physical symptoms of premenstrual syndrome, such as bloating and breast pain. At the same time, an increase in prostaglandin hormones causes uterine contractions, resulting in abdominal pain during the menstrual cycle (Rahmatulillah, 2020).

Management strategies that can be applied to control the symptoms of premenstrual syndrome include taking medications, especially vitamins and antidepressants, maintaining a balanced diet, psychological approaches, exercise, adopting a healthy lifestyle, and practicing relaxation methods such as yoga (Abdi et al., 2019). Appropriate coping mechanisms, such as targeted dietary changes, getting enough rest and sleep, exercise, and weight management, can be used to cope with stress (Tutdini et al., 2022).

CONCLUSSION

The stress level most commonly experienced by respondents was moderate stress, with 50 respondents (80.6%), while premenstrual syndrome most commonly affected respondents with no to mild symptoms, amounting to 43 respondents (69.4%) out of 62 respondents. Based on this explanation, it can be concluded that there is a significant relationship between stress levels and premenstrual syndrome among female students in the Nursing Bachelor's Program at Harapan Bangsa University, with a p-value of 0.000 and a correlation coefficient of 0.456. This suggests a moderate correlation with a positive direction, indicating that as stress levels increase, the severity of premenstrual syndrome symptoms also intensifies.

RECOMMENDATION

Based on the results obtained, there are still some issues to address in the discussion and conclusion. The following recommendations are suggested:

1. For the respondents, it is recommended that they should try to avoid the causes of stress and learn to manage stress effectively, which can help minimize the occurrence of premenstrual syndrome (PMS) symptoms.
2. For the research institution, Harapan Bangsa University is encouraged to expand its collection of books and literature in the library, making it easier for students to access the references they need.
3. For future researchers, it is advisable to conduct further studies on effective management strategies for premenstrual syndrome (PMS) experienced by female students in the Nursing Bachelor's Program at Harapan Bangsa University.

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