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The Relationship Between Premenstrual Syndrome and Mood Swings Based on Questionnaires SPAF and FDMS in Faculty Students Third Year of Medicine

Ratu Fathya Aulia Putri*, Sadya Wendra, Herin Setianingsih, Prajogo Wibowo
Universitas Hang Tuah, Indonesia
Email: ratufathya04@gmail.com*, wendrasadya@gmail.com,
herin.setianingsih@hangtuah.ac.id, Prajogo.wibowo@hangtuah.ac.id

ABSTRACT

Premenstrual Syndrome (PMS) is a collection of physical, emotional, and behavioral symptoms that appear during the luteal phase and can affect daily activities, including academic and emotional functioning. This study aims to determine the relationship between PMS and mood changes based on the SPAF and FDMS questionnaires among third-year Faculty of Medicine students. This study uses an observational analytical design with a cross-sectional approach and was conducted at the Faculty of Medicine, Hang Tuah University, Surabaya. Primary data were obtained through the distribution of the Shortened Premenstrual Assessment Form (SPAF) questionnaire to assess PMS levels and the Four-Dimensional Mood Scale (FDMS) to measure mood conditions. The results showed that most respondents experienced moderate PMS (55.3%) and were in a fairly good mood (82.5%). Bivariate analysis using the Spearman correlation test showed a significant association between PMS and mood changes ($p < 0.001$), with a negative relationship and a weak–moderate correlation strength ($r = -0.379$). This indicates that the more severe the level of PMS, the worse the mood tends to be. The conclusion of this study is that there is a relationship between the level of PMS and mood changes based on the SPAF and FDMS questionnaires among third-year Faculty of Medicine students. These findings underscore the importance of promotive and preventive efforts, including education on PMS management, stress management, and reproductive health monitoring to support the physical and emotional well-being of female students.

Keywords: *Premenstrual Syndrome, Mood, SPAF, FDMS.*

INTRODUCTION

Premenstrual Syndrome (PMS) is a condition that is often experienced by women of reproductive age and is characterized by various physical and psychological symptoms that appear before menstruation (Gao et al., 2022). The high frequency and severity of PMS indicate that this condition is a significant women's health problem and requires more attention (Tschudin, 2022). Common psychological symptoms in PMS include mood swings, irritability, easy crying, anxiety, difficulty concentrating, and depressive mood, while physical symptoms that often appear are flatulence, breast pain, fatigue, pelvic pain, back pain, and headache (Yunitasari, Kusuma and Palupi, 2023).

The results of the latest meta-analysis involving 17 studies with a total of 18,803 participants reported that the global prevalence of PMS was 48%, with variation between regions (Ashraf Direkvand-Moghadam et al., 2014). Other epidemiological studies show that the prevalence of PMS is higher in Asia than in other regions (Gao et al., 2022). In Indonesia, research reported that the incidence rate of PMS in adolescent girls was 58.1%, with an increasing tendency in which around 80% of women experience PMS (Maharani, 2023). These data confirm that PMS is a widespread health problem and has a significant impact on women's quality of life, especially in psychological aspects and academic productivity (Azhary et al., 2022; Dabash et al., 2024; Siahbazi et al., 2018; Victor et al., 2019).

PMS measurement was carried out using the Shortened Premenstrual Assessment Form (SPAF) questionnaire (Machfudhoh, Sari and Novina, 2020). Instruments that can evaluate

psychological conditions, especially mood, are also needed (Um and Lee, 2023). The Four-Dimension Mood Scale (FDMS) is a measurement tool used to classify a person's mood condition into four main dimensions (Adinugroho, 2016). The combination of these two instruments allows researchers to assess the relationship between PMS and mood changes systematically. Students of the Faculty of Medicine, Hang Tuah University, class of 2022 are currently in an intensive academic phase that has the potential to increase stress, aggravate PMS symptoms, and affect mood swings. Research that specifically assesses the relationship between PMS and mood changes in the population of medical students in Indonesia is still limited; therefore, this study aims to determine the relationship between Premenstrual Syndrome and mood changes based on the SPAF and FDMS questionnaires in third-year medical students.

This study asks the following research question: Is there a relationship between Premenstrual Syndrome (PMS) and mood changes based on the SPAF and FDMS questionnaires among female students of the Faculty of Medicine, Hang Tuah University, class of 2022? The objectives of this research are to determine the relationship between Premenstrual Syndrome (PMS) and mood changes based on the SPAF and FDMS questionnaires in female students of the Faculty of Medicine, Hang Tuah University, class of 2022; to determine the severity of Premenstrual Syndrome (PMS) based on the SPAF questionnaire among these students; and to identify the level of mood changes experienced by the students based on the FDMS questionnaire.

This research is expected to add scientific insight within the institutional environment, especially regarding the relationship between Premenstrual Syndrome (PMS) and mood changes based on the SPAF and FDMS questionnaires. It may also support educational institutions in designing educational programs and psychological counseling services to improve the well-being of female students, particularly during the premenstrual period. Through this study, the authors can deepen their understanding of the relationship between Premenstrual Syndrome (PMS) and mood swings. In addition, this research provides the author with the opportunity to improve academic writing skills in a structured and logical manner.

The results of this study can serve as a scientific reference for future research that discusses similar topics, both in psychology and medical science, particularly regarding Premenstrual Syndrome (PMS) and mood swings. This research can also increase public knowledge about Premenstrual Syndrome (PMS) and its association with mood changes.

The aim of this research is to analyze the relationship between Premenstrual Syndrome (PMS) and mood changes in female students of the Faculty of Medicine, Hang Tuah University, Surabaya, class of 2022. This study aims to assess the severity of PMS experienced by these students using the Shortened Premenstrual Assessment Form (SPAF) questionnaire and to determine their mood conditions using the Four-Dimension Mood Scale (FDMS) questionnaire. Additionally, this research seeks to examine the relationship between PMS severity and mood changes based on the results of the SPAF and FDMS questionnaires to gain a deeper understanding of the impact of PMS on emotional well-being. Therefore, this study is expected to contribute meaningful scientific insights regarding the effects of PMS on the physical and psychological health of students while providing recommendations for the management of mental and physical health during the premenstrual period.

RESEARCH METHODS

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The design of this study was an observational analytic study with a cross-sectional approach that aimed to analyze the relationship between Premenstrual Syndrome (PMS) and mood changes based on the Shortened Premenstrual Assessment Form (SPAF) and the Four-Dimension Mood Scale (FDMS) questionnaires among female students of the Faculty of Medicine, Hang Tuah University, class of 2022.

This research method used a quantitative approach with primary data obtained through the distribution of the Shortened Premenstrual Assessment Form (SPAF) questionnaire to measure the level of Premenstrual Syndrome (PMS) and the Four-Dimension Mood Scale (FDMS) questionnaire to measure mood conditions.

The population in this study consisted of female students of the Faculty of Medicine, Hang Tuah University, class of 2022. Participants were selected based on inclusion and exclusion criteria. The inclusion criteria were as follows: students of the Faculty of Medicine, Hang Tuah University, class of 2022; willingness to provide informed consent and participate as respondents; and completion of the Shortened Premenstrual Assessment Form (SPAF) questionnaire to measure the level of Premenstrual Syndrome (PMS) and the Four-Dimension Mood Scale (FDMS) questionnaire to measure mood conditions.

The exclusion criteria were students of the Faculty of Medicine, Hang Tuah University, class of 2022 who had been diagnosed with polycystic ovary syndrome (PCOS), students who used hormonal medications, and students who used psychotropic medications.

The sample size in this study was calculated using the cross-sectional study research formula according to the Taro Yamane formula:

$$n = \frac{N}{N\,(d^2) + 1}$$

Description:
N = Population
n = Minimum sample size required
d = Error rate 10% = 0.1
Thus, the minimum sample size needed in this study was obtained, namely:

$$n = \frac{154}{154\,(0{,}01) + 1}$$
$$n = \frac{154}{2{,}54}$$
$$n = 60{,}62 \ (61 \ sampel)$$

Based on the results of the calculation above, the minimum number of samples required for this study was 61 students from the Faculty of Medicine, class of 2022. The method used in this study was simple random sampling of female students from the Faculty of Medicine, class of 2022. This technique was chosen because the population had relatively homogeneous characteristics, the number and data (sampling frame) were clearly known, and every individual in the population had an equal chance of being selected as a sample.

Table 1. Operational Definition

Variable	Operational Definition	Instruments	How to Measure	Scale
Independent Variables *Premenstrual Syndrome* (PMS)	*Premenstrual Syndrome* (PMS) is a collection of physical, emotional, and behavioral symptoms that appear at the end of the luteal phase of the menstrual cycle, which begins from ovulation and subsides in the first few days of menstruation. These symptoms can cause disturbances in the individual's academic, social, and overall activity functions (Akbulut et al., 2024).	Online questionnaire *Shortened Premenstrual Assessment Form* (SPAF)	Using the SPAF questionnaire, which is categorized into: Not having PMS = 1-10 Mild PMS = 11-19 Moderate PMS = 20-29 Severe PMS = ≥ 30	Ordinal
Bound Variables Mood swings	Changes *Mood* It is a mood swing that occurs quickly and often extremely, characterized by significant emotional fluctuations in a person. This change involves a shift from positive feelings such as happiness and well-being, to negative feelings such as anger, irritability, or even depression (Monitha, 2021).	Online questionnaire *Four Dimensions Mood Scale* (FDMS)	Using the FDMS questionnaire, which is categorized into: 0-20% = Not Good 21-39.99% = Poor 40-59.99% = Pretty Good 60-79.99% = Good 80-100% = Excellent	Ordinal

Source: Akbulut et al., 2024

The tool used in the study for data collection was the Shortened Premenstrual Assessment Form (SPAF) questionnaire to measure the level of Premenstrual Syndrome (PMS). This instrument had been used in research in Indonesia with the title "The Relationship between Physical Activity and Premenstrual Syndrome (PMS) in Adolescent Girls at SMK Bhakti Indonesia Medika Mojokerto City" (Aprilana, 2025). The Four-Dimension Mood Scale (FDMS) questionnaire, which was used to measure mood conditions, had also been validated in the journal "Understanding Mood in the Indonesian Context: Adaptation and Validity Test of the Four Dimensions Mood Scale" (Adinugroho, 2016).

The instruments used in the research for data collection were as follows: an informed consent sheet that could be accessed online through Google Forms; questionnaire sheets including respondents' identities (name, age, and WhatsApp number) that could be accessed online through Google Forms; the Shortened Premenstrual Assessment Form (SPAF) questionnaire sheet that could be accessed online through Google Forms; the Four-Dimension Mood Scale (FDMS) questionnaire sheet that could be accessed online through Google Forms; and a smartphone, computer, or laptop to access the online questionnaire.

This research was conducted at the Faculty of Medicine, Hang Tuah University, Surabaya. The study was carried out from July to November 2025.

The research procedures were as follows: obtaining a research permit and ethical clearance from the Faculty of Medicine, Hang Tuah University; distributing questionnaires to social media groups of students from the class of 2022 at the Faculty of Medicine, Hang Tuah University; explaining the purpose of the study and requesting informed consent from

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participants; collecting data through an online questionnaire that included respondents' identities (name, age, and WhatsApp number), the Shortened Premenstrual Assessment Form (SPAF), and the Four-Dimension Mood Scale (FDMS); processing and analyzing the data using SPSS; and presenting the results of the data analysis and drawing conclusions.

The data or information that were edited included the online questionnaire containing the identity of the respondents, the Shortened Premenstrual Assessment Form (SPAF) questionnaire to measure the level of Premenstrual Syndrome (PMS), and the Four-Dimension Mood Scale (FDMS) questionnaire to measure mood conditions. Coding was applied to the data in this study to facilitate data processing by the researchers, including coding for the level of Premenstrual Syndrome (PMS).

Table 2. PMS level coding

Code	PMS level categories	Remarks
PMS1	Not Experiencing	1 - 10
PMS2	Lightweight	11 - 19
PMS3	Medium	20 - 29
PMS4	Weight	≥ 30

Source: Aprilana, 2025

Table 3. Coding mood conditions

Code	Categories of mood conditions	Remarks
KM1	Not Good	0% - 20%
KM2	Not Good	21% - 39,99%
KM3	Pretty Good	40% - 59,99%
KM4	Good	60% - 79,99%
KM5	Excellent	80% - 100%

Source: Adinugroho, 2016

Scoring was a stage in the research process that aimed to assign values to specific points requiring assessment. Scoring was carried out using a particular formula to process the data, as well as by selecting the most relevant data in accordance with the research objectives.

The Premenstrual Syndrome (PMS) scale consisted of 10 statements measured using an ordinal data scale with six levels to assess PMS symptoms, with the following criteria: Not experienced (no change) = 1; Very mild (without inhibiting social activities and interactions) = 2; Mild (slight disturbance in activities and social interaction) = 3; Moderate (disturbance of activities and social interaction, at least two episodes of PMS) = 4; Severe (significantly disrupting social activities and interactions, minimum two episodes of PMS) = 5; Extreme (drastic change) = 6. The above criteria were categorized as follows: Not experiencing PMS = 1 – 10; mild-intensity PMS = 11 – 19; moderate-intensity PMS = 20 – 29; and severe-intensity PMS = $\geq$30.

Mood state scale

The scale used in this study is the Likert scale, with the following information:

Table 4. Mood state scale

Positive Statement	
Not at all	: 1
Less	: 2
Medium	: 3
Very	: 4
Very much	: 5
Negative Statements	
Not at all	: 5
Less	: 4
Medium	: 3
Very	: 2
Very much	: 1

Source: Sudana, Purnawati, & Adiputra, 2025

Then the number of respondents' answers to each question was summed up on a Likert scale.

Description:

P = Percentage result

F = Total score of each respondent

N = Maximum score

After the P value is obtained, the interpretation of the score is based on the interval:

a. Numbers 0% - 20% = Not good

b. Score 20% - 39.99% = Not Good.

c. Figure 40% - 59.99% = Pretty good

d. 60% - 79.99% = Good

e. Numbers 80% - 100% = Excellent

Data entry is the process of entering data consisting of identity, SPAF questionnaire results and FDMS questionnaire results for data analysis using the Statistical Package for the Social Science (SPSS) application. Tabulating is the step of compiling research data into a table according to the criteria that have been found. Cleaning is the process of rechecking data to ensure that there are no errors, incompleteness, or inconsistencies before it is analyzed with a statistical program.

Data Analysis

The independent variable in this study was Premenstrual Syndrome (PMS), while the bound variable was mood swings. This analysis was made to find out whether there is a relationship between independent variables and bound variables (Aprillianti, 2021). In this study, bivariate analysis was conducted to test the relationship between Premenstrual Syndrome (PMS) and mood changes based on SPAF and FDMS questionnaires in female students of the Faculty of Medicine, Hang Tuah University class of 2022. The hypothesis test used is a spearman correlation test which aims to find out whether there is a relationship between two variables with the ordinal data scale.

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RESULTS AND DISCUSSION

Univariate Analysis

This research was carried out on August 12 – September 12 with the method of distributing questionnaires online to 154 respondents. Of these, there are 103 respondents who are willing and meet the criteria to fill out the questionnaire completely. This study aims to find out the relationship between Premenstrual Syndrome (PMS) and mood changes based on SPAF and FDMS questionnaires in female students of the Faculty of Medicine, Hang Tuah University class of 2022. The data of the study results are presented in the form of a table.

Table 5. Distribution of respondents by age

Age	Frequency	Percentage (%)
19	3	2,9%
20	14	13,6%
21	64	62,1%
22	22	21,4%
Total	103	100%

Source: Internal Study Data (no specific external source mentioned)

Table 5. showing a distribution of 103 respondents by age. Most of the respondents were 21 years old, as many as 64 people (62.1%). 22 respondents were 22 years old (21.4%), 20-year-old respondents were 14 (13.6%), and 19-year-old respondents were 3 people (2.9%). This shows that most of the respondents of this study are in the early adulthood age range, which is generally the age group of active students.

Table 6. Distribution of respondents by PMS level

PMS Rate	Frequency	Percentage (%)
Not Experiencing	2	1,9%
Lightweight	13	12,6%
Medium	57	55,3%
Weight	31	30,1%
Total	103	100%

Source: Internal Study Data (no specific external source mentioned)

Table 6. showed the distribution of 103 respondents based on the level of Premenstrual Syndrome (PMS). Based on the table, most of the respondents experienced moderate levels of STDs, namely 57 people (55.3%). Respondents who experienced severe PMS amounted to 31 people (30.1%), 13 people (12.6%) experienced mild PMS, and only 2 respondents (1.9%) did not experience PMS at all.

Table 7. Distribution of mood states

Mood Condition	Frequency	Percentage (%)
Not Good	12	11,7%
Pretty Good	85	82,5%
Good	6	5,8%
Total	103	100%

Source: Internal Study Data (no specific external source mentioned)

Table 7 shows the distribution of 103 respondents based on mood conditions. Based on the table, most of the respondents had mood conditions in the category of quite good, namely as many as 85 respondents (82.5%), 12 respondents (11.7%) had poor mood conditions, and 6 respondents (5.8%) showed good mood conditions.

Bivariate Analysis

Table 8. Cross-tabulation test of PMS levels and mood conditions

PMS Rate	Mood Condition			
	Not Good	Pretty Good	Good	Total
Not Experiencing	0	1 (50%)	1 (50%)	2 (100%)
Lightweight	0	12 (92,3%)	1 (7,7%)	13 (100%)
Medium	2 (3,5%)	52 (91,2%)	3 (5,3%)	57 (100%)
Weight	10 (32,3%)	20 (64,5%)	1 (3,2%)	31 (100%)
Total	12 (11,7%)	85 (82,5%)	6 (5,8%)	103 (100%)

Source: Internal Study Data (no specific external source mentioned)

Table 8 shows a cross-tabulation test between the level of Premenstrual Syndrome (PMS) and mood conditions in 103 respondents. Based on the table, it was known that of the 2 respondents who did not experience PMS, each 1 respondent (50%) had a fairly good mood condition, and 1 respondent (50%) had a good mood. In respondents with mild STDs, most of them had a fairly good mood condition as many as 12 respondents (92.3%), and only 1 respondent (7.7%) had a good mood. In the group with moderate PMS, most respondents had a fairly good mood, namely 52 respondents (91.2%), while 2 respondents (3.5%) had a bad mood, and 3 respondents (5.3%) had a good mood. Meanwhile, in the group with severe STDs, as many as 10 respondents (32.3%) had a bad mood, 20 respondents (64.5%) had a fairly good mood, and 1 respondent (3.2%) had a good mood.

Table 9. Spearman correlation test

			PMS	*MOOD*
Spearman's Rho	PMS	*Correlation Coefficient*	1.000	-.379**
		Sig. (*2-tailed)*		<,001
		N	103	103
	MOOD	*Correlation Coefficient*	-.379**	1.000
		Sig. (2-tailed)	<,001	
		N	103	103

Source: Aprillianti, 2021

Based on the results of the spearman analysis between PMS and mood changes based on SPAF and FDMS questionnaires in female students of the Faculty of Medicine, Hang Tuah University class of 2022 presented in table 9, a significance value of p < 0.001 was obtained. With a value of α=0.05, it can be interpreted that p<a. This shows that the H1 hypothesis is accepted, which means that there is a significant relationship between PMS and mood changes in female students of the Faculty of Medicine, Hang Tuah University, class of 2022. In the table, a correlation coefficient of -0.379 was also obtained which indicates a relationship with weak to moderate strength with a negative relationship direction. Thus, the higher the level of PMS experienced by the respondents, the worse the mood they felt. Conversely, the milder the PMS level, the better the mood condition tends to be.

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This study is an observational analytical study using primary data taken through the distribution of questionnaires to female students of the Faculty of Medicine, Hang Tuah University Class of 2022 to find out the relationship between Premenstrual Syndrome (PMS) and Mood Changes. The instruments used are the Shortened Premenstrual Assessment Form (SPAF) questionnaire to assess PMS levels and the Four Dimensions Mood Scale (FDMS) questionnaire to measure mood conditions which can be accessed online through google form. The number of respondents who participated and met the inclusion criteria in this study was 103 respondents.

Univariate Analysis

Based on the results of a study conducted on 103 female students of the Faculty of Medicine, Hang Tuah University class of 2022, it is known that most of the respondents experienced Premenstrual Syndrome (PMS) at a moderate level of 57 respondents (55.3%), followed by severe PMS as many as 31 respondents (30.1%), mild PMS as many as 13 respondents (12.6%), and only 2 respondents (1.9%) who did not experience PMS.

The results of this study are in line with a preliminary study conducted on female nutrition students of the Faculty of Public Health, Airlangga University, where as many as 65 female students experienced STDs during their menstrual cycles. Of these, there were 31 female students (46%) with moderate PMS symptoms, 29 female students (43%) with severe symptoms, and 7 female students (11%) with mild symptoms (Pridynabilah, 2023). Based on research conducted by Arianti et al. (2025) on adolescent girls at SMAN 6 Bone also showed a similar pattern, where of the 196 respondents, those who experienced moderate PMS were (63.8%), followed by severe PMS (19.9%) and mild PMS (16.3%) (Arianti et al., 2025). Research by Li et al. (2025) on female students in Ilam, Iran reported that most female students experienced moderate STDs (52%) and some others experienced severe STDs (14.6%) (Li et al., 2025). These findings reinforce that medium-level PMS is the category most experienced by young women, including female students. On the other hand, the results of this study are not entirely in line with the preliminary study at STIKes Kharisma Persada Pamulang, which reported that 66.7% of respondents experienced mild PMS and 33.3% experienced moderate to severe PMS (Kania and Puji, 2021). This difference can be influenced by different sleep patterns and lifestyles between populations, where STDs themselves are common in around 70 to 90% of women of reproductive age with severity varying from mild to severe (Yunitasari, Kusuma and Palupi, 2023).

The high rate of STDs can be caused by various factors such as academic stress, irregular sleep patterns, lifestyle and nutritional status (Ilmi and Utari, 2018). Consumption of foods high in sugar, salt, and dairy products can increase urine output, lower magnesium levels, increase sodium, and swelling. These three conditions can aggravate PMS symptoms and trigger the appearance of negative stress and emotional symptoms (Sudana, Purnawati and Adiputra, 2025). Stress experienced by female students has the potential to increase the activation of the Hypothalamus–Pituitary–Adrenal (HPA) axis and body cortisol levels, thereby inhibiting the release of Gonadotropin Releasing Hormone (GnRH) and Luteinizing Hormone (LH), which affect the fluctuations of the hormones estrogen and progesterone, so that it can cause PMS symptoms (Ayu and Kesehatan, 2023). These findings suggest that psychological factors have an important contribution to the severity of STDs, especially in women of productive age such as college students.

Based on the results of a study conducted on 103 students of the Faculty of Medicine, Hang Tuah University class of 2022, it was found that most of the respondents had quite good mood conditions as many as 85 respondents (82.5%), followed by poor mood conditions as many as 12 respondents (11.7%) and good mood conditions as many as 6 respondents (5.8%). These results are in line with research conducted by Ramadhani (2023) which states that PMS can cause uncontrollable mood swings in some women, with common symptoms such as irritability, depression, stress, crying and anxiety (Ramadhani, 2023). A study by Rahmawati (2025) also reported that the prevalence of moderate to severe PMS symptoms was related to mood in 10.7% of women, suggesting that this age group is at a higher risk of experiencing the emotional impact of PMS (Rahmawati, 2025).

Mood is an emotional condition that can change over a period and is influenced by internal (such as hormonal) and external factors (such as environmental stress) (Supriyono 2020). In the luteal phase, a decrease in the hormones estrogen and progesterone leads to a decrease in the activity of the neurotransmitters serotonin and GABA which play a role in maintaining emotional stability (Sudana, Purnawati & Adiputra, 2025). When neurotransmitter imbalances occur, individuals are more prone to experiencing irritability, anxiety, or depressive mood (Malini, 2019).

The results of this study also show that most of the respondents had a fairly good mood condition during the PMS period. These findings can be understood through several psychological and social factors that have been described in previous studies. Qualitative research by Simon et al. (2024) shows that women gradually learn to recognize the early signs of mood swings and anticipate their impact on daily activities. This process of self-awareness helps in the development of adaptive coping mechanisms to manage emotions, so mood fluctuations do not necessarily lead to severe emotional disturbances. Women also practice various behavioral coping strategies such as light exercise, relaxation, maintaining a healthy diet, and doing calming activities such as listening to music or taking a warm bath (Simon et al., 2024). Ayyub et al. (2024) found that activities such as aerobic exercise, yoga, and light stretching can significantly lower the severity of PMS symptoms both physically and psychologically. These behaviors support emotional stability and improve mood quality during the premenstrual phase. Cognitive and emotional strategies such as acceptance and mindfulness have been shown to be effective in reducing psychological distress and improving women's quality of life during PMS. The role of social support also greatly affects mood conditions during PMS (Ayyub et al., 2025). Research by Akın & Erbil (2023) on 452 female college students in Turkey showed that social support significantly lowered the severity of STD symptoms ($\beta = -0.265$, p <.001) (Akın and Erbil, 2024). Women who receive emotional support from friends, family, or partners tend to be better able to regulate their emotions and reduce stress that arises from STDs (Rahmawati, 2025).

The combination of self-awareness, the application of adaptive coping strategies, and social support may explain why most of the respondents in this study were in a pretty good mood even though they were experiencing PMS. These results reinforce the view that emotional experiences during PMS are not solely determined by hormonal factors, but also by the interaction between biological, psychological and social factors that shape women's emotional responses to changes that occur in their bodies (Rahmawati, 2025).

Bivariate Analysis

Based on the results of the statistical calculation of the spearman correlation test, a significance value of $p < 0.001$ with a correlation coefficient value of -0.379 was obtained. This shows that the H1 hypothesis is accepted, namely the relationship between Premenstrual Syndrome (PMS) and mood changes based on the SPAF and FDMS questionnaires in female students of the Faculty of Medicine, Hang Tuah University Class of 2022 with weak to moderate correlation strength and negative relationship direction. It can be interpreted that the more severe the level of PMS a person experiences, the worse their mood condition will be.

These results are in line with research by Um and Lee (2023) which found that increased severity of STDs correlates with an increase in negative affective symptoms such as anxiety, irritability, and emotional fatigue (Um and Lee, 2023). The findings of this study are also reinforced by several other studies that show that PMS is associated with the appearance of psychological symptoms and mood swings. Research by Lumingkewas, Suparman and Mongan (2021) on 142 female students concluded that the picture of PMS in adolescents in the final period at the Faculty of Medicine, Sam Ratulangi University, which was the most experienced according to the type of symptoms, was the psychological symptom of mood swing, this occurred in 136 respondents (95.8%) (Lumingkewas, Suparman and Mongan, 2021). Research by Li et al. (2025) suggests that an increase in the severity of depression, such as from mild to moderate or from moderate to severe, will increase a person's chances of falling into the category of more severe PMS so that, the higher the level of anxiety and depression experienced, the more likely an individual is to experience a higher degree of PMS of severity (Li et al., 2025). Research by Liu (2017) using a stress evaluation test, as well as the Positive Affect and Negative Affect Scale (PANAS) to assess the emotional state of women with PMS shows that women with PMS have a higher negative effect and lower positive affect (Liu, 2017). In a study conducted by Sudana et al. (2025) on 70 Psychology students at Udayana University, no significant association was found between PMS and mood swings ($p = 0.713$). Researchers suspect that confounding factors such as a diet high in sugar and salt, dairy products and differences in individual exercise intensity can affect emotional stability and be the reason for not finding a significant relationship (Sudana, Purnawati and Adiputra, 2025). These results confirm that PMS not only has an impact on physical aspects, but also affects emotional and psychological functions through neuroendocrine pathways so that the approach to handling PMS should ideally not only focus on hormonal aspects, but also on stress management and mood stabilization.

The underlying mechanism of the relationship between PMS and mood swings is related to changes in estrogen and progesterone levels in the luteal phase that decrease the sensitivity of GABA receptors to allopregnanolone, which is a metabolite of progesterone that functions to provide a calming effect on the brain (Ayu & Health, 2023). When allopregnanolone levels decrease ahead of menstruation, GABA's inhibitory effects also decrease, causing the appearance of symptoms such as anxiety, irritability, and mood swings (Modzelewski et al., 2024). The decrease in serotonin triggered by an increase in the enzyme monoamine oxidase (MAO) also worsens mood conditions and increases the risk of negative affectations (Bao & Swaab, 2019).

Globally, STDs are a very common condition experienced by women of reproductive age. The global disease burden study reports that the number of STD cases increased from

652.5 million in 1990 to 956 million in 2019 (Liu et al., 2024). Other research also confirms that PMS is widely found among college students, including medical students, and has an impact on quality of life and academic performance (Alkhalifa, Aldossary and Alahmari, 2023; Fatima et al., 2025). This study makes an important contribution by knowing the relationship between PMS and mood swings in female medical students, a group that faces high academic pressure and has a significant prevalence of STDs. These findings reinforce the evidence that STDs not only impact physical aspects, but also affect emotional and psychological functioning.

CONCLUSION

The study found a significant relationship between Premenstrual Syndrome (PMS) and mood changes based on the SPAF and FDMS questionnaires among female students of the Faculty of Medicine, Hang Tuah University, class of 2022. Most respondents experienced moderate PMS severity according to the SPAF questionnaire, while the majority showed relatively good mood conditions based on the FDMS questionnaire. These findings highlight the importance of increasing awareness of PMS symptoms and their potential psychological impact among female students, encouraging the adoption of stress management strategies and balanced lifestyles to reduce negative effects on daily activities. Support from educational institutions and the broader community is also essential, including providing education about PMS, fostering an empathetic environment, and facilitating counseling services to help students manage symptoms effectively. For future research, it is recommended to investigate additional factors that may influence mood changes in women with PMS, such as genetic predisposition, the use of hormonal contraceptives or other medications, and a history of psychological conditions, in order to obtain more comprehensive and accurate findings.

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