PREMENSTRUAL SYNDROME (PMS) AND CERTAIN MENSTRUAL CYCLE-RELATED CHARACTERISTICS AMONG FEMALE MEDICAL STUDENTS IN VIETNAM

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Received 08 August 2024

Accepted 30 August 2024

Abstract: Research on Premenstrual syndrome (PMS) and analysis of the relationship between menstrual cycle-related characteristics and PMS in female medical students in Vietnam. A cross-sectional study was conducted among 231 female students enrolled in medical in Vietnam using a questionnaire. The results indicated that students experienced a wide range of PMS symptoms. Despite this, the majority of them (94.8%) never missed exams, and only 0.4% consistently missed exams. The study also revealed a correlation between the severity of menstrual cramps throughout the cycle and the risk of experiencing moderate to severe PMS. From this study, it can be concluded that Premenstrual Syndrome (PMS) causes numerous physical and psychological symptoms, affecting the quality of life and academic performance of women in general and medical college students in particular. However, the number of students missing exams and those consistently performing poorly is very low. This may be attributed to the high academic commitment of the students, as they continue to strive for the best possible academic outcomes despite experiencing PMS symptoms.

*Keywords***:** *Premenstrual Syndrome (PMS), female medical students*

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https://doi.org/10.56086/jcvb.v4i3.172

1.Introduction

Premenstrual Syndrome (PMS) is a recurrent disorder occurring during the luteal phase of the menstrual cycle. It is characterized by symptoms such as irritability, anxiety, emotional instability, depression, edema, breast tenderness, and headaches. These symptoms typically arise within the five days preceding menstruation and usually resolve within a few hours after menstruation begins [1]. Studies indicate a global average prevalence rate of PMS at 47.8%, with a range from 12% to 98% [2]. Among female medical students, the prevalence varies across different countries: 35.3% in the UAE; 62.7% in India; and 89.5% in South Korea [3 -4]; …

PMS significantly impacts the physical and mental activities of young women. Female medical students are particularly noteworthy because they face demanding academic programs that require high levels of concentration, coupled with the pressures of rigorous coursework, examinations, and social engagements. Research has shown that the most common symptoms of PMS among female medical students are irritability, bloating, and insomnia [6,7]. The symptoms of PMS affect mental health and academic performance, leading to absences, exam failures, and mistakes [8]. Cheng and colleagues conducted a study on female students to evaluate the factors associated with PMS. They found that poor sleep quality, psychological distress, high consumption of foods containing egg yolk, and heavy alcohol intake were significantly related to PMS [9].

Given the demanding curriculum and substantial workload, medical students are more likely to experience PMS symptoms, which significantly impact their academic performance and quality of life. However, in Vietnam, research on PMS among female medical students has primarily focused on specific regions. Additionally, the issues surrounding PMS have not been extensively addressed, nor has the severity been adequately acknowledged. Therefore, we conducted the study: "Premenstrual Syndrome and Certain Menstrual Cycle-Related Characteristics Among Female Medical Students in Vietnam" with the following objectives:

1. To describe the prevalence of Premenstrual Syndrome (PMS) among female medical students in Vietnam.

2. To analyze the relationship between certain menstrual cycle-related characteristics and Premenstrual Syndrome (PMS) in female medical students in Vietnam.

1. Research Methodology

Study Population:

• Female students currently enrolled in medical universities/colleges in Vietnam.

Selection Criteria:

• Students in official training programs at medical universities/colleges in Vietnam.

• Actively attending medical universities/colleges at the time of the study.

Exclusion criteria include:

• Those using contraceptive or hormonal medications

• Those with conditions such as diabetes, epilepsy, anemia, endocrine disorders, sickle cell disease, thyroid disorders, ovarian or reproductive tract diseases.

Study Location and Period:

• Location: Medical universities and colleges in Vietnam.

• Period: From August 17, 2022, to November 10, 2022.

Study Design: Cross-sectional study.

Sample Size and Sampling Method:

• Sample size calculation: $n = Z1-\alpha/2^2 * p(1-p) / \varepsilon^2$

• n: minimum required sample size.

• Z1-α/2: standard normal value (1.96 for 5% significance level).

• p: 0.64 based on a study at Bisha University, Saudi Arabia.

• ε: acceptable relative error (0.1).

• Minimum sample size: 216.

• Actual sample size: 231 female medical students.

• Sampling method: Convenience sampling.

Data Collection*:* Data was collected using an online questionnaire administered via Redcap software. The collection method was indirect, with a link sent to the study subjects.

Data Analysis: Data processing was conducted using Excel and Jamovi 2.3.18.0. Descriptive statistics included calculating the mean and standard deviation for quantitative variables and determining frequency and percentage for qualitative variables. Inferential statistics involved using the Chi-square test to

identify relationships, with a significance level set at $\alpha = 0.05$. Additionally, logistic regression was employed to analyze the relationship between reproductive characteristics and Premenstrual Syndrome.

Ethics: The study was conducted with informed consent from participants, who were fully informed about the purpose and significance of the research. All participants voluntarily agreed to partake in the study after understanding its objectives and potential impact. To ensure ethical standards, the confidentiality of participant information was rigorously maintained, with data used solely for research purposes. Personal identifiers were removed, and data was stored securely to prevent unauthorized access, ensuring the privacy and rights of the participants were protected throughout the study.

2. Results

Table 1. General Information of Study Participants (n=231)

General Information		**n (%)**
Year of Study	Year 1, 2, 3, 4	224 (97,0)
	Year 5, 6	7 (3,0)
Program	Doctor Program	107 (36,2)
	Bachelor Program	124 (41,8)
Chronic Illness History	Yes	23 (9,9)
	No	208 (90,1)
Weight	Median (25th - 75th)	48,0 (45,0 - 50,0)
Height (Mean ± SD)	157,4 ± 5,5	
BMI (Mean ± SD)	19,8 ± 2,4	

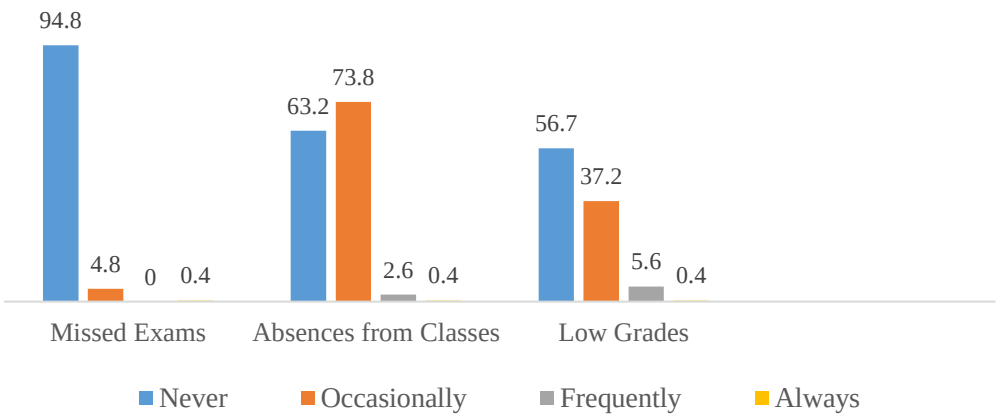
A total of 231 female medical students were surveyed across all academic years. The majority were in years 1 to 4 (97%). Most students were in the Bachelor program (41.8%), and 90.1% reported no history of chronic illness. The mean height was 157.4 ± 5.5 cm, and the mean BMI was 19.8 ± 2.4 kg/m².

Table 2. Reproductive and Menstrual Characteristics (n=231)

Characteristics	**Indicator**	**Number (n)**	**Percentage (%)**
Age of Menarche	Before 13 years	71	30,7
	13 years and above	160	69,3
Menstrual Duration	1-3 days	28	12,1
	4-7 days	195	84,4
	Over 7 days	8	3,5
Menstrual Pain Level	None	23	10,0
	Mild	63	27,3
	Moderate	111	48,1
	Severe	34	14,7
Menstrual Cycle Length	Under 21 days	10	4,3
	21-35 days	175	75,8
	Over 35 days	46	19,9
Menstrual Blood Loss	Low	9	3,9
	Normal	174	75,3
	High	45	19,5
	Very high	3	1,3
Regular Menstrual Cycle	Yes	125	54,1
	No	106	45,9
Pregnancy History	Yes	1	0,4
	No	230	99,6
Use of Contraceptive Pills	Yes	25	10,8
	No	206	89,2

The majority of female students had their first menstruation at 13 years or older (69.3%). Most had a menstrual duration of 4-7 days (84.4%) and experienced moderate menstrual pain (48.1%). The majority had a menstrual cycle length of 21-35 days (75.8%). Normal menstrual blood loss was reported by 75.3%, with 54.1% having a regular menstrual cycle. Nearly all participants had never been pregnant (99.6%) and had not used contraceptive pills (89.2%).

Figure 1. Impact of PMS on Academic Performance (n=231)



The results show that a majority of students never missed exams due to PMS (94.8%), never had absences from classes (63.2%), and never received low grades (56.7%).

Table 3: Multivariate Logistic Regression Analysis of Reproductive Characteristics Related to PMS (n=231)

Reproductive Characteristics	PMS Severity		OR	95%CI	P
	None/Mild (n=140)	Moderate/Severe (n=91)			
Age of Menarche					
Before 13 years	39	32	1,0	------	------
13 years and above	101	59	0,76	0,03 - 6,62	0,4
Menstrual Duration					
1-3 days	3	5	0,75	0,12 - 4,63	0,75

4-7 days	17	11	0,56	0,11 - 2,92	0,49
Over 7 days	120	75	1,0	------	------
Menstrual Pain Level					
None	19	4	1,0	------	------
Mild	51	12	1,09	0.31- 3,91	0,89
Moderate	60	51	**3,81**	**1,18- 12,31**	**0,02**
Severe	10	24	**10,04**	**2,59- 38,92**	**<0,01**
Menstrual Cycle Length					
Under 21 days	6	4	1,0		
21-35 days	30	16	1,27	0,29- 5,54	0,75
Over 35 days	104	71	0,76	0,15- 3,74	0,74
Regular Menstrual Cycle					
Yes	76	49	1,0	------	------
No	64	42	1,34	0,69- 2,60	0,37

The study analyzed menstrual characteristics between individuals with None/Mild PMS (n=140) and Moderate/Severe PMS (n=81). Age of menarche showed no significant difference (p=0.495). Menstrual duration over 7 days had a non-significant trend towards higher PMS severity (OR=1.81, p=0.125). Severe menstrual pain was strongly associated with increased PMS severity (OR=5.09, p<0.001), while mild pain was inversely related (OR=0.15, p<0.001). Cycle length (under 21 days OR=0.32, p=0.296; over 35 days OR=1.36, p=0.396) and regularity (OR=1.16, p=0.671) showed no significant associations. Severe menstrual pain is a key indicator of PMS severity, unlike other menstrual factors.

3. Discussion

This study was conducted among 231 female medical students enrolled in various medical universities and colleges in Vietnam. The majority of participants

were in their first to fourth years of study (97%) and enrolled in the Bachelor program (41.8%). The participants had a high level of health awareness, as reflected by the low prevalence of chronic illness (90.1%) and a normal mean BMI of 19.8 ± 2.4 kg/m².

The study population consisted of young students, which aligns with the finding that 90.1% had no history of chronic illness. The average height of the participants was 157.43 ± 5.49 cm, which is higher than the average height of Vietnamese women, reported to be 156.20 cm [11].

The age of menarche was predominantly 13 years or older (69.3%), which is consistent with the findings of Nguyen Thi Hai Ha's study, which reported a similar figure of 76.5% [12]. The duration of menstruation was primarily 4-7 days (84.4%), although the number of menstrual days varied among individuals and months, averaging from 2-7 days. The majority of menstrual cycles lasted between 21-35 days (75.8%), which is similar to the findings of Do Tuan Dat and colleagues, who reported a prevalence of 78.1% [13]. The majority of participants experienced menstrual cramps (90%), a higher prevalence compared to the 86% reported in the study by Do Tuan Dat and colleagues [14]. The amount of menstrual blood loss was predominantly normal (75.3%), attributed to the shedding of the uterine lining. Most participants had regular menstrual cycles (54.1%), which is lower compared to the 87% reported in the study by Ha Duy Tien and colleagues [15]; This difference may be attributed to the high academic pressure faced by the students in our study, which can affect the regularity of their menstrual cycles. Most students had never been pregnant (99.6%) and had never used contraceptive pills (89.2%), which is consistent with their young age and low marriage rate. Medical students typically exhibit high discipline and self-motivation in their studies. Despite experiencing menstrual symptoms, 63.2% of the students reported never being absent from classes, although this is lower than the 83.3% reported by Do Tuan Dat and colleagues [13].

Through multivariate logistic regression analysis, we found a significant relationship between the severity of menstrual pain and certain reproductive and menstrual characteristics. Our study identified a significant difference in the

intensity of moderate to severe menstrual pain associated with premenstrual syndrome (PMS) ($p < 0.05$). This indicates that the severity of menstrual pain is related to PMS. Similar findings were observed in the study by A.R. Kuczmierczyk, which also highlighted the connection between pain intensity and PMS [16].

4. Conclusion

In our study, premenstrual syndrome (PMS) was identified as a prevalent issue among female medical students. A significant relationship was found between the severity of menstrual cramps and the risk of experiencing moderate to severe PMS. The findings indicate that PMS causes numerous physical and psychological symptoms, impacting the quality of life and academic performance of women in general, and medical students in particular. Despite these challenges, the number of students missing exams and consistently performing poorly was very low.

Reference

[1] JoAnn V. Pinkerton. Cẩm nang MSD - Phiên bản dành cho chuyên gia. [15/8/2024]. Hội Chứng Tiền kinh nguyệt (PMS) - Phụ khoa và Sản khoa. Available from: https://www.msdmanuals.com/vi/professional/phụ-khoa-và-sản-khoa/rối-loạn-kinh-nguyệt/hội-chứng-tiền-kinh-nguyệt-pms

[2] A. Direkvand-Moghadam, S. Kaikhavani, and K. Sayehmiri, "The worldwide prevalence of premenstrual syndrome: A systematic review and meta-analysis study," *Iranian Journal of Obstetrics, Gynecology and Infertility*.

[3] M. S. Hashim *et al.*, "Premenstrual Syndrome Is Associated with Dietary and Lifestyle Behaviors among University Students: A Cross-Sectional Study from Sharjah, UAE," *Nutrients*

[4] K. Bhuvaneswari, P. Rabindran, and B. Bharadwaj, "Prevalence of premenstrual syndrome and its impact on quality of life among selected college students in Puducherry," *Natl Med J India*

[5] S. Kang and Y. Lee, "Menstruation and the Variability of Food Intake in Female College Students," *Korean J Community Nutr*

[6] "TOGÜ Sağlık Bilimleri Dergisi » Makale » Hemşirelik Öğrencilerinde Premenstrual Sendrom İlişkili Faktörlerin Belirlenmesi ve Uyku Kalitesi ile İlişkisinin İncelenmesi." https://dergipark.org.tr/tr/pub/togusagbilderg/issue/77807/1208964?fbclid=IwAR3v6OmHl0xYJck-PZsBKZtD8qmXlu6TyiN7AetrVav2b9SQ6GuOOnKgd7w.

[7] S. Bhandari, Y. Dwa, M. Maharjan, S. Maskey, M. Thakur, and S. Sharma, "Premenstrual Syndrome among Medical Students of a Medical College: A Descriptive Cross-sectional Study," *JNMA J Nepal Med Assoc*, doi: 10.31729/jnma.8136.

[8] E. Attieh, S. Maalouf, S. Richa, and A. Kesrouani, "Premenstrual syndrome among Lebanese medical students and residents," *Int J Gynaecol Obstet*, doi: 10.1016/j.ijgo.2012.11.006.

[9] W. S. Biggs and R. H. Demuth, "Premenstrual syndrome and premenstrual dysphoric disorder," *Am Fam Physician*.

[10] S.-H. Cheng, C.-C. Shih, Y.-K. Yang, K.-T. Chen, Y.-H. Chang, and Y.-C. Yang, "Factors associated with premenstrual syndrome — A survey of new female university students," *The Kaohsiung Journal of Medical Sciences*, doi: 10.1016/j.kjms.2012.08.017.

[11] "Bộ Y tế công bố kết quả Tổng điều tra Dinh dưỡng năm 2019-2020 - Tin nổi bật - Cổng thông tin Bộ Y tế.".

[12] Hà N. T. H., Hằng M. T. T., Anh N. T. T., "Nghiên cứu về sự thay đổi ở tuổi dậy thì của học sinh trung học cơ sở huyện Vụ Bản- tỉnh Nam Định," *TNU Journal of Science and Technology*.

[13] "Khảo sát tình trạng đau bụng kinh ở nữ sinh viên tại một số trường cao đẳng và đại học y tại Hà Nội." https://tailieu.vn/doc/khao-sat-tinh-trang-dau-bung-kinh-o-nu-sinh-vien-tai-mot-so-truong-cao-dang-va-dai-hoc-y-tai-ha-noi-2521724.html.

[14] "Đánh giá hiệu quả của các phương pháp giảm đau trên nữ sinh viên bị đau bụng kinh tại một số trường cao đẳng và đại học Y tại Hà Nội - MedLib," Aug. 17, 2022. https://thuvieny.com/danh-gia-hieu-qua-cua-cac-phuong-phap-giam-dau-tren-nu-sinh-vien-bi-dau-bung-

kinh-tai-mot-so-truong-cao-dang-va-dai-hoc-y-tai-ha-noi/

[15] Hà D. T., Phan T. N., Nguyễn N. P., Bùi L. K. C., Nguyễn T. H. N., and Phùng T. P. T., "Một số thay đổi kinh nguyệt sau khi cấy thuốc implanon,"

[16] A. R. Kuczmierczyk *et al.*, "Pain responsivity in women with premenstrual syndrome across the menstrual cycle,"