Vietnam Journal of Community Medicine, Vol. 67, English version No. 1, 2026, 297-302

CLINICAL CHARACTERISTICS AND FACTORS ASSOCIATED WITH DYSMENORRHEA SEVERITY AMONG FEMALE STUDENTS AT THE UNIVERSITY OF MEDICINE AND PHARMACY, VIETNAM NATIONAL UNIVERSITY, HANOI IN 2025

Hoang Tu Anh[1], Do Linh Quyen[1], Nguyen Thi Ngoc Nhu[2], Tran Mai Anh[1*]

[1]*University of Medicine and Pharmacy, VNU – 144 Xuan Thuy street, Cau Giay Ward, Hanoi City, Vietnam*
[2]*Hanoi Medical University - 1 Ton That Tung street, Kim Lien Ward, Hanoi City, Vietnam*

Received: 06/05/2026
Revised: 21/05/2026; Accepted: 27/05/2026

ABSTRACT

Objective: To describe the clinical characteristics of dysmenorrhea and investigate selected factors associated with the severity of dysmenorrhea among female students at the University of Medicine and Pharmacy, Vietnam National University, Hanoi in 2025.

Subjects and methods: A descriptive cross-sectional study was conducted among 172 female students who were currently enrolled at the University of Medicine and Pharmacy, Vietnam National University, Hanoi and reported experiencing menstrual pain. Data were collected using a structured self-administered questionnaire and analyzed with appropriate statistical tests.

Results: The mean age of participants was 21.6 ± 1.8 years. Most students reported regular menstrual cycles and a duration of menstruation within the normal range. Dysmenorrhea was predominantly mild to moderate in severity, with a mean visual analog scale score of 3.5 ± 2.0; however, 7.0% of participants reported severe pain. A total of 33.1% of students reported absence from classes during menstruation. In univariate analysis, stress level, history of pregnancy and childbirth, family history of dysmenorrhea, history of gynecological diseases, and smoking status were significantly associated with the severity of dysmenorrhea ($p < 0.05$).

Conclusion: Dysmenorrhea is a common condition among female students and has a considerable impact on academic activities. In univariate analysis, stress level, family history of dysmenorrhea, history of gynecological disease, history of pregnancy and childbirth, and smoking were associated with pain severity. These factors should be taken into account in counseling, monitoring, and reproductive health support programs for students.

Keywords: Dysmenorrhea; pain severity; female students; menstrual pain.

1. INTRODUCTION

Dysmenorrhea is one of the most common reproductive health problems among women of reproductive age. It is particularly prevalent among female university students, with several studies reporting prevalence rates ranging from 72% to 90%[1,2]. Dysmenorrhea not only causes physical discomfort but also significantly affects daily activities, academic performance, and quality of life[3]. Among medical and pharmacy students, academic pressure, psychological stress, and suboptimal lifestyle habits may increase pain severity and prolong symptom burden[4].

Previous studies have reported associations between dysmenorrhea and several factors, including body mass index, family history, psychological stress, lifestyle habits, and menstrual cycle characteristics[1,2]. However, most studies have mainly focused on the prevalence of dysmenorrhea, while factors associated with pain severity, which may more directly reflect the extent to which this condition affects academic performance and daily activities, have not been fully clarified, particularly among health science students. A study in Ethiopia found that students with moderate to severe dysmenorrhea were 8.53 times more likely to experience impaired academic performance than those with mild dysmenorrhea[5].

In Vietnam, several studies among medical and pharmacy students have reported a high prevalence of dysmenorrhea, ranging from 75.6% to 88.8%, with 16.7% to 33.1% of students reporting absence from classes during menstruation.(4,6,7) However, these studies have mainly described prevalence and general characteristics, whereas analyses of factors associated with pain severity and its impact on academic performance remain limited. Identifying these factors is important for guiding appropriate interventions, thereby contributing to improved reproductive health and better academic outcomes among female students.

Against this background, this study was conducted to describe the characteristics of dysmenorrhea and examine factors associated with pain severity among female students at the University of Medicine and Pharmacy, Vietnam National University, Hanoi, in 2025.

2. SUBJECTS AND METHODS

2.1. Study design

This was a cross-sectional descriptive study.

*Corresponding author
Email: maianh.ump@vnu.edu.vn **Phone:** (+84) xxx **Https:**//doi.org/10.52163/yhc.v67iE1.5267

2.2. Study period and setting

The study was conducted from January 2025 to May 2025 at the University of Medicine and Pharmacy, Vietnam National University, Hanoi.

2.3. Study participants

Participants were female students currently enrolled at the University of Medicine and Pharmacy, Vietnam National University, Hanoi, who experienced abdominal pain associated with menstruation.

- Inclusion criteria

+ Female students who experienced lower abdominal pain associated with menstruation.

+ Students who agreed to participate in the study.

- Exclusion criteria

+ Students with a self-reported history suggestive of secondary dysmenorrhea, such as endometriosis, uterine fibroids, pelvic inflammatory disease, or cervical stenosis, were excluded.

+ Students who did not complete the survey.

2.4. Sample size and sampling method

The sample size was calculated using the formula for estimating a single proportion:

$$n = Z^2_{1-\alpha/2} \frac{p(1-p)}{d^2}$$

Where:

- n: the minimum required sample size

- $Z^2_{1-\alpha/2}$ = 1.96 corresponding to a 95% confidence level;

- p: the estimated proportion based on a previous study. According to the study by Doan Van Minh conducted among 409 female students at Hue University of Medicine and Pharmacy, the prevalence of dysmenorrhea was 88.8%; therefore, p was set at 0.88;

- d: the acceptable absolute error, set at 0.05.

Substituting these values into the formula yielded a minimum sample size of 162. The actual sample size included in the study was 172 participants.

A convenience sampling method was used. All eligible female students who met the selection criteria during the study period were recruited. The sample size was estimated based on the prevalence of dysmenorrhea reported in a previous study because no prior local estimate was available for dysmenorrhea severity.

2.5. Study variables

The study variables included:

- General characteristics of the participants: age, academic year, major, and body mass index (BMI).

- Menstrual cycle characteristics: age at menarche, menstrual cycle length, duration of menstruation, menstrual flow, menstrual blood color, and the presence of blood clots.

- Characteristics of dysmenorrhea: number of painful menstrual cycles during the three most recent cycles, pain severity assessed using the Visual Analog Scale (VAS), time of pain onset, and the impact of pain on daily activities and academic performance.

- Associated factors: psychological stress, inadequate diet, smoking, family history, BMI, and selected menstrual cycle characteristics.

2.6. Data collection and statistical analysis

A self-administered questionnaire was developed using Google Forms and distributed to eligible female students through class communication channels. Participation was voluntary, and students were informed about the study objectives and assured of the confidentiality of their information before completing the survey. After collection, the data were checked, cleaned, and entered into SPSS version 25.0 for analysis. Quantitative variables were described as mean ± standard deviation, whereas qualitative variables were presented as frequencies and percentages. Differences between groups were compared using the Chi-square test or Fisher's exact test, as appropriate. Statistical significance was set at $p < 0.05$.

2.7. Research ethics

Permission to conduct the study was obtained from the Board of Management and the Department of Undergraduate Training Management of the University of Medicine and Pharmacy, Vietnam National University, Hanoi. All participants were informed about the study objectives and provided electronic informed consent prior to participation. Participation was entirely voluntary, and all responses were collected anonymously. Personal information was kept strictly confidential and used solely for scientific research purposes. The study was conducted in accordance with ethical principles for research involving human participants.

3. RESULTS

Table 1. General characteristics of participants (n =172)

Variables		n	%
Age group	≤ 20 years	57	33.1
	> 20 years	115	66.9
	Mean age ($\bar{X}$ ± SD) (Min - Max)	21.6 ± 1.8 (19 - 25)	
Academic year	First year	22	12.8
	Second year	35	20.3
	Third year	40	23.3
	Fourth year	34	19.8
	Fifth year	15	8.7
	Sixth year	26	15.1
BMI classification	Underweight	74	43.0
	Normal weight	91	52.9
	Overweight	7	4.1
Lifestyle and psychological factors	Smoking	8	4.7
	Inadequate diet	61	35.5
	Stress	40	23.3

The mean age of participants was 21.6 ± 1.8 years, ranging from 19 to 25 years. Most participants were older than 20 years (66.9%). Participants were distributed across all academic years, with third-year students representing the largest proportion (23.3%). Regarding nutritional status, more than half of the participants had a normal BMI (52.9%), while the proportion of underweight students remained relatively high (43.0%). Self-reported stress was observed in 23.3% of students, while 35.5% reported inadequate diet and 4.7% reported smoking.

Table 2. Menstrual cycle characteristics and selected related history among participants (n=172)

Variables		n	%
Age of first menstruation	< 12 years	1	0.6
	12 - ≤16 years	166	96.5
	> 16 years	5	2.9
	Mean age of first menstruation ($\bar{X}$ ± SD), years (Min – Max)	14.1 ± 1.3 (11 - 18)	
Obstetric and gynecological history	Pregnancy or childbirth	9	5.2
	Contraceptive use	15	8.7
	Gynecological diseases	22	12.8
	Family history of dysmenorrhea in mother or sister(s)	88	51.1
Menstrual cycle length	< 21 days	2	1.2
	21 – 35 days	160	93.0
	> 35 days	5	2.9
	Irregular menstrual cycle	5	2.9
Duration of menstruation	< 3 days	1	0.6
	3 - 5 days	77	44.8
	> 5 days	94	54.7
	Mean duration of menstruation ($\bar{X}$ ± SD), days (Min - Max)	5.9 ± 2.1 (1 - 30)	
Menstrual flow volume	Heavy	49	28.5
	Moderate	105	61.0
	Light	18	10.5
Menstrual blood color	Bright red	72	41.9
	Dark red	100	58.1
Blood clots	Yes	83	48.3
	No	89	51.7

Most students reported menarche between 12 and 16 years of age, with a mean age at menarche of 14.1 ± 1.3 years. The majority of participants had menstrual cycle lengths within the normal range of 21–35 days (93.0%). The mean duration of menstruation was 5.9 ± 2.1 days, with 54.7% of students reporting menstruation lasting more than 5 days. Menstrual flow was mainly moderate (61.0%), dark red menstrual blood was reported by 58.1% of participants, and blood clots were reported by 48.3%. Regarding related history, 51.1% of students reported a family history of dysmenorrhea in their mother or sister(s), 12.8% had a history of gynecological diseases, 8.7% had used contraceptives, and 5.2% had a history of pregnancy or childbirth.

Table 3. Characteristics of dysmenorrhea among participants

Variables		n	%
Time of pain onset	From the first menstrual cycle	85	49.4
	Within 1 year after the first menstrual cycle	79	45.9
	More than 1 year after the first menstrual cycle	8	4.7
Number of painful menstrual cycles during the three most recent cycles	1 cycle	20	11.6
	2 cycles	44	25.6
	3 cycles	107	62.8
Pain severity	Mild pain (VAS 1-3)	83	48.3
	Moderate pain (VAS 4-6)	77	44.8
	Severe pain (VAS 7-10)	12	7.0
	Mean VAS score ($\bar{X}$ ± SD) (Min - Max)	3.5 ± 2.0 (1 - 8)	

Nearly half of participants reported the onset of dysmenorrhea from their first menstrual cycle (49.4%), while 45.9% reported onset within 1 year after menarche. Most students experienced dysmenorrhea in all three of their most recent menstrual cycles (62.8%), suggesting a relatively frequent recurrent pattern. Pain severity was predominantly mild to moderate, with mild pain accounting for 48.3%, moderate pain for 44.8%, and severe pain for 7.0%. The mean VAS score was 3.5 ± 2.0.

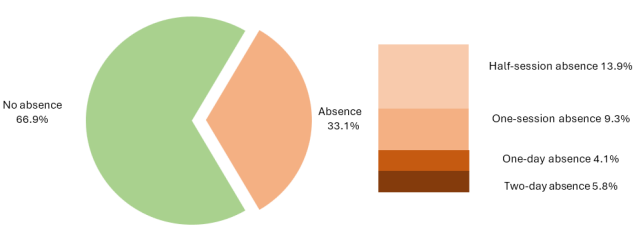


Chart 1. Impact of dysmenorrhea on academic attendance

Dysmenorrhea had a considerable impact on students' academic activities. A total of 33.1% of participants reported absence from classes during menstruation, whereas 66.9% reported no absence. Among those who missed classes, half-session absence accounted for the highest proportion, followed by one-session absence, two-day absence, and one-day absence.

Table 4. Comparison of selected factors according to dysmenorrhea severity (n=172)

Associated factors		Mild pain (n=83)		Moderate pain (n=77)		Severe pain (n=12)		Total		p
		n	%	n	%	n	%	n	%	
Stress level	Low	16	19.3	20	26.0	0	0	36	20.9	0.038
	Moderate	41	49.4	46	59.7	9	75.0	96	55.8	
	Severe	26	31.3	11	14.3	3	25.0	40	23.3	
History of pregnancy and childbirth	Yes	2	2.4	4	5.2	3	25.0	9	5.2	0.005
	No	81	97.6	73	94.8	9	75.0	163	94.8	
Family history of dysmenorrhea	Yes	34	41.5	48	61.5	6	50.0	88	51.1	0.048
	No	48	58.5	30	38.5	6	50.0	84	48.9	
History of gynecological diseases	Yes	6	7.2	12	15.6	4	33.3	22	12.8	0.025
	No	77	92.8	65	84.4	8	66.7	150	87.2	
History of contraceptive use	Yes	6	7.2	7	9.1	2	16.7	15	8.7	0.550
	No	77	92.8	70	90.9	10	83.3	157	91.3	
Nutritionally inadequate diet	Yes	24	28.9	33	42.9	5	41.7	62	36.0	0.136
	No	59	71.1	44	57.1	7	58.3	110	64.0	
Smoking	Yes	1	1.2	7	9.1	0	0	8	4.7	0.044
	No	82	98.8	70	90.9	12	100	164	95.3	

Univariate analysis showed that the distribution of dysmenorrhea severity differed significantly according to stress level, history of pregnancy and childbirth, family history of dysmenorrhea, history of gynecological diseases, and smoking status ($p < 0.05$). In contrast, no statistically significant differences in pain severity were observed according to history of contraceptive use or nutritionally inadequate diet ($p > 0.05$). Given the small frequencies in some subgroups, these findings should be interpreted with caution.

4. DISCUSSION

The mean age of participants was 21.6 ± 1.8 years, which is consistent with the typical age range of university students. The proportion of underweight students was relatively high (43.0%), which may reflect the nutritional status and lifestyle habits of female students. Previous studies have shown that abnormal BMI may be associated with dysmenorrhea through mechanisms involving prostaglandin activation and changes in pain perception thresholds[1]. In addition, approximately 23.3% of students reported psychological stress, suggesting that academic pressure in the medical training environment is considerable. These characteristics may affect reproductive health, particularly the perception and severity of menstrual pain, through endocrine and neurological mechanisms[3].

Most students experienced menarche between 12 and 16 years of age, had relatively regular menstrual cycles, and reported pain onset from the early menstrual cycles. These characteristics suggest that many cases in this study may be classified as primary dysmenorrhea[3]. Mechanistically, primary dysmenorrhea is commonly associated with increased prostaglandin synthesis in the endometrium, leading to increased uterine contractions, vasoconstriction, and reduced uterine muscle perfusion, thereby causing menstrual pain[3]. Notably, more than half of the students had a family history of dysmenorrhea (51.1%), which is consistent with previous studies and suggests the potential role of familial factors, including genetic predisposition, differences in pain perception, or similarities in lifestyle and symptom-coping behaviors[1,6]. In addition, a history of gynecological disease may contribute to greater pain severity or suggest the possibility of secondary dysmenorrhea in some cases[3]; however, this interpretation should be made with caution, as the information was mainly self-reported.

The results showed that nearly half of the students reported dysmenorrhea beginning with their first menstrual cycle, and most experienced pain over successive cycles, reflecting the recurrent nature of dysmenorrhea. Pain severity was predominantly mild to moderate, with a mean VAS score of 3.5 ± 2.0. This finding is consistent with the study by Doan Van Minh among students at Hue University of Medicine and Pharmacy, in which pain severity was also mainly mild to moderate[6]. This pattern is also in line with the review by Hong Ju et al., which reported that dysmenorrhea among young women was most commonly mild to moderate in severity, whereas the prevalence of severe pain was lower, ranging from 2% to 29% among women of reproductive age[8]. This may be explained by the generally young age of participants and the absence of apparent gynecological disease in most cases. Although the proportion of severe pain in the present study was not high, some students still reported severe pain; this may be related to individual differences in pain perception thresholds, uterine contractility, inflammatory responses, and increased prostaglandin synthesis during menstruation[3]. Furthermore, recurrent pain over multiple cycles, even when not severe, may still impose a cumulative burden on students' daily activities, academic performance, and mental health.

The study found that approximately one-third of students missed classes because of dysmenorrhea, indicating a

considerable impact on academic activities. This finding is consistent with the study by Do Tuan Dat and Nguyen Thi Thu Ha, in which dysmenorrhea was identified as one of the causes of academic disruption among female students[7]. However, absenteeism may represent only the most visible aspect of this burden; many students who still attend classes may experience reduced concentration, fatigue, lower learning efficiency, and limited participation in academic activities. These effects may result from lower abdominal pain and accompanying symptoms such as back pain, headache, nausea, sleep disturbance, or premenstrual stress. Therefore, dysmenorrhea should be regarded as an important student health issue, particularly in cases of recurrent pain, moderate to severe pain, or pain that clearly interferes with academic activities.

Univariate analysis showed that stress level was significantly associated with the severity of dysmenorrhea; students with higher stress levels tended to report more severe pain. This finding is consistent with previous studies suggesting that stress may increase pain perception through central nervous system and endocrine mechanisms[1]. Psychological stress may increase sympathetic nervous system activity, affect sleep, lower pain tolerance, and make symptoms feel more severe. Conversely, recurrent dysmenorrhea, particularly when it interferes with academic activities or increases the risk of class absence, may also heighten students' anxiety before each menstrual period. This suggests a possible vicious cycle between pain, stress, and reduced academic performance. Therefore, in addition to symptomatic pain management, stress management, sleep improvement, appropriate physical activity, and mental health counseling should also be considered when supporting students with dysmenorrhea.

Similarly, a family history of dysmenorrhea was also associated with pain severity, supporting the role of genetic factors and the family environment. In addition, a history of pregnancy and childbirth differed according to dysmenorrhea severity. This finding may be related to changes in uterine structure and function after pregnancy; however, the number of participants with a history of pregnancy and childbirth in this study was very small, and the result should therefore be interpreted with great caution. A history of gynecological disease and smoking status were also significantly associated with dysmenorrhea severity in univariate analysis. Gynecological conditions may increase pelvic inflammatory responses, stimulate sensory nerves, or contribute to secondary dysmenorrhea. Smoking may affect circulation, induce vasoconstriction, and increase uterine ischemia, thereby aggravating pain[8]. However, because the number of smokers in this study was very small, this finding should be confirmed in future studies with larger sample sizes. In contrast, no statistically significant association was observed between dysmenorrhea severity and either a history of contraceptive use or an inadequate diet. This may be related to the sample size, the way these variables were measured, or residual confounding factors that could not be controlled for in the cross-sectional study design.

This study should be interpreted in light of some limitations. First, the cross-sectional design does not allow causal relationships between associated factors and dysmenorrhea severity to be determined. Second, data were collected using a self-administered questionnaire and may therefore be subject to recall bias and information bias; additionally, secondary dysmenorrhea was excluded mainly based on self-reported information, without confirmation by specialist examination or paraclinical assessment. Third, some analytical subgroups had small frequencies, such as students who smoked or had a history of pregnancy and childbirth, and the analysis was limited to univariate comparisons; therefore, potential confounding factors were not simultaneously controlled for. Finally, participants were recruited using convenience sampling from a single university, which may limit the generalizability of the findings.

5. CONCLUSION

Among female students with dysmenorrhea, pain severity was predominantly mild to moderate; however, dysmenorrhea still had a considerable impact on academic activities, with approximately one-third of students reporting absence from classes during menstruation.

In univariate analysis, several factors, including stress level, family history of dysmenorrhea, history of gynecological disease, history of pregnancy and childbirth, and smoking status, were associated with dysmenorrhea severity.

Further studies with more appropriate analytical designs, particularly those using multivariable models and larger sample sizes, are needed to identify independent factors associated with dysmenorrhea severity and to provide evidence for effective interventions.

REFERENCE

[1] Wang L, Yan Y, Qiu H, Xu D, Zhu J, Liu J, et al. Prevalence and Risk Factors of Primary Dysmenorrhea in Students: A Meta-Analysis. Value Health J Int Soc Pharmacoeconomics Outcomes Res. October 2022;25(10):1678–84. doi:10.1016/j.jval.2022.03.023 PubMed PMID: 35523614.

[2] De Sanctis V, Soliman AT, Elsedfy H, Soliman NA, Elalaily R, El Kholy M. Dysmenorrhea in adolescents and young adults: a review in different countries. Acta Bio Medica Atenei Parm. 2016;87(3):233–46. PubMed PMID: 28112688; PubMed Central PMCID: PMC10521891.

[3] Itani R, Soubra L, Karout S, Rahme D, Karout L, Khojah HMJ. Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. Korean J Fam Med. March 2022; 43 (2) : 101–8. doi:10.4082/kjfm.21.0103 PubMed PMID: 35320895; PubMed Central PMCID: PMC8943241.

[4] Le Minh Hoang, Le Ngoc Diem, Quach Tu Vy et al, Characteristics clinical of dysmenorrhea and the need for treatment with traditional medicine of female students of Can Tho university of medicine and pharmacy in 2023. Vietnam J Community Med. 6 May 2024;65(3). doi:10.52163/yhc.v65i3.1063

[5] Mesele TT, Ayalew HG, Syoum AT, Antehneh TA. Impact of Dysmenorrhea on Academic Performance Among Haramaya University Undergraduate Regular Students, Eastern Ethiopia. Front Reprod Health. 6 July 2022;4:939035. doi:10.3389/frph.2022.939035

[6] Doan Van Minh. Characteristics clinical of dysmenorrhea and the need for treatment with traditional medicine of female students of Hue University of

Medicine and Pharmacy. Journal of Medicine and Pharmacy, Hue University of Medicine and Pharmacy. 2021; Vol 11 (01):79–86.

[7] Do Tuan Dat, Nguyen Thi Thu Ha. Research on dysmenorrhea in female students of some medical colleges and universities in Hanoi. Vietnam Medical Journal. 13 March 2022;510(2):2. doi:10.51298/vmj.v510i2.2014

[8] Ju H, Jones M, Mishra G. The Prevalence and Risk Factors of Dysmenorrhea. Epidemiol Rev. 2014;36(1):104–13. doi:10.1093/epirev/mxt009