# CLINICAL CHARACTERISTICS AND SEVERAL FACTORS RELATED TO THE DYSMENORRHEA OF FEMALE STUDENTS AT PHENIKAA UNIVERSITY: A CROSS-SECTIONAL STUDY

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## ABSTRACT

**Objective**: To survey the clinical characteristics and some factors related to the dysmenorrhea of female students at Phenikaa University

**Method:** Cross-sectional descriptive study on 333 female students at Phenikaa University from October 2024 to January 2025.

**Results:** The percentage of dysmenorrhea of female students at Phenikaa University is 79.8%; the rate of irregular menstruation is 57.1%; The average menstrual cycle length was 32.7 ± 10.5 days; the duration of menstrual cramps was 2.3 ± 1.3 days, of which the pain mainly occurred during menstruation, accounting for 57.1%. The most common accompanying symptoms were back pain (71.1%) and constipation/diarrhea (22.7%). Factors such as BMI, dark red menstrual blood, and blood clots were associated with dysmenorrhea ($p < 0.05$).

**Conclusion:** The prevalence of menstrual cramps and menstrual disorders among female students at Phenikaa University was relatively high, with most experiencing mild to moderate levels of pain. Common accompanying symptoms included back pain, constipation, and diarrhea. Factors such as body mass index (BMI), dark red menstrual blood, and blood clots were found to be associated with dysmenorrhea. The research results show the necessity of implementing educational programs, examinations, and reproductive health screening for students, and at the same time researching treatment methods to help improve clinical symptoms and enhance the quality of life and learning activities of female students at Phenikaa University.


***Keywords:*** dysmenorrhea, female, students, Phenikaa University

## I. INTRODUCTION

Dysmenorrhea or menstrual cramps is a condition of abdominal pain that occurs in relation to the menstrual cycle, which is frequently accompanied by headaches, nausea, diarrhea, breast tenderness, and mood swings [1]. Most of women experience this condition at some point during their reproductive years, with 10% - 15% of women experiencing severe dysmenorrhea that greatly affects their quality of life and social relationships [2]. Dysmenorrhea is considered one of the leading causes of absenteeism in students, with the rate ranging from 29% - 51% [1]. Dysmenorrhea is divided into two types: primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is often functional, occurring after puberty at the first menstrual cycle with ovulation without any pelvic pathology. It is resulted from excessive or aberrant uterine contractions. Secondary dysmenorrhea, also known as acquired dysmenorrhea, appears after many years of no dysmenorrhea, often due to endometriosis, retroverted uterus, cervical stenosis, uterine fibroids in the uterine isthmus that make it difficult for menstrual blood to escape. Currently, NSAIDs are the first-line drugs in the treatment of dysmenorrhea, in addition, hormonal contraceptives and paracetamol are also commonly used. Internal medicine or surgery can be used for cases of dysmenorrhea caused by endometriosis, stenosis of the cervix. Dysmenorrhea is almost not threat to life, but it reduces the quality of female's life, over time not only affecting the physical but also affecting the mental health of women. Phenikaa University is a multidisciplinary university with a high number of female students. With the desire to understand the situation so that we can support, educate, and improve the quality of life and study for students with menstrual pain problems, we conducted this study to survey the clinical characteristics and some factors related to menstrual cramps of female students at Phenikaa University.

## II. SUBJECTS AND METHODS

### 2.1. Subjects, location and study period

**Subjects:**

*** Selection criteria**

Female students studying at Phenikaa University and voluntarily agreeing to participate in the research.


1. *Phenikaa University*

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*** Exclusion criteria**

- Students using hormonal medications or NSAIDs before the survey.

- Students diagnosed with sexually transmitted diseases or gynecological conditions.

**Research period:** From October 2024 to January 2025

**Research location:** Phenikaa University

**2.2. Research methods**

**Study design:** Descriptive cross-sectional study

**Sample size**

Apply the formula for estimating a proportion in the population using absolute error:

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

With α = 0,05; $Z_{1-\alpha/2}$ = 1,96; p = 0,866; d = 0,05 we have a sample size of n ≥ 178. So the minimum sample size is 178 female students.

We collected 333 research subjects, meeting the minimum sample size of 178 students.

**Sampling method:** Purposive sampling. Survey of female students in four majors of Phenikaa University: Health Sciences, Business Economics, Engineering and Technology, Social Sciences and Humanities.

**Research criteria**

- General characteristics of research subjects: age, BMI

- Menstrual cycle characteristics: regular or irregular menstruation, menstrual cycle length, menstrual period, menstrual blood characteristics.

- Dysmenorrhea status: dysmenorrhea severity according to VAS scale, time of dysmenorrhea, duration of dysmenorrhea

- Accompanying symptoms: back pain, breast tenderness, pelvic pain, constipation/diarrhea; vomiting or nausea.

**Data collection method**

Interview through a survey questionnaire on Google form.

**Research process**

The questionnaire on Google form was interviewed on 10 subjects for standardization, then the link and QR code were exported to Phenikaa University students through the student managers of the Student Affairs Department.

The collected information was checked, cleaned, and supplemented. Data was exported from Google form as an Excel file.

**Statistical analysis**

Data was analysis by using Statistical Package for Social Science (SPSS) version 20.0 software, descriptive statistics method such as frequencies, counts, percentages. Inferential statistics was used to analyse the association between variables using the odds ratio OR with p<0.05 with statistical significance.

**2.3. Research ethics**

The research was approved by the Board of Directors of Phenikaa University and related departments. The research was approved by the ethics council of Phenikaa University. The participants were clearly explained about the purpose, benefits and voluntarily participated in the research. The research information is confidential, with data collected accurately and calculations performed with precision.

## III. RESULTS

The study was conducted on 333 female students studying at Phenikaa University. Among the 333 female students surveyed, 273 reported experiencing dysmenorrhea, accounting for 79.8% of the sample.

***Table 1. The anthropometric characteristics and menstrual characteristics of the study participants (n = 273)***

| Variables | | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Age (X ± SD) | | 21,1 ± 1,1 | |
| BMI | Underweight | 106 | 38,8 |
| | Normal | 144 | 52,7 |
| | Overweight | 13 | 4,8 |
| | Obesity | 10 | 3,7 |
| Menstrual blood characteristics | Bright red | 142 | 52,0 |
| | Dark red | 78 | 28,6 |
| | Clots | 11 | 4,0 |
| | Dark red, clots | 42 | 15,4 |

| Variables | Frequency (n) | Percentage (%) |
|---|---|---|
| Irregular menstruation | 156 | 57,1 |
| Menstrual cycle length (days) (X ± SD) | 32,7 ± 10,5 | |
| Menstrual duration (days) (X ± SD) | 5,62 ± 2,29 | |

Table 1 demonstrates that the average age of female students in the study was 21.1 ± 1.1 years. Among the study participants, 52.7% had a normal BMI. Regarding menstrual characteristics, the majority of students experienced irregular menstrual cycles (57.1%). The average menstrual cycle length was 32.7 ± 10.5 days, the average menstrual duration was 5.6 ± 2.3 days, and the menstrual blood was predominantly bright red (52.0%).

***Table 2. Characteristics of dysmenorrhea (n = 273)***

| Variables | | Frequency (n) | Percentage (%) |
|---|---|---|---|
| VAS | 0 - 3 | 102 | 37,4 |
| | 4 - 6 | 159 | 58,2 |
| | 7 - 10 | 12 | 4,4 |
| | X ± SD | 4,1 ± 1,2 | |
| Menstrual Pain Onset | Before menstruation | 26 | 9,5 |
| | During menstruation | 156 | 57,1 |
| | Both before and during menstruation | 91 | 33,4 |
| Duration of menstrual pain (days) (X ± SD) | | 2,3 ± 1,3 | |

The results in Table 2 indicate that the majority of female students experienced moderate dysmenorrhea (58.2%) and mild pain (37.4%), with the pain primarily occurring during menstruation (57.1%). The duration of menstrual pain was 2.3 ± 1.3 days.

***Table 3. Other symptoms during menstruation (n = 273)***

| Symptom | Frequency (n) | Percentage (%) |
|---|---|---|
| Back pain | 194 | 71,1 |
| Breast tenderness | 45 | 16,5 |
| Pelvic pain | 32 | 11,7 |
| Constipation/Diarhea | 62 | 22,7 |
| Nausea/Vomiting | 24 | 8,8 |

During menstruation, the most common symptoms were back pain (71.1%), digestive disorders (constipation, diarrhea) (22.7%), breast tenderness (16.5%), pelvic pain (11.7%) and with nausea and vomiting affecting only 8.8%

***Table 4. Association between some factors and dysmenorrhea***

| Variables | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|
| | OR (95%CI) | p | OR (95%CI) | p |
| Age | 0,877 (0,675 – 1,141) | 0,328 | 0,927 (0,694 – 1,237) | 0,605 |
| BMI | 1,11 (1,005 – 1,226) | 0,039 | 1,129 (1,019 – 1,252) | 0,021 |
| Menstrual cycle length (days) | 0,981 (0,942 – 1,021) | 0,339 | 0,977 (0,935 – 1,020) | 0,289 |
| Menstrual duration (days) | 0,971 (0,810 – 1,163) | 0,746 | 1,007 (0,838 – 1,211) | 0,937 |
| Menstruation<br>Regular<br>Irregular | <br>1<br>1,320 (0,764 – 2,279) | <br><br>0,319 | <br>1<br>0,690 (0,388 – 1,227) | <br><br>0,207 |

| Variables | Univariate analysis | | Multivariate analysis | |
|---|---|---|---|---|
| | OR (95%CI) | p | OR (95%CI) | p |
| Menstrual blood | | | | |
| Bright red | 1 | | 1 | |
| Dark red | 5,176 (1,195 – 22,421) | 0,028 | 5,587 (1,275 – 24,487) | 0,023 |
| Clotted red | 8,346 (1,903 – 36,602) | 0,005 | 8,860 (1,998 – 39,292) | 0,004 |
| Dark red with clotted blood | 1,909 (0,158 – 23,039) | 0,611 | 1,852 (0,150 – 22,873) | 0,631 |

The results in Table 4 show that the factors BMI, dark red menstrual blood and clotted blood are associated with dysmenorrhea ($p < 0.05$).

Regarding the impact of dysmenorrhea on students' school attendance, the majority of students had to miss school due to dysmenorrhea, accounting for 14%.

## IV. DISCUSSION

In our study, 273 out of 333 female students surveyed reported experiencing dysmenorrhea, indicating a dysmenorrhea prevalence rate of 79.8%. This result is consistent with the study conducted by Do Tuan Dat, which found a relatively high rate of dysmenorrhea (86%) among 922 female college and university students in Hanoi [1]. The BMI of the study participants was predominantly within the normal to underweight range according to the WHO classification for Asians. According to the study by Kyunghee Han et al., weight fluctuations or unhealthy weight control in young women were shown to have a negative impact on the occurrence of dysmenorrhea [3]. Female students, being in the adult age group, are highly concerned with their appearance, which often leads to weight loss or weight maintenance to maintain body shape. This aligns with the risk factor of attempting to lose weight or having a lower-than-normal BMI, both of which have been demonstrated to be associated with dysmenorrhea.

Regarding menstrual cycle characteristics, a menstrual cycle is defined as the period from the first day of menstruation to the first day of the next cycle. Typically, a cycle lasts around 28 days, with a range of 22 to 35 days considered normal. In this study, the average menstrual cycle length for female students was 32.7 ± 10.5 days, which falls within the normal range. However, 57.1% of students participating in the study reported having irregular menstrual cycles. This may be due to the fact that the survey was conducted among students, whose academic workload, exams, and living away from home often lead to irregular eating habits and lifestyle, increasing stress levels and contributing to cycle irregularities. The average menstrual duration of students in the study was 5.6 ± 2.3 days and the majority (52.0%) reported bright red menstrual blood. Menstruation occurs due to the uneven shedding of the endometrial lining, with the shedding process beginning at the anterior portion and then progressing posteriorly, typically resulting in menstrual periods lasting 3 to 5 days, and up to 7 days in some cases.

In term of the characteristics of dysmenorrhea in students, the pain was predominantly of moderate intensity (58.2%) and mild intensity (34.7%), with an average VAS score of 4.1 ± 1.2. This result is consistent with the studies of Do Tuan Dat (2022) and Doan Van Minh (2021), where the respective VAS scores were 4.17 ± 1.58 and 5.0 ± 2.3, indicating moderate pain levels [4],[5]. Pain during menstruation accounted for 57.1%. The majority of dysmenorrhea cases were primary, and while the pathophysiology of dysmenorrhea is not yet fully understood, evidence suggests an increase in prostaglandin F2α (PGF2α) and prostaglandin E2 (PGE2) during the process of endometrial shedding. Prostaglandins are synthesized from arachidonic acid through the COX pathway. Progesterone level increases during the luteal phase, and if conception does not occur, the corpus luteum regress, causing a sudden drop in progesterone, causing endometrial shedding. The shedding of the endometrial lining produces arachidonic acid, which is then converted into prostaglandins [1]. Therefore, dysmenorrhea typically occurs during ovulatory cycles. These prostaglandins play a role in increasing uterine contractions and vasoconstriction, leading to uterine ischemia and increased sensitivity of pain nerve fibers. Uterine contractions are most prominent during the first two days of the menstrual cycle, which is also when dysmenorrhea is usually most severe. In our study,

the average duration of menstrual cramps among the students was 2.3 ± 1.3 days, which aligns with the period when the endometrial lining undergoes the most shedding.

In addition to lower abdominal pain, dysmenorrhea is often accompanied by other common symptoms.

The most frequently reported symptoms include headaches, back pain, nausea, diarrhea, and sweating. In this study, back pain accompanied by menstrual cramps accounted for 71.1% of surveyed students, followed by constipation/diarrhea at 22.7%, breast tenderness at 16.5%; vomiting and nausea only accounted for 8.8%. Since the survey responses were based on different stages of the menstrual cycle and many symptoms were recalled, there may be variations in the reported results regarding accompanying symptoms during menstruation.

Regarding the association between certain factors and dysmenorrhea, BMI, dark red menstrual blood and clotted blood were found to link with dysmenorrhea ($p < 0.05$). Dark red menstrual blood is often observed in ovulatory cycles. It is resulted from blood flow through ruptured venous sinusoids and the arteriovenous connections formed under the influence of estrogen in conjunction with progesterone, following the Schelgel mechanism [6]. This phenomenom is also consistent with the cause of dysmenorrhea due to prostaglandin of the ovulatory menstrual cycle. Menstrual blood is typically not clotting, but when combined with cervical mucus, the expulsion of blood clots increases uterine muscle tone, causing strong uterine contractions that lead to pain. Research by author MoolRaj Kurral also showed that the majority of female students reported the presence of blood clots during menstruation, the size of the blood clots was mostly small. There was a significant association between dysmenorrhea and the presence of blood clots ($\chi^2 = 4.4$; df = 1; $p = 0.03$). Furthermore, girls with clotted blood had a 2.07 times higher risk of experiencing dysmenorrhea ($p < 0.05$) [7].

With the rate of students taking time off from school and work being 14%, this result is also equivalent to the research conducted on medical students by Do Tuan Dat with a rate of absenteeism of 16.7%. However rate does not correspond directly to the prevalence of severe dysmenorrhea, possibly because pain perception is subjective, and the pain tolerance of individuals varies. In addition to abdominal pain, other accompanying symptoms also affect students, necessitating the leave of absence from school or work. Therefore, it is essential to explore health education measures and provide support for the treatment of dysmenorrhea through various methods to help students improve their condition and enhance their academic performance, work, and daily activities.

## V. CONCLUSION

Our study shows that prevalence of dysmenorrhea and menstrual disorders among female students at Phenikaa University is relatively high, with the majority experiencing mild to moderate pain. Common accompanying symptoms include back pain and constipation or diarrhea. Factors such as BMI, dark red menstrual blood, and blood clots are associated with dysmenorrhea. The research results show the necessity of implementing educational programs, examinations, and reproductive health screening for students, and at the same time researching treatment methods to help improve clinical symptoms and enhance the quality of life and learning activities of female students at Phenikaa University.

## REFERENCES

1. **Itani R., Soubra L., Karout S. et al. (2022).** Primary Dysmenorrhea: Pathophysiology, Diagnosis, and Treatment Updates. Korean J Fam Med, 43(2), 101–108.
2. **Esan D.T., Ariyo S.A., Akinlolu E.F. et al. (2024)**. Prevalence of dysmenorrhea and its effect on the quality of life of female undergraduate students in Nigeria. J Endometr Uterine Disord, 5, 100059.
3. **Han K., Lim N.-K., Choi H. et al. (2023).** Weight Changes and Unhealthy Weight Control Behaviors Are Associated With Dysmenorrhea in Young Women. J Korean Med Sci, 38(18), e136.
4. **Do Tuan Dat, Nguyen Thi Thu Ha. (2022).** Research on dysmenorrhea in female students of some medical colleges and universities in Hanoi. Vietnam Medical Journal, 510(2), 236-240.
5. **Doan Van Minh, Nguyen Thi Kim Lien, Nguyen Quang Tam, et al. (2021).** Survey on characteristics clinical of dysmenorrhea and the need for treatment with traditional medicine of female students of Hue university of medicine and pharmacy. J Med Pharm, 79–86.
6. **Nguyen Duc Vy. (2019),** Obstetrics and Gynecology Lecture (For Postgraduate Training), Medical Publishing House, Hanoi.
7. **Kural M., Noor N.N., Pandit D. et al. (2015).** Menstrual characteristics and prevalence of dysmenorrhea in college going girls. J Fam Med Prim Care, 4(3), 426–431.