

Dysmenorrhea in Siriraj Medical Students; Prevalence, Quality of Life, and Knowledge of Management

Prasong Tanmahasamut MD*,
Suphang Chawengsettakul MD*

* Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand

Objective: To determine the prevalence of dysmenorrhea, effect on daily activity, academic activities, quality of life, and knowledge of management in Siriraj medical students.

Material and Method: A cross-sectional descriptive study at the Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand that included 552 female medical students who were asked to complete two questionnaires. The first questionnaire (32 items) included demographic data, menstrual pattern, severity of dysmenorrhea, pain score, impact of dysmenorrhea on daily and academic activities, the method and knowledge of medications to treat dysmenorrhea. The second questionnaire was Short Form (SF)-36 questionnaires used to evaluate the health-related quality of life.

Results: The prevalence of dysmenorrhea was 77.7%. The prevalence of mild, moderate, and severe dysmenorrhea was 35.3%, 39.3%, and 3.1% respectively. Age of menarche, duration of menses, and the family history of dysmenorrhea were significantly different between two groups. Students who had moderate to severe dysmenorrhea reported the negative impact on daily and academic activities. The scores of SF-36 in moderate and severe group was significantly lower than the mild group ($p < 0.001$). In the moderate to severe dysmenorrhea group, 82.9% and 66.7% of participants used mefenamic acid and paracetamol for pain relief, respectively.

Conclusion: Dysmenorrhea in medical students has high prevalence and it has negative effects on daily activities, academic activities, and quality of life. Most of the subjects know that mefenamic acid and/or paracetamol can relieve dysmenorrhea. Dysmenorrhea is a significant public health problem.

Keywords: Dysmenorrhea, Quality of life, Medical student, Prevalence

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Dysmenorrhea is the most common gynecologic disorder among female adolescents, with a prevalence of 53 to 90%⁽¹⁻⁹⁾. Dysmenorrhea is classified as primary and secondary dysmenorrhea. Primary dysmenorrhea usually begins a few years after menarche without any pelvic pathology and involves more than 50% of female teenagers. Secondary dysmenorrhea involves pain that occurs due to underlying gynecologic pathology, which usually develops years after menarche and can occur with anovulatory cycles⁽¹⁰⁾.

Several studies reported a high prevalence of dysmenorrhea in female adolescents. This condition is associated with a high degree of school absenteeism and limitation on social, academic, and sport activities,

especially in moderate to severe dysmenorrhea^(1,2,5,6,8,9). It is also a public health problem because of its high prevalence among women, the degree of discomfort felt by the sufferers, and a considerable economic loss to the community^(1,3,4,6,8,9).

Up to date, there were only two previous studies in Thai adolescents aged 16-19 and no study determined the effect of dysmenorrhea on the health-related quality of life (HRQoL) in Thai population. Thus, the present cross-sectional study was conducted to determine the prevalence of dysmenorrhea, and its effect on HRQoL, impact on school attendance, academic performance, social activities, and knowledge of management among Thai female medical students aged 19-24 in Bangkok, Thailand.

Correspondence to:

Tanmahasamut P, Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, 2 Prannok Rd, Bangkoknoi, Bangkok 10700, Thailand.

Phone: 0-2419-4657, Fax: 0-2419-4658

E-mail: prasong.tan@mahidol.ac.th

Material and Method

The present study was conducted between April and October 2010 at the Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand. The subjects were second to sixth year female

Table 1. Multidimensional scoring system for assessment of dysmenorrhea severity⁽¹³⁾

Severity grading	Working ability	Systemic symptoms	Analgesics
No: menstruation is not painful and daily activity is unaffected	Unaffected	None	None required
Mild: menstruation is painful but seldom inhibits normal activity; analgesics are seldom required; mild pain.	Rarely affected	None	Rarely required
Moderate: daily activity is affected; analgesics required and give sufficient relief so that absence from school is unusual; moderate pain	Moderately affected	Few	Required
Severe: activity clearly inhibited; poor effect of analgesics; vegetative symptoms (headache, fatigue, vomiting, and diarrhea); severe pain	Clearly inhibited	Apparent	Poor effect

medical students in Faculty of Medicine Siriraj Hospital, Mahidol University.

The present study was approved by the Siriraj Institutional Review Board. All participants were obtained the information about research methodology and two questionnaires.

The questionnaires were handed out by the researchers. There were two questionnaires. The first one was composed of demographic data, menstrual pattern, severity of menstrual pain, impact of dysmenorrhea on school attendance, academic performance, sport and social activities, and the knowledge of pain relief and medications use. The other one was "short form-36 (SF-36) Thai version 2"^(11,12), which is a questionnaire for evaluation of HRQoL in physical, mental, and psychosocial aspects.

The severity of dysmenorrhea was classified by the multidimensional scoring system and linear visual analogue scale (VAS)⁽¹³⁾. The multidimensional scoring system defined the severity of dysmenorrhea as mild, moderate, and severe based on pain, limited activities, and medication taken as shown in Table 1. Pain score was assessed using VAS that is a 10-cm horizontal line with two descriptors, *i.e.* "no pain" at the left end, and "intolerable pain" at the right end. The participants were asked to rate the degree of pain by making a mark on the line. Pain score was measured by the distance from zero to that mark using a ruler with a minimum measuring unit of one mm.

The data were analyzed using SPSS for windows version 14. The categorical data were analyzed by Chi-square or Fisher's exact test. The continuous data were analyzed using student t-test or one-way analysis of variance (ANOVA) as appropriate. All tests were two-tailed and a $p < 0.05$ was considered to indicate a statistically significant difference.

Results

The questionnaire was distributed to 638 female medical students in the Faculty of Medicine Siriraj Hospital, Mahidol University and 552 were completed. The response rate was about 86% of total female students. Mean age of participants in the present study was 21 ± 1.7 years old. The prevalence of dysmenorrhea was 77.7%. The prevalence of mild, moderate, and severe dysmenorrhea was 35.3%, 39.3%, and 3.1% respectively.

The mean pain score was statistically significantly different among groups as shown in Table 2. The mean pain scores in mild, moderate, and severe group were 2.7, 5.4, and 7.3 respectively and significantly correlate with the severity.

Table 3 shows comparison between those with and without dysmenorrhea with regard to demographic data and various factors. The factors that found to be associated with dysmenorrhea were mean age of menarche, duration of menses, and the family history of dysmenorrhea ($p < 0.05$).

Table 4 shows the associated symptoms. The three most common symptoms associated with dysmenorrhea were mood change (55.3%), diarrhea (47.6%), and fatigue (45.7%).

Table 2. Severity of dysmenorrhea and mean pain score

	n	Pain score*
Mild dysmenorrhea	195	2.7 ± 1.4
Moderate dysmenorrhea	217	5.4 ± 1.6
Severe dysmenorrhea	17	7.3 ± 1.5

Data were presented in number (%) and mean \pm SD

* Data were compared using one-way ANOVA, $p < 0.001$

All pairwise significant at $p < 0.001$ by Bonferroni multiple comparison

Table 3. Demographic data

Demographic data	No dysmenorrhea (n = 123)	Dysmenorrhea (n = 429)	p-value
Mean age (years)	20.7 ± 1.7	21.0 ± 1.7	0.065*
Body mass index (kg/m ²)	20.0 ± 2.1	20.2 ± 2.5	0.474*
Mean age at menarche (years)	12.5 ± 1.5	12.1 ± 1.3	0.004*
Menstruation			
Interval (days)	31.3 ± 8.4	30.9 ± 6.3	0.738*
Duration (days)	4.9 ± 1.2	5.4 ± 1.29	<0.001*
Amount (number of pad/day)	2.8 ± 0.8	2.9 ± 0.9	0.177*
Family history of dysmenorrhea	43 (35.0%)	249 (58.0%)	<0.001**
Exercise	115 (93.5%)	386 (90.0%)	0.235**
Smoking	0 (0%)	1 (0.2%)	0.592**
Coffee consumption	72 (58.5%)	244 (56.9%)	0.743**
Alcohol consumption	31 (25.2%)	140 (33.1%)	0.116**

* Data are mean ± SD and were compared using student t-test

** Data are n (%) and were compared using Chi-square test

Table 4. Percentage of students who had associated symptoms (n = 552)

Symptoms	n*	%
Mood change	305	55.3
Diarrhea	263	47.6
Fatigue	252	45.7
Abdominal pain	246	44.6
Myalgia	209	37.9
Back pain	186	33.7
Abdominal discomfort	178	32.2
Edema	177	32.1
Anorexia	57	10.3
Nausea & vomiting	27	4.9

* More than one symptoms/student

Table 5 shows the impact of dysmenorrhea on daily activities and academic activities of affecting students. Limited class concentration, school absenteeism, limitation to sports and social activity significantly affected the students with moderate and severe dysmenorrhea ($p < 0.001$). More than 90% of moderate and severe group reported that their class concentration and sport activities were affected respectively. About 32.1% in this group had school absenteeism and the impact of dysmenorrhea on academic activities was statistically significant difference between groups.

The HRQoL score is shown in Table 6. The mean scores of Short form-36 in physical, mental, and total score were statistically significantly different between groups. The HRQoL scores (physical, mental, and total score) in moderate and severe dysmenorrhea group were significantly lower than mild dysmenorrhea and no pain group.

Table 7 shows the management strategies and knowledge of medication for dysmenorrhea is shown in Table 8. The present study found that the management strategies were not different between the two groups. The participants reported that they used multiple treatments to relieve their symptoms such as rest (85.1%), medication (79.2%), heating-pad (50.2%), and exercise (16.1%). More than 80% of the participants took a rest and took medication to alleviate their symptoms. Many participants (82.9% and 66.7% with moderate and severe dysmenorrhea) knew that mefenamic acid and paracetamol could relieve their pain.

Overall, 28 (5.1%) participants with moderate or severe dysmenorrhea consulted a physician. Eight participants were diagnosed with endometriosis.

Discussion

The present study found a high prevalence of dysmenorrhea (77.7%) reported among medical students in Thailand, aged 21 ± 1.7 years old. The prevalence of dysmenorrhea among the same age group of women varied from 53.3-89.5%^(2,5,6,9,14-16).

Table 5. Impact of dysmenorrhea on daily activities

Daily activities	Students with dysmenorrhea (n = 429)	Mild dysmenorrhea (n = 195)	Moderate and severe dysmenorrhea (n = 234)	p-value*
School absenteeism	80 (18.6%)	5 (2.6%)	75 (32.1%)	<0.001
Limited class concentration	329 (76.7%)	112 (57.4%)	217 (92.7%)	<0.001
Limited sport activities	373 (86.9%)	151 (77.4%)	222 (94.9%)	<0.001
Limited social activities	256 (59.7%)	82 (42.0%)	174 (74.4%)	<0.001

* Data were compared using Chi-square test

Table 6. The severity of dysmenorrhea and mean SF-36 score (total score = 100)

	No and mild dysmenorrhea (n = 318)	Moderate and severe dysmenorrhea (n = 234)	p-value*
Physical score	75.6 ± 10.3	72.4 ± 11.3	<0.001
Mental score	68.3 ± 11.1	65.4 ± 11.3	0.003
Total score	74.1 ± 10.5	70.8 ± 11.1	<0.001

* Data are presented in mean ± SD and were compared using student t-test

Table 7. Management strategy for dysmenorrhea

Method	n*	%
Rest	470	85.1
Analgesics	437	79.2
Heating pad	277	50.2
Exercise	89	16.1
Massage	26	4.7
Meditation	22	4.0
Yoga	22	4.0
Vitamin	20	3.6
Acupuncture	7	1.3
Spa	1	0.2

Data are presented in number (%)

* More than one methods/student

This finding is consistent with the previous studies conducted in Turkey by Unsal A et al⁽⁹⁾ which indicated that the prevalence of dysmenorrhea among the same age group of woman was 72.7%. However, other studies in Turkey found the prevalence of dysmenorrhea were higher than the present study (88-89.5%)^(2,15) and another study found a lower prevalence than this study (55.5%)⁽¹⁴⁾. The present study found a higher prevalence of dysmenorrhea than other studies in Mexico, Nigeria, and China^(5,6,16). The factors accounting for this wide gap between studies may include difference in the definition of dysmenorrhea and sociocultural difference. Comparing to the present study in medical students,

the present study found a higher prevalence of dysmenorrhea than that previous study reported by Ortiz MI et al (60.4%)⁽⁶⁾.

Concerning the severity of dysmenorrhea, the present study found a lower prevalence of moderate and severe dysmenorrhea than other studies did (52.6-66.2%)^(6,9,14). However, Zhou HG et al reported a lower prevalence of moderate and severe dysmenorrhea (19.9%) in Chinese university students⁽¹⁶⁾.

The present study showed that the prevalence of dysmenorrhea was slightly lower than those previously reported in a Thai population by Tangchai K et al⁽⁸⁾ (84.2%) and Chongpensuklert Y et al⁽³⁾ (84.9%). These studies conducted in a younger age group of adolescents (16-19 years). Many previous studies determined that the prevalence of primary dysmenorrhea falls with increasing age^(9,14). The present result was in concordance with previous studies.

About demographic data, there was no difference between groups in body mass index, menstrual interval, sexual intercourse, smoking, coffee consumption, alcohol consumption and exercise except age at menarche, duration of menses, and family history of dysmenorrhea. The present study found that the dysmenorrheal students had younger age of menarche than students without dysmenorrhea had; this finding is consistent with the results of the previous study in Thai adolescences⁽⁸⁾. The association between early menarche and dysmenorrhea is probably

Table 8. Knowledge of medication⁺

	No or mild dysmenorrhea (n = 318)	Moderate or severe dysmenorrhea (n = 234)	p-value*
Paracetamol	165 (51.9%)	156 (66.7%)	0.001
Mefenamic acid	132 (41.5%)	194 (82.9%)	<0.001
Ibuprofen	14 (4.4%)	33 (14.1%)	<0.001
Oral contraceptive pill	0 (0%)	6 (2.6%)	0.04
Aspirin	3 (0.9%)	1 (0.4%)	0.48

Data were presented in number (%)

* Data of the two groups were compared using Chi-square test

⁺ More than one types/student

connected to the ovulatory cycle leading to higher level of prostaglandins releasing from the endometrium during menstruation⁽¹⁴⁾. The dysmenorrheal students had longer duration of menstruation than the students without dysmenorrhea. This finding is consistent with the previous study reported by Unsal A et al⁽⁹⁾. Several studies have shown that the family history of dysmenorrhea was the important risk of dysmenorrhea^(9,14,17), the finding of the present study is consistent with other previous studies. The reasons for this could relate to the behavior that is learnt from the mother and the fact that family history was shown to be a risk for related conditions such as endometriosis, which has already been shown to have a familial pattern^(9,14).

The associated symptoms of dysmenorrhea are known to encompass a wide variety of physical and mental symptoms. Mood change was the most frequently reported complaint among sufferers in the present study, followed by diarrhea and fatigue, which is similar to a previous report in Thailand⁽⁸⁾. However, these associated symptoms were different among several studies. In Turkey, Cakir M et al⁽²⁾ reported that abdominal pain, backache, and depression were the common associated symptoms. Another study in Turkey reported by Ozerdogan N et al⁽¹⁴⁾ found that the common associated symptoms were nervousness, breast tenderness, and arthralgia. An explanation was unclear, but the authors think the different symptoms might be associated with the different race, culture, occupation and nutrition. However, the health care providers and school administrators should consider inquiring about these associated symptoms in conjunction with menstrual pain because these symptoms may be more debilitating.

The present study showed that limitation of sports activities was the major impact of students with dysmenorrhea about 69.9% in mild dysmenorrhea

group and 94.9% in the moderate and severe dysmenorrhea group. The proportion of students with moderate and severe dysmenorrhea group has limited class concentration (92.7%) similar to the previous study in Thai adolescences (87.1%)⁽⁸⁾. However, the present study has higher rate of limited class concentration than those reported in the United States of America (59%)⁽¹⁾ and Iran (50%)⁽¹⁷⁾.

The present study found that the proportion of dysmenorrheal students whose daily activities were affected were statistically significantly different between the mild dysmenorrhea group and moderate and severe dysmenorrhea group, especially the impact on class concentration and school absenteeism. Given these findings, School officials and health program coordinators may benefit from considering dysmenorrhea in the context of improving their school attendance rates and academic performance of their students.

About quality of life in dysmenorrheal students, the present study found that the average HRQoL scores from short-form 36 in physical, mental, and total score were statistically significantly different between the mild dysmenorrhea group and moderate and severe dysmenorrhea group. In the mild dysmenorrhea group had higher HRQoL scores than the moderate and severe dysmenorrhea group, which was consistent with a previous report⁽⁹⁾. However, many confounding factors may affect the quality of life in medical students, *i.e.* work hard activities, sleepless, anxious about learning and testing in medical programs.

About knowledge of management for dysmenorrhea, more than 80% in the moderate and severe dysmenorrhea group knew that mefenamic acid was an effective treatment. It was different from the mild dysmenorrhea group that they knew paracetamol was adequate treatment. These findings were different

from the previous study in Thai adolescents⁽⁸⁾, which reported that most of participants knew paracetamol was effective for relief of their pain (98%). However, only 6% of participants knew mefenamic acid was also effective for relief of dysmenorrhea. The explanation for this difference might be the subjects in the present study were medical students who have studied in a medical program. Therefore, these findings cannot represent the general population. However, improving a health education program about dysmenorrhea may result in adequate pain relief and improving quality of life in general adolescents and adult women.

Surprisingly, the overall physician consultation rate was only 6.5% (28 of 429 participants). All were in the moderate and severe dysmenorrhea group. This finding was similar to the previous studies in Thai adolescents (7.1%)⁽⁸⁾. However, the rate of physician consultation was lower than other studies reported in the United States of America (14%)⁽¹⁾ and Iran (21%)⁽¹⁷⁾. The authors found that endometriosis diagnosed in 28.6% of cases who consulted physicians. Given information was beneficial to Thai health care providers for considering health education about dysmenorrhea, prevention, and management of their symptoms.

Some limitations of the present study should be noted. The authors could not finitely differentiate between primary or secondary dysmenorrhea, although secondary dysmenorrhea is rare in adolescents but this cause of moderate to severe pain could not be excluded because they did not consult a physician. In addition, participants were asked to recall menstrual pain and other information from 6 months ago, which may have led to recall bias. Some recall bias might have occurred when completing the questionnaire and SF-36. Misclassification of dysmenorrhea and its severity minimized by clear explanation of the definitions to all participants. Because this was an anonymous study, the information on dysmenorrhea obtained by self-report and could not be validated. These findings might not be generalizable to the population with cultural and occupational differences.

In conclusion, dysmenorrhea in Thai medical students has high prevalence. It has impact on daily and academic activities, especially in moderate and severe cases. In addition, it has negative effect on HRQoL. Furthermore, dysmenorrhea is a common cause of school absenteeism. School administrators should be concerned and provide intervention through secondary prevention by educating students about appropriate medication use. Physician consultation

should promote to women who have a dysmenorrhea problem. It could lead to reduction in the medical and social consequences of dysmenorrhea.

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Potential conflicts of interest

None.

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ภาวะปวดระดูในนักศึกษาแพทย์: ความชุก คุณภาพชีวิต และการดูแลรักษาอาการปวดระดูเบื้องต้น

ประสงค์ ตันมหาสมุทร, ศุภางค์ เขวงเศรษฐกุล

วัตถุประสงค์: ศึกษาหาความชุกของภาวะปวดระดูในนักศึกษาแพทย์ ผลกระทบของภาวะปวดระดูต่อกิจวัตรประจำวัน การเรียน และคุณภาพชีวิต และความรู้ในการดูแลภาวะปวดระดู

ชนิดของการทำวิจัย: การวิจัยเชิงพรรณนา

สถานที่ที่ทำวิจัย: โรงพยาบาลศิริราช คณะแพทยศาสตร์ศิริราชพยาบาล กรุงเทพมหานคร ประเทศไทย

กลุ่มตัวอย่าง: นักศึกษาแพทย์หญิง ชั้นปีที่ 2-6 ในคณะแพทยศาสตร์ศิริราชพยาบาล 552 คน

วัสดุและวิธีการ: นักศึกษาแพทย์ที่ยินยอมร่วมการศึกษาวิจัย จะได้รับแจกแบบสอบถาม 2 ชุด ชุดที่ 1 ข้อมูลพื้นฐาน ประวัติระดับความรุนแรงของการปวดระดู ผลกระทบของภาวะปวดระดูต่อกิจวัตรประจำวัน การเรียน และวิธีการบรรเทาอาการปวดทั้งหมด 32 ข้อ ชุดที่ 2 แบบประเมินคุณภาพชีวิต (short-form - 36)

ผลการศึกษา: ความชุกของภาวะปวดระดูของนักศึกษาแพทย์คิดเป็นร้อยละ 77.7 โดยความชุกของกลุ่มที่มีอาการปวดเล็กน้อย ปานกลาง และรุนแรง คิดเป็นร้อยละ 35.3, 39.3 และ 3.1 ตามลำดับ พบว่าอายุที่เริ่มมีระดู จำนวนวันที่มีระดู และประวัติคนในครอบครัวมีอาการปวดระดู มีความแตกต่างอย่างมีนัยสำคัญระหว่างกลุ่มที่มีอาการปวดระดูและกลุ่มที่ไม่มีอาการปวดระดู พบว่าอาการปวดระดูระดับปานกลางและรุนแรงมีผลกระทบต่อการทำกิจวัตรประจำวันและการเรียนค่อนข้างมาก คะแนนคุณภาพชีวิตของกลุ่มนี้ต่ำกว่ากลุ่มที่มีอาการปวดเล็กน้อยและไม่ปวดระดูอย่างมีนัยสำคัญ ($p < 0.001$) ร้อยละ 82.9 และ 66.7 ของกลุ่มที่มีอาการปวดระดูระดับปานกลางและรุนแรงทราบว่า ยา *mefenamic acid* และ พาราเซตามอล มีประสิทธิภาพในการบรรเทาอาการปวดได้

สรุป: อาการปวดระดูมีความชุกสูงในนักศึกษาแพทย์ และอาการปวดในระดับปานกลางและรุนแรงมาก จะส่งผลกระทบต่อการทำกิจวัตรประจำวัน การเรียน และคุณภาพชีวิต นักศึกษาแพทย์ส่วนใหญ่ทราบว่ายา *mefenamic acid* และพาราเซตามอลสามารถบรรเทาอาการปวดระดูได้ ภาวะปวดระดูนับเป็นปัญหาทางสาธารณสุขที่สำคัญ