Al Ameen J Med Sci 2025;18(3):192-197 ● US National Library of Medicine enlisted journal ● ISSN 0974-1143

ORIGINAL ARTICLE CODEN: AAJMBG

Menstrual health challenges: A rural cross-sectional study on dysmenorrhea among medical students of Maharashtra

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Received: 18th May 2025; ***Accepted:*** 17th June 2025; ***Published:*** 01st July 2025

Abstract: *Background:* Dysmenorrhea is one of the neglected common gynecological condition with painful menstrual cramps of uterine origin in young females. This study was aimed to evaluate its prevalence, impact, and the management strategies adopted by young medical students of a medical institute. *Material and Methods:* A prospective, descriptive, cross-sectional and observational study was conducted over 3 months in 275 female students of a rural tertiary care teaching hospital of Northern Maharashtra. A predefined and prevail dated questionnaire according to evaluation parameters was distributed to participants medical students. Those students who were willing to participate in the study were involved. *Results:* The obtained data was entered in Microsoft Excel. Statistical analysis was primarily descriptive with values expressed as percentage. Most participants experienced dysmenorrhea with average menstrual cycle length of 21 to 34 days and regular menstrual cycle. The major clinical features were lower abdominal pain, dizziness, headache and back pain. Most participants felt depressed and complained of poor concentration at the class. Paracetamol, Mefenamic acid, and Dicyclomine were the most commonly used drugs by the participants. *Conclusions:* Dysmenorrhea has a high prevalence among medical students and affect quality of life of students in several ways like decreased energy and stress. It is very important to create awareness about this aspect.

Keywords: Menstrual cramps, Abdomino-pelvic ultrasound, Menstrual cycle, Health challenges.

Introduction

Dysmenorrhea is a common gynecological condition with painful menstrual cramps of uterine origin. Two categories of dysmenorrhea are primary and secondary dysmenorrhea. Primary dysmenorrhea refers to menstrual pain without any pelvic pathology. These symptoms have underlying cause of elevated endometrial prostaglandins and their metabolites [1].

The initial onset of primary dysmenorrhoea is usually shortly after menarche (6–12 months), when ovulatory cycles are established. Pain duration is commonly 8–72 hours and is usually associated with the onset of menstrual flow [2].

The prevalence of dysmenorrhea is difficult to determine due to variations in its definition. According to a systematic review by the World Health Organization (WHO), reported prevalence rates range widely from 16.8% to 81% [3]. Adolescent girls tend to have a higher prevalence of primary dysmenorrhea than older women as primary dysmenorrhea improves with age. In developing countries it was found that 25–50% of adult women and about 75% of adolescents experienced pain with menstruation, with 5–20% reporting severe dysmenorrhoea or pain that prevents them from participating in their usual activities [4].

Age <30 years, low BMI, smoking, earlier menarche (<12 years), longer cycles, heavy menstrual flow, nulliparity, premenstrual syndrome, sterilization, clinically suspected pelvic inflammatory disease, sexual abuse, and psychological symptoms were associated with increased risk of dysmenorrhoea [5].

It often has social impact in terms of absenteeism from work based on severity grading score [6]. Despite the evidence supporting a link between prostaglandin levels and dysmenorrhea, it is important to recognize that the explanation for menstrual pain is not as simplistic as the cyclic production of one hormone. Women with dysmenorrhea may experience hormonal changes throughout their menstrual cycle. [7].

Treatment for dysmenorrhea is aimed at relieving symptoms and is best treated with analgesics that are prostaglandin inhibitors [8]. Nonsteroidal anti-inflammatory drugs (NSAIDs) are a group of chemically different drugs, which inhibit cyclooxygenase enzyme causing a decrease in prostaglandin synthesis [9]. A very recent meta-analysis showed that nonsteroidal anti-inflammatory drugs are more effective than placebo in reducing pain in women with primary dysmenorrhea [9-12]. Therefore, nonsteroidal anti-inflammatory drugs such as naproxen, diclofenac, mefenamic acid, ibuprofen among others, are the initial established therapy for primary dysmenorrhea [12-14]. However it is important to note that clinical scientific evidence on the efficacy of other relief strategies (for example, yoga, rest, etc) has also been noted [13-15].

There are several research gaps in this field like most existing dysmenorrhea surveys focus on urban or mixed populations leading to less data specific to rural medical colleges where access to resources and health-seeking behaviours differ. Also, the link between dysmenorrhea severity and its effect on lecture attendance, clinical duties, and exam performance in a demanding medical curriculum remains poorly quantified. Additionally, beyond prevalence, the interplay of cycle-long hormonal fluctuations, stress from medical training, and dysmenorrhea severity in this cohort is largely unexplored.

Medical students represent a population with better knowledge, understanding and exposure to other forms of chronic suffering, which might result in different pain perception and different approach to pain management and coping skills. This study aimed to evaluate the prevalence of dysmenorrhea, its impact, and the management strategies adopted by medical students.

Material and Methods

The present study was prospective, descriptive, cross-sectional and observational study over a duration of 3 months. This study was conducted in 275female medical students at a tertiary care teaching hospital in Northern Maharashtra, India.

Inclusion criteria for participation was females between 18–25 years of age, having regular menstrual cycles, normal Abdomino-pelvic ultrasound and willing to give informed consent to participate in the study. Only those students not willing to participate in the study were excluded. The participants were assured of complete confidentiality and data obtained was being used purely for research purposes. Exclusion criteria was age less than 18 years and above 25 years, irregular menstrual cycles, presence of an abnormal abdomino-pelvic ultrasound and those refusing to give consent to participate in the study. Participants were also excluded if they were taking concomitant medications including antipsychotics, antidepressants, sedative hypnotics, antispasmodics, corticosteroids or taking physician prescribed medications.

We analyzed several published articles regarding the impact of dysmenorrhea on students' quality of life and we developed a questionnaire according to the evaluation parameters: general characteristics, menstrual pain, management and the impact of dysmenorrhea on quality of life. The questionnaire was constructed using the online tool Google Forms and was afterwards distributed through social media to medical student groups.

Following approval from the Institutional Ethics Committee, data were collected using a structured, self-developed questionnaire. Pilot study was conducted before actually starting large scale questionnaire distribution. The identity of all the participants was kept confidential. The voluntariness of the participants was respected by the principal investigator. This was time bound study and was done in class of 300 student capacity among which 275 female medical students were included as per the inclusion & exclusion criteria.

Results

The obtained data entered in Microsoft Excel and Statistical Package for the Social Sciences (SPSS) version 30. Statistical analysis was primarily descriptive with values mainly expressed as percentage.

Out of 275 participants recruited for the study, a majority (198; 72%) reported experiencing dysmenorrhea. The mean age of the participants was 21.5 ± 1.16 years, and the average age at menarche was 12.38 ± 1.34 years. A positive family history of dysmenorrhea was noted in 162 participants (59%). Most participants (68%) had a menstrual cycle length ranging from 21 to 34 days, and 184 (67%) reported having regular cycles. Additionally, 58% experienced menstrual bleeding lasting 4 to 5 days. Regular physical activity was reported by 152 participants (55%) (Table-1).

Table-1: Menstrual characteristics of participants

Variable	Frequency	Percent
Menstruation cycle		
21 days or less	38	14
23 to 34 days	188	68
35 or greater days	49	18
Menstruation cycle regularity		
Regular	184	67
Irregular	91	33
Menstruation bleeding duration		
2-3 days	65	24
4-5 days	159	58
6-7 days	51	18
Experience of dysmenorrhea		
Yes	198	72
No	77	28
Family history of dysmenorrhea		
Yes	162	59
No	113	51
Regular physical activity		
Yes	152	55
No	123	45

Lower abdominal pain was the most commonly reported symptom, experienced by 72% of participants. The majority of those with dysmenorrhea reported the onset of symptoms coinciding with the beginning of menstrual flow. Dizziness was the second most frequently reported associated symptom (62%), followed by headache (58%) and back pain (55%) (Table-2). Dysmenorrhea can significantly impact quality of life. A majority of participants reported feeling depressed (75%) and experiencing poor concentration during classes (72%) (Table-3).

Table-2: Dysmenorrhea associated symptoms and sites of pain

Symptoms	Frequency	Percent
Lower abdominal pain	142	72
Dizziness	123	62
Headache	115	58
Back pain	109	55
Decreased concentration	89	45
Nausea, vomiting, and diarrhea	59	30
Loss of appetite	51	26
Thigh pain	20	10

Table-3: Impacts of menstrual pain

Symptoms	Frequency	Percent
Feel depressed	148	75
Poor concentration at class	143	72
Limitation of sleeping	115	58
Poor personal relationship	87	44
Limit your exercise	75	38
Absent from class	44	22

Paracetamol (44%), mefenamic acid (38%), and dicyclomine (34%) were the most commonly used medications among participants. As home remedies, the majority reported using bed rest (40%) and increased water intake (30%) to manage dysmenorrhea (Table 4).

Table-4: Medications & home remedies used for managing Dysmenorrhea		
Management strategies	**Frequency**	**Percent**
Paracetamol	87	44
Mefenamic acid	75	38
Dicyclomine	67	34
Ibuprofen	20	10
Bed rest	79	40
Drink more water	59	30
Listening music	48	24
Drink tea or coffee	44	22
Massage the site of pain	32	16
Apply pad	16	9
Yoga/ Exercise	12	8
None	30	7

Discussion

In this study, the prevalence of dysmenorrhea was 72%, which aligns with findings from previous studies reporting rates of 72.7% [16] and 74% [17]. The literature indicates a wide range in the prevalence of dysmenorrhea, varying from 16% to 91% [18-20]. However, it is important to note that the diagnosis in most studies, including this one, is based solely on self-reported menstrual pain, which is subjective and may sometimes be influenced by non-menstrual factors.

The average age of the students in this study was 21.5 ± 1.16 years, with the mean age at menarche being 12.38 ± 1.34 years. These findings are consistent with previous studies, which reported similar ages at menarche: 12.74 ± 1.57 years [19], 12.3 ± 1.3 years [21], and 12.6 ± 1.04 years [22].

Both the length of the menstrual cycle and the duration of menstruation were found to be associated with dysmenorrhea. A study from China also reported a relationship between heavier menstrual flow (median duration of 4 days) and increased severity of dysmenorrhea [23].

A positive family history of dysmenorrhea showed a significant association with its occurrence, a finding consistent with earlier research from India [24]. The influence of family history as a risk factor may be attributed to underlying hereditary conditions such as endometriosis or other genetic predispositions [25].

In contrast, this study did not find a significant association between regular physical activity and the experience of dysmenorrhea. However, an experimental study from Turkey observed that engaging in physical activity reduced both the duration and intensity of menstrual pain and bleeding. This may be explained by the release of endorphins during exercise, which can elevate pain thresholds [26].

Dysmenorrhea is a major contributor to short-term absenteeism among adolescent girls and work-related absenteeism among reproductive-age women. It is estimated that 10–15% of women experience menstrual pain severe enough to disrupt their daily functioning at school, work, or home [17]. In this study, 75% of participants reported feeling depressed, which may impair their concentration in class. Although dysmenorrhea is not life-threatening, its monthly recurrence and impact on daily life represent a significant burden.

Pain relief methods used by participants in this study included both pharmacological and non-pharmacological approaches, with 93% of students reporting the use of both. In contrast, Helwa et al. found that 41.5% of students did not use medication to manage menstrual pain [27]. Among the pharmacological options, non-steroidal anti-inflammatory drugs (NSAIDs) were most commonly used (82%), followed by spasmolytics like dicyclomine (34%). Similarly, Vlachou et al. reported the use of NSAIDs (48.3%) and paracetamol (43.2%) among medical students [19]. Mohamed et al. found that 71.8% of participants preferred spasmolytic drugs [28].

This study has certain limitations, primarily due to the subjective nature and potential response bias in the participants' self-reported data. Additionally, the use of predominantly closed-ended questions limited the ability of respondents to elaborate or provide more personalized responses.

Conclusions

Dysmenorrhea has a high prevalence among medical students and could affect the quality of life of students in several ways. During their menstrual period, most female students feel as if they have less energy for daily activities and exhibit a higher level of stress. The intensity of the symptoms varies a lot and, with it, the degree of discomfort it creates. It is very important to create awareness about the causes and treatment of dysmenorrhea via the education system and media. Health professional consultation must be promoted to help students who have dysmenorrhea.

Acknowledgement

Authors are very thankful to ICMR for granting fund for this study under ICMR-STS project.

Financial Support and sponsorship: Nil

Conflicts of interest: There are no conflicts of interest.

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Cite this article as: Valiyaparambil JA, More PD and Bahekar SE. Menstrual health challenges: A rural cross-sectional study on dysmenorrhea among medical students of Maharashtra. *Al Ameen J Med Sci* 2025; 18(3): 192-197.

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