

A Cross-Sectional Study on Dysmenorrhea and Its Associated Symptoms in Students of Kathmandu University School of Medical Sciences

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ABSTRACT

Introduction: Dysmenorrhea a painful menstruation is a common symptom among young females. Prevalence varies from 16.8% to 81.0%. It is associated with various non-specific symptoms. This study aimed to find out the prevalence, and associated symptoms along with other factors like positive family history, menarche and the impact on academic performance due to dysmenorrhea.

Methodology: This was a cross-sectional analytical study done at the Department of Physiology, Kathmandu University School of Medical Sciences, Chaukot, Nepal from 1st May 2022 to 31st June 2022. A questionnaire-based study was done on socio-demographic factors, associated symptoms, pain grading using a Visual Analog Scale and impact on working ability by a Multidimensional Scoring System(MSS). Chi-square test and independent sample t-test were applied.

Results: Out of 184, 129 (70.1%) reported to have dysmenorrhea. Associated symptoms included lethargy and tiredness (79.8%), back pain (74.4%), irritability (71.3%), mood swings (65.1%) and appetite change (55.8%). Compared to those without dysmenorrhea, girls with dysmenorrhea had less number of female siblings, positive family history, irregular cycle, early age of menarche and lack of knowledge of menstruation before menarche. The average duration of pain was 1.8 ± 0.6 days. The average of academic days lost was 0.8 ± 0.3 days. Of those with dysmenorrhea, 68.2% do nothing about it, 23.3% take bed rest, 9.3% take some form of analgesics and 3.1% seek medical consultation.

Conclusions: Dysmenorrhea is a common symptom in young females leading to a loss in academic attendance.

Keywords: *Dysmenorrhea; Menarche; Menstruation*

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INTRODUCTION

Dysmenorrhea is defined as painful menstruation.[1] It is a common symptom among young females.[2] Dysmenorrhea occurring without obvious pathological pelvic disease is called primary dysmenorrhea and almost always first occurs in younger women less than 20 years old once the ovulatory cycle begins.[3] The pathophysiology of dysmenorrhea may be related to inflammatory markers like prostaglandins and leukotrienes, both of which are found to be elevated in girls with dysmenorrhea.[4,5]

The prevalence of dysmenorrhea is difficult to estimate because of variations in definition and also because many young females underreport and do not seek medical assistance.[6,7] In 2006 World Health Organization conducted a systematic review and reported the prevalence to be between 16.8% to 81.0 %.[8] The prevalence has been reported as low as 15% to as high as 93%.[9,10] In Nepal one study reported prevalence to be 75.2% and another study reported it to be 67%.[11,12] However, in India it is reported to be 87.8%.[13]

Dysmenorrhea may be associated with other non-specific symptoms like nausea, vomiting, diarrhoea, muscle cramps, headache, tiredness, fatigue, dizziness, sleep disturbances and even mood swings. Symptoms usually start at the onset of menstrual flow or occur within a few hours before or after onset, and last for the first 24-48 hours. Some may experience mild form of pain whereas others have severe symptoms with physical as well as emotional impairment leading to absenteeism from regular work. [14,15] We have very few studies from Nepal. So, the objective of this study is to find out the prevalence, and its symptoms along with other factors like positive family history, menarche

and the impact on academic performance of medical students due to dysmenorrhea.

METHODS

It was a cross-sectional analytical study done at the Department of Physiology, Kathmandu University School of Medical Sciences, Chautokot, Nepal from 1st May 2022 to 31st June 2022. Ethical clearance was taken from KUSMS- IRC (institutional review committee). Female students were informed about the study. Those who were willing to be a part of the study and gave written consent were provided with a structured questionnaire which was developed after undergoing a literature review. They were asked to fill up the required information either in person or in Google form as preferred by the participants. The questionnaire included four major components; Socio-demographic factors, associated symptoms, pain grading using a Visual Analog Scale and impact on working ability by a Multidimensional Scoring System(MSS).[16,17] MSS is used for the assessment of the severity of dysmenorrhea. It has four grades from 0 to 3, based on the working ability, systemic symptoms and requirement of analgesics.[17]

Data was analyzed using SPSS version 21. Chi-square test and independent sample t-test were applied and $p < 0.05$ was considered significant. Chi-square test was used to analyze the significance of family type, family history of dysmenorrhea, regularity of menstrual cycle and knowledge of menstruation before menarche. The remaining variables were analyzed using an independent sample t-test.

RESULTS

Table 1: Socio-demographic characteristic features

		Dysmenorrhea Present	Dysmenorrhea Absent	P value
Age (years)		20.04 ± 1.23	19.83 ± 0.92	0.823
Body mass index (BMI) / (Kg m ²)		21.03 ± 2.47	20.08 ± 2.84	0.712
Total family members (mean ± SD)		5.34 ± 0.72	5.52 ± 0.81	0.736
Living in a Joint Family		47 (36.4%)	19 (34.5%)	0.420
Living in a Nuclear Family		82 (63.6%)	36 (66.5%)	
Number of siblings		2.1 ± 0.32	2.2 ± 0.35	0.794
Number of female siblings		0.8 ± 0.56	1.6 ± 0.62	0.028
Family history of Dysmenorrhea	Present	101 (78.3%)	16 (29.9%)	0.012
	Absent	28 (21.7%)	39 (70.1%)	

Table 2: Menstrual characteristic features

		Dysmenorrhea Present	Dysmenorrhea Absent	P value
Age at menarche (years)		12.16 ± 0.82	13.08 ± 0.91	0.041
Menstrual cycle	Regular	30 (23.3%)	42 (76.4%)	0.021
	Irregular	99 (76.7%)	13 (23.6%)	
Menstrual cycle duration (days)	≤ 20	23 (17.8%)	3 (5.5%)	0.036
	21-34	85 (65.9%)	48 (87.3%)	0.084
	≥ 35	21 (16.3%)	4 (7.3%)	0.042
Average menstrual bleeding (days)	< 3	26	4 (7.3%)	0.048
	3-5	88	48 (85.4%)	0.094
	> 5	15	4 (7.3%)	0.038
Knowledge of menstruation before menarche	Present	27 (20.9%)	43 (78.2%)	0.010
	Absent	102 (79.1%)	12 (21.8%)	

Out of 200 questionnaires filled up, 184 had the required information. Out of 184, 129 (70.1%) reported having dysmenorrhea whereas 55 (29.9%) reported not having dysmenorrhea.

Among those who had dysmenorrhea, the pain started a day before menstruation in 42 (32.6%), on the day of menstruation in 56 (43.4%) and 2nd day of menstruation in 31 (24.0%). The average duration of pain was 1.8 ± 0.6 days. The average of academic days lost was 0.8 ± 0.3 days. Those with dysmenorrhea 88 (68.2%) did nothing about it, 30 (23.3%) took bed rest, 12 (9.3%) took some form of analgesics and 4 (3.1%) sought medical consultation.

Table 3: Associated symptoms in those with Dysmenorrhea

Symptoms	Number (%)
Lethargy and tiredness	103 (79.8%)
Back pain	96 (74.4%)
Irritability	92 (71.3%)
Mood swings	84 (65.1%)
Appetite change	72 (55.8%)
Insomnia	56 (43.4%)
Bloating	55 (42.6%)
Nausea and vomiting	46 (35.6%)
Headache	42 (32.5%)
Fullness and tenderness of breasts	41 (31.8%)
Diarrhea	40 (31.0%)
Profuse sweating	37 (28.6%)
Constipation	32 (24.8%)
Dizziness	30 (23.2%)
Inability to concentrate	30 (23.2%)

Table 4: Pain grading during dysmenorrhea according to Visual Analogue Scale

VAS scale	0	1	2	3	4	5	6	7	8	9	10
Numbers	0	8	17	16	25	22	17	10	7	5	2
(%)	(0.0)	(6.2)	(13.2)	(12.4)	(19.4)	(17.1)	(13.2)	(7.8)	(5.4)	(3.9)	(1.6)

VAS = Visual analogue scale

Table 5: Working ability affected according to Multidimensional Scoring System

	MSS	Numbers (%)
Grade 0	Unaffected	36 (27.9)
Grade 1	Rarely affected	43 (33.3)
Grade 2	Moderately affected	33 (25.6)
Grade 3	Clearly inhibited	17 (13.2)

MSS = Multidimensional scoring system

DISCUSSION

Dysmenorrhea, painful menstruation is a common symptom in young females. In our study, 70.1% of the participants reported to have dysmenorrhea. In one of the studies done in Nepal by Katwal et al 67% of the participants had dysmenorrhea which is similar to our finding.[12] However, family history was positive in 78.3 % in our study but it was only 17.39% in their study. Another study done by Baidhya et al in Nepal found prevalence to be 75.2% and an association of dysmenorrhea with family history, and early menarche.[11] This is similar to our finding as we also found a significant association of dysmenorrhea with a positive family history and early age of menarche. The difference was that they found an association with underweight whereas we did not find an association with BMI.

The prevalence of dysmenorrhea aligns closely at 70.2% and 70.1% in one of the studies done in South India. [18] The majority of participants experience pain for 1-2 days in their study and 1.8 ± 0.6 days in our study supports the consistency of findings. However, there are notable differences in the proportions who took analgesics and sought medical advice. In their study, 25.5% reported taking analgesics compared to 9.3% in our study. Similarly, the percentage of seeking medical advice was

higher in their study 14.2% compared to 3.1% in our study. This difference could have been due to several factors like cultural differences, individual attitudes towards pain management and seeking medical help. Another study in India found prevalence to be 79.67%. [19] The three most common symptoms were tiredness and lethargy, depression and inability to concentrate. In our study, the three most common symptoms were tiredness and lethargy, followed by back pain and irritability.

A study from Kuwait by Al-Matoque et al. found the prevalence to be 85.6% and the participants sought medical assistance in 26% of participants which is higher compared to our study of 3.1%.[20] The difference could be multifactorial but could be due to cultural differences, the attitude of individuals towards dysmenorrhea and the economic status of the nation. Both studies did find an association of dysmenorrhea with age of menarche and irregular cycle. Studies from Ethiopia have reported a prevalence of around 51.5% which is less compared to 70.1% in our study.[21] The difference could be due to cultural variation and underreporting of dysmenorrhea. Both studies have shown an association of dysmenorrhea with a positive family history. Ju et al did a systemic review of fifteen studies and found the prevalence varying from 16% to 91%.[9] They concluded that dysmenorrhea is a significant symptom for a large proportion of women of reproductive age; however, severe pain limiting daily activities is less common which is similar to our finding. Positive family history had an association with dysmenorrhea which aligns with our study and conflicting results were found regarding the age of menarche.

In a study done in Turkey, the prevalence was 72.7%. [22] They found an association of dysmenorrhea with a positive family history and irregularity of the menstrual cycle. They did not find an association of BMI, living in a joint family or nuclear family which is similar to the finding of this study. Another larger study in Turkey by Ozerdogan et al who included more than 5,000 participants found the prevalence to be 55.5% which is less compared to ours of 70.1%. [17] The most common symptoms were nervousness, breast tenderness and fatigue. The most common symptoms in this study were lethargy and tiredness, backache and irritability. Most of the symptoms were similar though the proportion of participants having those symptoms was different. A study from Saudi Arabia found a prevalence of 70.6%. [23] In that study, 66% were using medication for pain relief and 23% consulted doctors for the problem. This finding is contradictory to ours with pain relief medication only in 9.3% and medical consultation only in 3.1%. Gastrointestinal symptoms were more common in that study whereas this study found tiredness and lethargy to be more common.

Though the prevalence of dysmenorrhea varies in different studies but many of the studies it is around 70 % including this study. [1,12,18,22,23] Many studies found dysmenorrhea to be associated with a positive family history, irregularity in menstruation and early menarche. [11,20-22] There was no association of dysmenorrhea with BMI, living in a joint family or nuclear family. [20,22] The associated with dysmenorrhea are similar in most studies though there is a difference in frequency of presentation. The severity of dysmenorrhea, medication and medical consultation differed from this study. [18,20,23] According to this study, when compared to girls without dysmenorrhoea, girls with dysmenorrhoea had a positive family history, early age at menarche, less number of female siblings, lack of knowledge

of menstruation before menarche and irregular menstrual cycles. However, we did not find many studies regarding this.

CONCLUSION

Dysmenorrhea is a common symptom in young females with academic days lost. The common symptoms include lethargy and tiredness, back pain, irritability and mood swings. Compared to girls without dysmenorrhoea, girls with dysmenorrhoea had a positive family history, early age at menarche, less number of female siblings, lack of knowledge of menstruation before menarche and irregular menstrual cycles. However, this requires further studies.

CONFLICT OF INTEREST

None

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None

REFERENCES

1. ACOG committee opinion no. 760: Dysmenorrhea and endometriosis in the adolescent. *Obstet Gynecol.* 2018;132(6):e249–58. <http://dx.doi.org/10.1097/aog.0000000000002978>
2. Harlow SD, Ephross SA. Epidemiology of menstruation and its relevance to women's health. *Epidemiol Rev.* 1995;17(2):265–86. <http://dx.doi.org/10.1093/oxfordjournals.epirev.a036193>
3. Lentz GM, Lobo RA, Gershenson DM, Katz VL. *Comprehensive Gynecology*. 6th edition: Expert Consult Online and Print. Elsevier Mosby; 2012.
4. Chan WY, Hill JC. Determination of menstrual prostaglandin levels in non-dysmenorrhic and dysmenorrhic subjects. *Prostaglandins.* 1978;15(2):365–75. [http://dx.doi.org/10.1016/0090-6980\(78\)90176-4](http://dx.doi.org/10.1016/0090-6980(78)90176-4)
5. Harel Z, Lilly C, Riggs S, Vaz R, Drazen J. Urinary leukotriene (LT) E4 in

- adolescents with dysmenorrhea: a pilot study. *J Adolesc Health*. 2000;27(3):151–4. [http://dx.doi.org/10.1016/s1054-139x\(00\)00123-3](http://dx.doi.org/10.1016/s1054-139x(00)00123-3)
6. Proctor M, Farquhar C. Diagnosis and management of dysmenorrhoea. *BMJ*. 2006;332(7550):1134–8. <http://dx.doi.org/10.1136/bmj.332.7550.1134>
 7. Latthe P, Latthe M, Say L, Gülmezoglu M, Khan KS. WHO systematic review of prevalence of chronic pelvic pain: a neglected reproductive health morbidity. *BMC Public Health*. 2006;6(1). <http://dx.doi.org/10.1186/1471-2458-6-177>
 8. Burnett M, Lemyre M. No. 345-primary dysmenorrhea consensus guideline. *J Obstet Gynaecol Can*. 2017;39(7):585–95. <http://dx.doi.org/10.1016/j.jogc.2016.12.023>
 9. Ju H, Jones M, Mishra G. The prevalence and risk factors of dysmenorrhea. *Epidemiol Rev*. 2014;36(1):104–13. <http://dx.doi.org/10.1093/epirev/mxt009>
 10. Parker MA, Sneddon AE, Arbon P. The menstrual disorder of teenagers (MDOT) study: determining typical menstrual patterns and menstrual disturbance in a large population-based study of Australian teenagers. *BJOG*. 2010;117(2):185–92. <http://dx.doi.org/10.1111/j.1471-0528.2009.02407.x>
 11. Baidhya N, Prasad Paneru D. Prevalence of dysmenorrhea and its associated factors among adolescent girls studying in technical schools of Dang, Nepal. *JHAS*. 2020;10(1):24–9. <http://dx.doi.org/10.37107/jhas.182>
 12. Katwal PC, Karki NR, Sharma P, Tamrakar SR. Dysmenorrhea and stress among the Nepalese medical students. *Kathmandu Univ Med J (KUMJ)*. 2016;14(56). <https://pubmed.ncbi.nlm.nih.gov/29336418/>
 13. George A, Bhaduri A. Dysmenorrhea among adolescent girls - symptoms experienced during menstruation. *Health Promotion Educ*. 2002; 17: 4
 14. Woosley JA, Lichstein KL. Dysmenorrhea, the menstrual cycle, and sleep. *Behav Med*. 2014;40(1):14–21. <http://dx.doi.org/10.1080/08964289.2013.829020>
 15. Negriff S, Dorn LD, Hillman JB, Huang B. The measurement of menstrual symptoms: Factor structure of the menstrual symptom questionnaire in adolescent girls. *J Health Psychol*. 2009;14(7):899–908. <http://dx.doi.org/10.1177/1359105309340995>
 16. Delgado DA, Lambert BS, Boutris N, McCulloch PC, Robbins AB, Moreno MR, et al. Validation of digital visual analog scale pain scoring with a traditional paper-based visual analog scale in adults. *J Am Acad Orthop Surg Glob Res Rev*. 2018;2(3):e088. <http://dx.doi.org/10.5435/jaaosglobal-d-17-00088>
 17. Ozerdogan N, Sayiner D, Ayranci U, Unsal A, Giray S. Prevalence and predictors of dysmenorrhea among students at a university in Turkey. *Int J Gynaecol Obstet*. 2009;107(1):39–43. <http://dx.doi.org/10.1016/j.ijgo.2009.05.010>
 18. Omidvar S, Bakouei F, Amiri FN, Begum K. Primary dysmenorrhea and menstrual symptoms in Indian female students: Prevalence, impact and management. *Glob J Health Sci*. 2015;8(8):135. <http://dx.doi.org/10.5539/gjhs.v8n8p135>
 19. Agarwal K, Agarwal A. A study of dysmenorrhea during menstruation in adolescent girls. *Indian J Community Med*. 2010;35(1):159. <http://dx.doi.org/10.4103/0970-0218.62586>
 20. Al-Matouq S, Al-Mutairi H, Al-Mutairi O, Abdulaziz F, Al-Basri D, Al-Enzi M, et al. Dysmenorrhea among high-school students and its associated factors in Kuwait. *BMC Pediatr*. 2019;19(1). <http://dx.doi.org/10.1186/s12887-019-1442-6>
 21. Tadese M, Kassa A, Muluneh AA, Altaye G. Prevalence of dysmenorrhoea, associated risk factors and its relationship

- with academic performance among graduating female university students in Ethiopia: a cross-sectional study. *BMJ Open*. 2021;11(3):e043814. <http://dx.doi.org/10.1136/bmjopen-2020-043814>
22. Unsal A, Ayranci U, Tozun M, Arslan G, Calik E. Prevalence of dysmenorrhea and its effect on quality of life among a group of female university students. *Ups J Med Sci*. 2010;115(2):138–45. <http://dx.doi.org/10.3109/03009730903457218>
23. Alsaleem M. Dysmenorrhea, associated symptoms, and management among students at King Khalid University, Saudi Arabia: An exploratory study. *J Family Med Prim Care*. 2018;7(4):769. http://dx.doi.org/10.4103/jfmpe.jfmpe_113_18