

Impact of Dysmenorrhea on Female Adolescents

Poonam Karmacharya,¹ Anshu Bhattarai,¹ Indu Tiwari,² Surjit Singh¹

¹Department of Physiology, Manipal College of Medical Sciences, Pokhara, ²Department of physiology, Universal Medical College, Bhairawaha, Nepal.

ABSTRACT

Introduction

Dysmenorrhea is a common condition that usually presents itself with cramps or a dull ache, mostly in the abdominal region. Alongside the cramps, it is also common to suffer from other symptoms such as nausea, diarrhoea, constipation, mood swings and headaches. Dysmenorrhea has been considered a leading cause of occupational and college absenteeism among women, yet little is known about its actual impact. The objective of this study is to understand the impact of dysmenorrhea in the young female medical students.

Methods

A cross-sectional study was carried out in 100 undergraduate students of Manipal college of medical sciences, Pokhara, Nepal. Standardized Self-reporting questionnaires were used to obtain relevant data. Data entry and analysis were done in SPSS 20.

Results

Out of 100 females, Majority of girls, 84 out of 100 reported different grades of dysmenorrhea. The study also showed strong association of dysmenorrhea with the family history and the severity of dysmenorrhea was highly associated with college absenteeism and regularity of the cycle. ($p\text{-value}\leq 0.005$). Other symptoms like stomach cramp, anxiety, irritability, difficult in concentration and insomnia were also significantly associated with dysmenorrhea ($p<0.005$) while stress was strongly associated with the dysmenorrhea. ($p<0.000$). However, Backaches, painful breast, nausea, skin disorders, appetite and forgetfulness were not associated with dysmenorrhea. ($p>0.005$)

Conclusions

Dysmenorrhea is found to be highly prevalent and has a negative impact on physical, social and academic activities of medical female students. The effect of dysmenorrhea is very wide, therefore managing the condition is very important.

Keywords: dysmenorrhea; medical students; menstrual pattern.

Correspondence: Dr. Poonam Karmacharya, Manipal College of Medical sciences, Pokhara, Nepal. Email: Poonam.karmacharya@manipal.edu.np. Phone: +977- 9806622499.

INTRODUCTION

Menstruation is a normal physiological process occurring every month throughout the reproductive age of the females. However, we can find the variation in the menstrual pattern. Dysmenorrhea is one of the most common menstrual problem among the adolescent females.

Dysmenorrhea is defined as cramping pain in the pelvis or lower abdomen before or during the menstruation. Dysmenorrhea may begin soon after the menarche, after which it often improves with age, or it may originate later in life after the onset of an underlying causative condition.

Other symptoms associated may include back pain, stomach cramp, diarrhea, nausea, anxiety, mood swings, Forgetfulness, skin disorders, irritability, difficulty in concentration, stress, insomnia etc.^{1,2} Absenteeism from school/work, social withdrawal, decrease academic performance are some of the other negative effects of dysmenorrhea.^{3,4} Dysmenorrhea is common, and in up to 20% of women it may be severe enough to interfere with daily activities. It is an extremely common and sometimes leading to debilitating condition for women of reproductive age. Despite their high prevalence and the associated ill effects, many females are reluctant to use medical care for these conditions.⁵

This research provides insights to ensure various symptoms associated with dysmenorrhea and its impact on quality of life of adolescent girls. This may also act as important evidence for the implementation of new health policies for females in Nepal.

METHODS

A cross-sectional study was carried out in 100 undergraduate students of Manipal college of medical sciences, Pokhara from January to

April 2020. The study protocol was approved by Institutional Review Committee, Manipal College of Medical Sciences. The purpose and the objective of the study was explained to the students and informed consent was taken. Inclusion criteria were healthy, non-smoker, nulliparous and unmarried females. Exclusion criteria were females who are married, known to have pelvic pathology and those who refused to participate.

A pre-designed questionnaire was prepared. Selected female students voluntarily agreed to answer questionnaire under the supervision of the researcher and then the data were analyzed. The questionnaire covered general information about the girls' including full name, address, age, marital status. Questions related to menstruation covered: age of menarche, duration of menstruation, cycle length, regularity of menstruation, dysmenorrhea and its severity (mild, moderate and severe) and other symptoms associated with dysmenorrhea. They were also enquired whether they needed treatment for dysmenorrhea and impact on college attendance due to menstrual problem and also about the other associated problems.

Samples were collected as per convenient sampling. Data entry and analysis were done in SPSS 20. Data were analyzed by Chi-square test. Statistical significance was tested for p-value <0.005.

RESULTS

A total of 100 female students of Manipal college of medical science took part in the study. The participants were in the age between 18 to 23. The baseline characteristics are shown in the table 1. The mean (SD) age of the participants was 20 years. The mean (SD) age of menarche was 12 years. Out of 100 females, Majority of girls 84 reported dysmenorrhea and only 16 females did not experience pain during menstruation as shown in Table 2.

S.N.	Variables	Minimum	Maximum	Mean \pm SD
1.	Age(years)	18	23	20.24 \pm 1.24
2.	Height(cm)	145	175	158.62 \pm 6.255
3.	Weight (kgs)	37	81	55.80 \pm 10.59
4.	BMI(Kg/m ²)	15	32	22.10 \pm 3.43
5.	Age of menarche	10	16	12.94 \pm 1.32
6.	Cycle length	20	120	34.8 \pm 11.8

Dysmenorrhea grading	Frequency/percent
Mild	17
Moderate	52
Severe	15
No dysmenorrhea	16

Table 3 showed strong association of dysmenorrhea with the family history.

Variable	Yes	No	p-value
Family history			
Yes	53(63.1%)	5 (31.3%)	0.018
No	31 (36.9%)	11(68.8%)	

is highly associated with college absenteeism and regularity of the cycle. (p - value \leq 0.005)

Table 5 showed that stomach cramp was significantly associated with dysmenorrhea (p<0.005) Back aches, general aches, painful breast, nausea, skin disorders and appetite are not associated with dysmenorrhea. (p>0.005)

Table 6 showed that irritability, difficulty in concentration, stress is highly significant in women with dysmenorrhea. while stress is strongly associated with the dysmenorrhea. (p<0.000). And anxiety, insomnia and forgetfulness are not significant with dysmenorrhea. (p>0.005)

Variables	DYSMENORRHOEA			
	Mild	Moderate	Severe	p-value
College Absentees				
Yes	3	50	15	0.005
No	14	2	0	
Regularity				
Yes	11	39	1	0.003
No	6	13	14	
Treatment needed				
Yes	3 (6.9%)	25 (58.13%)	15 (34.88%)	0.054
No	17 (28.81%)	27 (45.76%)	15 (25.42%)	

Table 5. Comparison of physical variables among the participants with dysmenorrhea and no dysmenorrhea.

Variables	No Dysmenorrhea	Dysmenorrhea	p-Value
Backache Yes (65) No (35)	9(13.85%) 7(20%)	56(86.15%) 28(80%)	0.4
General aches YES (62) NO (38)	7 (11.29%) 9(23.68%)	55 (88.71%) 29 (76.32%)	0.1
Stomach Cramp Yes (80) No (20)	7 (8.75%) 9(45%)	73 (91.25%) 11 (55%)	0.00
Painful breast Yes (25) No (75)	3 (12%) 13(17.33%)	22 (88%) 62 (82.67%)	0.5
Nausea YES (25) NO (75)	1(4%) 15 (20%)	24 (96%) 60 (80%)	0.6
Skin Disorders Yes (26) No (74)	3 (11.54%) 13 (17.57%)	23 (88.46%) 61 (82.43%)	0.4
Increased appetite Yes (32) No (68)	4 (12.5%) 12 (17.65%)	28 (87.5%) 56 (82.35%)	0.5

Table 6. Common psychological symptoms of dysmenorrhea experienced by respondents.

Variables	No dysmenorrhea	Dysmenorrhea	p - value
Anxiety Yes (48) No (52)	2 (4.17%) 14 (26.92)	46 (95.83%) 38 (73.08%)	0.02
Irritability Yes (73) No (27)	5 (6.85 %) 11 (40.74%)	68 (93.15%) 16 (59.25%)	0.00
Difficulty in concentration Yes (54) No (46)	4(7.40 %) 12 (26.08)	50 (92.59%) 34 (73.91%)	0.001
Insomnia Yes (25) No (75)	1(4%) 15 (20%)	24(96%) 60 (80%)	0.06
Forgetfulness Yes (12) No (88)	1(8.33) 16 (18.18%)	11(91.66%) 72 (81.81%)	0.1
Stress Yes (42) No (58)	2 (4.76%) 14 (24.13%)	40 (95.23%) 44 (75.86%)	0.009

DISCUSSION

Dysmenorrhea affects the physical, psychological, and social status of female adolescents. Dysmenorrhea profoundly affected the quality of life of adolescent girls both physically and mentally. In this study, a high prevalence of dysmenorrhea among the sample of university students (84%), which is in line with other international studies among young female university students.^{6,7} Dysmenorrhea is a common gynecological problem among adolescent females and it is an important issue to deal with because it affects most of female adolescents today and represents the leading cause of periodic college/school absenteeism among that population. In this study there was significant association between college absenteeism and dysmenorrhea. It is consistent with several studies which showed strong association between dysmenorrhea and college absenteeism. It caused prolonged resting hours and inability to focus in studies or any work.

Although dysmenorrhea is not life threatening, it can be severely painful affecting quality of life for many adolescents. Moreover, dysmenorrhea can cause mental problems in some of the females resulting in their loneliness and reduced participation in different social activities. This study showed positive relation between dysmenorrhea and stress. It is consistent with the study done in medical students in Kathmandu, Nepal which also showed a positive relationship between psychological stress and dysmenorrhea.⁸

Dysmenorrhea is classified into two categories: primary when pelvic examination and ovulatory function are normal and secondary when there is an identifiable gynecological pathology. Primary dysmenorrhea characteristically begins when adolescents attain their ovulatory cycles; generally, within the 1st year after menarche.

Dysmenorrhea is considered the most common symptom of all menstrual complaints and poses a greater burden of disease than any other gynecological complaint in developing countries.

This menstruation associated pain occurs as a result of excessive production of prostaglandins in the endometrium during the ovulatory cycle which then causes contraction of myometrium, vasoconstriction as well as sensitization of nerve ending.

Physiologically, stress inhibits the pulsatile release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) leading to impaired follicular development. As synthesis of progesterone is increased in the luteinized follicle following ovulation, stress induced impairment of follicle development could potentially reduce progesterone synthesis and its release. Reduced Progesterone may cause increased production of prostaglandin, the mediator of pain. And addition to it decreased progesterone causes increased myometrium contraction and gives more strain to ischemic myometrium and intensifies the pain.⁹

In this study it showed positive correlation between family history, irregularity of menstrual cycle with dysmenorrhea. It is consistent with the study done in Ethiopia which showed positive correlation of dysmenorrhea with their family history of dysmenorrhea along with the irregular menstrual cycle.¹⁰ It is also similar with the study done by Zegeye DT which showed a link between regularity of menstruation and severity of dysmenorrhea.¹¹ This implies that family history and irregular cycle of menstruation can be taken as risk factors to experience dysmenorrhea.

Present study revealed that the physical symptoms associated with dysmenorrhea were stomach cramp 73(91.25%), backache 56(86.15%), general aches 55 (88.71%), skin

disorders 23 (88.46%), painful breast 22 (88%), nausea 24(96%) and increased appetite 28 (87.5%). Psychologically the girls suffered from a wide spectrum of symptoms ranging from irritability 68 (93.15%), tension 16 (5.33%) and anxiety, 17 (5.6%). Our result indicate that variations are common in symptoms appearing in dysmenorrhea. Dysmenorrhea manifesting as abdominal pain or discomfort has been found as the commonest medical problem, the finding being consistent with the study done in Srilanka ¹²

Moreover, girls with severe dysmenorrhea had a significantly lower quality of life in terms of the bodily pain domain than those with mild and moderate forms of condition. Same observation was also found in the Chinese adolescent girls.¹³ which is inline with our studies.

Adolescents with dysmenorrhea also had a negative attitude consulting a physician, highlighting its importance as a public health issue.¹⁴ Also the systematic review done by Bajalan showed the positive relationship between some nutritional factors and primary dysmenorrhea, indicating the need of increased consumption of fruits and vegetables, fish and dairy products to lower menstrual pain. Therefore, attention should be paid to the correction of female nutritional behaviors for having enough and balanced diet. Given the negative effects of dysmenorrhea on the quality of life, measures should be taken to increase the knowledge of women about dysmenorrhea and make appropriate lifestyle changes to control it. Designing and implementing interventional studies on nutrition education and modification are recommended.

Limitations

The findings from this study should be interpreted in light of several limitations. This study used retrospective self-reporting to obtain

information regarding menstrual symptoms. This type of reporting may be prone to bias. Furthermore, this study population included women from a single faculty; therefore, future studies should be performed in other study populations as well.

CONCLUSIONS

This study confirms the findings of previous works showing that dysmenorrhea is a widespread problem and identifies its detrimental effect on adolescent girls. Dysmenorrhea is highly prevalent among female adolescents of Manipal college of medical sciences and is the leading cause of College absenteeism and limitations on social, academic, and sports activities. About half of the participants stated that they have a family history of dysmenorrhea.

Based on these findings, education on the appropriate management of dysmenorrhea should be given to students and parents in order to address the reproductive health needs of the female students and also to reduce the physical and psychological stress that happens to females and their families. Future research should focus on strategies to improve pain and symptom management with the aim of reducing the impact of dysmenorrhea so that young women can optimize their educational opportunities and future life chances.

ACKNOWLEDGMENTS

The authors acknowledge the staff and students of Manipal College of Medical sciences, Pokhara for their cooperation throughout the study.

Conflict of Interest

The authors declare that they have no Conflict of Interest.

REFERENCES

1. Barrett KE, Barman SM, Boitano S, Brooks HL, editors. *Ganong's review of medical physiology* (24th ed). New Delhi: McGraw-Hill 2010, 413.
2. Osayande AS, Mehulic S. Diagnosis and initial management of dysmenorrhea. *Am Fam Physician* 2014 Mar 1;89(5):341-6. PMID:24695505
3. Ahuja A, Sharma MK, Singh A. Impact of Dysmenorrhea on Quality of Life of Adolescent Girls of Chandigarh. *J Child Adolesc Behav.*2016;4:295. DOI:10.4172/2375-4494.1000295
4. Katwal PC, Karki NR, Sharma P, Tamrakar SR. Dysmenorrhea and Stress among the Nepalese Medical Students. *Kathmandu Univ Med J* 2016; 56(4):318-21. PMID: 29336418
5. Shete J S, Warbhe P, radmini D. Class Absenteeism Among Female Medical Students: A Study Reflecting Its Association With Common Menstrual Disorders. *International Journal of Recent Scientific Research* 2015; 6:5307-09. Link: <http://www.recentscientific.com/sites/default/files/3008.pdf>
6. Yesuf TA, Eshete N A., Sisay E.A. Dysmenorrhea among University Health Science Students, Northern Ethiopia: Impact and Associated Factors. *Int. J. Reprod. Med.* 2018;2:1-5. DOI: 10.1155/2018/9730328.
7. Alsalem M. Dysmenorrhea, associated symptoms, and management among students at King Khalid University, Saudi Arabia: An exploratory study. *J. Fam. Med. Prim. Care.* 2018;7:769-774. DOI: 10.4103/jfmprc.jfmprc_113_18.
8. Pramanik T, Shrestha R, Sherpa M, & Adhikari P. Incidence of dysmenorrhoea associated with high stress scores among the undergraduate Nepalese medical students. *Journal of Institute of Medicine* 2011;32(3), 2-4. DOI: 10.3126/jiom.v32i3.4952
9. Singh A, Kiran D, Singh H, Nel B, Singh P, Tiwari P. Prevalence and severity of dysmenorrhea: a problem related to menstruation, among first and second year female medical students. *Indian J Physiol Pharmacol.* 2008;252(4):389-97. PMID:19585756
10. Minaleshewa BG, Abebe BM, Yonas GT, Dagmawi AA, Yabsira BD, Geremew SB. Prevalence, Impact, and Management Practice of Dysmenorrhea among University of Gondar Students, Northwestern Ethiopia: A Cross-Sectional Study. *International Journal of Reproductive Medicine* 2017;3:1-8. DOI:10.1155/2017/3208276.
11. Zegeye DT, Megabiaw B and Mulu A. Age at menarche and the menstrual pattern of secondary school adolescents in northwest Ethiopia. *BMC Women's Health* volume. 2009;9:29-32 DOI: <https://doi.org/10.1186/1472-6874-9-29>
12. Alahakoon AMSS and Wickramaratne DBM. Prevalence of dysmenorrhea, its association with overall academic engagement and management among nursing undergraduates at Peradeniya University, Srilanka: A cross-sectional study. *Journal of Endometriosis and Pelvic Pain Disorders.*2021;13(2):127-135 DOI: <https://doi.org/10.1177/2284026521993680>
13. Wong, C. Health-related quality

of life among Chinese adolescent girls with Dysmenorrhoea. *Reprod Health*.2018;15: 80. DOI: <https://doi.org/10.1186/s12978-018-0540-5>

14. Kwabena A,Dorothy BA,Daniel G,Stalla A,Xionfeng P, Atipatsa K et al. Prevalence and predictors of Dysmenorrhea,its effect and coping mechanisms among Adolescents in Shai Osudoku district,

Ghana. *Obstetrics and Gynecology International*.2019.DOI:<https://doi.org/10.1155/2019/5834159>

15. Bajalan Z, Alimoradi Z, Moafi F. Nutrition as a Potential Factor of Primary Dysmenorrhea : A Systematic Review of Observational studies.2019;84:209-224. DOI: <https://doi.org/10.1159/000495408>

Citation: Karmacharya P, Bhattarai A, Tiwari I, Singh S. Impact of Dysmenorrhea on Female Adolescents. *JCMS Nepal*. 2022; 18(1); 1-8.