Original Article

Effects of Dysmenorrhea on Academic Activities among Higher Secondary Students of selected College in Kathmandu

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ABSTRACT

Background: Dysmenorrhea is the most common complaint and a leading cause of absenteeism in adolescence among university female students. It affects social, academic, and sports activities. Therefore, the objective of the study was to find out the effects of dysmenorrhea on academic activities among higher secondary students.

Methods: A descriptive cross-sectional study was conducted among higher secondary female students. A purposive sampling technique was used and the sample size was 206. Data collection was done from January 15, 2020, to February 12, 2020. Data were collected from the semi-structured questionnaire through a self-administered technique. The frequencies, percentage, mean, standard deviation, and range were used as a part of descriptive statistics. The Chi-square test and Fischer's exact test was used to establish the association between categorical variables. *P* value less than 0.05 was used for statistical significance.

Result: The findings showed that the dysmenorrhea was 92.2% whereas, 45.3%, 23.7%, and 31%, of students had severe, moderate, and mild pain respectively. Likes as 74.2% had an average academic activity. There was a statistical association of pain with college absenteeism, class absenteeism, unable to study in the exam, and lack of interest in sports ($P<0.05$).

Conclusion: Most of the girls had experienced dysmenorrhea, and it had significantly influenced students' academic activities. Along with this, students were unable to study, lost their concentration, and secured low scores in the exam due to the effects of dysmenorrhea. Therefore, to combat these academic effects from dysmenorrhea, it is better to implement health awareness programs regarding dysmenorrhea.

Keywords: Dysmenorrhea, effects, higher secondary students

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INTRODUCTION

Menstruation is a normal and natural phenomenon of the female reproductive system. The maximum of the women suffered from menstrual problems to some extent. Although most menstrual problems are harmless, a few conditions can be more serious and require medical attention. Many girls experience dysmenorrhea during the first few days of their periods. It is the most common complaint and a leading cause of absenteeism of adolescent students in a university.[1] It affects social, academic, and sports activities.

Seventy-five percent of girls faced menstrual problems. Dysmenorrhea and menstrual abnormalities are common problems of the adolescent.[2] The study conducted in Ethiopia and India reported the prevalence of dysmenorrhea was 34% and 45% respectively.[3, 4] The other study conducted in India also reported a 79.67% prevalence of dysmenorrhea in adolescent girls, and most of them, 37.96% had severe dysmenorrhea.[5] A study conducted in Nepal reported that 67% of the medical girls suffered from dysmenorrhea but 85% of girls had an increase in the frequency and severity of pain while admitting college. Of those girls experiencing dysmenorrhea, 29.45% missed classes and 17.39% of them were recurrent short-term school absenteeism.[6]

Reproductive health is a crucial issue of the adolescent. Dysmenorrhea significantly affects the routine life of most of the girls. It is a leading cause of absent school and college. That's why rises an issue to study the effect of dysmenorrhea on the academic activities of students. There are few studies about dysmenorrhea in Nepal. The results of this study provide evidence to support the importance of developing effective educational interventions targeting pain management and focusing on building and sustaining self-care management among students. The main objective of this research was to find out the effects of dysmenorrhea on academic activities among higher secondary students.

MATERIALS AND METHODS

The institutional-based descriptive cross-sectional study was conducted to find out the effects of dysmenorrhea on academic activities of higher secondary students. A purposive sampling technique was used to select a sample. The study site was Kathmandu College of Central State (KCCS), Kathmandu, which was affiliated with Tribhuvan University. The data was collected from January 15, 2020, to February 12, 2020. A total of 415 girls are studying at present in grades 11 and 12 of Science, Humanity, Law, Education, and Management faculties of KCCS.

The sample size was calculated using a simple mean formula. Sample size for calculation of infinite population (ni) $=\frac{z^2 p(1-p)}{d^2}$, whereas, z = 1.96 (5% level of significance), d= allowable error (5%), p=67% (Prevalence of dysmenorrhea)[6]. Again the sample size calculation for finite population (nf) = $\frac{ni}{1+\frac{ni}{N}}$ whereas, total number (N) = 415. The calculated sample size was 187. Then after 10% (n=19) of the calculated sample size was added for possible non-response. The final sample size was 206. A semi-structured tool was developed from reviewing different

literature by researchers. All the female students of separate faculty were gathered in the conference hall of the college. Then, the participants were requested to provide information who was experienced with dysmenorrhea, and those who were not experienced dysmenorrhea were excluded from this study. The pain scale was used to assess the severity of pain. The students were requested to rate their pain on 1-10 scale, itemized scores were categorized using a multi-dimensional scoring system into mild, moderate, and severe. The effect of dysmenorrhea on academic activities was assessed by asking simple questions according to three domains for the past six months which are classroom activities, exam activities, and extra-curricular activities. Besides, the information on academic activities was obtained by self-reporting. Self- administered semi-structured questionnaire was used for data collection. The level of academic activities due to the effects of dysmenorrhea was graded as good academic activities (>75%), average academic activities (50-75%) and poor academic activities (< 50%). The data were entered and then analyzed in SPSS. The frequencies, percentage, mean, standard deviation, and range were used as a part of descriptive statistics, Chi-square test, and Fisher's exact test was used to establish the association between categorical variables. *P*-value of less than 0.05 was used for statistical significance. The ethical approval was taken from the Institutional Review Committee from the Nepalese Army Institute of Health Sciences (IRC reference number-245) and permission was obtained from the KCCS. Verbal consent was taken from each student. The purpose and objectives of the study were explained to the participants. The participant was informed about their right to refuse or to withdraw at any time during the study.

RESULTS

A total of 206 participants were involved in this study. Regarding the socio-demographic information, the mean age was 17.35 ± 1.331 years and has a range of 15 to 20 years. Among them, more than half (60.2%) of them were aged 15-17 years. Three fourth (75.2%) of them were Hindu whereas more than half (52.4%) were Brahmin/Chhetri. Similarly, more than half (52.9%) of them were studied grade11. Regarding the types of family, more than three fifth (61.7%) of the respondents had a nuclear family. However, more than half (53.4%) of them were living in a rented house. Likes as, most (88.3%) fathers of the respondents' were literate. Similarly, more than three fourth (77.7%) mothers of the respondents' were literate. About half (49.5%) of fathers of the respondents' were involved in business whereas more than three fifth (66%) of the respondents' mothers was a homemaker.

Table 1 showed that more than half (56.8%) of the respondent's menarche age was 13-15 years. The mean age of menarche was 12.83 years. According to this study, three fifth (66.5%) of them had a family history of dysmenorrhea while more than half (56.2%) of the respondent's mother had present dysmenorrhea. Majority (65%) of the respondents had a regular menstrual pattern. More than three fourth (77.2%) of the respondent's menstrual flow was more than three days and majority (76.7%) of them had to soak 1-3 pads per day during menstruation.

Table 1: Respondent's Information regarding Menstruation

Variables	Number (n)	Percentage(%)
Age of menarche years (n=206)		
10-12	85	41.3
13-15	117	56.8
>15	4	1.9
Mean age of menarche 12.83 ± 1.121 years		
Menstrual cycle pattern (n=206)		
Regular	134	65.0
Irregular	72	35.0
Duration of menstrual blood flow (n=206)		
Less than 3 days	47	22.8
More than 3 days	159	77.2
Number of pad soak per day during the period (n=206)		
1-3	158	76.7
4-6	47	22.8
>6	1	0.5
Often to whom to share menstrual problem (n=206)		
Mother	142	68.9
Friend	53	25.7
Teacher	2	1.0
Others	9	4.4
History of dysmenorrhea in family (n=206)		
Yes	137	66.5
No	69	33.5
If yes, to whom (n=137)		
Mother	77	56.2
Sister	44	32.1
Aunt	7	5.1
Others	9	6.6
Presence of dysmenorrhea (n=206)		
Yes	190	92.2
No	16	7.8

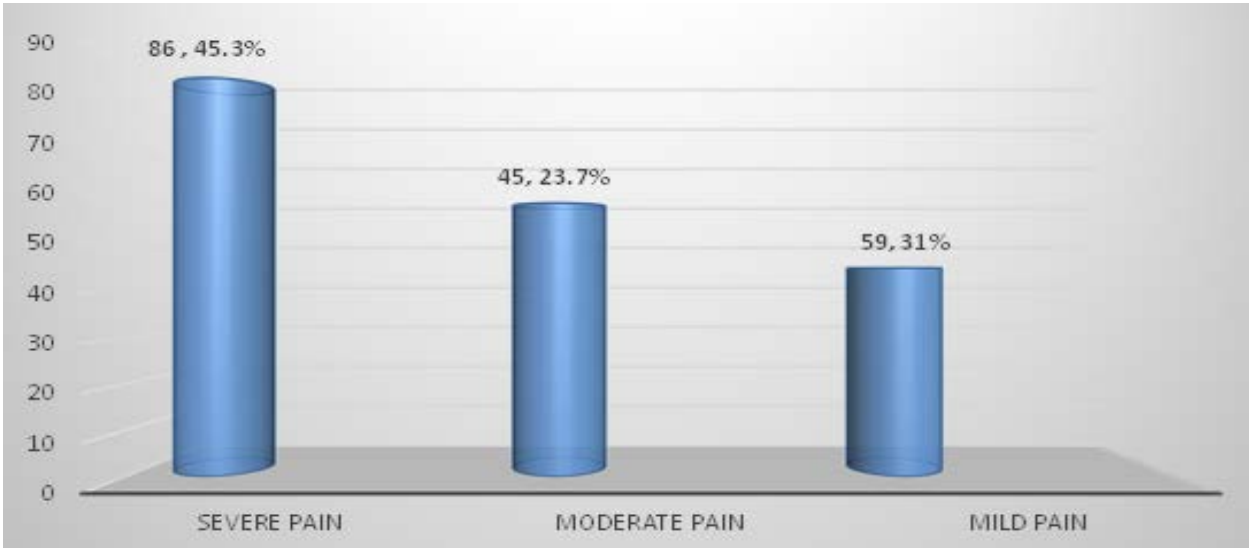

Figure 1: Experience of Menstrual Pain

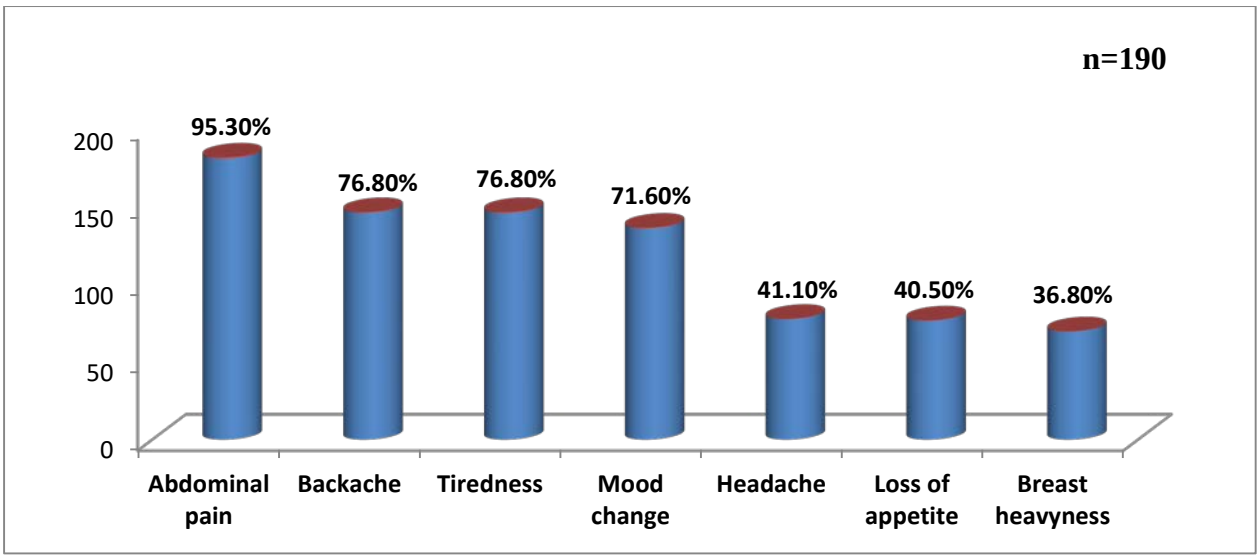

Figure 2: Symptoms associated with Dysmenorrhea (multiple responses)

Table 2: Association between Severity of Pain and Class Activities (n=190)

Class Activities		Severity of Pain			*P*-value
		Mild Pain n (%)	Moderate Pain n (%)	Severe Pain n (%)	
Decrease class concentration	Never	9 (4.7)	6 (3.2)	18 (9.5)	.370[b]
	Sometimes	42 (22.1)	37 (19.5)	60 (31.6)	
	Always	8 (4.2)	2 (1.1)	8 (4.2)	
College absenteeism	Never	27 (14.2)	16 (8.4)	19 (10)	.022[b]*
	Sometimes	26 (13.7)	27 (14.2)	60 (31.6)	
	Always	6 (3.2)	2 (1.1)	7 (3.7)	
Class absenteeism	Never	32 (16.8)	28 (14.7)	20 (10.5)	.000[b]*
	Sometimes	24 (12.6)	16 (8.4)	59 (31.1)	
	Always	3 (1.6)	1 (0.5)	7 (3.7)	
Difficulty in remembering	Never	23 (12.1)	22 (11.6)	16 (8.4)	.003[a]*
	Sometimes	29 (15.3)	18(9.5)	49 (25.8)	
	Always	7 (3.7)	5 (2.6)	21 (11.1)	
Participation in classroom activities	Never	26 (13.7)	9 (4.7)	21(11.1)	.008[a]*
	Sometimes	27 (14.2)	29 (15.3)	42 (22.1)	
	Always	6 (3.2)	7 (3.7)	23 (12.1)	
Verbal warning from authority	Never	47 (24.7)	35 (18.4)	56 (29.5)	.060[b]
	Sometimes	10 (5.3)	10 (5.3)	26 (13.7)	
	Always	2 (1.1)	0	4 (2.1)	
Warning letter from authority	Never	50 (26.3)	40 (21.1)	64 (33.7)	.219[b]
	Sometimes	7 (3.7)	5 (2.6)	21 (11.1)	
	Always	2 (1.1)	0	1 (0.5)	
Class input	Never	31(16.3)	20 (10.5)	35 (18.4)	.382[a]
	Sometimes	24 (12.6)	18 (9.5)	36 (18.9)	

	Always	4 (2.1)	7 (3.7)	15 (7.9)	
Effects on education	Never	19 (10)	17 (8.9)	18 (9.5)	.090[a]
	Sometimes	35 (18.4)	20 (10.5)	50 (26.3)	
	Always	5 (2.6)	8 (4.2)	18 (9.5)	

[a] Chi-square test, [b] Fisher's exact test, * Significant *P*-value at < 0.05 level

Similarly, more than three-fifth (68.9%) of the respondents shared their menstrual problems with their mother. A vast majority (92.2%) had experienced dysmenorrhea. Among them, less than half (45.3%) had severe pain. More than one-fifth (23.7%) had moderate pain and more than one-fourth (31%) of them had mild pain during menstruation (Figure 1). Table 2 revealed the relationship between class activities and the severity of pain, which was explored by the Chi-square test and Fisher's exact test *(P*-value at < 0.05 level). The severity of pain among dysmenorrheal respondents affected their academic activities (*P*<0.05). Statistical significance was found between the severity of pain and college absenteeism, class absenteeism, difficulty in remembering, and participation in classroom activities (*P*<0.05). Table 3 illustrated the relationship between the severity of pain and exam activities which was explored by Chi-square tests and Fisher's exact test *(P*-value at < 0.05 level). There was a significant relationship between the severity of pain and exam activities (*P*<0.05). Statistical significance was found among the severity of pain, and unable to study in the exam, getting a low score in the exam and having a verbal warning from authority due to low score in an exam (*P*<0.05).

Table 3: Association between Severity of Pain and Exam Activities (n=190)

Exam Activities		Severity of Pain			*P*-value
		Mild Pain n (%)	Moderate Pain n (%)	Severe Pain n (%)	
Unable to study in the exam	Never	27 (14.2)	19 (10)	26 (13.7)	.003[a]*
	Sometimes	30 (15.8)	22 (11.6)	38 (20.0)	
	Always	2 (1.1)	4 (2.1)	22 (11.6)	
Loss of concentration	Never	26 (13.7)	16 (8.4)	18 (9.5)	.010[a]*
	Sometimes	30 (15.8)	25 (13.2)	51 (26.8)	
	Always	3 (1.6)	4 (2.1)	17 (8.9)	
Absenteeism on exam day	Never	45 (23.7)	33 (17.4)	54 (28.4)	.060[b]
	Sometimes	12 (6.3)	10 (5.3)	25 (13.2)	
	Always	2 (1.1)	2 (1.1)	7 (3.7)	
Low score in exam	Never	34 (17.9)	29 (15.3)	32 (16.8)	.007[b]*
	Sometimes	23 (12.1)	13 (6.8)	41 (21.6)	
	Always	2 (1.1)	3 (1.6)	13 (6.8)	
	Never	49 (25.8	38 (20)	54(28.4)	

Having verbal warning from authority	Sometimes	8(4.2)	6 (3.2)	28 (14.7)	.011[b]*
	Always	2(1.1)	1 (0.5)	4(2.1)	
Having warning letter from authority	Never	46 (24.2)	36 (18.9)	64 (33.7)	.421[b]
	Sometimes	12 (6.3)	5 (2.6)	17 (8.9)	
	Always	1 (0.5)	4 (2.1)	5 (2.6)	
Delay in submitting homework	Never	33 (17.4)	24 (12.6)	36 (18.9)	.334[b]
	Sometimes	21 (11.1)	19 (10.0)	40 (21.1)	
	Always	5 (2.6)	2 (1.1)	10 (5.3)	
Submit homework regularly	Never	18 (9.5)	16 (8.4)	13 (6.8)	.080[a]
	Sometimes	20 (10.5)	14 (7.4)	38 (20)	
	Always	21 (11.1)	15 (7.9)	35 (18.4)	

[a] Chi-square test, [b] Fisher's exact test, * Significant *P*-value at < 0.05 level

Table 4: Association between Severity of Pain and Extra-Curricular Activities (n=190)

Extra-curricular Activities		Severity of Pain			*P*-value
		Mild Pain n (%)	Moderate Pain n (%)	Severe Pain n (%)	
Lack of interest in extra classes	Never	24 (12.6)	11 (5.8)	20 (10.5)	.055[a]
	Sometimes	26 (13.7)	26 (13.7)	40 (21.1)	
	Always	9 (4.7)	8 (4.2)	26 (13.7)	
Not able to participate	Never	22 (11.6)	12 (6.3)	18 (9.5)	.100[a]
	Sometimes	25 (13.2)	25 (13.2)	40 (21.1)	
	Always	12 (6.3)	8 (4.2)	28 (14.7)	
Lack of interest in sports	Never	26 (13.7)	13 (6.8)	20 (10.5)	.043[a]*
	Sometimes	24 (12.6)	21 (11.1)	37 (19.5)	
	Always	9 (4.7)	11(5.8)	29 (15.3)	
Decreased confidence level	Never	17 (8.9)	15 (7.9)	18 (9.5)	.054[a]
	Sometimes	35 (18.4)	26 (13.7)	45 (23.7)	
	Always	7 (3.7)	4 (2.1)	23 (12.1)	

[a] Chi-square test * Significant *P*-value at < 0.05 level

Table 5: Respondent's Level of Academic Activities due to Severity of Pain

Level of Academic Activities	Number (n)	Percentage (%)
Poor academic activities (< 50%)	46	24.2
Average academic activities (50-75%)	141	74.2
Good academic activities (>75%)	3	1.6
Total	190	100.0

A vast majority (95.3%) of respondents had abdominal pain followed by three fourth (76.8%) had present backache. Similarly, tiredness, mood change, headache, loss of

appetite, (76.8%, 71.6%, 41.1%, 40.5%) respectively (Figure 2). Table 4 showed the relationship between the severity of pain and extra-curricular activities, which was explored by the Chi-square test *(P*-value at < 0.05 level). Significant association was found between the severity of pain and lack of interest in sports (*P*<0.05).

Table 5 depicted that three fourth (74.2%) of the respondents had an average level of academic activities while one fourth (24.2%) of them had poor academic activities and a few (1.6%) of them had good academic activities due to the severity of pain.

DISCUSSION

The finding of this study illustrated that 92.2% of respondents had presence dysmenorrhea. Similar result was seen in other international study reported that 90% of adolescent were suffered worldwide from it.[7] Although, inconsistent with the study done in India and Nepal, it was reported the highest prevalence rate of dysmenorrhea was 79.67% in India and 67% in Nepal.[5, 6]

The recent study showed that nearly half (45.3%) of the students had severe pain. This finding is similar to the study done in India which showed 37.96% had severe dysmenorrhea.[5] Present study revealed 95.3% of the respondents had abdominal pain. So, this finding is inconsistent to the study done in Ethiopia, where abdominal pain was 70.4%.[8] This might be the effect of individual pain tolerance.

The finding of this study regarding class activities during pain found a significant effect on college absenteeism, class absenteeism, and decreased participation in classroom. A similar study conducted in Saudi Arabia showed a significant effect of severe pain on class concentration, college absenteeism, and class absenteeism.[9] Similar findings have also been observed in previous study done in Ethiopia where there was a significant association of severe pain with academic performance.[10] The present study showed that nearly half (45.3%) of the students had severe pain and a significant effect in the class absenteeism. This finding was similar to a study conducted in Nepal that stated dysmenorrhea in more than half of the students. There was statistical significance among dysmenorrhea and the absence from school.[11] Present study showed that more than three fifth (68.6%) of respondents were absent from the classes sometimes due to severe pain but this finding is inconsistent with the study conducted in Nepal which reported that 29.45% of respondents were absent from the classes due to dysmenorrhea.[6]

The current study showed that there was a significant association between the severity of pain and exam activities (*P*<0.05). A similar pattern of results was obtained in the study done in Saudi Arabia, which reported a significant effect between the severity of pain and exam activities. The effect of severity of pain on exams was associated with decreased

ability to study, low score, and reduced concentration during the exam.[9]

The present study found that most of the respondents reported they were never absent during exam day. A study done in Cairo showed a similar conclusion when the majority of their participants reported never missing an examination due to pain.[12] Two fifth (41.8%) of the respondents never delayed in submitting the assignment, and 40.6% of them always submitted homework regularly. An inconsistence finding was found in another study conducted in Ethiopia as the participants with dysmenorrhea complained of an inability to do homework due to pain.[13] This could be explained by the students' difficulty in concentrating and their inability to write.

Because of resources limitation, the setting of this study was limited in only one college, these finding cannot be generalized to all female adolescents' students of the country. As the study used non – probability sampling technique, there may have occurred sampling bias. Besides, the information on academic activities was obtained by self-reporting, so it may affect the academic activities score.

CONCLUSION

Most of the girls had experienced dysmenorrhea, and it had significantly influenced students' academic activities. Dysmenorrhea was a major problem representing the leading cause of college/class absenteeism. Along with this, students were unable to study in the exam, lost their concentration on the study, and secured low scores in the exam due to the effects of dysmenorrhea. There was a significant association of menstrual pain with academic activities. Therefore, to combat these academic effects from dysmenorrhea, it is better to implement health awareness programs regarding dysmenorrhea.

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