Prevalence of Dysmenorrhea among adolescent girls of Govt. Senior Secondary Schools of District Mandi, H.P.

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ABSTRACT

Background: Adolescence is most important stage of human life, particularly in adolescent girls as it lays down the conditions for healthy and safe procreation. Many girls face problems in their menstrual cycle including dysmenorrhea, which has figured less in past research studies. Objectives: To find out the prevalence of dysmenorrhea among adolescent school girls, to determine the association between the dysmenorrhea and quality of life as well as with other selected variables. Methodology: A cross-sectional study was conducted on 378 adolescent Senior Secondary School girls of 13-18 years of age, selected through multistage sampling technique using structured pretested questionnaire. The data was computed and analyzed in SPSS 23 version. Results: The prevalence of dysmenorrhea was 65.3%. Most of the students were in the age group of 15-16 years. The mean age of respondents was 15.26±1.293 years while it was 13.41±.682 for menarche. The most common symptoms reported were backache in 66.7% and irritability in 40.7% of the cases. The study found positive association between dysmenorrhea and family history and fruit intake. Dysmenorrhea was also found related with school absenteeism, poor exam grades, poor interpersonal relationship, decreased concentration in class and day-to-day activity. Conclusion: The prevalence of dysmenorrhea among adolescent girls was relatively high. The pain suffered could be severe that affected school absenteeism, social and academic performance and day-to-day activities. Association of dysmenorrhea was found to be significantly associated with age of menarche while it was highly significant with family history and fruits.

Keywords— Dysmenorrhea, Prevalence, Adolescent girls, Quality of life

1. INTRODUCTION

Adolescence is the most significant part of our lives particularly in case of adolescent girls who are the only source of procreation. Adolescence is a transition period from childhood to adulthood and is categorized by a spurt in physical, endocrinal, emotional, and mental growth, with a change from complete dependence to relative independence. This phase of life for a girl is a period of physical and psychological preparation for safe motherhood. [1] WHO has defined adolescence as the age group of 10-19 years. [2] Adolescents in India comprise 19.3% of the total Indian population.[3] One of the major physiological changes that take place in teenage girls is the onset of menarche. Of these, dysmenorrhea is one of the common problem experienced by most of the teenage girls. [4] Dysmenorrhea is defined as painful menstrual cramps of uterine origin. Studies point out that it is common gynecological ailment that can affect as many as 50% of women. This situation not only has a significant effect on quality of life and personal health but also has a global economic impact. [5] Dysmenorrhea has its impact on academic performance, college, sports and social activities of girls. But very few girls pursue health care for problem of dysmenorrhea. [6] The frequency of fast food intake is also associated with menstrual abnormalities including dysmenorrhea. [7] Many teenagers consider dysmenorrhea to be a normal part of the menstrual cycle and thus fail to report their pain to their physicians. [8] Dysmenorrhea is not a disease but it has definite negative effects on daily activities and works of women in and out of the home and may depreciate their living. [9] There are two types of dysmenorrhea – primary and secondary. Although primary dysmenorrhea is difficult to diagnose due to different

perception of symptoms and diagnostic criteria, but in simple words it may refer to menstrual pain or cramps that usually occur at the beginning of a woman's period and lasts a day or two. The pain decreases in the middle and latter part of the period. Most women experience primary dysmenorrhea as young women, and it may continue as long as they are menstruating. The good news is that many women who experience primary dysmenorrhea notice that it diminishes as they age or after childbirth. Secondary dysmenorrhea usually develops in women who have previously had normal periods and its pain lasts longer than primary dysmenorrhea pain. This pain may start later during the period and get worse as the period progresses. If the pain does not decrease or diminish as period ends, it may be due to the disorders: endometriosis, fibroids, ovarian cysts, adenomyosis problems with the uterine lining and infection. [10] The prevalence of dysmenorrhea differs largely worldwide, ranging from 16 to 91%. A systematic review study indicated that the lowest reported prevalence of dysmenorrhea was in Bulgaria (8.8%) and the highest in Finland (94%). There are different dysmenorrhea prevalence reports from 56.0% for Jordan (West Asia), 80% for Hong Kong (East Asia) [11] and it ranged from 50% to 87.8% in India. [12] The prevalence of menstrual pain has shown that many factors are related to this disorder. These factors include a younger age, low body mass index (BMI), smoking, early menarche, prolonged or abnormal menstrual flow, premenstrual somatic complaints, pelvic infections, earlier sterilization, somatization, psychological disturbance, genetic impact, and a history of sexual assault inducing the prevalence and severity of dysmenorrhea. [13] Emotional and behavioral problems may also exacerbate menstrual cycle problems and dysmenorrhea and vice-versa, the negative effects of dysmenorrhea may affect psychologically status and quality of life (HRQoL). [14] In spite of the frequency and severity of dysmenorrhea, most girls do not seek medical treatment for this condition because they feel it is a normal part of the menstrual cycle. [15] Menstrual problems are generally perceived as minor health problems and thus irrelevant to public health agenda particularly for females in developing countries who may face life threatening complications. It is often very difficult to separate the respective contributions of physiological and psychological factors and such factors may make dysmenorrhea worse even if they do not cause it. [16] Past research studies on this vital issue have not given much importance and are deficient in India. As of now, no study is available on this personal and societal reasonable concern in public health in Himachal Pradesh. Therefore, this study was undertaken to assess the prevalence of dysmenorrhea and its associated factors among adolescent girls of Senior Secondary Schools of district Mandi, HP.

2. METHODOLOGY

A cross-sectional study was conducted among 13-18 years old adolescent girls of Govt. Senior Secondary Schools of district Mandi, Himachal Pradesh from January-May, 2018. Sample size was calculated by using the Cochran's Formula for finite population i.e.

$$n = \frac{NZ^2P(1P)}{d^2\,(N-1)\,+\,Z^2P(1-P)}$$

By taking precision (e) of 5%, expected prevalence (p) of dysmenorrhea= 0.5, Z=1.96 level of confidence and population size of <50,000. The total sample size was 378. Multistage sampling technique was used in the study. There were 295 Senior Secondary Schools in 10 blocks of Mandi district, out of which 5 blocks were selected by systematic sampling technique. These 5 blocks included 147 Govt. Senior Secondary schools and 13001 adolescent girls. Out of 147 schools, 49 schools were selected by systematic sampling in which every third school was selected for the study. Finally, 378 girls were selected by proportionate sampling technique from these 49 schools. The structured questionnaire was framed taking extensive reference to past pertaining research literature. The questions were made in simple language. This questionnaire was then validated by six experts and their suggestions were incorporated where required. The questionnaire consisted of four Sections 1, 2, 3, 4 in which Section 1- consisted demographic variables, Section 2- consisted of questions on selected variables, Section 3- consisted of questions related to dysmenorrhea and Section 4- consisted about questions on quality of life. The tool was pre-tested to ascertain its appropriateness and feasibility, which was found satisfactory

2.1 Ethical consideration and Informed consent

The approval was taken from the Ethical Committee of Eternal University, Baru Sahib and the Director of Education of district Mandi, Himachal Pradesh as well as from the Principals of the selected schools. Before the data collection, purpose of the study was explained to the students. Informed consent was taken from the individual respondents before administration of the questionnaire during the data collection. They were informed that the obtained information would be confidential and would only be used for research purpose. Further, that they were free to discontinue if they wanted to do so.

3. RESULTS AND DISCUSSION
3.1 Results

Table 1: Demographic characteristics of respondents

Variables	Frequency(N=378)	Percentage
Age (in years)		
13-14	138	36.5
15-16	166	43.9
17-18	74	19.6
Minimum age= 13, Maximum age= 18, Mean age= 15.26±1.288		
Type of family		
Nuclear family	251	66.4
Joint family	120	31.7
Extended family	7	1.9
Family monthly Income (Rs)		
<5000	124	32.8

6000-10000	135	35.7
11000-20000	59	15.6
Above 21000	60	15.9
Father's education		
Primary school	21	5.6
Middle school	46	12.2
High school	156	41.3
Higher school	110	29.1
Graduate & above	45	11.8
Mother's education		
Primary school	24	6.3
Middle school	61	16.1
High school	160	42.3
Higher secondary	109	28.8
Graduate & above	24	6.5
Religion		
Hindu	370	97.9
Muslim	4	1.1
Sikh	3	0.8
Others	1	0.2
Residency		
Rural	377	99.7
Urban	1	0.3
Class		
9th	90	23.8
10th	91	24.1
11th	98	25.4
12th	99	26.2

Table 1 depicts that majority group of students 43.9% were of 15-16 years, followed by 36.5% of 13-14 years and 19.6% of 17-18 years. Mean age was 15.26±1.288 years. Most of the students, 66.4% were from nuclear family, 31.7% from joint family and 1.9% from extended family. About one third, 32.8% of students' family monthly income was below Rs. 5000/= and of 35.7% was Rs.6000-10000/=, while that of 15.6% and 15.9 % were Rs.11000-20000/=and above Rs. 21,000/=respectively. 41.3 % students fathers were educated up to high school, 29.1% were secondary, 11.8% graduate and least 5.6% were primary. 42.3% students' mothers were educated up to high school, 28.8% secondary, and least, graduate and primary 6.5 % and 6.3 % respectively. 97.9% of students were Hindu and the rest 2.1 % were Muslim, Sikh and other. 99.7% students were from rural area. Almost equal no. of students was from all classes-12th class (26.2%), 11th class (25.9%), 10th class (24.1%) and 9th class (23.8%).

Table 2 Frequency distribution of respondent according to their age of menarche

Sr.no.	Age of menarche	Frequency (N=378)	Percentage
1	12	24	6.3
2	13	193	51.1
3	14	143	37.8
4	15	18	4.8
Minimum age=12, Maximum age=15, Mean age= 13.41±.682			

Table 2 depicts that majority of adolescent girls; 51.1% had menarche at the 13 years of age, 37.8% at 14 years, 6.3% at 12 years and 4.8% at 15 years of age. The mean age of menarche was 13.41±.682.
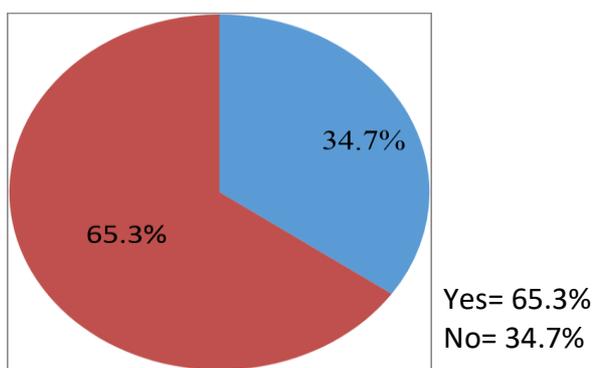

34.7%

65.3%

Yes= 65.3%
No= 34.7%

Fig. 1: Prevalence of dysmenorrhea

The above pie chart indicates that majority of the adolescent girls, 65.3% under the study experienced dysmenorrhea.

Table 3: Frequency of the dysmenorrhea symptoms

Sr. No.	Symptoms	Frequency(N=378)	Percentage
	Physical symptoms		
1	Tiredness	52	13.8
	Feeling fullness in lower abdomen	42	11.1
	Tenderness of breasts	31	8.2
	Swelling of legs	3	0.8
	Increased sleep	27	7.1
	Back pain	252	66.7
	Knee pain	17	4.5
	Facial puffiness	7	1.9
	Gastrointestinal symptoms		
2	Loss of appetite	80	21.2
	Increased appetite	16	4.2
	Nausea	18	4.8
	Vomiting	15	4.0
	No	249	65.9
	Elimination symptoms		
3	Constipation	10	2.6
	Diarrhea	5	1.3
	Increased frequency of urination	29	7.7
	Profuse sweating	8	2.1
	No	326	86.2
	Psychological symptoms		
4	Depressive symptoms	59	15.6
	Mood swings	61	16.1
	Irritability	154	40.7
	Inability to concentrate	33	8.7
	Nervousness	71	18.8

Table 3 depicts frequency of symptoms of dysmenorrhea. Regarding physical symptoms, 66.7% had backache, 13.8 % tiredness, 11.1 % fullness in lower abdomen, 8.2 % tenderness in breast, 7.1 % increased sleep and the rest were below 5%. Regarding gastrointestinal symptoms, majority 65.9 had no such symptoms, but 21.2 % had loss of appetite, while increased appetite, nausea and vomiting were in less than 5 % cases. Regarding elimination symptoms, while 86.2 experienced no such complaints, 7.7 % has increased frequency of urination and the rest symptoms were within range of 1.3 to 2.6 %. Regarding psychological symptoms, 40.7 % experienced irritability, 18.8 % nervousness, 16.1 % mood swings, 15.6 % depressive features and inability to concentrate.

Table 4: Frequency distribution based on dysmenorrhea characteristics

Sr. no.	Sample characteristics	Frequency(N=378)	Percentage
	Experience of pain due to menstruation		
1	First menstruation	140	37.0
	Within an year after first menstruation	133	35.2
	After one year	72	19.0
	After two or more years	33	8.7
	Day of menstruation with severe pain		
2	One day before the onset	150	39.7
	On the first day	135	35.7
	On the second day	55	14.6
	Any other day	38	10.1
	Total duration of pain in hours		
3	<1	172	45.5
	1-4	139	36.8
	5-8	43	11.4
	>8	24	6.3
	Body parts having pain		
4	Lower abdomen only	62	16.4
	Lower abdomen and back only	179	47.4
	Lower abdomen, back and legs	95	25.1
	Other body parts	42	11.1
	Measures taken to get relief from abdominal/back/ leg pain		
s5	Medicines	28	7.4
	Hot applications massage	24	6.3
	Bed rest	146	38.6
	No measures	180	47.6

Table 4 depicted that most of the adolescent girls 140 (37.0%) were having dysmenorrhea from their first menstruation onwards. In the most of the adolescent girls 150 (39.7%) were having severe pain one day before the onset and when considering the body parts having pain most of them 179 (47.4%) were having lower abdomen and back pain. It's also found that majority of the adolescent girls 172 (45.5%) experienced dysmenorrhea for less than one hour and when considering the measures taken to get relief from abdominal pain most of them 180 (47.6%) were with no measures.

Table 5: Association between dysmenorrhea and selected variables of the study

| Selected variables | N | Abdominal pain | | χ^2 | df | p-value |
		No	Yes			
Age of menarche a. 12 b. 13 c. 14 d. 15	24 193 143 18	5(20.8%) 66(34.2%) 55(38.5%) 5(27.8%)	19(79.2%) 127(65.8%) 88(61.5%) 13(72.2%)	3.333	3	0.038*
Duration of menstrual cycle a. 15-20 b. 21-28 c. 29-35 d. >35	19 338 18 3	9(47.4%) 116(34.3%) 5(27.8%) 1(33.3%)	10(52.6%) 222(65.7%) 13(72.2%) 2(66.7%)	1.751	3	0.065
Bleeding length a. Less than 2 days (short) b. 2-6 days (normal) c. More than 6 days (long)	38 302 38	14(36.8%) 105(34.8%) 12(31.6%)	24(63.2%) 197(65.2%) 26(68.4%)	0.241	2	0.085
Bleeding amount a. 2 pads (scanty) b. 3 pads (moderate) c. More than 3 (heavy)	174 147 57	62(35.6%) 49(33.3%) 20(35.1%)	112(64.4%) 98(66.7%) 37(64.9%)	0.191	2	0.059
Family history of dysmenorrhea a. No b. Yes	122 256	72(59.0%) 59(23.0%)	50(41.0%) 197(77.0%)	47.205	1	0.001**
Dietary pattern a. Vegetarian b. Non-vegetarian	256 122	86(33.6%) 45(36.9%)	170(66.4%) 77(63.1%)	0.395	1	0.075
Fruits and vegetables a. No b. Yes	7 371	6(85.7%) 125(33.7%)	1(14.3%) 246(66.3%)	8.210	1	0.007**
Regular physical activity a. No b. Yes	6 372	1(16.7%) 130(34.9%)	5(83.3%) 242(65.1%)	0.871	1	0.248

*Statistically significant at p<0.05
**Statistically highly significant at p<0.001

Table 5 indicates association between dysmenorrhea and selected variables. The association of age of menarche with dysmenorrhea was found significant (χ^2=3.333, p=0.038) whereas, the family history (χ^2=47.205, p<0.001) and fruits and vegetables (χ^2=8.210, p=0.007) were found highly significant with dysmenorrhea among the adolescent girls. While all other variables were nonsignificant.

Table 6: Association of dysmenorrhea and quality of life

| Quality of life | N | Abdominal pain | | χ^2 | df | p-value |
		No	Yes			
School absenteeism a. 0 day b. 1-3 days c. More than 3 day	321 54 3	118(36.8%) 13(24.1%) 0(.0%)	203(63.2%) 41(75.9%) 3(100.0%)	4.889	2	0.010*
Exam grades a. Affected	100	19(19.0%)	81(81.0%)	14.717	1	0.001**

b. Not affected	238	112(40.3%)	166(59.7%)			
Class concentration a. Affected b. Not affected	223 155	49(22.0%) 82(52.9%)	174(78.0%) 73(47.1%)	38.630	1	0.001**
Interpersonal relationships a. Affected b. Not affected	181 197	42(23.2%) 89(45.2%)	139(76.8%) 108(54.8%)	20.112	1	0.001**
Daily physical activity a. Affected b. Not affected	281 97	73(26.0%) 58(59.8%)	208(74.0%) 39(40.2%)	36.410	1	0.001**

*Statistically significant at p<0.05
**Statistically highly significant at p<0.001

Table 6 reveals highly significant association of dysmenorrhea with quality of life as all the constitutes of quality of life were significant. The association of dysmenorrhea with absenteeism ($\chi2=4.889$, p=0.010) was found significant, but it was found highly significant with exam grades ($\chi2=14.717$, p<0.001), class concentration ($\chi2=38.630$, p<0.001), interpersonal relationship ($\chi2=20.112$, p<0.001) and daily physical activity ($\chi2=36.410$, p<0.001).

3.2 Discussion
The finding of the present study showed a high prevalence of dysmenorrhea, that is, 65.3% among adolescent girls of Mandi district. This finding gets support from a similar study by Kumbhar et al [4] which found 65.02% prevalence of dysmenorrhea among adolescent girls of (14-19 years) of Kadapa district, Andhra Pradesh. The result is also supported by the finding of Patel et al [9] who conducted a study on dysmenorrhea: prevalence, impact and knowledge aspect of treatment in females of reproductive age in tertiary care teaching hospital and found estimated overall prevalence of dysmenorrhea as 56.57% among the females of reproductive age.

In the current study, the mean age at menarche was 13.41±.682. Similar finding was obtained by Chauhan et al [8] who studied the prevalence and impact of dysmenorrhea and its associated symptoms among adolescent girls residing in slum areas of Vadodara city, Gujarat and found the mean age of menarche among all the girls as 13.4years. In the present study, it is evidenced that almost all girls experienced the most common physical symptom was back pain 66.7% followed by with tiredness 13.8% and the most common psychological symptom was irritability 40.7% followed by depressive symptom 15.6%. However, in a Mangalore study the physical symptom back ache (39.6%) and psychological symptom irritability 76.4% was most common symptom by Mathew et al [17]

In the present study most of the adolescent girls 140 (37.0%) were having dysmenorrhea from their first menstruation onwards. Largest no. of the adolescent girls179 (47.4%) reported lower abdomen and back pain whereas 150 (39.7%) reported severe pain one day before the onset. 172 (45.5%) girls experienced dysmenorrhea for less than one hour for which they sought some measures taken to get relief from abdominal pain most of them 38.6% were taken bed rest, 7.4% were taken medicines, 6.3% were taken hot applications massage where as in the Karnataka study treatment taken for menstrual discomforts bed rest 73.97%, medicines 10.2%, hot applications 12.32% by George et al [18]

In this study, the association of family history was highly significant with abdominal pain (p<0.001). Significant relationship was also found between fruits and vegetables with abdominal pain (p=0.007) where as in the Manipur study the association of dysmenorrhea with family history was also highly significant (p=0.00) and the association of dysmenorrhea with fruits and vegetables was significant (p= 0.04) by Kumar et al [15]

The highly significant association of dysmenorrhea with quality of life; the associations of abdominal pain with absenteeism (p=0.010) were significant, with exam grades (p<0.001) and class concentration were highly significant (p<0.001). With interpersonal relationship (p<0.001) and daily physical activity (p<0.001) were found highly significant. The similar findings were obtained by Kumar et al [15] who studied the association of dysmenorrhea with quality of life was very highly significant, school absenteeism (p= 0.00), exam grades (p= 0.00), class concentration (p= 0.00), interpersonal relationships (p= 0.00), daily physical activity (p= 0.00).

4. CONCLUSION
The findings of the present study showed a high prevalence of dysmenorrhea. The pain suffered could be severe and was significantly related with school absenteeism, limitation in social and academic performance and day-to-day activities. Significant association of dysmenorrhea was also found with age of menarche and highly significant with family history and fruits and vegetables. Dysmenorrhea adversely affected mood leading to stress in the family and among friends, indirectly affecting quality of life.

5. RECOMMENDATIONS
- Menstruation education, counseling and management should be necessary parts of curriculum at school level for the adolescent girls.

- The appropriate researches should be conducted to explore the difficulties faced by adolescent girls regarding menstruation to highlight the dynamics of factors related with it, so that the findings can be utilized in the different health programs.
- Future healthcare programs should integrate imparting knowledge of dysmenorrhea to parents, specially mothers so that they can timely and appropriately guide their daughters.

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