Research Article

Primary dysmenorrhea and its effect on quality of life in young girls

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Abstract

Background: Dysmenorrhea is a common gynecological condition with painful cramps of uterine origin. Severe dysmenorrhea pain is associated with restriction of activity and absence from workplace. The impact of dysmenorrhea on quality of life has been enunciated rarely, especially in Indian context.

Objectives: To study the effect of primary dysmenorrhea on physical and social health status, work-related absenteeism, and work productivity in the young college-going girls.

Materials and Methods: In a cross-sectional study, data were collected among 310 young girls (18–25 years) on age at menarche, presence and absence of dysmenorrhea, premenstrual symptoms (PMS), quality of life, physical activity, and dietary habits using semi-structured questionnaire.

Results: Dysmenorrhea was reported in 84.2% (261) of girls, and 15.8% (49) reported no dysmenorrhea. Majority of girls (91%) have reported PMS; symptoms were irritability (42.9%), leg cramps (40.4%), abdominal pain (40.1%), emotional instability (29.8%), fatigue (23.4%), dizziness (17.7%), breast pain (16.3%), and anxiety (10.3%). Girls who had dysmenorrhea were 4.9 times more likely to be absent in college, 3.1 times more chance of reduced physical activity, 3.2 times more chance of loss of concentration during workplace, and 2.4 times more likely to have poor work satisfaction compared with other girls with no dysmenorrhea ($p < 0.05$). Meal skipping was significantly associated with dysmenorrhea, and thus increases the prevalence of dysmenorrhea by 2.0 times ($p < 0.05$).

Conclusion: Dysmenorrhea is a leading cause of absenteeism in colleges and has adverse effects on the quality of life of young girls.

KEY WORDS: Dysmenorrhea, young girls, quality of life

Introduction

Dysmenorrhea is nothing but painful cramps of uterus during menses. It is a common gynecological condition that can affect as many as 50% of women.[1] Almost 10% of these women suffer severely, which is enough to render them incapacitated for 1–3 days during each menstrual cycle.[2] This situation not only has a significant effect on the quality of life (QoL) and personal health but also may have a global economic impact.

Two categories of dysmenorrhea are primary and secondary dysmenorrhea. Primary dysmenorrhea is menstrual pain without any organic pathology.[3] The onset of primary dysmenorrhea is usually at or shortly after menarche, when ovulatory cycles are established. Women with primary dysmenorrhea have a greater endometrial production of prostaglandins compared with asymptomatic women.[4] Primary dysmenorrhea is an important clinical cause in young girls for work absenteeism, thus having negative effect on QoL.

The World Health Organization defined health as being not only the absence of disease and infirmity but also the presence of physical, mental, and social well-being.[5] QoL is defined as a subjective phenomenon based on individual perception, experiences, beliefs, and expectations.[6] Nowadays, QoL has become an issue in many clinical studies.[7]

Severe dysmenorrhea pain is associated with restriction of activity and absence from school/college or workplace. Participation in usual activities is adversely affected in 5–20% of the women.[8] Pain poses a unique challenge for outcomes research because of the central importance of patient-centered and patient-reported information. The diagnosis may be overlooked, and the impact of primary dysmenorrhea has been poorly studied; mainly, the studies have focused on Western populations.[9]

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A recent study in Turkey elucidated lower scores for indicators of QoL (physical functioning, bodily pain, general health perception, and vitality) in females with dysmenorrhea.[10] Results from a study in Georgia also showed significantly lower physical and psychosocial health-related QoL in females with dysmenorrhea than their healthy peers.[11] Although dysmenorrhea has been reported to affect the ability of women to carry out daily activities, the impact of primary dysmenorrhea on QoL has been enunciated rarely. These findings need to be confirmed, especially in Indian context.

Thus, the aim of this study was to evaluate menstrual characteristics and to study the impact of primary dysmenorrhea on physical and social health status and work-related aspects absenteeism and work productivity in young college-going girls.

Materials and Methods

This cross-sectional study was conducted by the Department of Obstetrics and Gynaecology, Index Medical College, Hospital and Research Centre, Indore, Madhya Pradesh, India, for 3 months (June–August 2014). The study proposal was cleared from the Scientific Evaluation Board of the Institute. The study was performed on a total of 310 girls who agreed to voluntarily participate in the study. All the girls belonged to the same socioeconomic and dietary background and were of same age group, which constituted a homogenous group. Written informed consent was obtained from all the girls before the commencement of the study.

Three hundred ten young girls aged between 18 and 25 years participated in the study. A questionnaire regarding details of menstrual cycle and QoL was filled up by the participants in the presence of members of study team. Before the distribution of questionnaire, brief orientation lecture was conducted in local language.

Study Parameters

The questionnaire was prepared with reference to previous studies in the literature[12] and included two parts. In the first part of the questionnaire, girls were asked to state their background information and menstrual characteristics such as age at menarche, presence and absence of dysmenorrhea, and irregularity and symptoms experienced during menstruation. Details regarding treatment of dysmenorrhea were also inquired. Second part focused on sickness absenteeism and QoL-related questions. Lifestyle factors such as physical activity and dietary habits were also examined. Data regarding type of exercise, time duration of exercise, and meal regularity were recorded.

Following inclusion criteria were used to categorize females under primary dysmenorrhea:

- Onset of pain within 6–12 h after onset of menses;
- Lower abdominal and pelvic pain associated with onset of menses and lasting for 9–72 h;
- Lower back pain; and
- Medial or anterior thigh pain.

Participants both with primary menstrual pain without significant pathology and without menstrual pain were recruited. Participants with any endocrine disorders, chronic disease, or who had undergone major surgery were excluded from the study.

Statistical Analyses

The statistical analysis was performed using SPSS software for Windows (version 11.0, 2001; SPSS, Inc., Chicago, IL). All the variables were tested for normality by the Kolmogorov–Smirnov test before statistical comparisons. The χ^2-test and logistic regression were used for the analyses. To avoid the effect of multicollinearity, separate models were be fitted for different parameters. Adjusted odds ratios (ORs) were calculated in the regression of the outcome events, and *p*-value less than 0.05 was considered to be significant.

Results

Baseline Characteristics

The average age of the participants was 20.4 ± 1.8 years, ranging from 17 to 25 years. Approximately 57% (175) were in the age range of 17–20 years and 43% (132) were in 21–25 years. Majority was younger than 23 years, and only 17.1% were older than 23 years.

The average age of menarche was reported as 13.8 ± 1.6 years (ranging from 9 to 19 years); majority of the participants (97.6%) fell between 10 and 17 years; remaining 1.6% had started menstruating after the age of 18 years and only 0.7% had started menstruating below 10 years. Dysmenorrhea was reported by 84.2% (261) of the total girls, whereas only 15.8% (49) reported no dysmenorrhea.

Premenstrual Symptoms

Dysmenorrhea is usually associated with premenstrual symptoms (PMS); however, in this study, we have observed that majority of girls (91%) reported PMS even in the absence of dysmenorrhea and only 9% of the girls did not report any such symptom. PMS were divided into physical and psychological symptoms. Nausea, leg cramps, dizziness, fatigue, abdominal pain, and breast pain were considered as physical symptoms, whereas anxiety, irritability, and emotional instability were considered as psychological symptoms.

Of these 91% girls, majority of them (64.2%) reported multiple symptoms; therefore, the total percentage did not come to 100. Most commonly reported symptom was irritability (42.9%), followed by leg cramps (40.4%), abdominal pain (40.1%), emotional instability (29.8%), fatigue (23.4%), dizziness (17.7%), breast pain (16.3%), anxiety (10.3%), and nausea (5%).

Totally, 84.2% girls reported presence of dysmenorrhea; of these 84.2% girls, 92.7% reported having PMS. Thus, PMS showed strong association with dysmenorrhea ($\chi^2 = 6.2$; df = 1; p =0.01). Regression analysis showed that girls with PMS have 2.9 times higher chance to have dysmenorrhea (OR: 2.9; 95% CI: 1.2–6.7) [Table 1].

Table 1: Association of dysmenorrhea with the premenstrual symptoms

	Dysmenorrhea present	Dysmenorrhea absent	Total
PMS present	242	40	282
PMS absent	19	9	28

χ^2, 6.2; df, 1; *p*-value, 0.01.

Moreover, when each symptom was studied across the presence of dysmenorrhea, it was observed that more number of girls with dysmenorrhea had reported PMS. This association was statistically significant (χ^2 = 24.57; df = 10; p = 0.006) [Figure 1].

Treatment

Almost half of the girls (55.2%) who had dysmenorrhea had taken medication; remaining 44.8% did not opt for any treatment. Of these, 55.2% girls who had taken medicines, 12% followed home remedies and 43% have taken antispasmodic and other pain killers.

In majority of those who have taken antispasmodic and other pain killers, the medicine duration was 1 day (71.7%), whereas few had taken medicines for 2 (22.7%) and 3 days (6.2%) as well. In 1 day, the frequency of medication was once a day for majority of cases (72.4%); 22% reported twice a day and remaining 5.5% girls had taken medicines more than 2 times.

Quality of Life and Dysmenorrhea

Figure 2 presents the effect of dysmenorrhea on QoL; more than half of the girls have reported poor QoL, although majority of girls lie under the category of "sometimes." Only cases with dysmenorrhea are presented in the graph.

Besides, when each parameter of QoL has been studied across the presence and absence of dysmenorrhea, the χ^2 analyses showed a strong association of dysmenorrhea and QoL ($p < 0.05$); that is, more percentage of girls with dysmenorrhea had poor QoL as against girls with no dysmenorrhea [Table 2].

In the bivariate regression analysis, "normal" QoL, that is, who never reported any absenteeism, reduced physical activity, loss of concentration, and so on, was taken as the reference category, and all other analysis was done with respect to this; participants who had dysmenorrhea were 4.9 times more likely to be absent in college when compared with girls who had normal QoL with respect to their menstrual cycle, and the difference was found to be statistically significant (OR: 4.9, 95% CI: 2.5–9.3). We also found that participants who reported dysmenorrhea had 3.1 times more chance of reduced physical activity in comparison with girls who had normal QoL

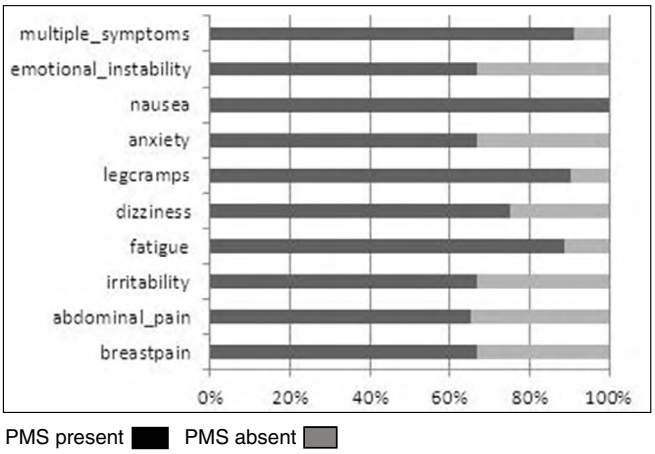

Figure 1: Association of dysmenorrhea with the premenstrual symptoms.

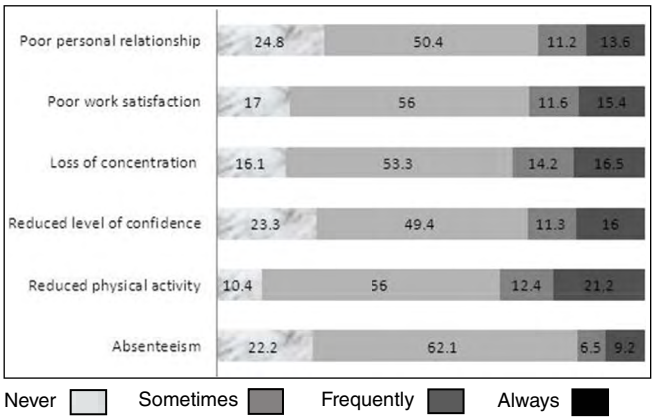

Figure 2: Effect of dysmenorrhea on quality of life.

Table 2: Association of dysmenorrhea with quality of life

Quality of life characteristics	Dysmenorrhea present	Dysmenorrhea absent	χ^2; df; *p*-Value
Absenteeism			
Yes	203	20	χ^2 = 26.3; df = 1;
No	58	28	p = 0.001
Reduced physical activity			
Yes	232	36	χ^2 = 9.5; df = 1;
No	27	13	p = 0.001
Loss of confidence			
Yes	197	29	χ^2 = 5.5; df = 1;
No	60	19	p = 0.001
Low concentration			
Yes	219	29	χ^2 = 12.5; df = 1;
No	42	18	p = 0.001
Poor work satisfaction			
Yes	215	33	χ^2 = 6.4; df = 1;
No	44	16	p = 0.001
Poor personal relationship			
Yes	194	28	χ^2 = 5.7; df = 1;
No	64	20	p = 0.001

with respect to their menstrual cycle, and the difference was found to be statistically significant (OR: 3.1, 95% CI: 1.4–6.5). In addition, participants who reported dysmenorrhea had 2.2 times more chance of low confidence during work as against girls who never reported low confidence with respect to their menstrual cycle, and the difference was found to be statistically significant (OR: 2.2, 95% CI: 1.4–4.1).

Furthermore, we found that participants with dysmenorrhea had 3.2 times more chance of loss of concentration during workplace in comparison with girls who never reported loss of concentration with respect to their menstrual cycle, and the difference was found to be statistically significant (OR: 3.2, 95% CI: 1.6–6.3). Finally, it was observed that girls with dysmenorrhea had 2.4 times (OR: 2.4, 95% CI: 1.2–4.7) more chance of poor work satisfaction and 2.2 times (OR: 2.2, 95% CI: 1.4–4.1) more likely to have poor social relationship in comparison with girls who never reported poor work satisfaction and poor personal relationship with respect to their menstrual cycle ($p < 0.01$).

Physical Activity

Because exercise has a vital role in dysmenorrhea, few questions related to physical activity were asked and analyzed in this study. Of the total 310, only 36.6% (113) girls have reported physical activity [i.e., (exercising) daily], whereas 63.4% did not report any physical activity. Of the 36% who reported daily physical activity, around 70% reported exercise duration as 15–30 min and remaining 30% have stated 30–60 min. No significant association could be seen between physical activity and dysmenorrhea in this study.

For the girls who reported physical activity, type of activity was walking for most of the girls (76.1%), followed by yoga (13.3%), jogging (8%), and others such as swimming and dancing (2.7%).

Eating Habits

Eating habits are the main lifestyle factors, which may influence dysmenorrhea; so, it was recorded in these girls in order to see association if any. Approximately one-fourth of the girls (25.5%) reported normal eating habits, whereas remaining 74.5% (38.7%, skipping meals; 27.4%, irregular meal timings; and 8.4%, overeating) reported some complaints regarding eating habits. Of these, meal skipping was significantly associated with dysmenorrhea and increases the prevalence of dysmenorrhea by 2.0 times (OR: 2.0; CI: 0.9–3.5; $p < 0.05$).

Discussion

This study was intended to study the effect of dysmenorrhea on QoL. Dysmenorrhea was found to be an important clinical cause in young girls for being absent in college and reduced physical activity, thus having negative effect on QoL.

Frequently, women of reproductive age experience symptoms during late luteal phase of their menstrual cycle, and collectively, these complaints are termed PMS and typically include both psychiatric and physical symptoms.[13] This study reported a significant association between PMS and dysmenorrhea. The findings are consistent with other studies from India,[14,15] in which symptoms such as irritability, breast pain, emotional disturbances, and so on were reported. Most frequent symptoms associated with dysmenorrhea were irritability, leg cramps, and abdominal pain.

Dysmenorrhea was found to have significant effect on day-to-day activities, thus having negative effect on QoL, leading to absenteeism, reduced physical activity, loss of concentration, and poor social relationship. This clearly indicates that dysmenorrhea is disturbing the life of girls when compared with the lives of girls without dysmenorrhea. These results are on par with other studies where the researchers have explained the effects of dysmenorrhea on physical functioning and emotional disturbances.[10,16] Similar findings were also observed by Adeyemi and Adekanle.[17] The presence of dysmenorrhea seemed to be an important factor in determining the different subcategories of the QoL in the bivariate analysis. However, because QoL variables were considered to be the effects rather than the causes of dysmenorrhea, they were analyzed separately using logistic regression and were not combined with the other variables. The wide confidence intervals were because of the low and unequal number of girls in these categories.

This study did not show any significant association between daily physical activity and dysmenorrhea. However, several observational studies reported that exercise was associated with a reduced prevalence of dysmenorrhea. In a randomized-controlled trial comparing symptoms between women who did physical training and a sedentary control group, a significant decrease in symptoms in the training group was found[18]; however, this was a cross-sectional study, and no intervention was provided. In addition, a recent meta-analysis that studied the risk factors for different classes of chronic pelvic pain revealed that exercise was associated with a small reduction in risk of dysmenorrhea, highlighting that exercise might potentially be an effective intervention.[19] On the contrary, numerous other studies have found no significant association.[20]

Our study demonstrated that meal skipping significantly increases the prevalence of dysmenorrhea by two times ($p < 0.05$). To the best of our knowledge, this is the first Indian study that has considered meal skipping as a risk factor, although some of the studies have suggested that nutrition affects reproductive function in young girls and dysmenorrhea as well. A similar study on dysmenorrhea on the population of *Tbilisi* also reported on par finding on meal skipping in females.[11] Specific dietary nutrients may have direct effects or exert their effects by altering the status of circulating steroids. So, as inadequate nutrition is a cause of low energy availability and can alter hormonal status, we have showed meal skipping as one of the risk factors for menstrual disorders.

There are certain limitations of the study. First, it has been conducted in a single college and single district; therefore, the sample may not be representative of all colleges in Indore, Madhya Pradesh, India. Second, this was a cross-sectional study, thus precluding inferences of causality among

variables. Finally, the nature of self-reporting may have resulted in underreporting of the conditions in few cases.

Conclusion

To conclude, dysmenorrhea is found to be highly prevalent among college-going girls and is found to be a leading cause of absenteeism in colleges. Most of the girls have experienced a number of physical and emotional symptoms associated with dysmenorrhea, thus having an adverse effect on the QoL. The findings of this study, therefore, indicate the magnitude of the problem and the need for appropriate intervention through a change in lifestyle.

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References

1. Weissman AM, Hartz AJ, Hansen MD, Johnson SR. The natural history of primary dysmenorrhoea: a longitudinal study. BJOG 2004;111(4):345–52.
2. Dawood MY. Ibuprofen and dysmenorrhea. Am J Med 1984;77(1A):87–94.
3. Lichten EM, Bombard J. Surgical treatment of primary dysmenorrhea with laparoscopic uterine nerve ablation. J Reprod Med 1987;32:37–41.
4. Zaiei S, Faghihzadeh S, Sohrabvand F, Lamyian M, Emamgholy T. A randomised placebo-controlled trial to determine the effect of vitamin E in treatment of primary dysmenorrhoea. BJOG 2001;108(11):1181–3.
5. Testa MA, Simonson DC. Assessment of quality-of-life outcomes. N Engl J Med 1996;334:835–40.
6. Bubien RS, Knotts-Dolson SM, Plumb VJ, Kay GN. Effect of radiofrequency catheter ablation on health-related quality of life and activities of daily living in patients with recurrent arrhythmias. Circulation 1996;94:1585–91.
7. Härtl K, Janni W, Kästner R, Sommer H, Strobl B, Rack B, et al. Impact of medical and demographic factors on long-term quality of life and body image of breast cancer patients. Ann Oncol 2003;14:1064–71.
8. Harlow S, Campbell O. Epidemiology of menstrual disorders in developing countries: a systematic review. BJOG 2004;111:6–16.
9. Granot M, Yarnitsky D, Itskovitz-Eldor J, Granovsky Y, Peer E, Zimmer EZ. Pain perception in women with dysmenorrhea. Obstet Gynecol 2001;98:407–11.
10. 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.
11. Gagua T, Tkeshelashvili B, Gagua D. Primary dysmenorrhea: prevalence in adolescent population of Tbilisi, Georgia and risk factors. J Turk Ger Gynecol Assoc 2012;13:162–8.
12. Kumbhar SK, Reddy M, Sujana B, Reddy RK, Bhargavi KD, Balkrishna C. Prevalence of dysmenorrhea among adolescent girls (14-19) of Kadapa district and its impact on quality of life: a cross sectional study. Natl J Community Med 2011;2(2):265–8.
13. Hoffman B, Schorge JO, Schaffer JI, Halvorson LM, Bradshaw K, Cunningham F. *Williams Gynecology*, 2nd edn. New York: McGraw-Hill, 2008. p. 296.
14. Agarwal AK, Agarwal A. A study of dysmenorrhea during menstruation in adolescent girls. Indian J Community Med 2010;35(1):159–64.
15. Shrotriya C, Ray A, Ray S, Thomas GA. Menstrual characteristics and prevalence and effect of dysmenorrhea on quality of life in medical students. Int J Collab Res Intern Med Public Health 2012;4(4):276–94.
16. El-Gilany AH, Badwai J, El-Fedway S. Epidemiology of dysmenorrhea among adolescent students in Mansoura, Egypt. East Mediterr Health J 2005;11(1–2):155–63.
17. Adeyemi AS, Adekanle DA. Management of dysmenorrhoea among medical students. Int J Gynecol Obstet 2007;7:1528–39.
18. Brown J, Brown S. Exercise for dysmenorrhoea. Cochrane Database Syst Rev 2010;17(2):CD004142.
19. Latthe P, Mignini L, Gray R. Factors predisposing women to chronic pelvic pain: a systematic review. BMJ 2006;332:749–55.
20. Daley AJ. Exercise and primary dysmenorrhoea: a comprehensive and critical review of the literature. BJOG 2010; 117(2):222–4.

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