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Original Research Article

Prevalence and risk factors for dysmenorrhoea among nursing student and its impact on their quality of life

Shashikala Karanth^{1*}, S. R. Liya²

¹Department of Obstetrics and Gynecology, St Johns Medical College and Hospital, Bengaluru, Karnataka, India

²Department of Obstetrics and Gynecology, Loudes Matha Hospital Pacha, Alappuzha, Kerala, India

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***Correspondence:**

Dr. Shashikala Karanth,

E-mail: dr.shashikaranth@gmail.com

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ABSTRACT

Background: Dysmenorrhea is an important health problem of adolescent girls, that affects their quality of life and it is one of the leading causes of repeated school absenteeism. The purposes of this study was to determine the prevalence and risk factors for dysmenorrhea among nursing students and its impact on their quality of life.

Methods: A prospective study was carried out in St Johns Nursing College, Bengaluru. 200 nursing students aged between 18-20 years were included. Standardized questionnaires were used to obtain relevant data. Data was analysed using Chi-sq. test, correlation and regression analysis by SPSS version 23.

Results: The prevalence of dysmenorrhea was 62.5%. The mean age, age at menarche and, the mean PABC of the students were 18.7 ± 0.48 , 13.3 ± 1.20 and 74.96 ± 16.14 respectively, which is not significant. The average length of menstrual cycle was between 28-30 days, duration of bleeding as 3-5 days. Duration of sleep, regular menstrual cycle and low BMI exhibited positive correlation ($p < 0.05$) while Family history and exercising habits did not exhibit significant effect. Dysmenorrhea was significantly associated with repeated school absenteeism (16%).

Conclusions: Dysmenorrhoea is found to be highly prevalent among nursing students and is one of the leading causes of absenteeism. Regular cycle, duration of sleep and low BMI were significant risk factors for dysmenorrhea. Findings of present study suggest the need for educating adolescent girls on appropriate and effective management of dysmenorrhea.

Keywords: Adolescents, Body mass index (BMI), Dysmenorrhoea

INTRODUCTION

Dysmenorrhoea is one of the most common health problems in young adolescent girls as it affects 50-90% of the general population.¹ Dysmenorrhea refers to a cyclical lower abdominal or pelvic pain which may radiate to the back or to the thighs, occurring during menstruation often accompanied by other biological symptoms including dizziness, fatigue, sweating, backache, headache, nausea, vomiting, and diarrhoea.

It is divided into two types: Primary dysmenorrhea and secondary dysmenorrhea. Primary dysmenorrhea is the

one, in which there is cramping pain in the lower abdomen at the onset of menstruation in the absence of any identifiable pelvic disease. Secondary dysmenorrhea is a menstrual pain associated with underlying pathology and its onset might be years after menarche.² The prevalence of dysmenorrhoea among young women varies widely from country to country. A recent study on dysmenorrhea showed that there are different prevalence rates among females in different countries and different associated factors with dysmenorrhea or severity of pain.³ Previous studies on university students showed its prevalence to be 34% in Egypt, 64% in Nigeria and Mexico, 84% in Thailand 88% in Turkey and 93% in

Taiwan, 74.5% in Malaysia, 70% in Italy, 80% in Australia, 85% among Hispanic, and Lowest prevalence has been reported in Japan (16%).³⁻¹³ True incidence and prevalence of dysmenorrhea are not clearly established in India. Studies from various parts of India reported the prevalence of dysmenorrhoea ranges between 50 to 87.8%.¹⁴⁻¹⁹ Several studies reported that various physiological, cultural, and psychological factors are involved in dysmenorrhea. Reported risk factors for dysmenorrhea include earlier age at menarche, longer menstrual periods, heavier menstrual flow, family history of dysmenorrhea, and reduced frequency of breakfast meals per week and low BMI.²⁰⁻²³ Dysmenorrhea is an important public health problem among university students and is associated with school absenteeism and poor quality of life. Approximately 10-15% of females experience monthly menstrual pain severe enough to stop normal daily functions at work, home, or school.^{19,24,25,26} Data from various studies conducted earlier show that absenteeism from school due to primary dysmenorrhea is 34-50%.^{27,28} Due to its importance, different treatments like pharmacological and non-pharmacological treatment approaches such as nonsteroidal anti-inflammatory drugs (NSAIDs), herbal, dietary therapies, yoga, meditation, and acupuncture have been tried to decrease the effects of dysmenorrhea.²⁹ The purpose of this study was to determine the prevalence and risk factors for dysmenorrhea in nursing students and its impact on their quality of life. This study is also assessing the relationship between Body mass index (BMI) and dysmenorrhoea among these students.

METHODS

The study was carried out in St Johns Nursing College, Bengaluru, Karnataka, India. It was a prospective study, which included 200 nursing students of the age group 18-20 years. A self-administered questionnaire was distributed to all the participants. Participation by students was strictly voluntary. Informed consent was taken from all the students before their participation. The socio-demographic and lifestyle characteristics of the students were collected through standard questionnaire which included age, parent's education, family history of dysmenorrhoea, regularity of the cycle, menorrhagia, anaemia, exercise habits, sleeping habits, past history, medication use, area of residence (Rural/urban). Intensity of pain was assessed by the Multidimensional Scoring System of Andersch and Milsom which defines pain as, Mild dysmenorrhea is defined as painful menstruation with no limitation of normal activity, with infrequent requirement of analgesics and no systemic complaints.³⁰

Moderate dysmenorrhea is defined as menstrual pain affecting daily activities, with requirement of analgesics for pain relief and few systemic complaints. Severe dysmenorrhea is defined as menstrual pain with severe limitation of daily activities, poor response to analgesics, and apparent systemic complaints like vomiting, fainting. According to the pictorial blood loss assessment charts

(PBAC) where score of 100 at the end of menses was considered equivalent to 80ml blood loss and a score >100 was considered as menorrhagia.³¹ BMI was calculated by weight in kg divided by the square of height in meter. The students were classified into four groups: underweight (<18.5), normal (18.5-24.99), overweight (25-29.99) or obese (≥ 30) based on the recommendations from the World Health Organization (WHO).

Statistical Methods

Descriptive statistics were reported using mean and standard deviation for the continuous variables, number and percentages for the categorical variables. Chi-square test was used to test the association between demographic and clinical characteristics with the presence of dysmenorrhea. Logistic regression was used to find the factors associated with the presence of dysmenorrhea. P value less than 0.05 was considered as statistically significant. All the analyses were done using SPSS version 23.0.

RESULTS

Table 1: Characteristics of the Study Subjects.

Factors	Frequencies	%
Age	17	3
	18	49
	19	148
Residence	Rural	72
	Urban	128
Sleep hours	< 8	138
	> 8	62
Dysmenorrhoea	Yes	125
	No	75
Regularity	Regular	19
	Irregular	181
Effect of media	Radio	5
	TV	120
	TV+Radio	75
Exercise habit	Mild	150
	Moderate	50
SES	L	4
	M	177
	H	19
BMI category	Normal	116
	Underweight	46
	Overweight	38
School absent	32	16.0
Family history present	36	18.0
Pallor	16	8.00

Table 1 describes the characteristics of the study subjects. The mean age and age at menarche of the students studied was 18.7 ± 0.48 and 13.3 ± 1.20 respectively. Menorrhagia was defined in present study, according to the pictorial blood loss assessment charts (PBAC) where

score of 100 at the end of menses was considered equivalent to 80ml blood loss and a score >100 was considered as menorrhagia. The mean PABC of the students was 74.96±16.14 which is not significant. The mean calorie intake per day of the students was 2071±233. The proportion dysmenorrhea reported was 62.5%. There was no significant difference in the mean age, age at menarche, calorie intake of the students and amount of the bleeding between the presence of dysmenorrhea and the absent group.

The average length of menstrual cycle was between 28-30 days, which 87% of the students reported. Nearly two third of the students reported their duration of bleeding as 3-4 days to 4-5 days. Comparison of demographic and other parameters by the presence of dysmenorrhea is given in Table 2.

Table 2: Comparison of demographic and clinical characteristics by presence/absence of dysmenorrhea.

Factor	Dysmenorrhea-Yes	Dysmenorrhea -No
Age	17	2 (1.6)
	18	31 (24.8)
	19	92 (73.6)
Residence	Rural	51 (40.8)
	Urban	74 (59.2)
Sleep Hours	< 8	80 (64.0) *
	> 8	45 (36.0)
Regularity of cycle	Regular	8 (6.4) *
	Irregular	117 (93.6)
Effect of media	Radio	3 (2.4)
	TV	75 (60.0)
	TV+Radio	47 (37.6)
Exercise habit	Mild	92 (73.6)
	Moderate	33 (26.4)
SES	L	3 (2.4)
	M	110 (88.0)
	H	12 (9.6)
BMI category	Normal	84 (67.2)
	Underweight	35 (28.0)*
	Overweight	6 (4.8)
Family history present		25 (20.0)
Pallor		9 (7.2)
Mood changes/tiredness		2
Associated other pain		81 (64.8)*
Medicines taken		31 (24.8)
Heat application		30 (24.0)
Lying		98 (78.4)*
Exercise		50 (40.0)
Food		22 (17.6)
Temperature		19 (15.2)*
Tension		49 (39.2)
School Absent		25 (20.0)*

Reported as number and %* -p<0.05 using chi-square test

Duration of sleep, regularity of menstrual cycle was significantly associated with the presence of dysmenorrhea. Students who had sleep less than 8 hours and regular menstrual cycles were associated with the presence of dysmenorrhea.

BMI category was significantly associated with the presence of dysmenorrhea. Underweight students were significantly associated than normal and overweight students (p<0.05). Exercising habits have no significant correlation with dysmenorrhea. Besides, the presence of dysmenorrhea was significantly associated with increased school absenteeism. In present study, we analysed the

various components which improve or aggravate the complaints related to dysmenorrhea (Table 3). Lying down/relaxing showed improvement in 78.4% of the population which proved to be the most effective measure, followed by tablets and heat/pressure.

There was not much significant change with the use of injections to relieve the symptoms of dysmenorrhea. Tension caused aggravation in an average of 40% of patients; Movements also caused increased symptoms in nearly 40% of patients and temperature/food in 15% of patients.

Table 3: Factors which aggravates/relieves dysmenorrhic pain.

Factors	Frequencies	Percentage
Mood changes/tiredness	2	0
Associated other pain	120	60.0
Medicines taken	41	20.5
Heat application	41	20.5
Lying	67	67.0
Exercise	77	38.5
Food	28	14.0
Temperature	26	13.0
Tension	73	36.5

DISCUSSION

Prevalence of dysmenorrhoea in present study is 62% (Figure 1). This observation is consistent with previous studies from India and other countries.⁴⁻¹⁹ An Egyptian study reported very high prevalence (94%) of dysmenorrhea among nursing students.³²

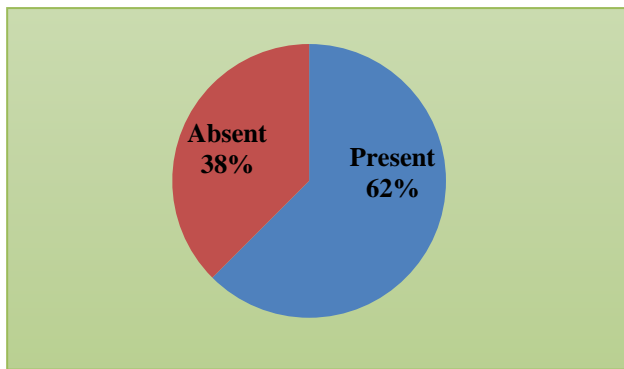


Figure 1: Distribution of dysmenorrhea.

In present study age of the students, family history, age of menarche, parent’s educational status, menorrhagia, effect of media on their attitude towards dysmenorrhoea, socioeconomic status and anaemia did not exhibit significant association with dysmenorrhoea. Similar findings have been reported in the literature with respect to a negative correlation with development of dysmenorrhoea.^{15,33} Length of menstrual cycle and duration of menses were found to be associated with dysmenorrhea. In China, the increased menstrual flows

have been reported to be associated with an increase in the severity of dysmenorrhea.^{34,35} Present study showed that the students who had regular menstrual cycles are more closely associated with the presence of dysmenorrhea (p-value 0.054). A study by William et al had explained the association between dysmenorrhoea and regular cycle.³⁶ The Study by Kural M et al did not find the association between length of cycle and dysmenorrhea.³⁷

Majority of the girls in present study were found to have low BMI indicating the poor nutritional status among our students. In present study, the relation between dysmenorrhea and BMI was found to be significant (p value <0.05) with increased prevalence of dysmenorrhea in the low BMI group (Figure 2).

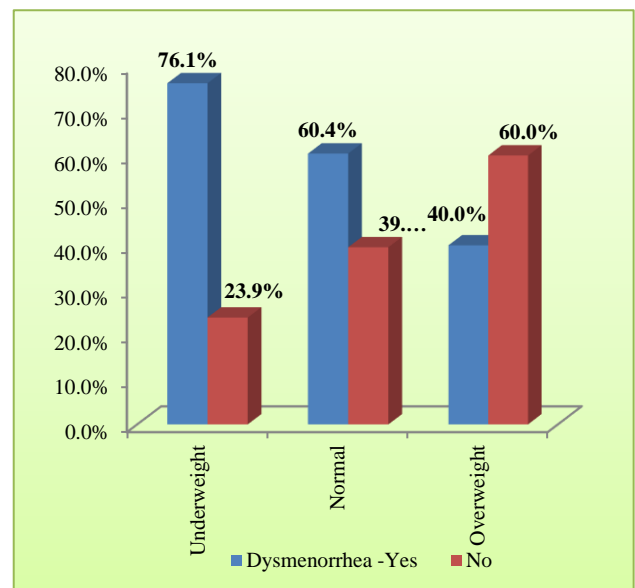


Figure 2: Distribution of BMI

Our results are supported by the study of Tangchai et al, Hirata et al, and Chauhan M, and disagrees with Ibrahim NK et al study.^{6,38,39,40} In contrast to present study overweight was an important risk factor for dysmenorrhea in Harlow et al study.⁴¹ A longitudinal study by Ju et al. reported that U-shaped association between dysmenorrhea and BMI, revealing increased prevalence in both underweight and overweight.⁴²

In present study we observed that dysmenorrhoea had its impact on the daily activities of the students leading to inability to attend classes, inability to pursue routine activities and hobbies. Students had symptoms severe enough to cause absenteeism from college and classes. The school absenteeism rate in present study (16%) was lower than that reported by Hillen et al (45.6-54%).¹² Reported rates of absenteeism from other studies ranged from 24 to 50%.^{4,9,12,13,43,44} These results revealed that during dysmenorrhea students may face a tremendous impact in their educational outcomes and daily activities. In present study 64% of the students with dysmenorrhea

had less than 8 hours of sleep and 36% of the students had more than 8 hours of sleep. Hence the relation between dysmenorrhea and sleeping habits were found to be highly significant (p value=0.048). A study by Gebeyehu M B nearly half (42.7%) of the students reported they had decreased appetite and altered sleeping pattern.³⁴ Many studies reported that participants had disturbed or altered pattern of sleep due to dysmenorrhoea. So far none of the studies reported the relationship between the duration of sleep and dysmenorrhoea. This association could be due to negative effect of increased physical activity.

Exercise works by improving blood flow at the pelvic level as well as stimulating the release of endorphins, which act as non-specific analgesics. Present study showed that there is no association between exercise and dysmenorrhea, this observation corroborates with Omidvar S study.¹⁹ Study conducted by Madhubala et al and Mahvash N et al showed that increased physical activity was found to be significantly associated with decreasing intensity of dysmenorrhea.^{39,29}

It is worthwhile to comment that, despite the sufferings, only a small proportion of girls had sought pharmacological management (21%) and 79% depended on non-pharmacological methods in present study. Only 14.2% had sought medical advice and this suboptimal use of the medical advice has been reported by others.^{3,12,19} Approaches to deal with dysmenorrhoea differ in different cultures. According to the study from Mexico, 62% of university students with dysmenorrhoea self-medicated while, 26% consulted physicians.⁵

Pain relieving factors lying down/relaxing showed improvement in 78.4% of the students, which proved to be the most effective measure, followed by tablets and heat/pressuring in present study. There was not much significant change with the use of injections to relieve the symptoms of dysmenorrhea. Present study corresponds to the study by Kamonsak Tangchai included, use of heat pad in 34%, use of analgesics (Paracetamol, Aspirin and Ibuprofen) in 32.5% cases.^{6,34} According to the Swanberg and Ulmsten 23% use analgesics and 34% prefer lying down/relaxing to relieve dysmenorrhea.⁴⁴ A study by Hillens most common medication used by those reporting dysmenorrhea was simple analgesics (53%), followed by nonsteroidal anti-inflammatory drugs (NSAIDs).¹¹ According to the Gebeyehu MB study about 36.3% use analgesics, Ibuprofen (12.6%), diclofenac (6.9%), and paracetamol (5.4%) were the most frequently used medications, whereas coffee, tea, and Coca-Cola (34.4%), and heat therapy (3.9%) were the most frequently used home remedies to manage their illness.³⁴

CONCLUSION

Prevalence of dysmenorrhea in present study is high. Regular menstrual cycle, low BMI, duration of sleep (less than 8hours) are the risk factors for dysmenorrhea in

present study. Dysmenorrhea has a negative effect on health-related quality of life. It is a leading cause of school and college absenteeism.

Attempt should be made to find out the factors, which cause dysmenorrhoea, and it is necessary for us to clarify these factors to improve their quality of life. Appropriate counselling and management should be instituted among the students to improve their academic performance. Information, education and support should also be extended to parents, school peer leaders, and hostel administrators in order to address the reproductive health needs to prevent unnecessary suffering of the student during menstruation.

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