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RESEARCH ARTICLE

MENSTRUAL PROBLEMS IN FIRST, SECOND AND THIRD YEAR MEDICAL STUDENTS- A CONCERN!

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ABSTRACT

Introduction: Menstrual disorders are extremely common in puberty & reproductive age group. Menstrual disorders happen to be a common presentation by late adolescence, disorder such as primary dysmenorrhea, or painful menstruation in the absence of pelvic pathology, is a common and often debilitating, gynaecological condition that affects about 45 to 95% of menstruating girl [1]. Medical students are a high risk group for developing menstrual irregularities due to lifestyle with less sleep, irregular food and exercise habits. Thus making them prone to[3], varying degree of discomfort with Incidence of spasmodic dysmenorrhea of sufficient magnitude with incapacitation, which is about 5-15% [4]. Pain is of such a magnitude that it interferes with normal physical activity of the individual and disrupts emotional balance; it is one of the major reasons for absence from school, college and incapacitates a woman from employment, especially from a field like medicine requiring persistent efforts and activity at physical and psychological level. These can be a major matter of concern for the female experiencing them as the lag and stress along with the pressure of career in the present day competitive world where gender equality has seen great uprising, keeping up with opposite gender not experiencing similar conditions can be tough. Through this study we will be trying to explore the problem faced by female medical students during menses and its correlation to biological variables.

Objectives:

a) To study the prevalence of dysmenorrhea, premenstrual syndrome, and to find students affected with abnormal amount of bleeding, abnormal duration of bleeding and abnormal length of cycle

b) To find out effect of the above problems on students -college absenteeism, class absenteeism and social withdrawal

c) To find out association of menstrual problem like dysmenorrhea with biological variables such as BMI, age and stress.

Material & Methods: This is a cross sectional descriptive study carried out from April to July 2016 conducted in Indira Gandhi government medical college, Nagpur. Medical students who were unmarried and gave consent were included while those who did not give consent and married were excluded from the study. Total 204 students took part in the study out of which 86 students were from 1st year, 27 from 2nd year and 91 from 3rd year. Each of the 204 medical students was given a questionnaire to complete after giving consent. The general data about each student included age education, height, weight, haemoglobin, dietary habits, and bowel habits.

Results: In this study 204 participants completed the questionnaire, of these 42.15 % from 1st year, 13.2% in 2nd year, and 44.6% in 3rd year. Out of the total 204 students 55.8% had dysmenorrhea and 46.6% experienced premenstrual syndrome. College absenteeism due to dysmenorrhea 12.3%, Class absenteeism 6.9% & Social withdrawal 73%. No association of dysmenorrhea with BMI and stress was found whereas there is increase in prevalence of dysmenorrhea with age for the age group 18 to 24 years (P value = 0.015, significant).

Conclusion: Prevalence of dysmenorrhea among all menstrual problems is high in medical students & the leading cause of college/class absenteeism and social withdrawal. Health education on menstrual problems by health care providers can help prevent the absenteeism & of loss of invaluable college time.

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INTRODUCTION

Menstrual disorders in 1st 2nd and 3rd year medical students

Menstrual disorders are extremely common in puberty and reproductive age group, during the first two year after menarche, most cycles are anovulatory. Despite this, they are somewhat regular within a range of approximately 21 to 42 days, in contrast to an adult woman, whose cycles typically range between 21 and 35 days. The mean duration of menses is 4.7 days; 89% of cycles last 7 days, the average blood loss per cycle are 35 ml [2]. Menstrual disorders happen to be a common presentation by late adolescence, disorder such as primary dysmenorrhea, or painful menstruation in the absence of pelvic pathology, is a common and often debilitating, gynecological condition that affects about 45 to 95% of menstruating girl (Iacovides *et al*., 2015). Numerous studies have indicated that a considerable portion of women of reproductive age suffers

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from menses-associated health problems such as premenstrual symptoms, dysmenorrhea and irregular menstrual cycles (Klein and Litt, 1981; Flug *et al*., 1984; Dawood, 1990; Münster *et al*., 1992; Johnson, 2004). Despite the high prevalence (Cronje and Krintzinger, 1991), health professionals, pain researchers and women themselves often avoid it. Present age and life style has seen a grave rise in menses associated syndromes in young girls, about 75% of girls present with some menstrual problem-owing to the modern sedentary lifestyle and stress (Lee *et al*., 2006). Seventy-five (74.5%) of the women accepted menstruation as an integral part of a woman's life whereas about 20% preferred not to menstruate. In this latter group, the majority reported severe symptoms (Cronje and Krintzinger, 1991). The menstrual function is deemed to be one of the factors reflecting the functional potentiality of women and that may be affected by stress. There is also a growing evidence of an association between psychosocial stress and menses-associated health problems in women (Woods *et al*., 1985; Harlow and Matanoski, 1991; Woods *et al*., 1998; Gordley *et al*., 2000; Kaplan and Manuck, 2004; Wang *et al*., 2004) On similar grounds medical students are a high risk group for developing menstrual irregularities due to lifestyle with less sleep, irregular food and exercise habits. Thus making them prone to (NirmalaJaget Lakkawar *et al*., 2014) varying degree of discomfort with Incidence of spasmodic dysmenorrhea of sufficient magnitude with incapacitation, which is about 5-15%[4]. Pain is of such a magnitude that it interferes with normal physical activity of the individual and disrupts emotional balance, it is one of the major reasons for absence from school, college and incapacitates a woman from employment, especially from a field like medicine requiring persistent efforts and activity at physical and psychological level. Psychogenic cause-incidence is higher amongst affluent women, those predisposed to undue fears, emotional stress and anxiety (Whitney Wharton *et al*., 2012). Warren reported that 40 % women with heavy bleeding could not work outside their house during their period (Warren, 2002). Periodical loss of work and college days to dysmenorrhea and other menstrual abnormalities hindering studies, social interaction, progress and growth the individual even begins to develop anticipatory anxiety regarding the commencement of her menses and or even in most severe cases may lead to panic attacks. All being the product of increased levels of prostaglandins in women's endocrine system.

The aetiology of primary dysmenorrhea is not precisely understood but most symptoms can be explained by the action of uterine prostaglandins, particularly PGF2α. The disintegrating endometrial cells release PGF2α as menstruation begins. PGF2α stimulates myometrial contractions, ischemia and sensitization of nerve endings. These levels are highest during the first two days of menses when symptoms peak[6] Other commonly experienced condition is PMS (pre-menstrual syndrome) starts about 7 to 14 days prior to start of menstrual flow and spontaneously resolves after menses, it is used to describe physical, cognitive, affective and behavioural symptoms that occur cyclically during the luteal phase of the menstrual cycle and resolve quickly (Andrew and Coco, 1999; Braverman, 2007), These conditions are not life threatening but they can seriously decrease the quality of life of many women and affect their mental health and their productivity (NirmalaJaget Lakkawar *et al*., 2014; Bourne H.Shaw's Textbook of Gynaecology, 2004). The number of women seeking treatment for premenstrual symptoms is on the increase. There are numerous symptoms that may occur but the typical ones include somatic symptoms like bloatedness, breast swelling and pain, pelvic pain, head ache, skin disorders and changes in bowel habits and the psychosocial symptoms like irritability, aggressiveness, depression, anxiety, inability to concentrate, hypersomnia or insomnia, change in appetite, specific food craving, change in libido and poor coordination symptoms experienced are highly varied (O'Brien, 1985; McHichialami *et al*., 2002; Cenac *et al*., 1987; Cronje and Krintzinger, 1991; Khella, 1992). These can be a major matter of concern for the female experiencing them as the lag and stress along with the pressure of career in the present day competitive world where gender equality has seen great uprising, keeping up with opposite gender not experiencing similar conditions can be tough. Through this study we will be trying to explore the problem faced by female medical students during menses and its correlation to biological variables

Objectives

The main objective was to find out

a) The prevalence of dysmenorrhea, premenstrual syndrome, and to find students affected with abnormal amount of bleeding, abnormal duration of bleeding and abnormal length of cycle
b) The effect of the above problems on students -college absenteeism, class absenteeism and social withdrawal
c) And an attempt to find out association of menstrual problem dysmenorrhea with biological variables such as BMI, age and stress

MATERIALS AND METHODS

This is a cross sectional descriptive study carried out from April to July 2016 with. Study was conducted in Indira Gandhi government medical college, Nagpur after taking institutional ethical committee approval. Medical students who were unmarried and gave consent were included while those who did not give consent and married were excluded from the study. Total 204 students took part in the study out of which 86 students were from 1st year, 27 from 2nd year and 91 from 3rd year. Each of the 204 medical students was given a questionnaire to complete after giving consent. The general data about each student included age education, height, weight, haemoglobin, dietary habits and bowel habits.

Menstrual Data

Duration of cycle, duration of bleeding, and amount of blood loss noted. History of dysmenorrhea and its severity, premenstrual symptoms, class/college absenteeism was asked. To detect the severity of dysmenorrhea verbal multidimensional scoring system was used "a normal menstrual cycle lasts from 21 to 35 days; with 2 to 6 days of bleeding (Paula, 2007) and average blood loss 30 to 80ml (Marc A. Fritz and Leon Speroff, 2012) (5 to 10 napkins/cycle)". The length of cycle of participants is the period between two menstrual periods on an average as observed in the past 3 months. The duration of flow is suggestive of the number of days the participant bleeds for in one menstrual period as observed on an average in the past 3 months. And the amount of blood flow is measured by counting the number of sanitary napkins each participant utilized during entire span menstrual period on an average over the past three months (limitations: depends on women's personal hygiene practices, frequency of attention to

menstrual flow and financial resources) (Highamjm *et al*., 1990) considering a regular sanitary napkin can take up to 5 to 7 ml of blood and loss of blood normally ranges from 30 ml to 80 ml, thus utilization of 5 to 10 sanitary napkins is taken as normal whereas beyond 10 can be Heavy Menstrual Bleeding (HMB), which is defined as total measured blood loss in excess of 80 ml per cycle or bleeding for more than 7 days in each cycle (objectively) (Cynthia Holland-Hall, 2013; Natalia rydz and Mary Anne Jaimeson, 2013).

Terms

Dysmenorrhea – painful menstruation presenting with uterine cramping causing pain in hypogastrium, back, inner thighs; nausea; vomiting; backache; diarrhea; giddiness; syncope or fainting, past 3 months and would be categorized as mild, moderate, severe.

Pre-menstrual symptoms: 7 to 14 days prior of menstruation experiences low back ache, fatigue, breast tenderness, abdominal bloating, increased weight, head ache, irritability, skin disorders, aggression, depression, GIT syndromes, loss of appetite

College absence: missing half a day or complete day of college

Class absence: missing individual classes because of menstrual pain

Data analyzed by chi square test. Statistical significance of difference between groups was tested; p- vale was <0.05 that is statistically significant.

The students were informed about the study before the questionnaire was administered. The subjects were given privacy for filling the forms. They were also informed of their right to withdraw from the study at any time and for confidentiality were instructed not to write their names on the questionnaire. Each self-administered questionnaire was completed within 15-20 minutes.

RESULTS

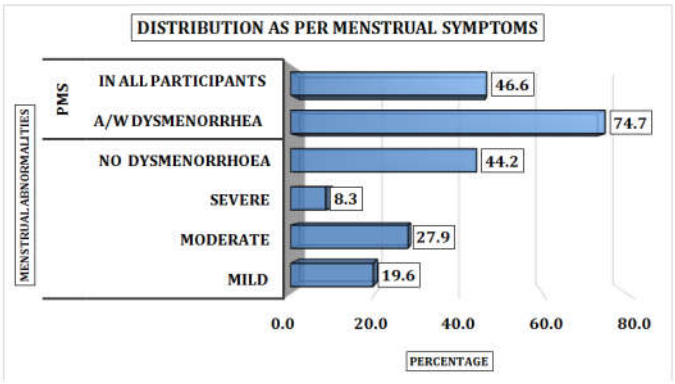
In this study 204 participants completed the questionnaire, of these 41.9% from 1st year, 59.3% in 2nd year, and 68.1% in 3rd year. 61.8% participants are above 20 yrs. of age rest are below 20 yrs. Mean age being 21 yrs.

Age	Percentage of students
20 -25 years	(78) 38.2%
< 20 years	(126) 61.8%
Total	(204) 100%

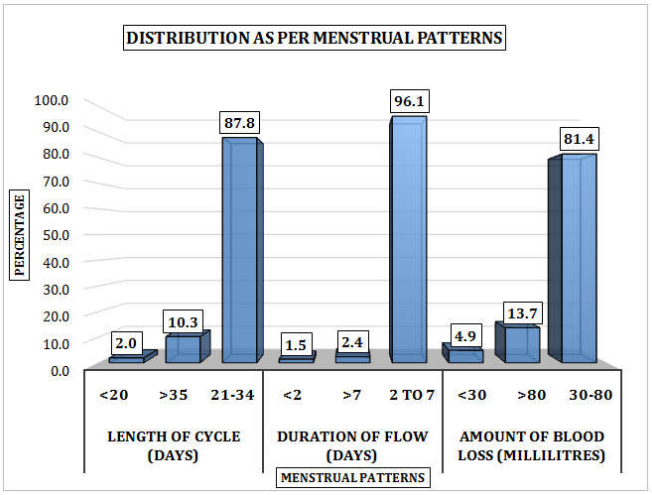
Of the total participants 55.9% experienced dysmenorrheal

The degree of dysmenorrhea experienced by participants was measured by verbal multidimensional scoring system categorized into mild, moderate, severe. 44.2 % experienced no dysmenorrhea, all those who had dysmenorrhea 35% mild, 50% moderate, and 14.9% severe.

From the total participants 46.6% experienced premenstrual syndrome and out of these 74.7% experienced dysmenorrhea (P value=0.00, significant) suggestive of the fact that premenstrual syndrome was prevalent among girls experiencing dysmenorrhea, it could as well be the result of comparatively more awareness among girls experiencing dysmenorrhea about the occurrence of PMS



Menstrual pattern as observed by the participants gave the following results

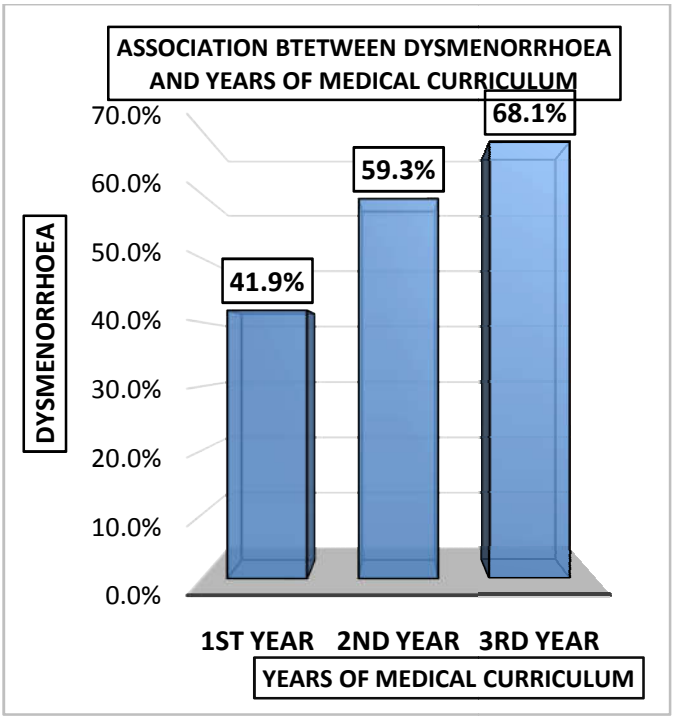


Abnormal length of cycle in 12.3 % (N=21 to 34 days)
Abnormal duration of flow in 3.9% (N=2 to 7 days)

And abnormal amount of blood loss in 18.6% (N=30 to 80ml) of participants

- The various effects of menstrual abnormalities on medical students studied were
- College absenteeism, class absenteeism and social withdrawal
- College absenteeism due to dysmenorrhea 12.3% of the total participants
- Class absenteeism due to dysmenorrhea 6.9% of the total participants
- Social withdrawal due to dysmenorrhea 18.1% of the total participants
- Social withdrawal =73% (P value=0.021) of those who experienced dysmenorrhea,
- Similarly amongst the girls who experienced dysmenorrhea 85.7 % showed class absenteeism (P value =0.020) and that of college absenteeism is 88 % (P value =0.001)
- Effects studied were found to be significantly associated with dysmenorrhea

AGE :Of those who experienced dysmenorrhea 49.2% were below 20 yrs. of age and 66.7% were above 20 yrs. of age Pearson chi square value= 5.965 (Pvalue=0.015) test was significant i.e. with age upto 25 years of age dysmenorrhea significantly increased in medical students, thus the distribution was such that the participants who experienced dysmenorrhea 41.9%from 1st year, 59.3%from 2nd year, 68.1%from 3rd year (Pvalue=0.002, significant) i.e. dysmenorrhea significantly increased with the medical academic year



BMI: According to WHO grouping out of the total participants the BMI distribution observed was 57.8% had normal body mass index, whereas a total of 17.1% were overweight and 25 % underweight; all the participants who were overweight 71.5 % had dysmenorrhea (Pvalue=0.115) similarly who had normal BMI 61.9 % had dysmenorrhea and the those who were underweight 52.9 % had dysmenorrhea

SRESS: There is also a growing evidence of an association between psychosocial stress and menses-associated health problems in women, participants were asked what degree of stress they experienced in the past 3 months of which 1%complained of severe stress and of these all the participants experienced dysmenorrhea

Stress	Percent
Mild	72.5%
Moderate	11.3%
Severe	1.0%
No stress	15.2%

Coexisting illness	Frequency
Poly cystic ovarian disease	12
Hypothyroidism	6
Insulin dependent diabetes mellitus	2
Blood diseases	3
Fibro adenoma	1
Hemorrhoids	1
Kidney stone	1
Migraine	1
Schizophrenia	1

Association between stress and dysmenorrhea showed of those who had mild stress experienced dysmenorrhea in 53.4% cases, those with moderate stress experienced dysmenorrhea in 69.6% cases and those with severe stress all experienced dysmenorrhea (p value = 0.294)

Now the various previously diagnosed coexisting conditions in various participants noted were polycystic ovarian disease, hypothyroidism, diabetes mellitus, and blood disorders such as sickle cell anemia, thalassemia minor and major.

- Other variables observed about these girls were haemoglobin, blood group, non-cyclic complaints, physical activities and family history of obesity
- 61.8% of the girls were anemic according to WHO criteria i.e. haemoglbin below 12gm%
- Most common blood type found was B+ve (31.98%) and 2nd most common blood type noted was A+ve (25.38%)
- Noncyclic complaints the participants had were headache body ache (4.4%) and lethargy (4.9%) of which headache (11.8 %) was the commonest.
- Out of 204 participants only 76 participants indulged in some form of physical activity such as outdoor exercise, yoga (8.3%) or gym (1%), most commonly practiced was outdoor minimum 30 min exercise by most (27.9%)
- Out of all the participants only 14.2 % had family history of obesity

DISCUSSION

Menstruation is an inevitable part of a woman's life, menstrual disorders and private nature of data related to menstruation, however, do not attract the attention of the public health community (Harlow and Campbell, 2000; Walraven *et al*., 2002). The changes in the normal menstrual pattern of female in the reproductive age group may affect physical, physiological and psychological wellbeing. However, this normal phenomenon is not an easy one and is often associated with some degree of sufferings, inconvenience and embarrassment. Pre-menstrual syndrome and dysmenorrhea are the commonest gynaecologic disorders among female adolescents (Ryan *et al*., 1995; Jamieson and Steege, 1996; Banikarim *et al*., 2000). Studies on menstrual abnormalities in college students have been conducted in various parts of India and neighbouring countries. In the present study we attempted to find out the prevalence of various menstrual disorders which are dysmenorrhea, PMS, abnormal length of cycle, abnormal duration of cycle, abnormal amount of flow in medical students as well to find the association of stress, anemia, BMI, age, academic year, social withdrawal, class absenteeism, college absenteeism with dysmenorrhea which happens to be the commonest reported complaint of menstruating adolescent. A total number of 204 participants were studied of the age group 18-24 yrs., mean age 21 years (Amitasingh *et al*., 2008) of which 55.9% experienced dysmenorrhea, making it the commonest menstrual problem in this study the result is consistent with the findings of other studies falling in range of 45 -95 % (Iacovides *et al*., 2015) as well in range of 51-80 % (Pullon *et al*., 1988; Ng *et al*., 1992). Several other studies reported its prevalence as 51% (Anandha Lakshmi *et al*., 2011), 59.7% (Jerry *et al*., 1981), 67.7% (Lee *et al*., 2006), 73.83% (Amitasingh *et al*., 2008). In this study 35% had mild, 50%

moderate and 14.9% experienced severe dysmenorrhea where as other studies showed 6.32%, 30.37%, 63.29 –severe, moderate, mild dysmenorrhea (Amitasingh *et al*., 2008), while study by Jerry *et al*. (1981) showed 14% severe, 38% moderate and 49 % subjects mild sufferers and yet another study (NisreenAref *et al*., 2015) 'Frequency of Different Menstrual Disorders among Female Medical Students at Taif Medical College' showed 61.6% had severe, 19.5% moderate and 18.8% experienced mild dysmenorrhea which is a contrast to rest of the studies conducted . These differences in the degree of pain severity may be related to cultural differences in pain perception and variability in pain threshold.

Second commonest menstrual complaint happens to be premenstrual syndrome, in present study 46.6% of all participants experienced PMS whereas study by Singh *et al* its prevalence was 60.47% (Amitasingh *et al*., 2008). Adolescent girls are known to complaint of PMS when they are actually experiencing dysmenorrhea or psychosocial problems (Jerry *et al*., 1981) -based on this in present study it was found 74.7 % of the students who had dysmenorrhea experienced PMS as well. Other common disorders in present study were abnormal menstrual flow in 18.6%, abnormal length of cycle in 12.3 %, polycystic ovarian disease in 5.9 % and abnormal duration of blood loss in 3.9%. Whereas in study by Singh *et al.* abnormal menstrual flow was commoner than abnormal duration of flow followed by irregular length of cycle and then polycystic ovarian diseases (Amitasingh *et al*., 2008), while in Malaysian study (Lee *et al*., 2006) a long cycle was a common menstrual disorder among adolescent girls, this could be a result of different gynecological age of the participant. The amount of blood loss per cycle is individually of great significance as heavy menstrual flow (HMB) is considered to be the most significant causes of ill health in girls with prevalence rate ranging from 12.1% to 37 % (Barr *et al*., 1998; Friberg *et al*., 2006) in this study 13.7 % girls showed bleeding more than 80 ml. In a study in morocco, menstrual pain was cited as the main single cause of school absenteeism among adolescent girls (Andersch and Milsom, 1982). In the present study, 12.3% had symptoms severe enough for them to be absent from college, 6.9 % absent from classes and about 73 % complained of social withdrawal as a result of menses which was statistically significant in correlation to dysmenorrhea where participants reported of withdrawal from friends, academics, gatherings, sports. The college, class absenteeism was up to 16 % (Anandha Lakshmi *et al*., 2011) in a study of young women by Anandha Lakshmi, rates of absenteeism ranged from 34% to 50% in several studies (Banikarim *et al*., 2000; Andersch and Milsom, 1982; Sundell *et al*., 1996). Similar studies among female high school adolescents showed that the majority of female adolescents identified dysmenorrhoea and PMS as problems that significantly affected their academic performance (Banikarim *et al*., 2000; Wilson and Keye, 1989). Social withdrawal as seen in study by Singh *et al* was 67.08% (Amitasingh *et al*., 2008). The biological variable, BMI statistically did not have significant correlation with dysmenorrhea (Pvalue = 0.115) similarly in various other studies correlation BMI and dysmenorrhea was absent (Amitasingh *et al*., 2008; Gast *et al*., 2010). Women are particularly susceptible to stress caused by hormonal changes. During puberty, menstrual cycle, pregnancy, and menopause, the hormone levels fluctuate and cause stress. Stress also alters menstrual phase length (Mini Sood *et al*., 2012).

Clarivit found no evidence to support the hypothesis that a high perceived level of stress was associated with a change in any of the measures of menstrual function (Clarivit, 1988), whilst. Sharma *et al.* in an Indian study on medical students reported a high incidence of premenstrual syndrome and dysmenorrheal (Sharma *et al*., 2008). Demir *et al* also stated that 16% had a positive correlation between irregular menses and examination stress. The most common effects on daily routine reported by the study subjects were prolonged resting hours (54%) and inability to study (50%). In present study participant's subjective experience of stress was not statistically significant with respect to dysmenorrhea experienced (P value = 0.294). From the various studies conducted in medical students, no study shows correlation between the academic year and dysmenorrhea, in the present study it was observed the correlation between academic year of MBBS and dysmenorrhea was statistically significant (Pvalue = 0.002) i.e. the prevalence of dysmenorrhea was higher in 3rd year medical students compared to 1st year medical students. The association so observed could be the result of gynecological age of the female, presence of ovulatory cycle, or increased mental and physical exertion as the academic year passes with onset of clinical postings and increased academic load. The prevalence of dysmenorrhea with age reported in the literature varies substantially. A greater prevalence was generally observed in young women, with estimates ranging from 67% to 90% for those aged 17–24 years. Severe pain sufficient to limit daily activities is considerably less common, affecting approximately 7%–15% of women (Harlow and Ephross, 1995), although a study of adolescents and young adults aged 26 years or less reported that 41% of the participants had limitations in their daily activities due to dysmenorrhea (Rodrigues *et al*., 2011). In this study it was found dysmenorrhea was higher in females between 20-24yrs.of age compared to those below 20 yrs. of age, the correlation was statistically significant Pvalue =0.015.

Conclusion

In conclusion, it can be mentioned that prevalence of dysmenorrhea among all menstrual problems in female of Indira Gandhi government medical college is high. Working ability is reported to be affected by menstrual pain. It is major problem representing the leading cause of college/class absenteeism and social withdrawal. In the medical institutions, students should be educated on the importance of physical, social and mental health as well as the importance of preventive care. Health education on menstrual problems targeting female students and their parents, and routine screening for menstrual problems by healthcare providers, can help prevent the absenteeism. With adequate support from parents, school and health care personnel, the problem of loss of invaluable college time can be prevented.

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