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Research Article

A Study of Menstrual Disorders in Medical Students and its Correlation with Biological Variables

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Abstract: The study was aimed to evaluate the prevalence of menstrual abnormalities among the female medical students and their association with lifestyle, psychological stress and college absenteeism. A cross-sectional descriptive study was conducted among 200 female students in a medical school in Pondicherry, India, through self-administered structured questionnaire. The data collected on the anthropometric measurements, menstrual history, lifestyle, food habits and psychosocial stress was correlated with menstrual abnormalities and college absenteeism. Inferential statistical analysis such as Chi-square test was carried out using SPSS software. The mean age of menarche was 12.6±1.32 years and mean duration of the cycle was 4.25±0.5 days. The most commonly observed menstrual disorders in the students were dysmenorrhoea (76%), premenstrual syndrome (69%) and irregular menstruation (29%). Habit of consumption of junk food was found in 86.5% of the subjects and 29.5 % students were obese. Dieting and regular exercise was practiced by 39% and 28% of the participants respectively. Increase in BMI was significantly associated with oligomenorrhoea, however no association was established with dysmenorrhea and PMS. Consumption of junk food was associated with oligomenorrhoea, hypomenorrhoea, dysmenorrhea and PMS. Infrequent cycles were reported by students on dieting. Dysmenorrhea and PMS were highly prevalent among students not on regular exercise. 70% of the students with menstrual disorder had difficulty in their routine activities and 31% had to abstain from class/college during menstruation. Stress during the examination was associated with increased prevalence of dysmenorrhoea, irregular cycles and premenstrual syndrome among the medical students. Students with higher BMI and those consuming junk food revealed higher incidence of irregular menstruation. Highly Significant correlation was found between lack of exercise and consumption of junk food with dysmenorrhea and PMS. Psychological stress was significantly associated with prevalence of various types of menstrual disorders. Dysmenorrhea, PMS, menorrhagia and related stress were the important causes for absence from college. We recommend timely diagnosis and management of menstrual abnormalities with proper advice on diet and exercise, which will improve health, sense of well being and overall quality of life of students and also, lower the risks for future diseases.
Keywords: Medical students, Lifestyle, Stress, Menstrual disorders, College absenteeism

INTRODUCTION

Menstruation is a normal physiological phenomenon in a woman indicating her capability for procreation. However, this normal phenomenon is not an easy one and is often associated with some degree of suffering and embarrassment. Almost every woman does experience one or the other type of menstrual problem in her lifetime. The prevalence of menstrual disorders has been recorded as high as 87% [1]. The list of menstrual disorders may range from amenorrhea, irregular cycles, abnormal flow to dysmenorrhoea and premenstrual symptoms. Dysmenorrhoea is the commonest gynaecological disorder among women, with a prevalence of 60% to 93% [2]. Dysmenorrhoea is pain perceived before or during menstruation, confined to lower abdomen, back and thighs, and of varying severity, ranging from mild, moderate to severe. Regular menstrual cycle occurs every 28-35 days ± 2-3 days in which the menstrual flow lasts for 3-5 days with an average loss of 30-80 ml of blood. Irregular menstrual cycle is any deviation from normal duration. Menorrhagia denotes regular cycles with bleeding either excessive in amount (>80ml) &/or, in duration with flow lasting >7 days. Hypomenorrhoea is scanty menstrual flow which lasts for <2 days. In polymenorrhoea, the interval between two consecutive cycles is <21 day and in oligomenorrhea, this interval may extend to>35 days. Pre-menstrual syndrome encompasses a wide variety of cyclic, recurrent, physical, emotional and behavioural symptoms occurring during late luteal phase of menstrual cycle and subsiding with the beginning of menses. These

symptoms include weight gain, headache, fatigue, nervousness, irritability and mood swings [3, 4].

Medical students are at high risk for developing menstrual irregularities due to stressed lifestyle, irregular food and exercise habits. Menstrual irregularity over prolonged periods of time can cause anovulation, endometrial hyperplasia and infertility as well as deterioration in the quality of life. Dysmenorrhea and PMS are most commonly related to absence from class/college, limitation in social, academic, sports and daily activities [5, 6].

Many studies have been conducted earlier to address the problems related to menstrual abnormalities in young students, yet few reports are available on effect of stress on menstrual patterns in medical students in India as well as in different parts of the world [5-12]. Medical students need to study harder and are vulnerable to stress, which may lead to dysfunction of hypothalamo-pituitary ovarian axis causing menstrual abnormalities [6].

A number of medical conditions can cause irregular or missed menses which can be diagnosed and treated at early stage. However, this part of women's health is mostly neglected by primary health care. More than 90% of menstrual problems are preventable just by early detection and appropriate treatment [13]. An etiological relationship between menstrual disorders, body mass index (BMI), dietary habits, physical exercise and psychological stress may be sought for early prevention.

With this backdrop, a cross-sectional study was conducted in undergraduate female medical students in Sri Lakshmi Narayana Institute of Medical Sciences (SLIMS), Pondicherry, India to determine average age of menarche, the patterns of menstrual cycles, prevalence and types of menstrual disorders and their association with family history, body mass index (BMI), dietary habits, physical exercise, stress and college absenteeism.

METHODOLOGY

A cross sectional prospective study was conducted at Sri Lakshmi Narayana Institute of Medical Sciences (SLIMS), Bharath University, Pondicherry- 605502, India on 200 female medical students. Informed consent was obtained from all the participants. The study protocol was evaluated and approved by the Institute Ethics Committee (IEC).

All the students willing to participate in the proposed study were explained about the purpose of the study and were given information on the questionnaire. Unmarried participants who were willing and had attained menarche were included in the study.

Background information of the students regarding age, religion, social status, family history of related menstrual abnormality, dietary habits, physical exercise and stress was collected. Anthropometric measurements including weight, height and body mass index were collected from all the subjects. Details of menstrual history including age at menarche, average length of menstrual cycle, duration of flow, passage of clots during menses, presence of dysmenorrhoea or any preceding symptoms like headache, weight gain, water retention, mood swings and irritability suggesting premenstrual symptoms were also collected from the individuals. Subjects were also evaluated for any known cause of their menstrual disorder. We also recorded the number of students with menstrual abnormalities severe enough to warrant skipping of classes and needing medication.

Any known cause for menstrual disorder was also recorded. Any menstrual disorder, which was severe enough to warrant skip of class or required to administer medications (like analgesics or antispasmodics) were also recorded.

The self explanatory questionnaire was distributed to the participants. Any difficulty/clarifications related to the questionnaire were attended by the investigators. Prevalence of each menstrual abnormality was calculated and expressed as proportions. Data were analyzed by Chi-squire test. Statistical significance of differences between groups was tested. Statistical analysis was done using Statistical Package for Social Sciences (SPSS) V16 Software and p value <0.005 was considered as statistically significant.

RESULTS

In the present study, 200 under graduate female medical students, aged between 17-22 years were interviewed through a structured questionnaire. All students belonged to middle or upper class of social strata, 61% were hostel residents and 39% were day scholars (vide Table1).

The mean age of menarche in this study was 12.6 ± 1.32 years. Out of 200 participants, 71% reported normal cycles and 29% had abnormal cycles in the form of polymenorrhoea (8%) or oligomenorrhoea (21%). The mean duration of the cycle was reported to be of 4.25 ± 0.5. Moderate blood loss was reported by 79% of correspondents, 5% had heavy blood loss and 10.5% had scanty flow. Passage of clots during menstruation was reported by14% of the students. Dysmenorrhoea (76%), premenstrual symptoms (69%) and irregularity of cycles (29%) were the most frequent menstrual abnormalities observed in the present study. Dysmenorrhoea ranged from mild to moderate degree in 46% and of severe degree in 30% of the participants. Out of 76% students, who experienced dysmenorrhoea, 24% revealed occasional use of analgesics and

antispasmodic drugs and 40% had to depend on these drugs to alleviate pain (Table 2; Fig. 1).

Table 1: Demographic and Lifestyle charecteristics of the participants

Characters	Number of Subjects (N=200)	Percentage (%)
BMI		
Underweight	22	11
Normal	119	40.5
Over weight and obese	59	29.5
Habit of consuming junk food		
Yes	173	86.5
Junk food consumption increased during stress		
Yes	141	70.5
Frequency of consumption of junk food		
1day/week	49	24.5
2-3 days//week	99	49.5
4-7 days/week	25	12.5
History of dieting for weight reduction		
Yes	78	39
Fussy about food consumption		
Yes	159	79.5
Addiction to		
Tea	18	9
Coffee	26	26
Chocolates	12	6
Others	2	1
Is addiction increasing during stress (Examination)		
Yes	45	22.5
No addiction	142	71
Fitness schedule through regular exercise		
Yes	56	28
Physical activity ≥ 30 min to cause sweating	21	10.5
Physical activity ≤ 30 min to cause sweating	35	17.5
Frequency of exercise		
1 day/week	4	2
2-3 days/week	47	23.5
4-7 week	5	2.5
Physical activity decreased during stress		
Yes	54	27
No	02	1
Feeling Stressed		
Never	10	5
Almost never	21	10.5
Sometimes	94	47
Fairly often	25	12.5
Very Often	38	19

Table 2: Menstrual patterns and abnormalities among medical students

Variables	Number of subjects	% (Percentage) (N=200)
Age at Menarche (Years)		
1<10	Nil	
11-13	184	92
14-16	16	8
>17	Nil	
Regular cycles	142	71
Irregular Cycles	58	29
Duration of Flow (Days)		
<2	16	8
3-5	139	69.5
5-7	30	15
>8	15	7.5
Amount of Flow		
Mild (≤ 2 Pads/days)	32	16
Moderate (3-5 Pads/days)	144	72
Heavy (≥ 6 Pads/days)	24	12
Cycle Length		
≤20 days	6	3
21-35 days	166	83
≥36 days	28	14
Dysmenorrhoea		
Yes	152	76
Severity of Dysmenorrhoea		
Grade 0	48	24
Grade 1	92	46
Grade 2	52	26
Grade 3	8	4
Pre-menstrual Symptoms		
Yes	138	69
Analgesics/Other medications		
Not required	72	36
Rarely required	48	24
Always required	80	40

Table 3: Association of menstrual abnormalities with medical and family history

Characters	Number of Subjects (N=200)	Percentage (%)
Medical History		
Suffering from chronic medical disease		
No	200	100
History of Hypothyroidism	21	10.5
History of blood transfusion	4	2
Cause of menstrual disorder known	52	26
History of psychiatric illness		
Yes	5	2.5
Family History		
History of familial menstrual abnormality		
Yes	32	16
Type of family		
Nuclear	179	89.5
Joint	21	10.5
Menstrual problem discussed with		
Mother	197	98.5
Teacher	95	47.5
Sister	123	61.5
Friend	198	99
Clinician	104	52

Table 4: Association between lifestyle and menstrual disorder (Irregular cycle)

Variables	Irregular Cycle				Chi-square	p-value
	Frequent	Infrequent	Normal	Total		
BMI						
Under Weight	2 (9.09%)	2 (9.09%)	18 (81.82%)	22	14.1	.007
Normal	13 (10.92%)	19 (15.97%)	87 (73.11%)	119		
Over Weight	1 (1.69%)	21 (35.59%)	37 (62.71%)	59		
Total	16	42	142	200		
Junk Food						
No junk food	8 (29.63%)	5 (18.52%)	14 (51.85%)	27	75.7	.000
≤ 3 days	6 (4.05%)	18 (12.16%)	124 (83.78%)	148		
> 3 days	2 (8.00%)	19 (76.00%)	4 (16.00%)	25		
Total	16	42	142	200		
Dieting						
Yes	12 (15.38%)	38 (48.72%)	28 (35.90%)	78	77.7	.000
No	4 (3.28%)	4 (3.28%)	114 (93.44%)	122		
Total	16	42	142	200		
Physical Activity						
No	5 (3.47%)	19 (13.19%)	120 (83.33%)	144	44.3	.000
≤ 3 days	10 (19.61%)	19 (37.25%)	22 (43.14%)	51		
> 3 days	1 (20.00%)	4 (80.00%)	0 (0.00%)	5		
Total	16	42	142	200		

Table 5: Association between lifestyle and menstrual disorder (abnormal flow)

Variables	Abnormal Flow				Chi-square	p-value
	Scanty	Heavy	Normal	Total		
BMI						
Under Weight	2 (9.09%)	1 (4.55%)	19 (86.36%)	22	3.20	.525
Normal	13 (10.92%)	18 (15.13%)	88 (73.95%)	119		
Over Weight	6 (10.17%)	5 (8.47%)	48 (81.36%)	59		
Total	21	24	155	200		
Junk Food						
No junk food	0 (0.00%)	2 (7.41%)	25 (92.59%)	27	118	.000
≤ 3 days	3 (2.03%)	19 (12.84%)	126 (85.14%)	148		
> 3 days	18 (72.00%)	3 (12.00%)	4 (16.00%)	25		
Total	21	24	155	200		
Dieting						
Yes	13 (16.67%)	6 (7.69%)	59 (75.64%)	78	6.67	.036
No	8 (6.56%)	18 (14.75%)	96 (78.69%)	122		
Total	21	24	155	200		
Physical Activity						
No	3 (2.08%)	17 (11.81%)	124 (86.11%)	144	49.3	.000
≤ 3 days	15 (29.41%)	5 (9.80%)	31 (60.78%)	51		
> 3 days	3 (60.00%)	2 (40.00%)	0 (0.00%)	5		
Total	21	24	155	200		

Table 6: Association between lifestyle and menstrual disorder (passage of clots)

Variables	Passage of clots			Chi-square	p-value
	Yes	No	Total		
BMI					
Under Weight	2 (9.09%)	20 (90.91%)	22	0.575	.750
Normal	18 (15.13%)	101 (84.87%)	119		
Over Weight	8 (13.56%)	51(86.44%)	59		
Total	28	172	200		
Junk Food					
No junk food	2 (7.41%)	25 (92.59%)	27	3.08	.214
≤ 3 days	20 (13.51%)	128 (86.49%)	148		
> 3 days	6 (24.00%)	19 (76.00%)	25		
Total	28	172	200		
Dieting					
Yes	8 (10.26%)	70 (89.74%)	78	1.49	.222
No	20 (16.39%)	102 (83.61%)	122		
Total	28	172	200		
Physical Exercise					
No	15 (10.42%)	129 (89.58%)	144	6.77	.034
≤ 3 days	11 (21.57%)	40 (78.43%)	51		
> 3 days	2 (40.00%)	3 (60.00%)	5		
Total	28	172	200		

Table 7: Association between lifestyle and Dysmenorrhoea

Variables	Dysmenorrhoea			Chi-square	p-value
	Yes	No	Total		
BMI					
Under Weight	11 (50.00%)	11 (50.00%)	22	74.8	.000
Normal	116 (97.48%)	3 (2.52%)	119		
Over Weight	25 (42.37%)	34 (57.63%)	59		
Total	152	48	200		
Junk Food					
No junk food	22 (81.48%)	5 (18.52%)	27	30.3	.000
≤ 3 days	122 (82.43%)	26 (17.57%)	148		
> 3 days	8 (32.00%)	17 (68.00%)	25		
Total	152	48	200		
Dieting					
Yes	40 (51.28%)	38 (48.72%)	78	42.8	.000
No	112 (91.80%)	10 (8.20%)	122		
Total	152	48	200		
Physical Activity					
No	117 (81.25%)	27 (18.75%)	144	7.79	.020
≤ 3 days	32 (62.75%)	19 (37.25%)	51		
> 3 days	3 (60.00%)	2 (40.00%)	5		
Total	152	48	200		

Table 8: Association between lifestyle and Pre-menstrual symptoms

Variables	Pre-menstrual symptoms			Chi-square	p-value
	Yes	No	Total		
BMI					
Under Weight	2 (9.09%)	20 (90.91%)	22	116	.000
Normal	116 (97.48%)	3 (2.52%)	119		
Over Weight	20 (33.90%)	39 (66.10%)	59		
Total	138	62	200		
Junk Food					
No junk food	19 (70.37%)	8 (29.63%)	27	18.5	.000
≤ 3 days	111 (75.00%)	37 (25.00%)	148		
> 3 days	8 (32.00%)	17 (68.00%)	25		
Total	138	62	200		
Dieting					
Yes	37 (47.44%)	41 (52.56%)	78	27.8	.000
No	101 (82.79%)	21 (17.21%)	122		
Total	138	62	200		
Physical Activity					
No	105 (72.92%)	39 (27.08%)	144	7.58	.023
≤ 3 days	32 (62.75%)	19 (37.25%)	51		
> 3 days	1 (20.00%)	4 (80.00%)	5		
Total	138	62	200		

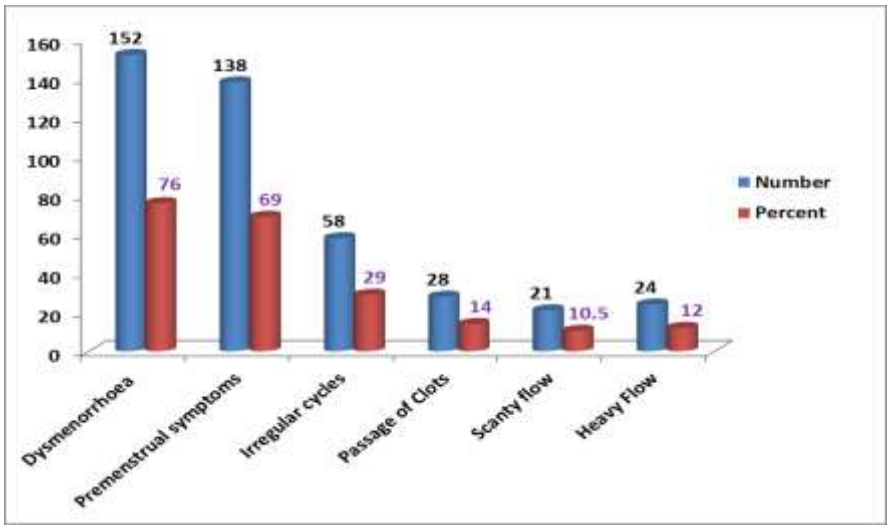

Fig. 1: Menstrual Disorders in Female Medical students

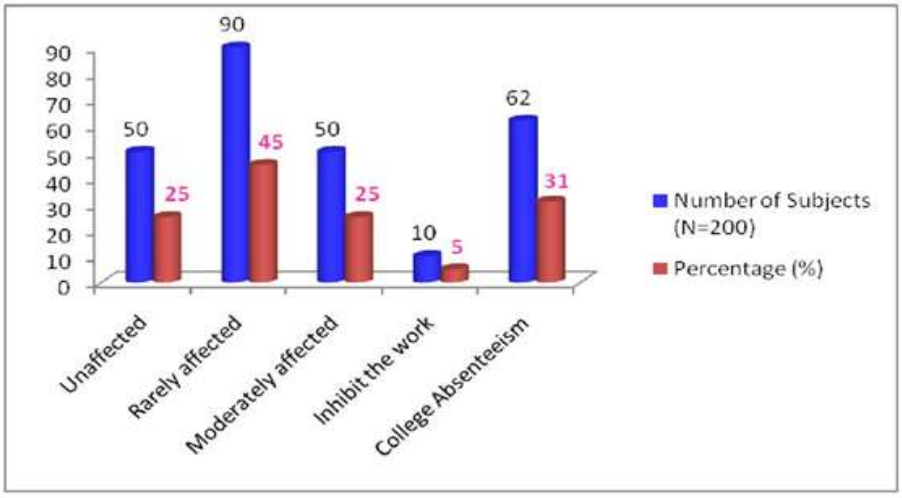

Fig. 2: Effects of menstrual abnormalities on students

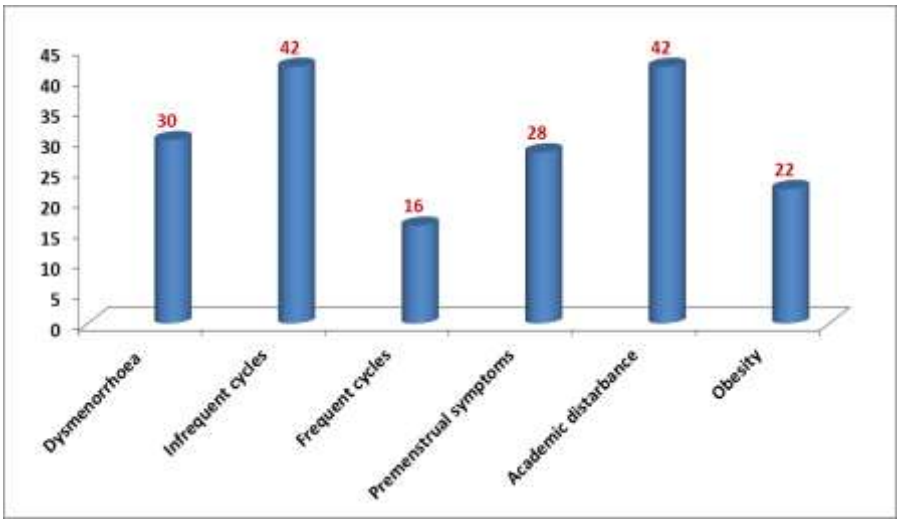

Fig. 3: Number of students seeking medical advice on various menstrual disorders

11% of the students suffered from hypothyroidism, 1% had history of tuberculosis and 2% received blood transfusion in the past for treatment of anaemia resulting from puberty menorrhagia. Polycystic ovarian syndrome was reported by 15% of the cases. Psychiatric illness was reported by 2.5% of students, who were on treatment for the same. 16% of the participants provided positive family history of the similar menstrual disorder. 52% had reported to have consulted clinicians for their menstrual disorders and almost all the students discussed their problems with multiple personnel including family members, friends and sometimes with teachers (Table 3).

Overweight and obesity was found in 29.5% of the cases, 11% were underweight and 40.5% were of normal weight. Consumption of junk food was reported by 86.5% of the students, out of which 24.5% consumed once in a week, 37% for 2-3days/week and 12.5% reported to consume almost daily. History of dieting in order to reduce weight was found in 39% of the subjects and 79.5% reported to be fussy about food. Addiction to tea, coffee or other items was reported by 29%. Physical exercise of varying frequency/schedule was observed in 28% of the subjects. Out of 28% performing physical exercise, 10.5% practiced for more than 30min in a day and 17.5% for less than 30min/day. 26% reported to exercise for more than 3 days/week (Table 1).

Infrequent cycles were significantly associated ($p \leq 0.005$) with being overweight, consumption of junk food on regular basis, dieting and physical exercise (Table 4).

Table 5 depicts significant association between consumption of junk food, dieting and physical exercise with abnormal flow. However, no association was established between BMI and abnormal flow. Data presented in Table 6 shows BMI, junk food consumption and dieting are not significantly associated with passage of clots, while physical exercise is significantly associated with passage of clots.

Table 7 shows higher prevalence of dysmenorrhea in normal and underweight category in comparison to over weight ($p \leq 0.001$). Dysmenorrhea was also significantly associated with junk food consumption ($p \leq 0.001$), dieting ($p \leq 0.001$) and lack of physical exercise ($p \leq 0.005$).

Table8 represents significantly higher prevalence of pre-menstrual symptoms in students with normal and overweight category ($p \leq 0.001$), having habit of consuming junk food ($p \leq 0.01$) and not practicing dieting ($p \leq 0.001$) as well as physical exercise ($p \leq 0.005$).

Routine work was affected by menstrual abnormalities in 140 (70%) cases and caused varying degrees of stress in 157 (78.5%). Discomfort resulting from menstrual abnormalities forced 62 (31%) students to be absent from class/college (Fig. 2).

Menstrual disorders, which warranted the students to seek medical advice, were dysmenorrhea in 30 (15%) cases, infrequent cycles in 42 (21%), frequent cycles in 16 (8%), premenstrual symptoms in 28 (14%), obesity 22 (11%). Academic disturbance because of these problems was reported by 42 (21%) students (Fig. 3)

DISCUSSION

Menstruation is an inevitable part of a woman's life and an important indicator of normal sexual and reproductive health. The changes in the normal menstrual pattern of female in the reproductive age group may affect physical, physiological and psychological well being. However, this normal

phenomenon is not an easy one and is often associated with some degree of sufferings, inconvenience and embarrassment.

Studies on menstrual abnormalities in college students have been conducted in various parts of India and neighbouring countries in relation to the lifestyle and the types of menstrual abnormalities and their correlation with BMI, consumption of junk food and physical exercise.

In the present study, we attempted to correlate various lifestyle factors like consumption of junk food, dieting and physical exercise with the menstrual problems experienced by the female medical students and their association with stress. Medical students need to study harder and are at high risk for stress and menstrual disorders [6-8]. These risk factors, which are modifiable and intervention at an early stage might result in healthier adults.

The mean age of menarche in the present study was 12.6 ± 1.32 years, which was almost consistent with earlier reports from different geographical areas of India and different parts of the world 12.5±1.52 years [5], 12.6 ± 1.0 years[11], 12.5 years [12], 13.99 ± 1.8 years [14], 13.57 ± 1.23 years [15], 14.2 years [16], 12.4 ± 1.3 years [17]. The age of menarche is determined by general health, genetic factors, socio-economic and nutritional status.

In our study, 71% of participants had regular cycles, whereas 29% had irregular cycles. A study conducted among the girl students in Ratnagiri, Maharashtra, India reported 83.1% girls with regular and 16.9% had irregular cycles [18]. Study conducted in Nigeria found that 63.5% respondents had regular and 36.5% had irregular menstrual cycles [19]. Similar study conducted among the female students at Medical school, Dinajpur, Bangladesh revealed regular cycles in 152 (87.4%) participants, whereas 22 (12.7%) with irregular cycles [11]. Mohite and Mohite also reported 73.8% subjects with regular and 26.1% had irregular cycle among the college students [13]. The minor difference among the various studies was mainly due to environmental, racial, nutritional and lifestyle factors.

In the present study, 77% of the subjects had normal menstrual cycle, while 10.5% had scanty flow and 5% had heavy blood loss. According to Begum et al 100 (57.5%) respondents had average menstrual flow, while 72 (43.4%) had scanty and 2 (1.1%) had heavy flow [11].

Significant association was observed between pattern of menstrual cycle and amount of flow. Students with regular cycles reported to have moderate flow, while heavy flow was observed by participants who had irregular cycle either frequent or infrequent cycles.

Dysmenorrhoea and premenstrual symptoms are the common disorder that affects more than 50% of the menstruating women [20, 21]. The proposed cause of pain in dysmenorrhea is excess production of prostaglandins (PG) in the endometrium during the ovulatory cycle. It was shown that women with dysmenorrhea have higher levels of PG in their plasma and menstrual discharge than women without dysmenorrhea [22]. Pre-menstrual symptoms are experienced prior to menstruation due to changes in blood levels of estrogen as well as progesterone [21].

In the present study, dysmenorrhoea and premenstrual symptoms were experienced by significant number of students with normal body weight (97.48%). These findings corroborated with the earlier reports [5, 10, 11].

In the present study, out of 76% cases with dysmenorrhoea, 30% experienced severity that warranted medical attention. Dysmenorrhoea, PMS and heavy flow were the main cause for absence (31%) from class/college. Similar observations were also reported by earlier workers, wherein dysmenorrhea among the subjects ranged between 50-73% of the cases and PMS in 60-63% of the cases [5, 10, 12, 23, 24]. Most of the students experienced menstrual disorders more commonly around the time of examinations confirming the stress induced abnormalities. Our findings on absenteeism are in agreement with earlier reports of 30-50% of absenteeism from the class/college due to menstrual disorders [5, 11, 16].

In the present study, increased BMI was associated with infrequent cycles, however no association was found with other menstrual disorders. Significant association between increased BMI and irregular cycle has also been reported earlier [25]. In addition, most of the overweight participants in the present study were reported to be on the way of reducing weight either by dieting or regular exercise. Studies conducted earlier suggested significant association between overweight and dysmenorrhea [26, 27]; however some authors reported no significant correlation [5, 28].

In the present study, alarmingly high numbers of students (86%) reported to consume junk food on regular basis. Significant association was found between irregular cycles, abnormal flow, dysmenorrhoea and PMS with frequent consumption of junk food. The association of junk food consumption with dysmenorrhoea and PMS were also reported in earlier studies [29-31]. Junk food being rich in saturated fatty acids might interfere with metabolism of progesterone in luteal phase of menstrual cycle causing PMS and increased prostaglandin levels may also be associated with dysmenorrhoea. Frequency of consumption of junk food concomitantly with less physical activity with added stress during examination time predisposed the students to menstrual disorders.

Psychological stress activates the hypothalamo-pitutary adrenal axis resulting in increased cortisol level, which is related to functional menstrual disorder. Stress can also affect hypothalamo-pitutary ovarian axis and cause disturbance in menstrual cycle [32].

In the present study, significant association was observed with the physical exercise and menstrual abnormalities. Students performing regular physical exercise for more than 3 days/ week suffered less from menstrual abnormalities in relation to duration of cycle, flow, dysmenorrhoea and PMS in comparison to students without scheduled exercise. Regular physical activity helps to maintain ideal body weight, increases insulin sensitivity, increases BMR and releases endorphins, which in turn helps in regularisation of menstrual cycle, improvement in PCOS and hypothyroidism, reduction in PMS and overall feeling of well-being [31, 33, 34].

The present study was a cross sectional design based on the structured questionnaire on a sample size of 200. The self reported information about the menstrual cycles can be influenced by subjective bias related to the memory and recall of all the events that have happened earlier. The collected information from the students does not suffice the objective assessment for verifying the reported symptoms and clinical manifestations of the menstrual abnormalities. At times, some of the morbidities related to the menstruations may have remained asymptomatic and therefore cannot be assessed as reported in earlier studies [15, 35].

We recommend that further studies may be undertaken with multicentric and larger sample size of similar age group using a relatively validated questionnaire for the assessment of stress and clinical manifestations of menstrual disorders. The incorporation of hormonal assay in such study protocol will definitely be of great help in understanding the various menstrual abnormalities experienced by the students.

CONCLUSION

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. Menstruation is a normal physiological process, however any deviation from normalcy is usually considered as minor ailment. Menstrual abnormalities can cause severe health problems like polycystic ovarian disease, hyperlipidemia, obesity, infertility, social withdrawal, psychological problems, low self esteem and class/college absenteeism. The timely intervention after understanding the problem on individual basis can be done by conducting studies in order to provide healthy clinicians to the community, who can treat similar problems in the surrounding population and help the society on a larger scale

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