# PREVALENCE AND SEVERITY OF DYSMENORRHEA : A PROBLEM RELATED TO MENSTRUATION, AMONG FIRST AND SECOND YEAR FEMALE MEDICAL STUDENTS

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Abstract : Dysmenorrhea is the most common of gynecologic complaints. It affects half of all female adolescents today and represents the leading cause of periodic college/school absenteeism among that population. To evaluate the menstrual problem specially dysmenorrhea and its severity in female medical students and its effect on their regular activities. This is a cross-sectional descriptive study; conducted on 107 female medical students, all participants were given a questionnaire to complete; questions were related to menstruation elucidating variations in menstrual patterns, history of dysmenorrhea and its severity, pre-menstrual symptom and absenteeism from college and /or class; to detect the severity of dysmenorrhea we used the verbal multi-dimensional scoring system, participants were given 20 minutes to complete the questionnaire. The mean age of subjects at menarche was 12.5 (±1.52) years, with a range of 10-15 years. The prevalence of dysmenorrhea was 73.83%; approximately 4.67% of dysmenorrhic subjects had severe dysmenorrhea. The average duration between two periods and the duration of menstrual flow were 28.34 (±7.54) days and 4.5 (±2.45) days respectively. Prevalence of other menstrual disorders like irregularity, prolonged menstrual bleeding, heavy menstrual bleeding and PCOD were 7.47%, 10.28%, 23.36% and 3.73% respectively. Among female medical students who reported dysmenorrhea; 31.67% and 8.68% were frequently missing college & classes respectively. Premenstrual symptom was the second most (60.50%) prevalent disorder and 67.08% reported social withdrawal. Dysmenorrhea and PMS is highly prevalent among female medical students, it is related to college/class absenteeism, limitations on social, academic, sports and daily activities. Maximum participants do not seek medical advice and self treat themselves with prostaglandin inhibitors; like Ibuprofen.

Key words : dysmenorrhea          PMS (premenstrual syndrome)
            socio-economic status (SES)      body mass index (BMI)
            menstruation                          menarche

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## INTRODUCTION

Menstrual disorders are a common presentation by late adolescence, 75% of girls experience some problems associated with menstruation (1). Dysmenorrhea is a common problem in women of reproductive age. Primary dysmenorrhea is defined as painful menses in women with normal pelvic anatomy, usually begins during adolescence (2). It is unusual for symptoms to start within first six months after menarche. Affected women experience sharp, intermittent spasm of pain usually concentrated in the supra-pubic area. Pain may radiate to the back of the legs or the lower back. Systemic symptoms of nausea, vomiting, diarrhea, fatigue, mild fever and headache or lightheadedness are fairly common. Pain usually develops within hours of the start of the menstruation and peaks as the flow becomes heaviest during the first day or two of the cycle (3). It is usually possible to differentiate dysmenorrhea from pre menstrual syndrome (PMS) based on patients history. The pain associated with PMS is generally related to breast tenderness and abdominal bloating rather than a lower abdominal cramping pain. PMS symptoms begin before the menstrual cycle and resolve shortly after menstrual flow begins (3). Painful menstruation with pelvic pathology is defined as secondary dysmenorrhea.

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 is 35 ml. Recurrent bleeding in excess of 80 ml per cycle's results in anemia (4). Dysmenorrhea is the most common gynecologic disorder among female adolescents, with a prevalence of 60% to 93% (5–6). In the United States, dysmenorrhea is the leading cause of recurrent short-term school absenteeism (7). Several studies have shown that adolescents with dysmenorrhea report that, it effects their academic performance, social and sports activities (8). The etiology of primary dysmenorrhea is not precisely understood, but most symptoms can be explained by the action of uterine prostaglandins, particularly $PGF_{2-Alfa}$, the disintegrating endometrial cells release $PGF_{2-Alfa}$ as menstruation begins. $PGF_{2-Alfa}$ stimulates myometrial contractions, ischemia and sensitization of nerve endings. These levels are highest during the first two days of menses, when symptoms peak (3). The risk factors for dysmenorrhea are; age <20 years, nulliparity, heavy menstrual flow, smoking, high/upper socioeconomic status; attempts to lose weight, physical activity, disruption of social networks, depression and anxiety (9). But several observational studies have found controversial results. Through this study we are trying to explore the problem faced by female medical students during menses (dysmenorrhea/absenteeism) and its correlation with biologic variables.

## MATERIAL   AND   METHODS

This is cross-sectional descriptive study, carried out from Jan to April 2008 with objectives to rule out the problems related to menstruation in last three cycles. Study was conducted in three medical colleges at different states of India, of these 37 (34.57%) from Govt. medical college Jagdalpur C.G.,

46 (42.99%) from Institute of medical sciences, Bhubaneswar, Orissa and 24 (22.42%) from S.S. medical college, Rewa, MP. A total of 107 female (1st and 2nd year) medical students were chosen for this study and each student was given a questionnaire to complete. Back ground information about the respondents include: age, education, religion, weight, height, socioeconomic status, father's and mother's occupation, number of total family members, number of earning members in family, dietary habits, physical exercise and family history of dysmenorrhea. Questions related to menstruation, elucidated variation in menstrual patterns like length of cycle, duration of bleeding period, blood loss per cycle, (in this study abnormal menstruation was defined as subject with length of cycle is <20 or >35 days; duration of flow <2 or >7 days and loss of blood per cycle >100ml), history of dysmenorrhea and its severity, pre-menstrual symptom and absenteeism from college/classes. Each participant was given 20 minutes to complete the questionnaire; they were advised not to write their name on the questionnaire and were told that, there responses would remain confidential. To detect the severity of dysmenorrhea we used the Verbal-Multi-dimensional Scoring System (10). "A normal menstrual cycle lasts from 21 to 35 days; with 2 to 6 days of flow and average blood loose 20 to 60 ml (11)". In this study dysmenorrhea was defined as having painful menstruation during the previous three months and the degree of pain was categorized as mild, moderate and severe. College absence was defined as missing a half day to complete day of college and class absence was defined as missing individual classes because of pain during menstruation

(12). Pre-menstrual syndrome (PMS) is recurrent variable cluster of trouble some physical and emotional symptoms that develop 7–14 days before the onset of menstruation and subsides when menstruation occurs. The PMS consists of low backache, fatigue, breast heaviness, abdominal bloating, increased weight, headache, irritability, skin disorders, aggressiveness, depression, gastrointestinal symptoms and loss of appetite (13). This study included only unmarried nulliparous, healthy (1st and 2nd year) female medical students, in age group of 17th to 25 years. The participation was purely on voluntarily basis and written consent was taken before initiating the data collection. Data were analyzed by Chi-squire test. Statistical significance of differences between groups was tested, P-value was <0.05 i.e., statistically significant.

**Observations:**

This Study was conducted on 1st and 2nd year female medical students in three medical colleges at different states of India from December 2007 to May 2008 with objectives to observe the problems related to menstruation in female medical students from last three cycles and following observations were made:

## RESULTS

In this study; 107 participants completed the questionnaire, of these 34.57% were from GMC, Jagdalpur, 42.99% from IMS, BSSR and 22.42% from SSMC, Rewa. The mean age of the participants was 21(±2.74) years. The mean age at menarche was 12.5 (±1.52) years. Of the total participants, 44.85% were

pure vegetarian and 55.14% were on mixed
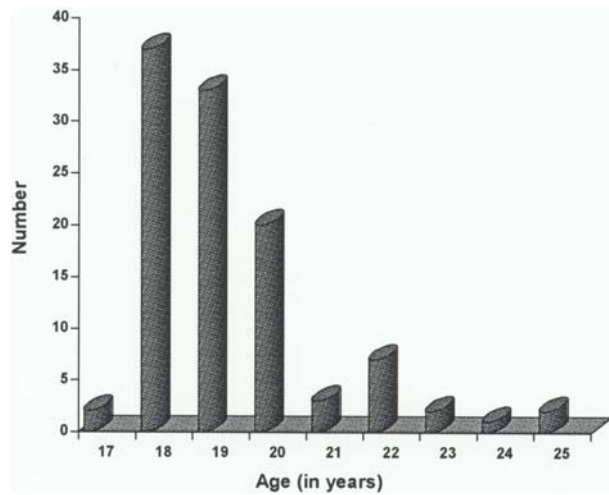diet, 79.43% has fast food habit, of these
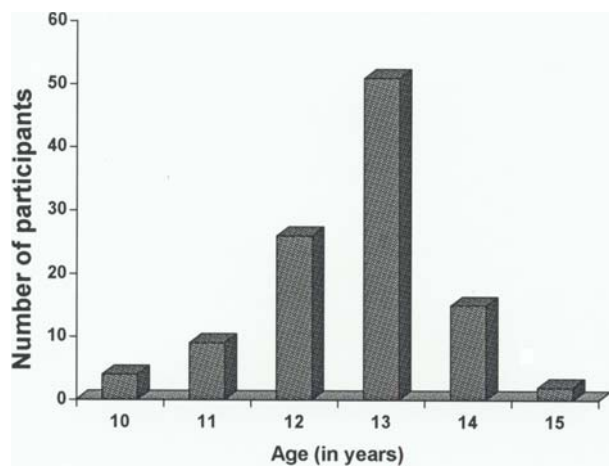


Fig. 1 : Age wise distribution of participants.



Fig. 2 : Menarche age wise distribution of participants.

20.56% had daily fast food habits in which
16.82% participants were dysmenorrhea
positive; and 20.56% had no such habit,
(P=0.89). 53.27% participants did no physical
exercise; while 46.7% have 30 minutes or
more outdoor exercise activity, (P=0.39).
18.56% participants had family history of
obesity, rest 81.30% were normal; 12.14%
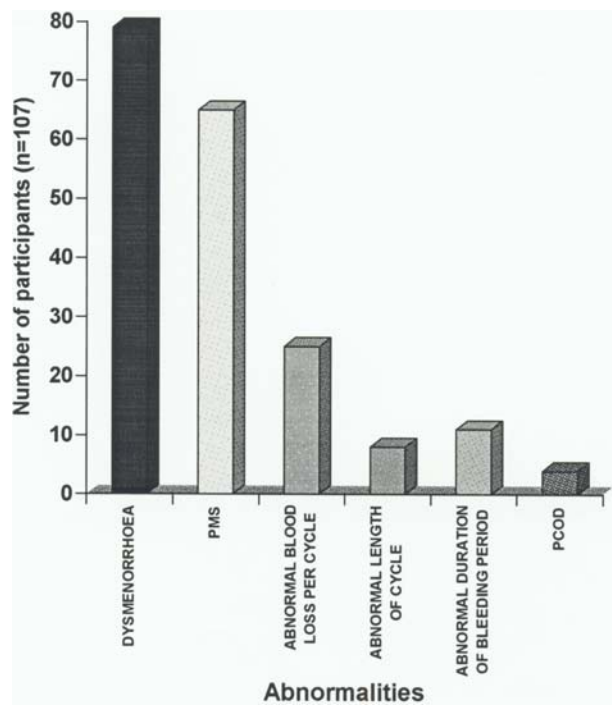


Fig. 3 : Menstrual abnormalities present in adolescents.
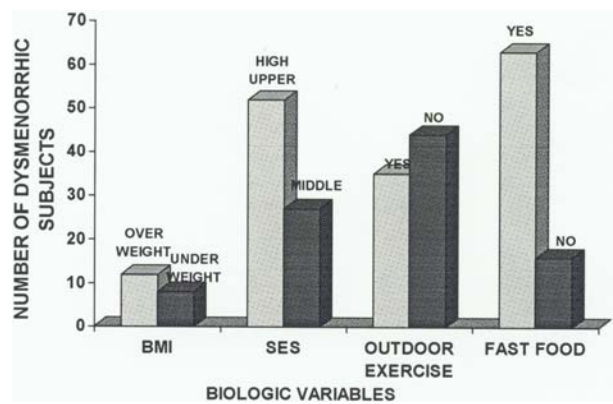


BMI = BODY MASS INDEX
SES = SOCIOECONOMIC STATUS

Fig. 4 : Correlation of dysmenorrhea with biological
        variables.

subjects were underweight while 11.21%
subjects were overweight; in underweight
category 61.53%, while in overweight 91.67%
subjects were suffering from dysmenorrhea
and rest 76.63% were average, (P=0.22).
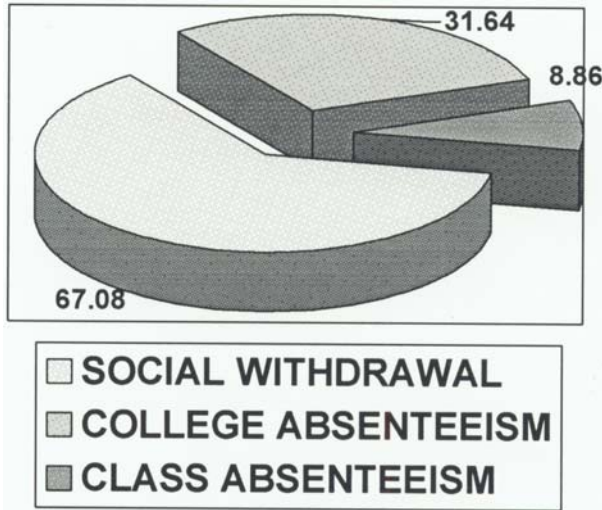44.85% participants in this study have blood

Fig. 5: Conditions associated during menses.

TABLE I: Menstrual cycle characteristics in female medical students.

| Menstrual cycle characteristics | Number of subjects | % (Percentage) |
|---|---|---|
| **Length of cycle (days)** | | |
| <20 days | 05 | 4.6 |
| 28–30 days | 86 | 80.3 |
| 35 days | 13 | 12.1 |
| >36 days | 03 | 2.8 |
| **Total** | **107** | |
| **Amount of blood flow/cycle** | | |
| <30 ml (<4 pads per day) | 13 | 12.1 |
| 30-100 ml (5-10 pads per day) | 82 | 76.6 |
| >100 (2 pads at a times on first day) | 12 | 11.2 |
| **Total** | **107** | |
| **Duration of bleeding (days)** | | |
| <2 days | 02 | 1.8 |
| 3-7 days | 96 | 89.7 |
| >8 days | 09 | 8.4 |
| **Total** | **107** | |
| **Dysmenorrhea H/O** | | |
| Yes | 79 | 73.8 |
| No | 28 | 26.1 |
| **Total** | **107** | |
| **Grade of dysmenorrhea** | | |
| Grade-0 | 28 | 26.1 |
| Grade-1 | 51 | 47.6 |
| Grade-2 | 24 | 22.4 |
| Grade-3 | 04 | 3.7 |
| **Total** | **107** | |
| **Premenstrual symptoms (PMS)** | | |
| Yes | 65 | 60.7 |
| No | 42 | 39.2 |
| **Total** | **107** | |

TABLE II: Abnormality associated with menstruation in Female medical Students.

| Factors | Abnormal duration of menstrual flow (n=11) | Irregular (length) cycle (n=08) | Abnormal (amount) menstrual flow (n=25) | PCOD (n=04) |
|---|---|---|---|---|
| **BMI** | | | | |
| Overweight | 06 | 01 | 08 | 02 |
| Average | 04 | 07 | 13 | 02 |
| Underweight | 01 | 00 | 04 | 00 |
| **Total** | **11** | **08** | **25** | **04** |
| **Socioeconomic Status** | | | | |
| High Upper | 05 | 02 | 11 | 04 |
| Upper Middle | 05 | 05 | 08 | 0 |
| Lower Middle | 01 | 01 | 06 | 0 |
| **Total** | **11** | **08** | **25** | **04** |
| **Diet (Fast food Habit)** | | | | |
| Present | 06 | 07 | 21 | 04 |
| Absent | 05 | 01 | 04 | 00 |
| **Total** | **11** | **08** | **25** | **04** |
| **Exercise (30 or >30 mins)** | | | | |
| Yes | 02 | 04 | 13 | 03 |
| No | 09 | 04 | 12 | 01 |
| **Total** | **11** | **08** | **25** | **04** |

TABLE III: Body mass index wise distribution of participants and its association with dysmenorrhea.

| Body mass index | Number | Percentage |
|---|---|---|
| Under wt(BMI<18.5) | 13 | 12.14 |
| Average (BMI 18.5-24.99) | 82 | 76.63 |
| Over wt( BMI>25.00) | 12 | 11.21 |
| **Total** | **107** | |

| Factor BMI | Positive history of dysmenorrhea (n=79) | Negative history of dysmenorrhea (n=28) | Total (n=107) |
|---|---|---|---|
| Underweight | 08 | 05 | 13 |
| Average weight | 60 | 22 | 82 |
| Overweight | 11 | 01 | 12 |
| **Total** | **79** | **28** | **107** |

$\chi^2 = 3.011$, $P = 0.22$, Not Significant.

TABLE IV : Socioeconomic status wise distribution of participants and its association with dysmenorrhea.

| Socioeconomic status | Number | Percentage |
|---|---|---|
| High Upper (>160000) | 66 | 61.68 |
| Upper Middle (120000-160000) | 31 | 28.97 |
| Lower Middle (80001-120000) | 10 | 9.33 |
| **Total** | **107** | |

| Factor Socioeconomic status | Positive history of dys-menorrhea (n=79) | Negative history of dys-menorrhea (n=28) | Total (n=107) |
|---|---|---|---|
| 1-High Upper | 52 | 14 | 66 |
| 2-Upper Middle | 22 | 09 | 31 |
| 3-Lower Middle | 05 | 05 | 10 |
| **Total** | **79** | **28** | **107** |

$\chi^2 = 3.91$, P = 0.14, Not Significant.

TABLE V : Exercise activity wise distribution of participants and its association with dysmenorrhea.

| Outdoor Exercise (30 minute or more) | Number | Percentage |
|---|---|---|
| Yes | 50 | 46.7 |
| No | 57 | 53.3 |
| **Total** | **107** | |

| Factor Exercise activity (Daily outdoor) | Positive history of dys-menorrhea (n=79) | Negative history of dys-menorrhea (n=28) | Total (n=107) |
|---|---|---|---|
| Yes | 35 | 15 | 50 |
| No | 44 | 13 | 57 |
| **Total** | **79** | **28** | **107** |

$\chi^2 = 0.71$, P = 0.39, Not Significant.

TABLE VI : Exercise activity wise distribution of participants and its association with dysmenorrhea.

| Fast food habits | Number | Percentage |
|---|---|---|
| Yes | 85 | 79.43 |
| No | 22 | 20.56 |
| **Total** | **107** | |

| Factor Dietary habits (Fast food) | Positive history of dys-menorrhea (n=79) | Negative history of dys-menorrhea (n=28) | Total (n=107) |
|---|---|---|---|
| Yes | 63 | 22 | 85 |
| No | 16 | 06 | 22 |
| **Total** | **79** | **28** | **107** |

$\chi^2 = 0.71$, P = 0.89, Not Significant.

group 0+ve, 28.97% B+ve, 19.62% A+ve, 2.8% AB+ve and rest 4% were absent at the time of grouping. According to WHO criteria; 38.31% subjects were anemic, only 2.83% had hemoglobin >15 gms. 61.68% belonged to high upper, 39.30% in middle (P=0.14) and 0%

belonged to lower socioeconomic status. Age of menarche of maximum participants (47.66%) was 13 years. Prevalence of dysmenorrhea was 73.83%; of these 6.32% severe, 30.37% moderate and 63.29% were mild grade. Among these subjects (n=79), following symptoms i.e., backache (62.0%), headache (26.58%), fatigue (70.88%) and vomiting/diarrhea (6.32%) were reported. In 107 participants, 60.74% were presented with PMS, symptoms consist of: breast heaviness (17.75%), abdominal bloating (12.14%), backache (25.23%), headache (13.08%), uneasiness (22.42%), and anxiety (8.41%). In 7.47% subjects, length of cycle was abnormal (4.67% had <20 days and 2.80% had >35 days); 10.28% subjects had abnormal duration of bleeding period; (of these, 1.86% subjects had duration <2 days and 8.41% had >7 days); 21.49% subjects were reported abnormal blood loss per cycle; (of these, 12.14% had blood loss <30 ml and 11.21% had >100 ml). Among participants, 31.64% were absent from college, 8.86% missed individual classes and 67.08% reported social withdrawal during menstruation.

TABLE VII : BMI, SES, Dietary habits and Exercise activity wise distribution of problems / circumstances related during menstruation in female medical students.

| Factors BMI | Pre- menstrual symptoms (n=65) | Absen- teeism H \ O (n=32) | Social withdra- wal (n=32) |
|---|---|---|---|
| Underweight (<18.5) (n=13) | 03 (23.0%) | 02 (15.3%) | 05 (38.4%) |
| Average (18.5-24.99) (n=82) | 53 (64.6%) | 23 (28.0%) | 42 (51.2%) |
| Over weight (>25) (n=12) | 09 (75%) | 07 (58.3%) | 05 (41.6%) |
| **Total** | **65** | **32** | **52** |
| **Socioeconomic status** | | | |
| 1. High-Upper (n=66) | 51 (77.2%) | 19 (28.7%) | 38 (57.7%) |
| 2. Upper-middle (n=31) | 12 (38.7%) | 13 (41.9%) | 11 (35.4%) |
| 3. Lower-middle (n=10) | 02 (20%) | 00 | 03 (30.0%) |
| **Total** | **65** | **32** | **52** |
| **Dietary habits (Fast food)** | | | |
| Daily fast food intake history POSITIVE (n=85) | 52 (61.1%) | 24 (28.3%) | 41 (48.2%) |
| Daily fast food intake habit NEGATIVE (n=22) | 13 (59.0%) | 08 (36.3%) | 11 (50.0%) |
| **Total** | **65** | **32** | **52** |
| **Exercise activity (Daily outdoor)** | | | |
| Daily outdoor exercise activity Present (n=50) | 18 (36.0%) | 09 (18.0%) | 29 (58.0%) |
| Daily outdoor exercise activity Absent (n=57) | 47 (82.4%) | 23 (40.3%) | 23 (40.3%) |
| **Total** | **65** | **32** | **52** |

TABLE VIII : Incidence of Circumstances associated with dysmenorrhea in female medical students

| Incidence of circumstances with dysmenorrhea | Number of subjects | Per- centage |
|---|---|---|
| Social withdrawal | 53 | 67.0 |
| College absenteeism | 25 | 31.6 |
| Class absenteeism | 07 | 8.8 |

## DISCUSSIONS

In present study the mean age of menarche was 12.5 (±1.52) years, which is very similar to many other studies (14, 15). Most of the girls related to one or more menstrual problems. Dysmenorrhea is the most common (73.83%) gynecological problem associated with female medical students in this study. Several other studies reported its prevalence as 67.7% (1) and 59.7% (16). The ranges of prevalence of dysmenorrhea from 51% to 80% have been reported by many other studies (17, 18). In this study, 6.32%, 30.37% and 63.29% participants were suffering from severe, moderate and mild grades of dysmenorrhea, while study by Jerry et al (16) showed that 14% severe, 38% moderate and 49% subjects were mild sufferers. Other common disorders in present study were abnormal menstrual flow, abnormal duration of flow followed by irregular length of cycle and polycystic ovarian disease, while in the Malaysian study (1) a "long cycle" was a common menstrual disorder among adolescent girls; this may be due to difference in their gynecological age. In our study, all the girls had menarche far more than three years, while in reference study most of those with abnormal cycle length were within two years of achieving menarche, suggestive of anovulatory cycles at the time of study. In WHO study on menstrual and ovulatory patterns in adolescent girls, the mean menstrual cycle length was 50.7 days, in the first cycle after menarche, and bleeding lasted for an average of 4.7 days (19). The female reproductive system usually requires approximately two years to mature before adolescent girls will have consistently regular ovulatory cycles (19). In present

study 60.74% female medical students had PMS, while in other studies PMS was reported as 63.1% (13). Etiology of PMS is unknown and it is a relatively uncommon disorder during adolescence. Adolescent girls commonly complain of PMS when they are actually experiencing dysmenorrhea or psychosocial problems (20). Backache, abdominal bloating fatigue and breast heaviness are the most common symptoms reported by participants. In the present study, 31.64% participants had symptoms which were severe enough for them to be absent from college, and 8.86% were absent from classes during menses; several studies reported that rate of absenteeism from school/work as ranging from 34 to 50% (10, 21, 12). Another study (15) showed that 14% subjects frequently missed school, in that black students missed more classes than white students. In our study, 67.08% subjects reported social withdrawal from friends, marketing, gathering, sports and academic activities during menses. Many studies (18, 21) reported that ability to perform work was affected in up to 52% of female adolescents. Another study (12) showed that in majority of female adolescents, PMS and dysmenorrhea had significant effect on academic performance and was responsible for school absenteeism. In biologic variables,

BMI statistically not correlated with dysmenorrhea (P=0.22, not significant) in this study. However, the evidence of an association between overweight and dysmenorrhea is inconsistent (9, 10, 2). Another study by Parazzini et al (22) has not found an association with obesity. SES, dietary habits and exercise activity were statistically not correlates in present study, may be due to less number of participants and this is supported by Jerry et al (16), for SES; and by Harlow et al (9) for exercise activity. Another study[1] also reported that physical activities have not been associated consistently with menstrual dysfunction.

Conclusion:

Dysmenorrhea is common among the female medical students and it is major problem representing the leading cause of college/class absenteeism, information about its effective medication may help alleviate the discomfort during menses. An etiologic relationship between dysmenorrhea and obesity (BMI), SES, exercise activity, alcoholism and dietary habits have been proposed. Although further research is needed, as their relationship is controversial in many other studies.

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