European Journal of Molecular & Clinical Medicine (EJMCM)
ISSN: 2515-8260 Volume 07, Issue 11, 2020

Original research article

A Cross Sectional Study to assess the Prevalence of Menstrual abnormalities in Medical Students of Karimnagar

Suman Nama[1], Aswan Gaddala[2], Pratima Matli[3], J. Rajamouli[4], Sachin Gurnule[5]

Usha Tejaswi[6]

[1,2,3] Assistant Professor, [4]Professor & Head of the Department, [5]Lecturer in Statistics, [6]Intern, Department of Community Medicine, Chalmeda Ananda Rao Institute of Medical Sciences, Karimnagar

Corresponding Author: Pratima Matli

Abstract

Background: Menstruation is a physiological event in the life of a woman, influenced by the endocrinal system. Several factors that affect physical, emotional and mental status of a woman can have an effect on menstruation. This study is aimed at measuring the prevalence of menstrual disorders in medical students and the factors associated with them.

Material & Methods: A descriptive, cross sectional study was conducted among 100 medical students of Karimnagar aged 19-25 years from June 1, 2020 to July 31, 2020. A pretested self -administered questionnaire was used to collect demographic, menstruation and lifestyle data, which was analysed using SPSS v16.0.

Results: Most common menstrual abnormalities were dysmenorrhoea (86%), Pre-menstrual Syndrome (83%) and irregular menstrual cycles (25%). 70% students perceived that stress had an effect on their periods – delayed periods (43%), painful menstruation (15%) and increased menstrual flow (11%).

Conclusion: Dysmenorrhoea and pre-menstrual syndrome are found to be highly prevalent in undergraduate medical students. High levels of stress associated with medical education act as an added factor in these students. Hence a provision of flexible medical curriculum to accommodate the students' needs is to be sought.

Key words: Menstrual abnormalities, Medical students, Stress

Introduction

Menstruation is a natural, inevitable fact of every woman's life. A woman's Menstrual health can act as a reliable and good indicator of a Woman's overall health. Due to menstruation's link to the endocrine system, which is responsible for most of the bodily functions, information about a woman's menstrual cycles can offer a comprehensive insight into her complete health, overarching the obvious reproductive health of that woman. A report of the American College of Obstetricians and Gynaecologists in 2015 went as far as recommending a woman's menstrual cycle be considered a vital sign along with her Blood pressure, Pulse rate and body temperature.

Menstrual disorders as the main concern of women, is the result found during researches that were carried out in various developing countries. However, very little attention is paid to understand women's menstrual complaints[1]. Menstrual disorders are common among Young adults and can adversely affect their quality of life. They may add to the burden of anxiety for this group of population. Other than the well-known health related issues to these menstrual disorders, these can also lead to serious outcomes like loss of attendance at work and poor academic performance ultimately affecting future accomplishments and employment opportunities[2]. The Global burden of disease assessment does not take into account menstrual dysfunction. Though reproductive health programs emphasize on the consideration of

gynaecologic morbidity, in practice, menstrual problems are not commonly given importance. Menstrual disorders are notedly common in medical students and are known to affect their physical, mental, emotional and social well-being; and are a well-known cause of absenteeism from academics[3].

Today, more and more female students are joining the medical stream. Hence it is necessary and of utmost importance to understand their health needs and design the course to work around their needs in order to produce good quality medical graduates. Heeding this, the current study was designed with an aim to measure the prevalence of menstrual disorders and an objective to identify the menstrual patterns and factors associated with menstrual disorders in young Medical students of Karimnagar.

Material and Methods:

A Cross sectional descriptive study was conducted on female undergraduate medical students aged 19 to 25 years of two private medical colleges in Karimnagar from June 1st, 2020 to July 31st, 2020. Approval for the study was obtained from the Institutional Ethics Committee, Chalmeda Ananda Rao Institute of Medical Sciences. 100 students consented to participate in the study.

All Female medical undergraduate students between ages 19 to 25 years who consented to participate were included in the study. Those students who were Pregnant at the time of study and the students who were suffering from secondary amenorrhoea were excluded from the study.

A pre tested, structured, self-administered questionnaire was used to collect socio-demographic data and information regarding menstruation, menstrual patterns, menstrual abnormalities and other health information like diet, lifestyle, physical exercise, etc. Questionnaire also collected information regarding Current Haemoglobin status, Height, weight, history of urinary and genital tract infections and methods of tracking periods. The questionnaire was sent through google forms by way of social media platforms and the participants filled the questionnaire by using their own mobile phones.

The data thus collected, was entered into statistical software SPSSv16.0 and analysed. Descriptive statistics were used to analyse demographic data, menstrual patterns and incidence of various menstrual disorders. Associations were elicited where possible between variables using appropriate statistical tests.

Results:

A total of 100 young, unmarried medical students of final MBBS and internship participated in the study. The mean age of the participants was 22.29 ± 1.09 years (range – 19 to 25 years).

Mean height of the participants was 159.54 ± 6.89 cm while the mean weight was 60.35 ± 12.42 Kg. The mean BMI was 23.64 ± 4.22 kg/m^2. 68% of the participants had normal BMI, while 2% were undernourished and 30% were overweight or obese. 39% of the participants reported regular physical activity as per recommended norms.

The mean Haemoglobin percentage was 11.45 ± 1.39 g/dL. 23% of the study participants had Haemoglobin levels in the normal range, while 55% had mild anaemia and 21% had moderate to severe anaemia.

54% of participants had attained menarche between the ages of 13 to 16 years, while 45% attained menarche between 10-12 years.76% of the participants had menstrual cycles in normal range of 21 to 35 days while 19% reported cycles longer than 35 days and 5% reported cycles shorter than 21 days. 82% of the participants had 3 to 6 days of bleeding while 12% had longer duration of bleeding lasting more than 7 days. Quantity of bleeding was recorded in terms of number of pads filled per day. 53% reported requirement of 1-2 pads per day while 43% reported need of 3 to 4 pads per day. 4 % reported requirement of 5

or more pads per day. Regular menstrual cycles were reported by 75% of the participants, while 25% reported irregular cycles.
Dysmenorrhoea (Pain preceding or during menstruation) was reported by 86% of the participants, which was severe enough to interfere with daily activities in 41% of the participants. Only 14% reported absence of dysmenorrhoea.

Table 1: Frequencies of Menstrual disorders in the study Population

Menstrual Disorder		**Frequency (%)**
Dysmenorrhoea		86 (86)
Pre-Menstrual Syndrome		83 (83)
Irregular cycles		25 (25)
Length of Menstrual Cycle	Oligomenorrhoea	19 (19)
	Polymenorrhoea	6 (6)
Flow disturbances	Total	18 (18)
	Menorrhagia	12 (12)
	Hypomenorrhoea	6 (6)

Other conditions related to menstrual disorders reported by the participants were Polycystic Ovarian Diseases (19%), Urinary tract infections (19%), Mittelschermstz (13%), Leucorrhoea (12%), Thyroid disorders (6%), Genital tract infections (3%), Mid cycle bleeding (6%), Uterine fibroids (2%), usage of Oral contraceptive pills to regulate cycles (2%).
Symptoms of Pre-menstrual syndrome (PMS) were reported by 83% of students. Two or more symptoms of PMS (Moderate PMS) were reported by 68% students while 23% students reported five to seven symptoms (Severe PMS) while presence of only one symptom (Mild PMS) was seen in 54%.

Table 2: Symptoms reported as a part of Pre-menstrual syndrome (PMS)

Symptoms experienced as PMS	**Frequency (%)**
Acne	50 (50)
Aches and pains	33 (33)
Behaviour changes such as Decreased academic performance, Difficulty in concentrating, Irritability, Depression, Forgetfulness, Anxiety, Adjustment difficulties, Loneliness, High emotional sensitivity	32 (32)
Food cravings and Sleep disturbances	28 (28)
Bloating, Weight gain, Oedema of lower limbs	23 (23)
Diarrhoea, Faintness, Nausea, Vomiting, Hot flushes	7 (7)

70% of the participants reported an effect of stress on their menstrual cycles in the form of delayed menstruation (43%), increased quantity of bleeding (11%), dysmenorrhoea and increase in physical distress during menstruation (15%). Type of stress also had an effect on the menstrual disturbances as reported by the participants – Psychological (57%), Emotional (30%), Physical (26%) and Environmental (3%).
81% of the participants reported tracking their menstrual cycles. Participants used methods like Mobile phone applications (23.9%) and calendars (12.5%) for tracking their cycles while

59.3% depended on their memory of last menstruation date and do not use any actual method to track them.
83% of the participants were of the opinion that they should be allowed to take official leave from work during menstruation.
Factors that had significant association with menstrual irregularities were weight, BMI, Haemoglobin status, PCOD, Physical activity and Psychological stress.

Table 3: Association of menstrual irregularity with various factors

Factors	P value
Weight	0.021
BMI	0.001
Haemoglobin status	0.001
PCOD	0.003
Physical activity	0.001
Psychological stress	0.001
Eating Junk food	0.033
Physical stress	0.074
Leucorrhoea	1.066
Urinary tract infections	0.078

Eating junk food more than 2 times a month, physical stress, leucorrhoea, Urinary tract infections had no significant association with menstrual abnormalities.
Participants with regular physical activity reported proportionately lesser incidence of dysmenorrhoea (69.2%) and PMS (62%) when compared to those not involved in routine physical activity reporting dysmenorrhea (95%). Dysmenorrhoea was significantly more associated with lack of Physical activity (p=0.0005).
No significant association was found between symptoms of Pre-Menstrual Syndrome and Body Mass Index, Psychological stress, Physical activity, PCOD, Eating junk food.

Discussion:

Menstruation is an indicator of normal reproductive/sexual health of a woman and deviation from normal is common. Abnormalities of menstruation may affect physical, physiological, or psychological well-being of the girls, more so in medical profession who are staying away from their homes in hostels, experiencing changed eating pattern, daily routine, and stress of studies.[3]
In the present study, mean age of the participants was 22.29 ± 1.09 years. Participants with normal BMI were 68 (68%) and high BMI observed in 30 (30%). Mean age of menarche of study participants is 13.21 ± 0.52 years, the length of menstrual cycle is normal in 82 (82%), long in 12, and short in 6. Regular cycles were seen in 75 (75%) and irregularity of the cycle was observed in 25 (25%) participants in this study.
In a study done by Indu et al[4] on 183 medical students in North India, Participants had a mean age of 20.97 ± 1.43 years, normal BMI seen in 58.01%, high BMI in 29.5%, mean age of menarche was 13.37 ± 1.40 years, normal menstrual cycle length in 90.74%, long in 16, and short in 1. Regular cycles were seen in 88.52% and irregularity of the cycle was observed in 11.48% participants. Irregular cycles are higher in current study compared to Indu et al, though most of the other findings were similar.

In a cross-sectional study conducted among 171 female students, Karki and Gupta[5] reported that the menarche age of the students was 12.95 ± 1.08 years, which was comparable to our observation; however, they observed that 33.3% of their students were having irregular cycles, which are more than our observation of 11.47%.2 The mean age of menarche seen by Aref et al[6]. was 13.2 ± 0.318 years, which is similar to our findings of 13.37 ± 1.40 years.5
Current study observes that Dysmenorrhoea (86%) is the most common menstrual disorder followed by Pre-menstrual syndrome (83%). Indu et al's[4] study reported the most common menstrual problem as PMS (85.24%) and Dysmenorrhea (60.66%) was their second most common problem, which is the same as findings of Karanth et al[7] who have observed dysmenorrhea in 62.5% of nursing students.
Yesuf et al[8] reported a lower incidence of dysmenorrhea among university health sciences students (71.8%), with higher incidence of irregularity of menstrual cycles in 32.6% of the girls compared to the current study. Teshome et al[9] studied 470 Ethiopian University students aged 17–24 years with mean age of menarche 14.7 ± 1.6 years for menstrual disorders and their associated factors. They recorded irregular cycles in 46.2% students, and dysmenorrhea in 85.1%. The incidence of dysmenorrhoea in the above study was similar but the frequency of irregular cycles was higher than the findings of present study.
An abnormal menstrual duration and flow pattern was seen in 42% of the present study's population while a normal pattern was observed in 58% students. Oligomenorrhea was the commonest abnormality seen in 19% medical students followed by Menorrhagia in 12% students. Indu et al[4] reported an abnormal bleeding pattern in 48.63% of study population where Menorrhagia was the commonest abnormality in 18.58% tailed by oligomenorrhea in 14.75% students and hypomenorrhea in 6.56%. Aref et al[6] found 92.5% of their students had one or more menstrual problem with an incidence of menorrhagia in 29.9% girls.
Symptoms of Pre-menstrual syndrome (PMS) were reported by 83% of students of current study. Similarly, Indu et al[4] observed PMS symptoms in 85.24% of students whereas others have seen a lower incidence 46.7–69%[5,6,10,11] in their study population of medical students. The commonest symptom found in current study was acne (50%) followed by aches, pains and breast tenderness (33%), mood changes (32%), Food cravings and sleep disturbances (28%) and bloating, weight gain and oedema of lower limbs (23%). Two or more symptoms of PMS (Moderate PMS) were reported by 53% students. 10% students reported a severe form of PMS with five to seven symptoms while mild PMS (presence of only one symptom) was seen in 16%. Indu et al[4] reported commonest PMS symptom in their study as mood swings (84.62%) followed by food craving (73.72%), breast tenderness (39.74%), and edema or bloating (12.02%). While Moderate PMS was reported in 42.31%, severe PMS was reported in 16.67% and mild PMS was reported in 41.03% in their study. Teshome et al[9] reported PMS in 72.8% of the girls, the commonest symptoms being irritability, fatigue, and depression. Rumana[12] studied PMS in 270 medical students of a private rural medical college and found prevalence of PMS to be 31.1% with features of mild, moderate, and severe in 20, 7.4, and 3.7%, respectively. In a similar study done by Rafique and Al-Sheik on 738 female health science students in Saudi Arabia, aged 18–25 years, found a high incidence of dysmenorrhea (89.7%), with 12.4% having severe dysmenorrhea. They also noted PMS in 46.7% and the common symptoms of PMS were mood swings, anger, irritability, and tiredness.[11]
In the present study, 39% of the participants reported regular physical activity as per recommended norms (150 mins of physical activity for at-least 5 days in a week). Participants with regular physical activity reported no difference in irregular cycles (26.5%), menstruation disorders (13%), as opposed to proportionately lesser incidence of dysmenorrhoea (69.2%) and PMS (62%) when compared to those not involved in routine physical activity. Dysmenorrhoea was significantly more associated with lack of Physical

activity (p=0.0005). Indu et al[4] noted that dysmenorrhea was more (73.47%) in girls who were exercising occasionally than in those who were doing exercise routinely (55.97%) and this difference was statistically significant. Yesuf et al[8] had also reported that girls doing regular exercise had less dysmenorrhea.

In the current study study, 92% of the girls with dysmenorrhea also had one or more symptom of PMS, whereas in students not having dysmenorrhea, PMS was seen in 28.6% of the participants. A strong association was seen between dysmenorrhea and PMS in our study which was statistically significant (p = 0.00001). In students with severe PMS, 90.9% also had dysmenorrhea and girls with moderate PMS, 96.4% had dysmenorrhea showing no significant association (p = 0.427) between severity of PMS and dysmenorrhea; severity of PMS was also not significantly associated with menstrual cycle regularity, BMI and exercise.

Indu et al[4] reported a strong association between dysmenorrhea and PMS and also between severity of PMS and Dysmenorrhoea. But, no significant association was found between PMS and menstrual cycle regularity, BMI, diet, exercise. Rumana et al[12] noted that PMS was more in students with low BMI, those residing in hostels, having vegetarian diet, and with age of menarche less than 10 years. Rafique et al[11] found significant correlation between dysmenorrhea, PMS, and stress and also the common symptoms of PMS in their study were mood swings, anger, irritability, and tiredness. No concensus was observed in association between menstrual irregularity and high BMI compared to Lakkawar et al[10] who reported that dysmenorrhea was significantly associated with junk food consumption, low and normal BMI. In their study, high prevalence of PMS was seen in the normal and overweight category and not practicing exercise similar to current study; but no association was seen between BMI and abnormal flow unlike in current study. Yesuf et al observed a higher incidence of dysmenorrhea (71.8%) among university health sciences students and found that long menstrual cycle intervals, long menses duration, family history, alcohol, and field of study were associated with it.[8]

Conclusion

Menstrual disorders are common among medical students and can affect their psychosocial and physical well-being and are a cause of class absenteeism. In this study, the most common menstrual disorders were PMS and dysmenorrhea. Common premenstrual symptoms were acne, followed by aches, pains and breast tenderness. Most of the students were having a sedentary lifestyle. A strong association was seen between dysmenorrhea and exercise; students exercising regularly had low incidence of dysmenorrhea. A significant association of dysmenorrhea was also seen with PMS. Lifestyle modifications along with tracking of menstruation and early management of menstrual problems can help these students to lead a more productive life. Designing academic curriculum around the health needs of the students allowing them flexibility around their menstruation days with measures for eliminating sedentary lifestyle could go a long way in improving their academics in-turn producing healthy medical graduates for the community.

Acknowledgment: We are grateful to the Principals of Chalmeda Ananda Rao Institute of Medical Sciences and Prathima Institute of Medical Sciences, Karimnagar for giving us the necessary help and support. Special thanks to interns of 2015 batch - S.P. Sankeerthana, Naresh T, Ananya T, Ajay Kumar Goud V.

References

1. Dev E and Karger B: Pediatric and adolescent gynecology. evidence - based clinical practice. 2nd, revised and extended edition 2012; 22: 160-170.
2. Diaz A, Laufer MR and Breech LL: Menstruation in girls and adolescents: using the menstrual cycle as a vital sign. Paediatrics 2006; 118(5): 2245-50.

3. Ansong E, Arhin SK, Cai Y, et al. Menstrual characteristics, disorders and associated risk factors among female international students in Zhejiang Province, China: a cross-sectional survey. BMC Women's Health 2019;19(1):35.
4. Indu V, Gaurika J, Dinesh S, et al. Menstrual Problems in Undergraduate Medical Students: A Cross-sectional Study in a Medical College of North India. Journal of South Asian Federation of Obstetrics and Gynaecology 2020;12(2):85–90.
5. Karki PK, Gupta R. Menstrual pattern. disorders among female students of Kathmandu medical college. International Journal of Contemporary Medical Research 2017;4(12):1–3.
6. Aref N, Rizwan F, Abbas MM. Frequency of different menstrual disorders among female medical students at Taif medical college. World Journal of Medical Science 2015;12:109–114
7. Karanth S, Liya SR. Prevalence and risk factors for dysmenorrhoea among nursing student and its impact on their quality of life. International Journal of Reproduction Contraceptives Obstetrics Gynecology 2018;7(7):2661–2667..
8. Yesuf TA, Eshete NA, Sisay EA. Dysmenorrhoea among university health science students, northern ethiopia: impact and associated factors. International Journal of Reproductive Medicine 2018;2018:9730328.
9. Teshome SM, Wubshet M, Tegabu D. Menstrual problems and associated factors among students of Bahir Dar university, Amhara National Regional State, Ethiopia: a cross-sectional survey. Pan Afr Med J 2014;17:246. DOI: 10.11604/pamj.2014.17.246.2230.
10. Lakkawar NJ, Jayavani RL, Nivedhana AP, et al. A study of menstrual disorders in medical students and its correlation with biological Variables. Sch J App Med Sci 2014;2:3165–3175.
1. 11.Rafique N, Al-Sheik MH. Prevalence of menstrual problems and their association with psychological stress in young female students studying health sciences. Saudi Med J 2018;39(1):67–73. DOI: 10.15537/ smj.2018.1.21438.
11. Rumana Akbari M, Sudharani M, Kallupurackal SJX, et al. Prevalence of premenstrual syndrome among medical students. National J Commun Med 2017;8(6):292–294.