Prevalence of menstrual problems and their association with psychological stress among students of a medical college in Northern India

Authors

1) **Shaugfta Aara, Assistant Professor, Department of Physiology, Government Medical College, Anantnag, Jammu and Kashmir, India.**
2) **Mehbooba Rasool, Assistant Professor, Department of Community Medicine, Government Medical College, Anantnag, Jammu and Kashmir, India.**
3) **Masarat Nazeer, Senior Resident, Department of Physiology, SKIMS Medical College, Srinagar, India.**
4) **Mohsina Mukhtar, Senior Resident, Department of Community Medicine, Government Medical College, Anantnag, Jammu and Kashmir, India.**

Corresponding Author: Dr. Mohsina Mukhtar, Senior Resident, Department of Community Medicine, Government Medical College, Anantnag, Jammu and Kashmir, India;
Email: mohsinamukhtar13@gmail.com

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Abstract:

Background: Regular menstruation symbolizes a normal reproductive health of woman; however, all women experience some form of menstrual problem in their lifetime. Medical undergraduates are mostly in the age group of late adolescence and early twenties. Females in this age group frequently experience different menstrual problems that commonly affect their quality of life. These disorders may be so severe that they influence their routine physical activity and also force them to skip their classes. **Objectives:** To estimate prevalence of menstrual problems and their association with psychological stress among students of medical college. **Methods:** This was a cross-sectional study conducted among 120 medical and paramedical students of 1st and 2nd year of Government Medical College situated in District Anantnag. **Results**: Majority of participants were of 19 years of age (42.0%) and belonged to rural areas (71.4%). All of them were unmarried at the time of the study. The menstrual patterns of participants revealed that half of the students had attained menarche between 13 to 14 years and among 65.5% average duration of the menstrual cycle was more than 35 days. Menorrhagia was the most common menstrual disorder (56.5%) followed by dysmenorrhea (55.5%). There was statistically significant association between presence of irregular menstruation and menorrhagia ($p = 0.03$) as well as premenstrual symptoms ($p = 0.007$). Another significant finding of our study was that half of the students with middle perceived stress (MPS) were more likely to suffer from dysmenorrhea, menorrhagia and irregular cycles, although the associations were statistically non significant. **Conclusion:** The most prevalent menstrual problems in our study were menorrhagia and dysmenorrhoea. Therefore, it is recommended that female science students should be provided with early psychological and gynaecological counselling to prevent future complications.

Keywords: Menstrual problems, irregularities, stress, students, Kashmir, Anantnag.

Menarche means onset of menstruation in a female adolescent. Menstruation is the cyclic shedding of the endometrial lining of the uterus. The average age of menarche among 95% of the girls is between 11 and 14 years of age. The major determinant of onset of menstruation is the complex hypothalamic-pituitary- ovarian axis coordination. Other factors that play an important role include girl's nutritional status, socioeconomic factors, overall general wellbeing etc.[1-3]

On an average a menstrual cycle compromises of 28 days and can be divided into three phases. Follicular phase or ovulatory phase (average 14 days) under the influence of estrogen involves an increase in the follicular size is

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witnessed. Ovulation usually occurs on day 14 of the menstrual cycle under the influence of luteinizing hormone surge. The secretory or luteal phase (average 14 days) occurs due to an increase in the level of progesterone hormone resulting in the endometrial vessels to coil and increase the thickness of the endometrium. The final phase is the menstrual phase (lasts for 3 to 5 days) where due to the non fertilization of the matured ovum, all the ovarian hormones fall, resulting in the shedding of the endometrial lining.[4]

Almost all females, on an average, have faced one or other form of menstrual related problems in their life especially young females in whom it can affect their quality of life in a negative manner. These menstrual disorders include dysmenorrhea, menorrhagia, premenstrual symptoms, abnormal vaginal bleeding (earlier called dysfunctional bleeding), oligomenorrhea, polymenorrhea, and irregular menstruation.[5-7] These menstrual problems may be a severe as a source of anxiety among this group of adolescents. Moreover not only are they one of the most common causes of school absenteeism and poor scholastic performance among adolescent females but can also be a source of economic burden.[8-10] Numerous factors contribute to the menstrual disorders and their patterns including age, family history, ethnicity, physical activity, stress, nutritional factors and dietary habits.[11] Stress can serve as a foremost source of menstrual problems and existing data suggests a link between stress and various menstrual abnormalities.[12, 13]

Among the adolescent girls, menstrual disorders have been reportedly common in the medical students.[7.14,15] The stress related to studies, academics and exams during their courses affects their overall health adversely and is also known to be a major contributor to the menstrual disorders.[16] Keeping these points in view it is the need of the hour to address the health needs of these female medical students and work out a plan to design their courses around these needs so as to ensure high class and efficient medical graduates. So in order to evaluate the burden of menstrual problems and associated factors affecting the menstrual health, this study was carried among the medical and paramedical students of medical college located in District Anantnag of Jammu and Kashmir, India.

Aims and objectives -
Primary: To estimate prevalence of menstrual problems in females among students of government medical college.
Secondary: To identify association of these menstrual problems with stress.

Materials and methods

A cross sectional study was conducted using purposive sampling technique among 120 medical and paramedical students of 1st and 2nd year students of the Government medical college situated in District Anantnag between April 2021 to June 2021. Female students pursuing medical and paramedical courses of GMC Anantnag were included in the study and those not willing to participate or did not give informed consent were excluded. The subjects were given a self-administered questionnaire anonymously after obtaining a due informed consent form**.** The questionnaire included demographic variables; menstrual problem related questions and perceived stress scale (PSS 10)[17] was used. A short 15 minutes briefing was carried out to explain the participants about various terminologies used in the questionnaire. Data was entered into Microsoft excel sheet and analysis was done using appropriate statistical tool. Chi square test was used to determine association of menstrual problems, menstrual irregularities and perceived stress scale group.

Results

The demographic characteristics of the participants are shown in the table 1. Majority of participants were of 19 years of age (42.0%) and belonged to rural areas (71.4%). All of them were unmarried at the time of the study.

Table 2 shows the menstrual patterns of participants, including age of menarche, duration of menstrual cycle and duration of flow (days). The study revealed that half of the students had attained menarche between 13 to 14 years and among 65.5% average duration of the menstrual cycle was more than 35 days.

The study also acknowledged a high percentage of the participants suffered from some form of the menstrual disorder. Table 3 shows the frequency of occurrence of different menstrual disorders. Menorrhagia was the most common menstrual disorder (56.5%) followed by dysmenorrhea (55.5%) followed by premenstrual syndrome (40.3%).

Table 1: Distribution of study participants as per Sociodemographic characteristics (N=119)	
Demographic variables	**N (%)**
Age (in years)	
18	31 (26.1)
19	50 (42.0)
20	38 (31.9)
Residence	
Urban	34 (28.6)
Rural	85 (71.4)
Family Size	
<4	29 (24.4)
5 to 8	85 (71.4)
>8	5 (4.2)
Marital status	
Single	119 (100.0)
Total	119 (100.0)

Table 2: Distribution of study participants as per menstrual pattern (N=119)	
Menstrual Pattern	**N (%)**
Age (in years) at menarche	
11	8 (6.7)
12	23 (19.3)
13	46 (38.7)
14	27 (22.7)
15	9 (7.6)
16	6 (5.0)
Duration of Cycle (in days)	
<21	28 (23.5)
21-35	78 (11.0)
>35	13 (65.5)
Duration of flow (in days)	
<2	0 (0.0)
2-7	118 (99.1)
>7	1 (0.8)
Total	119 (100.0)

Table 3: Distribution of study participants as per various menstrual disorders (N=119)			
Menstrual disorders		**N (%)**	**Total**
Dysmenorrhoea	Yes	66 (55.5)	119 (100.0)
	No	53 (44.5)	
Premenstrual symptoms	Yes	48 (40.3)	119 (100.0)
	No	71 (59.7)	
Menorrhagia	Yes	67 (56.3)	119 (100.0)
	No	52 (43.7)	
Irregular cycle	Yes	40(33.6)	119 (100.0)
	No	79(66.4)	

Table 4: Distribution and association between menstrual irregularities and menstrual disorders (N=119)						
Menstrual disorders		**Menstrual irregularity**		**Total n (%)**	**χ^2**	**P value**
		Yes n (%)	**No n (%)**			
Dysmenorrhoea	Yes	24 (60.0)	42 (53.2)	66 (55.5)	0.502	0.47
	No	16 (40.0)	37 (46.8)	53 (44.5)		
	Total	40 (100.0)	79 (100.0)	119 (100.0)		
Premenstrual symptoms	Yes	23 (57.5)	25 (31.7)	48 (40.3)	7.376	0.007
	No	17 (42.5)	54 (68.3)	71 (59.6)		
	Total	40 (100.0)	79 (100.0)	119 (100.0)		
Menorrhagia	Yes	28 (70.0)	39 (49.4)	67 (56.3)	4.595	0.03
	No	12 (30.0)	40 (50.6)	52 (43.7)		
	Total	40 (100.0)	79 (100.0)	119 (100.0)		
*p-value was calculated by Chi-square test						

Table 4 shows the association between various menstrual problems and the presence or absence of menstrual irregularity in the students indicating that the statistically significant number of students with irregular menstruation were also suffering from menorrhagia (p = 0.03) as well as premenstrual symptoms (p = 0.007).

Table 5: Distribution and association between Perceived Stress Scale groups and menstrual disorders (N=119)							
Menstrual disorders		**Perceived stress scale**			**Total n (%)**	**χ^2**	**P value**
		LPS group (0-13) n (%)	**MPS group (14-26) n (%)**	**HPS group (27-30) n (%)**			
Dysmenorrhoea	Yes	3(42.8)	57(57.6)	6(46.2)	66 (55.5)	1.085	0.581
	No	4(57.2)	42(42.4)	7(53.8)	53 (44.5)		
	Total	7(100.0)	99(100.0)	13(100.0)	119(100.0)		
Premenstrual symptoms	Yes	5(71.4)	39(39.4)	4(30.8)	48 (40.3)	3.343	0.188
	No	2(28.6)	60(60.6)	9(69.2)	71 (59.6)		
	Total	7(100.0)	99(100.0)	13(100.0)	119(100.0)		
Menorrhagia	Yes	2(28.6)	59(59.6)	6(46.2)	67 (56.3)	3.169	0.205
	No	5(71.4)	40(40.4)	7(53.8)	52 (43.7)		
	Total	7(100.0)	99(100.0)	13(100.0)	119(100.0)		
Irregular cycle	Yes	5(71.4)	64(64.7)	10(77.0)	79(66.4)	0.861	0.650
	No	2(28.6)	35(35.3)	3(23.0)	40(33.6)		
	Total	7(100.0)	99(100.0)	13(100.0)	119(100.0)		
*p-value was calculated by chi-square test							

Another significant finding of our study was that half of the students with middle perceived stress (MPS) were more likely to suffer from dysmenorrhea, menorrhagia and irregular cycles, although the associations were statistically non significant. Also more than half of participants with high perceived stress (HPS) were more likely to have irregular cycles (table 5).

Discussion

Menstrual period is a marker of normal reproductive health of a female. Effects of menstrual disorders can be witnessed in physical, mental, social, psychological and emotional well being of women especially in medical students staying in hostels far away from home, facing altered daily routines, dietary habits and trying to cope up with constant and chronic academic stress.[18] Our study which was conducted with an aim to find prevalence of menstrual problems and their association with psychological stress among the students of Government medical college, District Anantnag, Kashmir identified that more than half of the students suffered from dysmenorrhea and

menorrhagia, 40.3% faced premenstrual symptoms and 33.6% participants had irregular cycles. A study conducted by Kollipaka et al[19] revealed a much higher percentage of dysmenorrhea, 76.9% among their study participants which is much higher than what our study identified. In present study percentage of students facing premenstrual symptoms was high (40.3%) as compared to the findings of another study conducted by Raval et al[20] in which they reported a comparatively low prevalence of premenstrual symptoms (18.4%). Regarding the menstrual patterns of participants, including age of menarche, duration of menstrual cycle and duration of flow (days), our study revealed that half of the students had attained menarche between 13 to 14 years and among 65.5% average duration of the menstrual cycle was more than 35 days. In our study no association was found between menstrual problems and psychological stress however half of the students with middle perceived stress (MPS) were more likely to suffer from dysmenorrhea, menorrhagia and irregular cycles, although the associations were statistically non significant. Also more than half of participants with high perceived stress (HPS) were more likely to have irregular cycles. Similar findings by studies conducted by Sood et al[21], Clarvit SR et al[22] and Rafique & Al-Sheikh[23] reported no association between stress and menstrual problems among the medical students. However various studies conducted nationally and internationally[13,24,25] reported contrast findings to our present study regarding a strong influence of stress as a cause of amenorrhea and menstrual irregularities. Our study reported a statistically significant association between menstrual irregularities and menorrhagia ($p = 0.03$) as well as premenstrual symptoms ($p = 0.007$). These findings were in tune with results reported by various other studies.[19, 26]

Conclusion

The study concludes that the prevalence of menstrual disorders is high among these medical students. Significant association was found between menstrual irregularity with premenstrual syndrome and menorrhagia. However no significant association was found between menstrual disorders and psychological stress. It is recommended that timely diagnosis and early management of these menstrual problems can help these medical students to lead a healthy life.

References

1. Hickey M, Balen A. Menstrual disorders in adolescence : investigation and management. Hum Reprod Update. 2003; 9(5): 493–504.

2. Marshall WA, Tanner JM. Variations in Pattern of Pubertal Changes in Girls. Arch Dis Child. 1969; 44: 291.

3. Tanner JM, Davies PS. Clinical Longitudinal Standards for Height and Height Velocity for North American Children. J Pediatr. 1985;107:317-29.

4. Cederblad G, Hahn L, Korsan-Bengtsen K, Pehrsson NG, Rybo G. Variations in blood coagulation, fibrinolysis, platelet function and various plasma proteins during the menstrual cycle. Haemostasis. 1977; 6(5): 294-302.

5. Deliwala KJ, Shah HH, Shah BS, Goswami HM, Shah PK, Patil S. Evaluation of menstrual problems among urban females of Ahmedabad. J Clin Res Lett. 2013; 4(1): 49.

6. Amu, Eyitope O, Bamidele JO. Prevalence of menstrual disorders among adolescent girls in Osogbo, South Western Nigeria. Int J Adolesc Med Health. 2014; 26(1):101-6.

7. Karout N, Hawai SM, Altuwaijri S. Prevalence and pattern of menstrual disorders among Lebanese nursing students. East Mediterr Heal J. 2012;18(4):346-52.

8. Syed A, Rao SB. Prevalence of premenstrual syndrome and dysmenorrhea among medical students and its impact on their college absenteeism. Int J Reprod Contraception, Obstet Gynecol. 2020; 9(4):1377.

9. Bitzer J, Tschudin S, Stadlmayr W. Die Menstruation und ihre Bedeutung für die Frauengesundheit [Menstruation and its impact on women's health]. Zentralbl Gynakol. 2005;127(5):282-87.

10. Houston AM, Abraham A, Huang Z, D'Angelo LJ. Knowledge, attitudes, and consequences of menstrual health in urban adolescent females. J Pediatr Adolesc Gynecol. 2006;19(4): 271-5.

11. Liu Y, Gold EB, Lasley BL, Johnson WO. Factors affecting menstrual cycle characteristics. Am J Epidemiol. 2004;160(2):131-40.

12. Ekpenyong CE, Davis KJ, Akpan UP, Daniel NE. Academic stress and menstrual disorders among female undergraduates in Uyo, South Eastern Nigeria - the need for health education. Niger J Physiol Sci. 2011;26(2):193-98.

13. Zhou M, Wege N, Gu H, Shang L, Li J, Siegrist J. Work and family stress is associated with menstrual disorders but not with fibrocystic changes: Cross-sectional findings in chinese working women. J Occup Health. 2010;52(6):361-6.

14. Nisar N, Zehra N, Haider G, Munir AA, Sohoo NA. Frequency, intensity and impact of premenstrual syndrome in medical students. J Coll Physicians Surg Pak. 2008;18(8):481-84.

15. Issa BA, Yussuf AD, Olatinwo AW, Ighodalo M. Premenstrual dysphoric disorder among medical students of a Nigerian university. Ann Afr Med. 2010; 9(3):118-22.

16. Saipanish R. Stress among medical students in a Thai medical school. Med Teach. 2003; 25(5): 502-6.

17. Cohen S, Kamarck T, Mermelstein R. A Global Measure of Perceived Stress. Journal of Health and Social Behavior. 1983; 24: 385-96.

18. Ansong E, Arhin SK, Cai Y, Xu X, Wu X. Menstrual characteristics, disorders and associated risk factors among female international students in Zhejiang Province, China: A cross-sectional survey. BMC Womens Health. 2019;19(1):1-10.

19. Kollipaka R, Arounassalame B, Lakshminarayanan S. Does psychosocial stress influence menstrual abnormalities in medical students? J Obstet Gynaecol. 2013;33(5):489-93.

20. Raval CM, Panchal BN, Tiwari DS, Vala AU, Bhatt RB. Prevalence of premenstrual syndrome and premenstrual dysphoric disorder among college students of Bhavnagar, Gujarat. Indian J Psychiatry. 2016; 58(2):164-70.

21. Sood M, Devi A, Daher AM, Razali S, Nawawi H, Tahir HM, et al. Poor Correlation of Stress Levels and Menstrual Patterns. J Asian Behav Stud. 2012; 2(7): 60-6.

22. Clarvit SR. Stress and Menstrual Dysfunction in Medical Students. Psychosomatics. 1988; 29(4): 404-9.

23. Rafique N, Al-Sheikh 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.

24. Allsworth JE, Clarke J, Peipert JF, Hebert MR, Cooper A, Boardman LA. The Influence of Stress on the Menstrual Cycle among Newly Incarcerated Women. Women's Heal Issues. 2007; 17(4): 202-9.

25. Gordley LB, Lemasters G, Simpson SR, Yiin JH. Menstrual disorders and occupational, stress, and racial factors among military personnel. J Occup Environ Med. 2000; 42(9): 871-81.

26. Gollenberg AL, Hediger ML, Mumford SL, Whitcomb BW, Hovey KM, Wactawski-Wende J, et al. Perceived stress and severity of perimenstrual symptoms: The biocycle study. J Women's Heal. 2010;19(5): 959-67.

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