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**ORIGINAL ARTICLE**

# Menstrual Pattern and Common Menstrual Disorders among Adolescent Girls

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## ABSTRACT

**Background and Aim:** The adolescent is the time period between puberty and psychophysical maturity where endocrinological, metabolic and somatic changes occur, the most frequent menstrual disorders during adolescent are; polymenorrhe, oligomenorrhea, dysmenorrhea. The present study aimed to assess the menstrual pattern and common menstrual disorders among adolescent girls.

**Methodology:** This descriptive cross-sectional study was carried out on 75 adolescent girls in the Department of Gynecology, Sindh Government hospital Landhi from August-2021 to January 2022. All the adolescent girls with minimum and maximum menarche age of 9 years and 16 years respectively were enrolled in this study. Girls with chronic disease and hormonal use were excluded. Only already menstruating girls were asked to participate. Informed consent was taken from each participant. A self-administered structured questionnaire was used to gather information such as socioeconomic status, demographic details, contraceptive pills usage, smoking habits, and anthropometrics. The girl's menstrual pattern was associated with menarche age, average bleeding days, weight, recent menstrual intervals, and complications such as amenorrhea, secondary amenorrhea, menorrhagia, dysmenorrhea, and premenstrual syndrome. SPSS version 25 was used for data analysis.

**Results:** Mean age at menarche was 11.82±2.10 years with a range from 9 to 16 years. The menstrual cycles mean length was 31.6±5.8 days. The incidence of irregular menstruation, prolonged menstrual bleeding, and dysmenorrhea were 69.3% (n=52), 8% (n=6), and 22.6% (n=17) respectively. Of the total 52 irregular menstrual cycles, the prevalence of amenorrhea, oligomenorrhea, and polymenorrhea was 5.3% (n=4), 42.7% (n=32), and 21.3% (n=16) respectively. There were no significant associations found between menstrual irregularities and other factors such as age at menarche, BMI, physical activity, age, fat intake, and nutritional status. Out of 6 prolong menstrual bleeding; the incidence of medical disease, anemia, and ovarian cysts was three, two, and one case respectively.

**Conclusion:** Our study found that irregular menstrual cycle and dysmenorrhea has higher prevalence among adolescent girls. Oligomenorrhea was the prevalent irregular menstrual problem. Irregular menstruation has no significant association with age, BMI, age at menarche, nutritional status, and physical activities. Prolong bleeding cycle was due to medical disease, anemia, and ovary cyst. Educational program and proper health information promotion should be arranged to minimize the possible consequences and complications caused by menstruation of adolescent's girls. Also, adolescent girls should record their menstrual frequency and regular prospective after menarche to minimize these sequelae.

**Keywords:** Menstrual Pattern, Adolescent girls, Dysmenorrhea,

## INTRODUCTION

The time of life where somatic, essential endocrinological, and psychological changes occur between the psychophysical maturity and puberty is referred adolescent age. At this age, the complex endocrinological system comprising hypothalamo-pituitary-ovarian interaction mark the maturation sequential phases [1, 2]. In female puberty, menarche signifies the physiological growth and potential of reproductive maturation. In 95% cases, it usually occurs after 2.3 years of puberty initiation between 11 and 14 years and mainly relies on socioeconomic status, race, nutritional status, and race [2-4]. Anovulatroy cycles cause irregularities in the menstrual cycle during the first year of menarche. The cycle becomes regular with increase in body fat, height, and weight 1 to 2 years post-menarche. Approximately 80% girl's menstrual cycle lasts for 2 to 7 days with frequency of three to six pads changes for normal cycle. Menstrual dysfunction occurs in approximately 80% adolescent girls in various form affecting their health and social life [5, 6].

The most prevalent gynecology disorder among adolescent girls is dysmenorrhea. The common symptoms include menstruation related pelvic pain, vomiting, headache, diarrhea, and back pain. Dysmenorrhea is classified into two categories; primary and secondary. The normal ovulatory function based on pelvic examination is referred to as primary dysmenorrhea whereas identifiable gynecological pathology is called secondary dysmenorrhea. The characteristics of primary dysmenorrhea are that adolescent girls reach their ovulatory cycle within a year of menarche. The prostaglandins (PG) excessive production in endometrium during ovulatory cycle causes pain, local vasoconstriction and myometrial contraction is stimulated by PG causing the menstrual effluent expelled from the uterine cavity. A higher level of PG was found in plasma of adolescent girls with dysmenorrhea compared to without dysmenorrhea [7]. After menarche prolong menstrual cycles, menstrual irregularities, and other complications such menorrhagia, secondary amenorrhea and premenstrual syndrome could be consequence in adolescent girls. These complications could be caused by factors such as anemia, medical disease, ovarian cysts, surgical disease, hypothyroidism, and ovarian masses. The present study aimed to assess the menstrual pattern and menstrual disorders among adolescent girls.

## METHODOLOGY

This descriptive cross-sectional study was carried out on 75 adolescent girls in the Department of Obstetrics and Gynecology Sindh Government hospital Landhi, from August 2021 to January 2022. All the adolescent girls with minimum and maximum menarche age were 9 year and 16 year respectively were enrolled in this study. Girls with chronic disease and hormonal drugs were excluded. Only already menstruating girls were asked to participate. Informed consent was taken from each participant. A self-administered structured questionnaire was used to gather information such as socioeconomic status, menarche age, demographic details, contraceptive pills usage, menstrual pattern, smoking habits, severity of dysmenorrhea, and anthropometrics. The girl's menstrual pattern was associated with menarche age, average bleeding days, weight, recent menstrual intervals, and patterns such as secondary amenorrhea, menorrhagia, dysmenorrhea, and premenstrual syndrome.

The age of menarche usually varies from 9 year to 16 year. The adolescent girls were divided into three categories: early normal menarche age was 9- 10 year, mid normal menarche age was 11- 13 year, and late normal menarche age was >14 year. Menstrual bleeding for more than 10 days was defined as prolonged menstrual flow. Any pain related to menstruation was referred to dysmenorrhea. Multidimensional scoring system was used for measuring the severity categorized as mild, moderate, and severe pain. Menstrual disorder was defined as menstruation beyond the normal variations 21 days to 45 days.

Digital standardization scale was used for the measurement of anthropometric parameters such as height and weight. BMI was measured in weight divided by height in square meters. Mean value after three measurements of each parameter was calculated. SPSS version 25 was used for data analysis. Descriptive statistics was used to measure the participant's mean age, frequency of menstrual disorders, menarche age, and dysmenorrhea treatment. Fisher's exact test was used for the analysis of categorical data. The statistical significance was 5%.

## RESULTS

Mean age at menarche was 11.82±2.10 year with a range from 9 to 16 year. The menstrual cycles mean length was 31.6±5.8 days. The incidence of irregular menstruation, prolonged menstrual bleeding, and dysmenorrhea were 69.3% (n=52), 8% (n=6), and 22.6% (n=17) respectively. Of the total 52 irregular menstrual cycles, the prevalence of amenorrhea, oligomenorrhea, and polymenorrhea was 5.3% (n=4), 42.7% (n=32), and 21.3% (n=16) respectively. There were no significant associations found between menstrual irregularities and other factors such as age at menarche, BMI, physical activity, age, fat intake, and nutritional status. Out of 6 prolonged menstrual bleeding, the incidence of medical disease, anemia, and ovarian cysts was three, two, and one case respectively. Table-I shows the menarche age and menstrual pattern of all the participants. The prevalence of dysmenorrhea, prolonged menstruation, and menstrual irregularities are shown in Figure-1. Figure-2 depicts the prevalence of amenorrhea, oligomenorrhea, and polymenorrhea as menstrual irregularities or complications. Dysmenorrhea associated symptoms are illustrated in Figure-3.

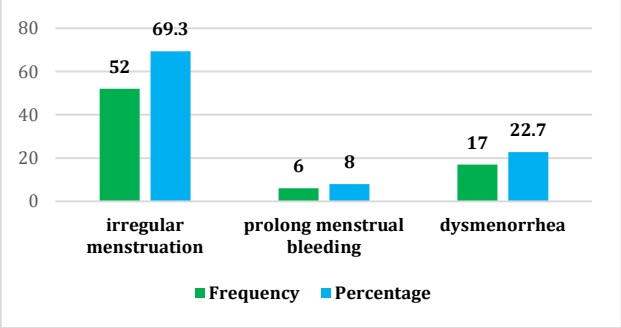


Figure-1: Prevalence of dysmenorrhea, prolong menstruation, and menstrual irregularities

Table-1: Baseline characteristics, menarche age and menstrual pattern

| Parameters | Mean ±SD |
|---|---|
| Age in years | 21.37±1.92 |
| BMI (kg/m2) | 22.34±5.21 |
| Nutritional Status n (%)<br>Underweight<br>Normal<br>Overweight | <br>19 (25.3)<br>44 (58.7)<br>12 (16) |
| Menarche age in years<br>Early menarche age n (%)<br>Normal menarche age n (%)<br>Late menarche age n (%) | <br>17 (22.7)<br>52 (69.3)<br>6 (8) |
| Average duration between two periods (days) | 29.4 ±1.8 (12-45) |
| Duration of menstrual flow (days) | 6.3±1.2 (2-10) |

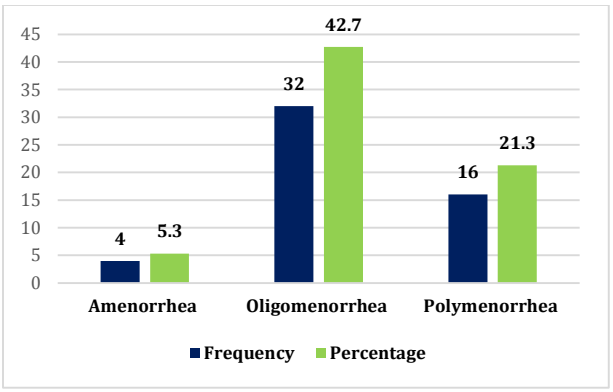


Figure-2: prevalence of amenorrhea, oligomenorrhea, and polymenorrhea

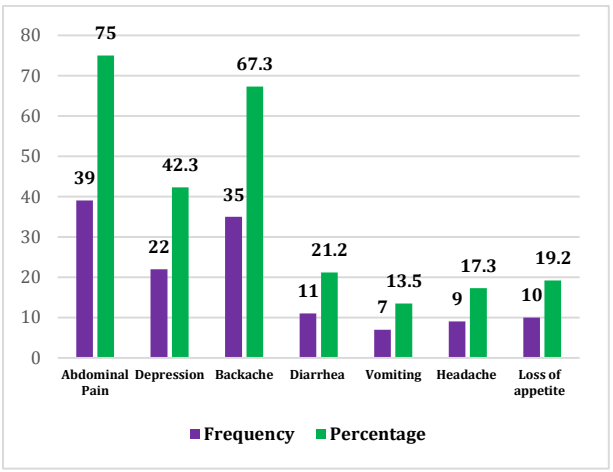


Figure-3: Dysmenorrhea associated symptoms

## DISCUSSION

The present study focused on menstrual pattern and menstrual disorders among adolescent girls and found higher prevalence of dysmenorrhea and irregular menstruation among these girls. Oligomenorrhea was the most common irregular menstrual complication. Generally, menarche age is determined by genetic factors, nutritional status, general health, and socioeconomic status. For the past two decades, typical menarche age declined from 12 to 13 years due to general health and nutritional status [8. 9]. The current study found that means menarche age was 11.82±2.10 years which resemble a previous study [10]. For a young girl, adolescence is duration where hormonal and physical changes occur. Menstrual disorders might be seen prominently in this period compared to organic gynecological pathologies which is rare in adolescent period.

The specific feature of polycystic ovarian syndrome is oligomenorrhea [11]. In the present study, among menstrual cycle abnormalities, oligomenorrhea was the prevalent menstrual disorder. About 80% of girls might be affected by problems related to menstrual patterns [12]. In early adolescent girls, menstrual disorders such as prolonged bleeding and menstrual irregularities were the commonest. In early menarche the anovulatory cycles results in prolonged menstruation due to inadequate progesterone, during this period the uterine lining or endometrium becomes unstable and disordered, initiating random shedding in turn results in irregular heavier bleeding lasting longer than normal cycle. [13, 14]. PMF was more common in adolescent girls with delayed menarche and less common in subjects with dysmenorrhea in the current study. Although 90% of PMF cases are related with anovulatory cycles during adolescence, systemic bleeding disorders such as coagulation factor deficiencies and

thrombocytopenia must be ruled out before a definite diagnosis can be made [15, 16].

The common menstrual disorder is dysmenorrhea among adolescent girls, in contrast to prolonged menstrual bleeding and irregularities, dysmenorrhea is most common in ovulatory cycles among girls. The incidence might rise and fall with advancement of age. In the present study, the incidence of dysmenorrhea was 57.3%. Rumana et al [17] found higher incidence of dysmenorrhea. Another study conducted by Teshome et al [18] reported 59.7% prevalence while investigating 2700 menarche adolescent girls. In their study, dysmenorrhea was significantly associated with socioeconomic status. Dysmenorrhea-related risk factors were nulli-parity, depression, weight loss, smoking, and anxiety [19]. Early menarche age and dysmenorrhea has significant association in Moroccan girls reported by Laksham [20]. There was no significant association of dysmenorrhea and menarche age in our study but severe dysmenorrhea has substantial relationship with mild-moderate dysmenorrhea. Regardless of adverse effects and higher incidence, the menstrual pain resistance among young adolescents considered painful periods are normal. Most of the adolescent girls had never consulted a doctor for their severe dysmenorrhea. Approximately 85% of girls found mother is a source of knowledge about menstrual and menarche issues [21]

There were no significant associations between menstrual pattern, physical activity, BMI, menarche age, fat intake, nutritional status, and age. However, another study found significant association between irregular menstrual cycle and age, menarche age, and smoking behavior [22]. A Chinese study reported no significant association between menstrual cycle and lifestyle and food intake [23]. A Turkish-based study observed strong correlation between irregular menstruation and weight, height, obesity [24].

The intervals between prolonged menstruation and menstrual heavy bleeding in adolescent girls are significantly related to oligomenorrhea or anovulation [25]. Oligomenorrhea can be caused by endocrine dysfunction that includes eating disorders, thyroid dysfunction, anemia, strong physical exercise, adrenal tumors, medical disease, and polycystic ovarian syndrome. Despite gynecological age and girl's menstruation, certain conditions are rare and must be carefully managed and evaluated [26]. Various symptoms such as abdominal pain, backache, vomiting, diarrhea, and loss of appetite, and headache could be related to girl's menstruation. In our study, dysmenorrhea was the common complaint followed by abdominal pain, backache.

## CONCLUSION

Our study found that irregular menstrual cycle and dysmenorrhea has higher prevalence among adolescent girls. Oligomenorrhea was the prevalent irregular menstrual complication. Irregular menstruation has no significant association with age, BMI, age at menarche, nutritional status, and physical activities. Prolong bleeding cycle was due to medical disease, anemia, and ovary cyst. Educational programs and proper health information promotion should be arranged to minimize the possible consequences and complications caused by menstruation of adolescent's girls. Also, adolescent girls should record their menstrual frequency and regular prospective after menarche to minimize these sequelae.

## REFERENCES


1. Dr. Anuradha Kushwah, Dr. Mugdha L Jungari, Dr. Deepti Shrivastava, Dr. Abhishek Joshi. (2021). Study of Pattern of Menstrual Disorders in Adolescent Girls at Tertiary Care Centre in Peri-Urban Area of Central India . Annals of the Romanian Society for Cell Biology, 7147
2. Rafique, N., & Al-Sheikh, M. H. (2018). Prevalence of menstrual problems and their association with psychological stress in young female students studying health sciences. Saudi medical journal, 39(1), 67–73. (Cited on 05/02/2021)
3. Khadija Sani et al.2021, Systematic Review on Prevalence of Menstrual Disorders Among Women. Int J Recent Sci Res. 12(04), pp. 41525-41527. DOI: http://dx.doi.org/10.24327/ijrsr.2021.1204.5908
4. Abu Helwa, H.A.; Mitaeb, A.A.; Al-Hamshri, S.; Sweileh,W.M. Prevalence of dysmenorrhea and predictors of its pain intensity among Palestinian female university students. BMC Women's Health 2018, 18, 18.
5. Arafa A, Senosy S, Helmy H, Mohamed A. Prevalence and patterns of dysmenorrhea and premenstrual syndrome among Egyptian girls (12–25 years). Middle East Fertil Soc J. 2018;23(4):486–90.10.1016/j.mefs.2018.01.007
6. Omidvar S, Bakouei F, Amiri F, Begum K. Primary dysmenorrhea and menstrual symptoms in Indian female students: prevalence, impact and management. Glob J Health Sci. 2016;8(8):135–44.10.5539/gjhs.v8n8p135
7. Arafa A, Khamis Y, Hassan H, Saber N, Abbas A. Epidemiology of dysmenorrhea among workers in Upper Egypt; A cross sectional study. Middle East Fertil Soc J. 2018;23:44–7.10.1016/j.mefs.2017.07.002
8. Alam M, Luby S, Halder A, Islam K, Opel A, Shoab A, et al. Menstrual hygiene management among Bangladeshi adolescent schoolgirls and risk factors affecting school absence: results from a cross-sectional survey. BMJ Open. 2017;7(7):015508.10.1136/bmjopen-2016-015508
9. bd El-Mawgod M, Alshaibany A, Al-Anazi A. Epidemiology of dysmenorrhea among secondary-school students in Northern Saudi Arabia. J Egypt Public Health Assoc. 2016;91(3):115–9.10.1097/01.EPX.0000489884.20641.95
10. Tadakawa M, Takeda T, Monma Y, Koga S, Yaegashi N. The prevalence and risk factors of school absenteeism due to premenstrual disorders in Japanese high school students–a school-based cross-sectional study. Biopsychosoc Med. 2016;10:13.10.1186/s13030-016-0067-3
11. Ansong E, Arhin SK, Cai Y, et al. Menstrual characteristics, disorders and associated risk factors among female international students in Zhejiang Province, China: a crosssectional survey. BMC Women's Health 2019;19(1):35.
12. 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.
13. 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..
14. 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.
15. 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.
16. .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.
17. 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.
18. 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
19. 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
20. Laksham, K. B., Selvaraj, R., &Kar, S. S. (2019). Menstrual disorders and quality of life of women in an urban area of Puducherry: A community-based crosssectional study. Journal of family medicine and primary care, 8(1), 137.5.
21. Peña AS, Doherty DA, Atkinson HC, Hickey M, Norman RJ, Hart R. The majority of irregular menstrual cycles in adolescence are ovulatory: results of a prospective study. Arch Dis Child. 2018;103:235-9.
22. Sharma S, Deuja S, Saha CG. Menstrual pattern among adolescent girls of Pokhara Valley: a cross sectional study. BMC Womens Health. 2016;16:74.
23. Zhang Q, Wang YY, Zhang Y, Zhang HG, Yang Y, He Y, et al. The influence of age at menarche, menstrual cycle length and bleeding duration on time to pregnancy: a large prospective cohort study among rural Chinese women. BJOG. 2017;124:1654-62.
24. Esen I, Oguz B, Serin HM. Menstrual characteristics of pubertal girls: a questionnaire-based study in Turkey. J Clin Res Pediatr Endocrinol. 2016;8:192-6.
25. Nishihama Y, Yoshinaga J, Iida A, Konishi S, Imai H. Menstrual cycle length and source of its variation in female university students majoring in nursing sciences. Nihon Eiselgaku Zasshi. 2015;70:139-148.
26. Singh A, Kiran D, Singh H, Nel B, Singh P, Tiwari P: Prevalence and severity of dysmenorrhea: a problem related to menstruation, among first and second year female medical students. Indian J Physiol Pharmacol 2008, 52(4):389–397