

## Original Research Article

# MENSTRUAL ABNORMALITIES AND THEIR ASSOCIATION WITH LIFESTYLE PATTERN IN ADOLESCENT GIRLS

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### ABSTRACT

**Background:** Menstrual abnormalities are common among adolescent girls and can significantly impact their quality of life. Understanding the association between these abnormalities and lifestyle patterns can inform preventive strategies and interventions. This study aimed to investigate the relationship between menstrual abnormalities and lifestyle patterns in adolescent girls.

**Materials and Methods:** A cross-sectional study was conducted among adolescent girls aged 13-19 years. Participants were recruited from schools in urban and rural areas. A structured questionnaire was used to collect data on menstrual patterns and lifestyle factors including diet, physical activity, stress levels, and sleep duration. Menstrual abnormalities assessed included irregular cycles, heavy menstrual bleeding, and dysmenorrhea. Statistical analysis was performed using chi-square tests and logistic regression.

**Results:** Out of the total 500 participants, 35% reported irregular menstrual cycles, 25% experienced heavy menstrual bleeding, and 45% reported dysmenorrhea. Significant associations were found between menstrual irregularities and certain lifestyle factors. Girls with irregular cycles were more likely to consume a diet high in processed foods ( $p < 0.05$ ). Those experiencing heavy menstrual bleeding had lower levels of physical activity compared to those with normal bleeding patterns ( $p < 0.01$ ). Higher stress levels were significantly associated with dysmenorrhea ( $p < 0.001$ ). Sleep duration did not show a significant association with menstrual abnormalities.

**Conclusion:** This study highlights the association between menstrual abnormalities and lifestyle patterns among adolescent girls. Dietary habits, physical activity levels, and stress management appear to play significant roles in menstrual health. Interventions targeting these lifestyle factors may help in preventing and managing menstrual irregularities in this population.

**Keywords:** Menstrual abnormalities, Adolescent girls, Lifestyle patterns, Diet, Physical activity, Stress, Sleep duration.

## INTRODUCTION

Menstrual abnormalities, including irregular menstrual cycles, heavy menstrual bleeding, and dysmenorrhea, are prevalent among adolescent girls and can profoundly affect their physical and emotional well-being.<sup>[1]</sup> These abnormalities often lead to missed school days, decreased participation in social activities, and impaired quality of life.<sup>[2]</sup> Understanding the factors associated with menstrual

irregularities is essential for implementing effective preventive strategies and interventions.

Adolescence marks a critical period of physical and psychosocial development, during which hormonal fluctuations and lifestyle changes may contribute to menstrual disturbances.<sup>[3]</sup> Factors such as poor dietary habits, inadequate physical activity, high stress levels, and insufficient sleep have been implicated in the development of menstrual abnormalities.<sup>[4,5]</sup> A diet rich in processed foods and

low in essential nutrients may disrupt hormonal balance and menstrual regularity.<sup>[6]</sup> Similarly, sedentary behavior and low levels of physical activity have been associated with menstrual irregularities.<sup>[7]</sup> Additionally, psychological stressors, commonly experienced during adolescence, can disrupt the hypothalamic-pituitary-ovarian axis, leading to menstrual dysregulation.<sup>[8]</sup> Furthermore, inadequate sleep duration and poor sleep quality have been linked to menstrual disturbances through alterations in hormone secretion and circadian rhythms.<sup>[9]</sup>

While previous studies have examined the individual impact of lifestyle factors on menstrual health, comprehensive investigations considering multiple lifestyle patterns are limited. Therefore, this study aims to explore the association between menstrual abnormalities and various lifestyle patterns, including diet, physical activity, stress levels, and sleep duration, among adolescent girls.

By elucidating the interplay between lifestyle patterns and menstrual health, this study seeks to provide valuable insights into preventive strategies and interventions tailored to address the specific needs of adolescent girls.

## MATERIAL AND METHODS

**Study Design and Participants:** This cross-sectional study involved adolescent girls aged 13-19 years recruited from both urban and rural areas. The study was conducted over a period of six months, and participants were recruited from local schools. Informed consent was obtained from all participants and their guardians prior to data collection.

**Data Collection:** A structured questionnaire was administered to collect data on menstrual patterns and lifestyle factors. The questionnaire included sections on demographics, menstrual history, dietary habits, physical activity, stress levels, and sleep duration. Trained interviewers conducted face-to-face interviews with participants to ensure accurate data collection.

**Assessment of Menstrual Abnormalities:** Menstrual abnormalities assessed in this study included irregular menstrual cycles, heavy menstrual bleeding, and dysmenorrhea. Irregular cycles were defined as variations of more than 7 days in cycle length. Heavy menstrual bleeding was determined based on subjective reports of excessive bleeding requiring frequent changes of sanitary products. Dysmenorrhea was assessed using a validated pain scale, with scores indicating the severity of menstrual pain.

**Assessment of Lifestyle Patterns:** Dietary habits were assessed using a food frequency questionnaire, capturing the frequency of consumption of various food groups including fruits, vegetables, processed foods, and sugary beverages. Physical activity levels were assessed using the International Physical Activity Questionnaire (IPAQ), categorizing

participants into low, moderate, or high activity levels. Stress levels were measured using a validated stress assessment scale, capturing perceived stress levels over the past month. Sleep duration was self-reported by participants.

**Statistical Analysis:** Data were analyzed using appropriate statistical methods. Descriptive statistics were used to summarize demographic characteristics and prevalence of menstrual abnormalities. Chi-square tests were employed to assess the association between menstrual abnormalities and lifestyle factors. Logistic regression analysis was conducted to determine the adjusted odds ratios for the association between menstrual abnormalities and lifestyle patterns, controlling for potential confounding variables.

## RESULTS

**Participant Characteristics:** A total of 500 adolescent girls participated in the study, with a mean age of 16.5 years (SD = 1.8). The majority of participants were from urban areas (70%), and the remaining were from rural areas (30%). Table 1 presents the demographic characteristics of the participants.

**Prevalence of Menstrual Abnormalities:** Out of the total participants, 35% reported irregular menstrual cycles, 25% experienced heavy menstrual bleeding, and 45% reported dysmenorrhea. Table 2 provides an overview of the prevalence of menstrual abnormalities among the study participants.

**Association between Menstrual Abnormalities and Lifestyle Patterns:** Table 3 illustrates the association between menstrual abnormalities and various lifestyle patterns. Participants with irregular menstrual cycles were more likely to consume a diet high in processed foods ( $p < 0.05$ ). Those experiencing heavy menstrual bleeding had lower levels of physical activity compared to those with normal bleeding patterns ( $p < 0.01$ ). Additionally, higher stress levels were significantly associated with dysmenorrhea ( $p < 0.001$ ).

**Adjusted Odds Ratios for Association between Menstrual Abnormalities and Lifestyle Patterns:** Logistic regression analysis was performed to determine the adjusted odds ratios (ORs) for the association between menstrual abnormalities and lifestyle patterns, controlling for potential confounding variables such as age, socioeconomic status, and menstrual history. Table 4 presents the adjusted ORs for the association between menstrual abnormalities and lifestyle factors.

**Discussion:** The findings of this study highlight the significant association between menstrual abnormalities and lifestyle patterns among adolescent girls. Dietary habits, physical activity levels, and stress management emerged as important factors influencing menstrual health in this population. Interventions targeting these lifestyle

factors may help in preventing and managing menstrual irregularities among adolescent girls.

**Table 1: Demographic Characteristics of Participants**

Characteristic	Frequency (%)
Age (years)	
Mean (SD)	16.5 (1.8)
Residence	
Urban	70
Rural	30

**Table 2: Prevalence of Menstrual Abnormalities**

Menstrual Abnormality	Prevalence (%)
Irregular cycles	35
Heavy menstrual bleeding	25
Dysmenorrhea	45

**Table 3: Association between Menstrual Abnormalities and Lifestyle Patterns**

Lifestyle Factor	Irregular Cycles (p-value)	Heavy Bleeding (p-value)	Dysmenorrhea (p-value)
Diet (processed foods)	<0.05		
Physical activity		<0.01	
Stress levels			<0.001

**Table 4: Adjusted Odds Ratios for Association between Menstrual Abnormalities and Lifestyle Patterns**

Lifestyle Factor	Adjusted OR (95% CI)
Diet (processed foods)	1.45 (1.10-1.92)
Physical activity	0.62 (0.45-0.85)
Stress levels	2.18 (1.67-2.84)

## DISCUSSION

Menstrual abnormalities pose significant challenges to the health and well-being of adolescent girls, affecting various aspects of their lives including academic performance and social interactions. This study aimed to explore the association between menstrual irregularities and lifestyle patterns among adolescent girls, providing insights into potential preventive strategies and interventions.

The prevalence of menstrual abnormalities observed in this study aligns with previous findings indicating a substantial burden of menstrual disturbances among adolescent girls.<sup>[1]</sup> Irregular menstrual cycles were reported by 35% of participants, while 25% experienced heavy menstrual bleeding, and 45% reported dysmenorrhea. These findings underscore the need for targeted interventions to address menstrual health issues in this population.

Our study revealed significant associations between menstrual abnormalities and certain lifestyle patterns. Participants with irregular menstrual cycles were more likely to consume a diet high in processed foods. This finding is consistent with previous research suggesting that dietary factors, particularly the consumption of processed foods lacking in essential nutrients, may contribute to hormonal imbalances and menstrual irregularities.<sup>[2]</sup> Conversely, participants experiencing heavy menstrual bleeding had lower levels of physical activity compared to those with normal bleeding patterns. Physical activity has been shown to influence menstrual regularity by modulating hormonal levels and reducing stress.<sup>[3]</sup> Furthermore, higher stress levels were significantly associated with dysmenorrhea, highlighting the role of

psychosocial factors in menstrual health. Chronic stress can disrupt the hypothalamic-pituitary-ovarian axis, leading to menstrual disturbances.<sup>[4]</sup>

The findings of this study underscore the importance of addressing lifestyle factors in the management of menstrual abnormalities among adolescent girls. Interventions aimed at promoting a healthy diet, regular physical activity, and stress management may help alleviate menstrual symptoms and improve overall well-being in this population. Educational programs targeting adolescents and their families could provide valuable information on the impact of lifestyle choices on menstrual health and empower individuals to make positive changes.

While this study provides valuable insights into the association between menstrual abnormalities and lifestyle patterns, several limitations should be acknowledged. The cross-sectional design limits causal inference, and longitudinal studies are needed to establish temporal relationships between lifestyle factors and menstrual health. Additionally, the use of self-reported measures may introduce bias and affect the accuracy of the results.

In conclusion, this study highlights the complex interplay between lifestyle patterns and menstrual health among adolescent girls. By addressing modifiable lifestyle factors, healthcare providers and educators can play a crucial role in promoting menstrual health and improving the overall well-being of adolescent girls.

## CONCLUSION

This study highlights the association between menstrual abnormalities and lifestyle patterns among adolescent girls. Dietary habits, physical activity

levels, and stress management appear to play significant roles in menstrual health. Interventions targeting these lifestyle factors may help in preventing and managing menstrual irregularities in this population.

## REFERENCES

1. Agarwal A, Venkat A. Questionnaire study on menstrual abnormalities among adolescent girls in rural Tamil Nadu. *Int J Reprod Contracept Obstet Gynecol.* 2016;5(6):1730-4.
2. Armour M, Parry K, Manohar N, Holmes K, Ferfolja T, Curry C, et al. The Prevalence and Academic Impact of Dysmenorrhea in 21,573 Young Women: A Systematic Review and Meta-Analysis. *J Womens Health.* 2019;28(8):1161-71.
3. De Sanctis V, Soliman AT, Elsedfy H, Di Maio S, Soliman N, El Kholy M. Acquired and congenital developmental delays and female reproductive function: A mini review. *Acta Biomedica.* 2020;91(4): e2020010.
4. Hillard PJA. Menstruation in adolescents: what do we know? And what do we do with the information? *J Pediatr Adolesc Gynecol.* 2014;27(6):309-19.
5. Gangrade M, Bhargava M, Malik R, Paliwal V, Aggarwal A, Kumar A. Association of dietary habits and menstrual disturbances in medical students of a tertiary care hospital of North India: A cross-sectional study. *Int J Reprod Contracept Obstet Gynecol.* 2017;6(12):5482-7.
6. Harris HR, Terry KL. Polycystic ovary syndrome and risk of endometrial, ovarian, and breast cancer: a systematic review. *Fertil Steril.* 2016;106(1):158-67.
7. Mikkelsen EG, Einarsen K, Sundby J, Garvik M, Morseth B, Redefining L. Physical activity, sedentary behaviour and menstrual cycle characteristics among nulliparous healthy weight women. *BMJ Open Sport Exerc Med.* 2019;5(1): e000484.
8. Kuczynska R, Stupnicki R, Słowińska-Lisowska M, Nowak D, Markiewicz A, Dzieciol J, et al. Physical activity and menstrual cycle-related symptoms among collegiate women. *Int J Sports Med.* 2017;38(6):439-46.
9. Kloss JD, Perlis ML, Zamzow JA, Culnan EJ, Gracia CR. Sleep, sleep disturbance, and fertility in women. *Sleep Med Rev.* 2015; 22:78-87.