

Impact of Diet and Physical Activity on Menstrual Regularity in Young Women

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ABSTRACT

Background: Menstrual consistency is a significant sign of reproductive health and is affected by nutrition, exercise, and body weight. Unhealthy lifestyle habits correlate with a higher likelihood of menstrual irregularities. Nonetheless, information regarding their overall effect on young women in Bangladesh is scarce. The purpose of this study was to evaluate how diet and exercise influence menstrual regularity in young women in Bangladesh. **Methods & Materials:** This cross-sectional analytical study involved 180 women between the ages of 18 and 30. Information regarding eating patterns, exercise, body mass index, stress levels, and menstrual cycle regularity was gathered through a standardized questionnaire. Associations were evaluated using the chi-square test and multivariable logistic regression, with $p < 0.05$ regarded as statistically significant. **Results:** Out of 180 participants (average age 22.4 ± 2.7 years), 116 (64.4%) exhibited regular menstrual cycles, whereas 64 (35.6%) faced menstrual irregularity. Consistent menstruation showed a strong link to daily breakfast eating, reduced fast-food consumption, sufficient fruit and vegetable intake, moderate-to-high physical activity levels, and a normal BMI ($p < 0.05$). Multivariable analysis revealed that skipping breakfast (AOR=2.34), frequent fast-food consumption (AOR=2.51), low physical activity levels (AOR=3.12), being overweight or obese (AOR=1.91), insufficient fruit and vegetable consumption (AOR=1.84), and elevated perceived stress (AOR=2.69) are independent predictors of menstrual irregularity (all $p < 0.05$). **Conclusion:** Healthy eating patterns and consistent exercise were strongly linked to better menstrual regularity, emphasizing the crucial impact of lifestyle changes on enhancing menstrual and

reproductive health in young women.

Keywords: Menstrual Regularity, Diet, Physical Activity, Young Women

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INTRODUCTION

Regularity of menstruation serves as a key sign of women's reproductive and general well-being. The menstrual cycle consists of the luteal and follicular phases divided by ovulation. The length of the menstrual cycle differs among women, mainly due to variations in the timing of ovulation [1]. A typical menstrual cycle ranges from 24 to 38 days. Consistent cycles exhibit little difference between successive cycles, while increased variation suggests menstrual irregularity. Intermenstrual bleeding signifies bleeding that occurs between typical menstrual cycles [2,3]. Worldwide, menstrual issues impact 15–30% of women in their reproductive years. Poor diet, lack of exercise, obesity, and stress significantly influence health, while changes in lifestyle can enhance menstrual regularity and reproductive wellness [4,5]. Nutrition is essential for proper reproductive functioning. Inadequate nutrition and lack of essential nutrients can interfere with hormonal equilibrium and menstrual health, while a nutritious, well-rounded diet promotes consistent menstrual cycles and reproductive well-being [6]. Consistent moderate physical activity supports hormonal balance and menstrual well-being, while excessive exercise coupled with insufficient energy intake can lead to menstrual irregularities. Consequently, a proper diet and suitable exercise are crucial for healthy reproductive function [4]. Body mass index (BMI) affects

menstrual function, as both underweight and overweight women face an increased likelihood of menstrual irregularities. Keeping a healthy BMI by following a balanced diet and engaging in regular exercise promotes regular menstrual cycles [7,8].

Worldwide research has consistently indicated that poor eating habits, regular junk food intake, and lack of exercise are linked to a higher likelihood of menstrual irregularities. Conversely, nutritious eating habits and consistent physical exercise are associated with improved menstrual regularity and enhanced reproductive health in adolescent girls and young women [9,10]. Research conducted in Bangladesh has found a significant occurrence of menstrual irregularities in adolescent girls and university students. Menstrual irregularities were notably linked to poor eating habits, lack of nutritional knowledge, unhealthy lifestyle choices, stress, and inactivity, suggesting that better nutrition and encouragement of healthy behaviors could improve menstrual health and reproductive wellness [11,12].

While worldwide research has shown the impact of diet and exercise on menstrual consistency, there is a lack of evidence from Bangladesh. The majority of local research has concentrated on the occurrence of menstrual disorders instead of the joint impact of eating habits and physical activity on menstrual health. Consequently, this research sought to evaluate the influence of

diet and exercise on menstrual consistency in young women within Bangladesh.

METHODS & MATERIALS

This hospital-based analytical cross-sectional study was conducted in the Department of Obstetrics and Gynaecology, Dhaka Medical College Hospital, Dhaka, Bangladesh, from January 2025 to December 2025 to evaluate the impact of dietary habits and physical activity on menstrual regularity among young women. A total of 180 women aged 18–30 years attending the outpatient department were enrolled using a consecutive sampling technique. Women with a history of menstruation for at least two years who provided written informed consent were included, whereas pregnant or lactating women, those receiving hormonal therapy or contraceptives, and those with diagnosed endocrine disorders (e.g., polycystic ovary syndrome, thyroid disease, hyperprolactinemia), chronic systemic illnesses, or incomplete data were excluded. Data were collected using a pretested structured interviewer-administered questionnaire that included socio-demographic characteristics, menstrual history, dietary habits, physical activity, and perceived stress. Anthropometric measurements were obtained using standardized procedures, and body mass index (BMI) was calculated according to the World Health Organization classification. Menstrual regularity was defined as a cycle

length of 21–35 days. Dietary assessment included breakfast consumption, fast-food intake, fruit and vegetable consumption, and daily water intake. Physical activity was assessed using the International Physical Activity Questionnaire–Short Form (IPAQ-SF) and categorized as low, moderate, or high. Perceived stress was measured using the 10-item Perceived Stress Scale (PSS-10). Data were entered into Microsoft Excel and analyzed using SPSS version 26.0. Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. Associations between categorical variables were evaluated using the chi-square test, and

variables showing significant associations were entered into a multivariable binary logistic regression model to identify independent predictors of menstrual irregularity. Adjusted odds ratios (AORs) with 95% confidence intervals (CIs) were calculated, and a two-tailed p-value <0.05 was considered statistically significant. Ethical approval was obtained from the Institutional Review Board of Dhaka Medical College Hospital, and written informed consent was obtained from all participants before enrollment.

RESULTS

A total of 180 young women aged 18–30 years were included in the study. The mean age of the participants was 22.4 ± 2.7 years,

while the mean body mass index (BMI) was 23.1 ± 3.9 kg/m². Overall, 116 (64.4%) participants reported regular menstrual cycles, whereas 64 (35.6%) experienced menstrual irregularity.

Table I shows the socio-demographic characteristics of the study participants. The mean age was 22.4 ± 2.7 years, with the largest proportion (40.0%) belonging to the 21–23 years age group. Most participants were undergraduate university students (67.8%) and resided in urban areas (73.3%). Approximately two-thirds (62.2%) had a normal BMI, while 26.6% were either overweight or obese.

Table I
Socio-demographic and Anthropometric Characteristics of the Participants (n = 180).

Variables	Frequency (n)	Percentage (%)
Age group (years)		
18–20	50	27.8
21–23	72	40.0
24–26	40	22.2
27–30	18	10.0
Mean age (years)	22.4 ± 2.7	
Educational status		
College	32	17.8
University undergraduate	122	67.8
Postgraduate	26	14.4
Residence		
Urban	132	73.3
Rural	48	26.7
BMI (kg/m²)		
Underweight (<18.5)	20	11.1
Normal (18.5–24.9)	112	62.2
Overweight (25–29.9)	35	19.4
Obese (≥30)	13	7.2
Mean BMI (kg/m²)	23.1 ± 3.9	

Table II presents 64.4% of participants had regular menstrual cycles, whereas 35.6% experienced menstrual irregularity. Two-

thirds (66.7%) reported a normal menstrual cycle length of 21–35 days, while 24.4% had prolonged cycles exceeding 35 days.

Dysmenorrhea was reported by 60.0% of participants, and premenstrual symptoms were present in 71.1%.

Table II
Menstrual Characteristics of the Participants (n = 180).

Variables	Frequency (n)	Percentage (%)
Menstrual regularity		
Regular	116	64.4
Irregular	64	35.6
Cycle length		
21–35 days	120	66.7
<21 days	16	8.9
>35 days	44	24.4
Duration of menstrual flow		
≤5 days	72	40.0
6–7 days	90	50.0
>7 days	18	10.0
Dysmenorrhea	108	60.0
Premenstrual symptoms	128	71.1

Table III demonstrates the lifestyle characteristics of the participants. Daily breakfast was consumed by 52.2%, whereas 18.9% skipped breakfast on most days.

Frequent fast-food consumption (≥4 times/week) was observed in 16.7% of participants. Only 23.3% met the recommended daily intake of fruits and

vegetables. Nearly half (48.9%) engaged in moderate physical activity, while 31.1% reported low physical activity.

Table IIIDietary Habits and Physical Activity of the Participants ($n = 180$).

Variables	Frequency (n)	Percentage (%)
Breakfast consumption		
Daily	94	52.2
3–6 days/week	52	28.9
<3 days/week	34	18.9
Fast-food consumption		
≤1 time/week	68	37.8
2–3 times/week	82	45.6
≥4 times/week	30	16.7
Fruit & vegetable intake		
≥5 servings/day	42	23.3
3–4 servings/day	76	42.2
<3 servings/day	62	34.4
Water intake ≥2 L/day	116	64.4
Physical activity level		
Low	56	31.1
Moderate	88	48.9
High	36	20.0

Table IV shows participants who consumed breakfast daily had a significantly higher prevalence of regular menstrual cycles compared with those who did not (78.7% vs.

48.8%, $p < 0.001$). Similarly, women consuming fast food four or more times weekly had significantly greater menstrual irregularity (60.0%, $p = 0.002$). Adequate

fruit and vegetable intake was also significantly associated with regular menstrual cycles (81.0% vs. 59.4%, $p = 0.009$).

Table IVAssociation Between Dietary Habits and Menstrual Regularity ($n = 180$).

Dietary Variables	Regular n (%)	Irregular n (%)	χ^2	p-value
Breakfast consumption				
Daily (n=94)	74 (78.7)	20 (21.3)	17.24	<0.001
Not daily (n=86)	42 (48.8)	44 (51.2)		
Fast-food intake				
<4 times/week (n=150)	104 (69.3)	46 (30.7)	9.87	0.002
≥4 times/week (n=30)	12 (40.0)	18 (60.0)		
Fruit & vegetable intake				
≥5 servings/day (n=42)	34 (81.0)	8 (19.0)	6.84	0.009
<5 servings/day (n=138)	82 (59.4)	56 (40.6)		

Table V presents menstrual regularity increased with higher levels of physical activity ($p < 0.001$). Regular menstrual cycles were reported by 83.3% of

participants with high physical activity compared with only 42.9% among those with low activity. BMI was also significantly associated with menstrual

regularity ($p = 0.027$), with women having normal BMI demonstrating a greater proportion of regular cycles than those who were underweight or overweight/obese.

Table VAssociation Between Physical Activity, BMI and Menstrual Regularity ($n = 180$).

Variables	Regular n (%)	Irregular n (%)	χ^2	p-value
Physical activity				
Low (n=56)	24 (42.9)	32 (57.1)	18.62	<0.001
Moderate (n=88)	62 (70.5)	26 (29.5)		
High (n=36)	30 (83.3)	6 (16.7)		
BMI category				
Normal (n=112)	80 (71.4)	32 (28.6)	7.26	0.027
Underweight (n=20)	10 (50.0)	10 (50.0)		
Overweight/Obese (n=48)	26 (54.2)	22 (45.8)		

Table VI identified several independent predictors of menstrual irregularity. Women who skipped breakfast were more than twice as likely to experience menstrual irregularity (AOR=2.34; 95% CI: 1.23–

4.44; $p = 0.010$). Frequent fast-food intake (AOR=2.51; $p = 0.021$), low physical activity (AOR=3.12; $p = 0.001$), overweight/obesity (AOR=1.91; $p = 0.043$), inadequate fruit and vegetable intake (AOR=1.84; $p = 0.046$), and

high perceived stress (AOR=2.69; $p = 0.003$) were also independently associated with increased odds of menstrual irregularity.

Table VI
Multivariable Logistic Regression Analysis of Factors Associated with Menstrual Irregularity (*n* = 180).

Variables	Adjusted OR	95% CI	p-value
Skippping breakfast	2.34	1.23–4.44	0.010
Fast-food intake ≥4 times/week	2.51	1.15–5.47	0.021
Low physical activity	3.12	1.55–6.27	0.001
Overweight/Obesity	1.91	1.02–3.58	0.043
Low fruit & vegetable intake	1.84	1.01–3.35	0.046
High perceived stress	2.69	1.41–5.15	0.003

Overall, the findings indicate that healthier dietary habits and higher levels of physical activity are significantly associated with improved menstrual regularity among young women, even after adjustment for potential confounding factors. These findings are consistent with current clinical evidence linking lifestyle factors to menstrual health.

DISCUSSION

In this study, the majority of participants consisted of young university students, with an average age of 22.4 ± 2.7 years. BMI demonstrated a notable link to menstrual regularity, and being overweight/obese was identified as a predictor of menstrual irregularity. Comparable results were observed in a Bangladeshi study involving female university students, where the majority of participants were aged 24–25 years, revealing a significant link between BMI and irregularities in the menstrual cycle, emphasizing the importance of a healthy body weight for menstrual health [13].

In this current study, 64.4% of participants had consistent menstrual cycles, whereas 35.6% faced menstrual irregularities, and 60.0% reported dysmenorrhea. Comparable results were noted in a Bangladeshi cross-sectional study indicated that 76.7% of women experienced regular menstruation, while 75.1% had a menstrual duration of 3–6 days, showcasing the prevalent pattern of menstrual traits among young Bangladeshi women [14].

In this research, 52.2% of participants had breakfast every day, 16.7% noted regular consumption of fast food, and merely 23.3% met sufficient fruit and vegetable consumption. Moderate and minimal physical activity were recorded in 48.9% and 31.1% of participants, respectively. Comparable results were found in a cross-sectional study conducted in Bangladesh among young women, indicating that unhealthy eating habits, decreased physical activity, and lifestyle choices were linked to worsened premenstrual symptoms, emphasizing the significance of a nutritious diet and consistent exercise for menstrual health [15].

In this research, consuming breakfast daily correlated with greater menstrual regularity, whereas regular fast-food intake led to increased menstrual irregularity. Sufficient consumption of fruits and vegetables was linked to consistent cycles. Comparable

results from earlier research indicated that poor dietary habits were associated with menstrual issues, while a well-balanced diet supported improved menstrual health [9,16].

In this study, increased physical activity was significantly linked to regular menstrual cycles, showing regularity in 83.3% of highly active individuals versus 42.9% of those with low activity. BMI showed a significant association with menstrual regularity. Comparable results were found in earlier research, indicating that exercise and a healthy body weight significantly influence menstrual cycle traits, whereas low activity levels and an abnormal BMI heighten the risk of menstrual irregularities [17,18].

This research found that minimal physical activity, elevated stress, poor eating habits, and being overweight/obese were major indicators of menstrual irregularities. Comparable research indicated that an irregular BMI, insufficient exercise, and unhealthy lifestyle habits negatively impact menstrual health, highlighting the significance of adopting a healthier lifestyle [13,17,18].

Overall, maintaining menstrual regularity in young women relies on healthy eating habits, consistent physical activity, ideal BMI, and effective stress management.

CONCLUSION

This study demonstrated that lifestyle factors, particularly dietary habits and physical activity, are significantly associated with menstrual regularity among young women. Regular breakfast consumption, adequate fruit and vegetable intake, and moderate-to-high levels of physical activity were associated with a higher prevalence of regular menstrual cycles, whereas frequent fast-food consumption, low physical activity, overweight/obesity, and high perceived stress were independently associated with an increased likelihood of menstrual irregularity. These findings highlight the importance of adopting healthy lifestyle behaviors as a potential strategy for promoting menstrual health. Routine lifestyle counseling focusing on balanced nutrition, regular physical activity, weight management, and stress reduction should be incorporated into reproductive health services for young women. Further prospective longitudinal studies are recommended to establish causal relationships and evaluate the long-term

effects of lifestyle modifications on menstrual health.

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