Research Article

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Menstrual Irregularity and Mental Health Problems among Bangladeshi Adolescent Girls

Mohosina Akter[1], Md. Safaet Hossain Sujan[2*], Muhammad Ramiz Uddin[3], Lakshmi Rani Kundu[1]

[1]Department of Public Health and Informatics, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh
[2]Department of Allied Health Sciences, University of Connecticut, Storrs-06269-1101, USA
[3]Department of Chemistry and Biochemistry, The university of Oklahoma, Norman, USA

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***Corresponding author**
Md. Safaet Hossain Sujan
Department of Allied Health Sciences, University of Connecticut, Storrs-06269-1101, USA
Email: safaet_sujan@uconn.edu
https://orcid.org/0000-0003-0313-2423

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Abstract

Background: Despite being more prevalent in adolescent girls, menstrual irregularity remains a poorly treated health issue in developing countries like Bangladesh. Moreover, this notable health issue disproportionately impacts the mental well-being of adolescent girls. Thus, this study aimed to explore the prevalence and associations of menstrual irregularity and mental health problems among adolescent girls.

Methods: A cross-sectional face-to-face survey was conducted among 501 school-going adolescent girls from February to April 2023. Data on demographics, menstrual irregularities, and mental health issues were collected using a structured questionnaire. The questionnaire included assessments such as the Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder (GAD-7), and UCLA Loneliness (UCLA-3) scales. Descriptive statistics (frequency, percentages) and logistic regression analysis were employed in the present study.

Results: A total of 28.9% of participants reported menstrual irregularity, and the prevalence of anxiety, depression, and loneliness were 24.6%, 25.5%, and 20%, respectively. Participants with menstrual irregularities were more likely to suffer from depression (20.2% vs. 38.6%, AOR: 2.1; 95% CI: 1.1-3.9, p-value=0.012). Additionally, participants who use sanitary napkins for menstrual hygiene practice were less likely to have anxiety (25.6% vs. 12.5%, AOR: 0.3; 95% CI: 0.1-1.0, p-value=0.052), whereas cloth users were more likely to have depression (27.1% vs. 7.5%, AOR: 4.7; 95% CI: 1.3-16.2, p-value=0.013).

Conclusion: The present study highlighted a substantial prevalence of menstrual irregularities among adolescent girls, including several mental health issues. Parents and health service providers must take proactive measures to curb menstrual irregularities in this group. Failing to do so could put them at risk of compromised reproductive health and mental well-being.

Keywords: *menstrual irregularity, adolescent, depression, anxiety, loneliness, suicidal thoughts, suicidal attempts*

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Tweetable Abstract: 28.9% of Bangladeshi adolescent girls face menstrual irregularities, with a 2.1x higher risk of depression. Urgent action needed!

Introduction

According to the World Health Organization (WHO), adolescence is a transition lasting from 10 to 19 years old, marked by significant physical and psychological transformations [1]. Adolescents commonly encounter menstrual irregularities, such as menorrhagia, dysmenorrhea, unusually prolonged menstrual cycles, and irregular cycles. Research conducted by WHO indicates that the prevalence of menstrual cycle issues in women exceeds 45%, and menstrual disorders and irregularities are the most prevalent gynecological issues, mainly affecting adolescent girls and their families [2]. Additionally, menstrual irregularities hinder their academic performance and quality of life, especially when they are students [3]. It also impacts many of their daily activities [4]. Moreover, it has been linked to a variety of later-life concerns, including osteoporosis, infertility, future diabetes mellitus, and cardiovascular disease [5,6].

Recently, there has been a notable increase in research exploring the connection between menstrual irregularity and psychological well-being. A growing body of evidence indicates a clear correlation between menstrual irregularity and various mental health issues, such as stress and other related conditions [7]. Recent studies reported that anxiety, loneliness, remorse, loathing of oneself, thoughts of suicide, discontentment with life [8], enduring emotional disorders, substance abuse [5], and depression [6] lead to menstrual irregularity among adolescents. Further studies also

reported that menstrual irregularities lead women to suicidal behavior such as suicidal thoughts or suicide attempts [9,10], stress [11], anxiety, depression [12], and loneliness [13], meaning that they have a vice versa relationship [9]. Therefore, to ensure high-quality nursing care for them, it is imperative to consider these interconnected factors [10]. Understanding the documented link between mental health and menstrual cycles is crucial to offering adolescents the best nursing care possible. It is also imperative to do an investigation into menstruation disturbance in adolescent girls to identify risk factors for regulating irregularity [11].

Despite these findings, the relationship between menstrual abnormalities and adverse mental health outcomes in adolescents requires further investigation. Additionally, there is a need to develop tailored prevention strategies utilizing self and home-based care that can effectively address these issues. Unfortunately, there is a lack of data guiding the evaluation and appropriate care for adolescent girls in this area. More comprehensive studies are essential to understand the underlying processes and design interventions that can produce desired positive effects.

Currently, research is scarce in Bangladesh that explores the occurrence and connections between mental health problems and menstrual irregularities among school-aged adolescents. Given this knowledge gap, the authors posited that individuals experiencing menstrual irregularities might be more prone to mental health issues. Consequently, the present study set out to examine the prevalence and associations of menstrual irregularities and mental health problems among school-aged adolescent girls in Dhaka, Bangladesh.

Methodology

Study design and participants' recruitment procedure

A cross-sectional face-to-face study was conducted among 501 school-going adolescent girls in Dhaka, Bangladesh, between February and April 2023, utilizing purposive sampling. Multiple schools in Dhaka city were purposively selected to recruit participants. A pilot test was conducted with 50 participants from the same demographic group before starting the survey to assess the questionnaire's appropriateness and objectivity. However, the responses were excluded from the final analysis. Based on the pilot test feedback, minor adjustments were made to the questionnaire. The entire survey was conducted in Bangla (the participants' first language), and support was given, when necessary, through trained research assistants to avoid ambiguity in the survey. After filtering out 520 initial responses with partial replies, 501 complete responses were included in the final analysis. Participants were allowed to decline participation in the study, which was communicated in the informed consent statement attached to the questionnaire's first page. Parental and participants' verbal consent was obtained for this study. The eligibility criteria for this study were as follows: i) being an adolescent girl (12-18 years old), ii) being enrolled in any educational institution, and iii) being willing to participate voluntarily. Exclusion criteria included: i) being above the age of 19 years and ii) having pre-existing or severe psychiatric issues.

Data collection instruments

The questionnaire consisted of five sections that included: (i) socio-demographic measures, (ii) menstrual irregularity-related questions, (iii) Generalized Anxiety Disorder (GAD-7), (iv) Patient Health Questionnaire (PHQ-9), and (v) UCLA Loneliness Scale.

Socio-demographic measures

During the interview process, continuous and closed-ended questions were utilized to gather data related to socioeconomic factors. These factors included age, age of menarche, and education level {(primary (class 1-5), secondary (class 6-10), and intermediate (class 11-12)} and later categorized into (secondary or less than secondary school), and monthly family income later classified as {(15000 Bangladeshi Taka (BDT)-lower socio-economic status (SES)), 15000-30000 BDT (middle SES), or >30000 BDT-higher SES)} [12]. Additionally, they were questioned about their self-rated health status (poor/sound) and their body mass index (BMI) [participants were asked to put their weight and height, and later we converted it into BMI], which was categorized as underweight, healthy weight, overweight, or obese.

Menstrual irregularity-related questions

The following question was used to assess menstrual irregularity: "Do you experience irregular menstrual cycles? [with that, we mean menstrual cycle that is significantly heavier or lighter than usual, missing three or more consecutive periods, and periods that happen less frequently than 21 days or more frequently than 35 days apart]" (yes/no), "Is there a family history of menstrual cycle irregularity?" (yes/no) "What is the frequency of your menstrual cycle?" (<22 days/22-40 days/>40 days) "How do you maintain your menstrual hygiene during the menstruation time?" (sanitary napkin/ only clothes) "Do you experience psychological stress due to irregular menstrual cycles in your daily life?" (yes/no) "Have you felt burdened by sadness or hopelessness for two or more weeks in the past year?" (yes/no) "Have you had thoughts about committing suicide in your lifetime?" (yes/no) "Have you attempted suicide in your lifetime?" (yes/no) "Have you consulted any physician for the menstrual irregularity problem in the past year?" (yes/no).

Generalized Anxiety Disorder (GAD-7)

In this study, we utilized the Bangla Generalized Anxiety Disorder (GAD-7), a seven-item scale [12], to assess anxiety levels among both diagnosed individuals and the broader community. The scale demonstrated excellent sensitivity (89%) and specificity (82%) in measuring anxiety [13]. The study was conducted in Bangla. The GAD-7 comprises seven items, each rated on a Likert scale with four response options, ranging from 0 ("never") to 3 ("nearly every day"). A cutoff score of ≥10 was considered to indicate moderate to severe anxiety [14]. The Cronbach alpha of the GAD-7 in this study was 0.77.

Patient Health Questionnaire (PHQ-9)

The participants' depressive symptom levels were assessed using the Bangla version of the PHQ-9 scale, which comprises nine items based on the DSM-IV Diagnostic Criteria for Symptoms of Major Depressive Disorder [15]. The PHQ-9 has demonstrated high sensitivity (89.5%) and specificity (94%), making it a promising tool for identifying depression [16]. Participants rated the frequency of their experiences on a scale ranging from 0 (not at all) to 3 (nearly daily). A cutoff score of ≥10 was considered to indicate moderate

to severe depression [16]. The Cronbach alpha of the PHQ-9 in this study was 0.77.

UCLA Loneliness Scale

The UCLA Loneliness Scale, developed by Russell et al. in 1978, is commonly used to assess loneliness in adolescents and adults. This study employed a revised version of the loneliness scale previously used in Bangla [12]. This version comprises three items and employs a Likert scale with three-point values: 1 (indicating "hardly ever"), 2 (meaning "some of the time"), and 3 (indicating "often"). The total score on this scale can range from three to nine, with higher scores indicating higher levels of loneliness. Consistent with previous research, a score of 6 in this study stated loneliness. The Cronbach alpha for the UCLA Loneliness Scale in this research was calculated to be 0.76.

Statistical analysis

The data was summarized using descriptive statistics, including frequency, percentages, means, and standard deviations. Binary logistic regression was employed and adjusted to identify candidate variables for the multiple regression analysis. In this analysis, demographics and menstrual irregularity-related questions were considered independent factors, while mental health burdens such as depression, anxiety, and loneliness served as dependent variables. For the multiple logistic regression analysis, variables with p-values less than 0.1 from the binary logistic regression were independently included for each dependent variable: depression, anxiety, and loneliness. The Statistical Package for the Social Sciences (SPSS) version 25.0 was used for all analyses, and a significance level of $p < 0.05$ was applied.

Ethics

The research adhered to the Helsinki Declaration and Institutional Research Ethics guidelines, focusing on human involvement. Approval for this study was obtained from the Ethical Review Committee of Biosafety, Biosecurity, and Ethical Review Committee of Jahangirnagar University, Savar, Dhaka-1342 [RefNo: BBEC, JU, {\4 2023109 (56)]. The study's purpose, procedures, and objectives were documented in the initial phase of the questionnaire. Participants were assured of data confidentiality and anonymity and could withdraw their responses from the study at any time.

Results

General characteristics of study variables

A total of 501 adolescent participants were included in the final analysis, with a mean age of 15.61 years (SD=1.67). Most participants reported being more than 16 years old (53.9%) and experienced their menarche at age 12 or younger (62.1%). Most participants had secondary or less than secondary school (87.2%) completed. While most of the participants used sanitary napkins for hygiene practice (92%), only 8% used cloths. Half of the participants had a normal BMI (52.9%), more than half perceived their health conditions as good (77%) and 82.2% were living in higher SES. About 28.9% of participants reported experiencing menstrual irregularity. Additionally, the prevalence of participants' lifetime thoughts of suicide, attempts at suicide, anxiety, depression, and loneliness were 12.8%, 9%, 24.6%, 25.5%, and 20%, respectively.

Associations of all variables with anxiety (n=501)

In the present study, according to the GAD-7 scale, 24.6% of participants were suffering from anxiety. However, in the multiple logistic regression analysis, participants with secondary or less than secondary school education were three times more likely to have anxiety compared to those who have intermediate-level education (AOR: 2.9; 95% CI: 1.6-5.3, p-value=<0.01). Additionally, participants who used sanitary napkins were less likely to have anxiety than those who used only clothes for their menstrual hygiene (AOR: 1.0; 95% CI: 0.1-1.0, p-value=0.052). In addition, participants who took irregular menstrual cycles as stressful were two times more likely to have anxiety compared to those who did not (AOR: 1.9; 95% CI: 1.1-3.2, p-value=0.017) [Table 1]

Table 1: Distribution and associations of all study variables with anxiety (n=501)

Variables	Anxiety		COR (95% CI)	AOR (95% CI)	P-value
	Negative n (%)	Positive n (%)			
Age					
<15 Years old	182 (78.8)	49 (21.2)	0.7 (0.4-1.07)	0.8 (0.5-1.2)	0.353
>16 years old	196 (72.6)	74 (27.4)	ref	ref	
Monthly Family Income					
Lower SES	8 (72.7)	3 (27.3)	1.05 (0.2-4.05)	1.2 (0.2-5.0)	0.800
Middle SES	66 (84.6)	12 (15.4)	0.5 (0.2-0.9)	0.5 (0.2-1.1)	0.123
Higher SES	304 (73.8)	108 (26.2)	ref	ref	
Education					
≤ Secondary school	344 (78.7)	93 (21.3)	3.2 (1.8-5.6)	2.9 (1.6-5.3)	<0.01**
Intermediate	34 (53.1)	30 (46.9)	ref	ref	
Menstrual hygiene practice					
Sanitary napkin	343 (74.4)	118 (25.6)	0.4 (01.-1.0)	0.3 (0.1-1.0)	0.052*
Only clothes	35 (87.5)	5 (12.5)	ref	ref	
Stressed for irregular menstrual cycle					
Yes	132 (67.7)	63 (32.3)	1.9 (1.2-2.9)	1.9 (1.1-3.2)	0.017*
No	246 (80.4)	60 (19.6)	ref	ref	

Note: OR: Odds Ratios; CI: Confidence interval; * p <0.05; ** p<0.01

Associations of all variables with depression (n=501)

According to the PHQ-9 scale in this study, the prevalence of depression was 25.5%. Participants who were less than 15 years old, had secondary or less than secondary education, and used only clothes for menstrual hygiene practice were 3.2, 4.6, and 4.7 times likelier to have depression (AOR: 3.2; 95% CI: 1.9-5.5, p-value=<0.01), (AOR: 4.6; 95% CI: 2.3-8.8, p-value=<0.01), and (AOR: 4.7; 95% CI: 1.3-16.2, p-value=0.013, respectively). Additionally, participants who had irregular menstrual cycles were two times more likely to have depression compared to those who did not have it (AOR: 21; 95% CI: 1.1-3.9, p-value=0.012) [Table 2].

Table 2: Distribution and associations of all study variables with depression (n=501)

Variables	Depression		COR (95% CI)	AOR (95% CI)	p-value
	Negative n (%)	Positive n (%)			
Age					
<15 Years old	152 (65.8)	79 (34.2)	2.3 (1.5-3.5)	3.2 (1.9-5.5)	<0.01**
>16 years old	221 (81.9)	49 (18.91)	ref	ref	
Age of Menarche					
<12 Years	222 (71.4)	89 (28.6)	1.5 (1.0-2.3)	1.1 (0.6-1.8)	0.666
>13 years	151 (79.5)	39 (20.5)	ref	ref	
Monthly Family Income					
Lower SES	8 (72.7)	3 (27.3)	1.0 (0.2-3.9)	1.2 (0.2-5.6)	0.736
Middle SES	64 (82.1)	14 (17.9)	0.5 (0.3-1.1)	0.7 (0.4-1.5)	0.460
Higher SES	301 (73.1)	111 (26.9)	ref	ref	
Education					
≤ Secondary school	338 (77.3)	99 (22.7)	2.8 (1.6-4.8)	4.6 (2.3-8.8)	<0.01**
Intermediate	35 (54.7)	29 (45.3)	ref	ref	
Menstrual Hygiene practice					
Only clothes	37 (92.5)	3 (7.5)	4.5 (1.4-15.1)	4.7 (1.3-16.2)	0.013*
Sanitary napkin	336 (72.9)	125 (27.1)	ref	ref	
Irregular menstrual cycle					
Yes	89 (61.4)	56 (38.6)	2.4 (1.6-3.7)	2.1 (1.1-3.9)	0.012*
No	284 (79.8)	72 (20.2)	ref	ref	

Note: OR: Odds Ratios; CI: Confidence interval; * p <0.05; ** p<0.01

Association of all variables with loneliness (n=501)

According to the UCLA scale in this study, the prevalence of loneliness was 20%. Participants who experienced menarche at the age of 13 or more were less likely to have loneliness than those who experienced it 12 years or less (AOR: 0.6; 95% CI: 0.3-0.9, p-value=0.035). However, participants living in lower SES were 3.5 times more likely to have loneliness than those in higher SES (AOR: 3.5; 95% CI: 1.04-12.1, p-value=0.043) [Table 3].

Table 3: Distribution and associations of all study variables with loneliness (n=501)

Variables	Loneliness		COR (95% CI)	AOR (95% CI)	p-value
	Negative n (%)	Positive n (%)			
Age					
<15 Years old	194 (84.0)	37 (16.0)	0.6 (0.4-0.9)	0.7 (0.4-1.2)	0.298
>16 years old	207 (76.7)	63 (23.3)	ref	ref	
Age of Menarche					
<12 Years	261 (83.9)	50 (16.1)	ref	ref	
>13 years	140 (73.7)	50 (26.3)	0.5 (0.3-0.8)	0.6 (0.3-0.9)	0.035*
Monthly Family Income					
Lower SES	6 (54.5)	5 (45.5)	0.04 (1.06-11.9)	3.5 (1.04-12.1)	0.043 *
Middle SES	61 (78.2)	17 (21.8)	1.1 (0.6-2.1)	1.2 (0.6-2.1)	
Higher SES	334 (81.1)	78 (18.9)	ref	ref	

Note: OR: Odds Ratios; CI: Confidence interval; * p <0.05; ** p<0.01

Discussion

The occurrence of menstrual irregularity could potentially indicate the presence of significant underlying health conditions. If left unnoticed, these conditions may deteriorate and lead to considerable morbidity. This article presents a concise overview of research findings concerning the prevalence of menstrual irregularities in lower- and middle-income countries (LMICs) such as Bangladesh. Additionally, it proposes a strategy to enhance the standard of care for adolescents experiencing menstrual irregularities.

In the present study, we found a notable prevalence of menstrual irregularity among adolescence girls in Dhaka, Bangladesh. In line with the current findings, another study conducted among female participants at Rajshahi University in Bangladesh found that 12.9% of participants suffered from menstrual irregularity [11,17]. Some prior studies conducted globally also found similar results. An Indian study involving medical college students reported a prevalence of menstrual irregularity to be 7.47% [18]. Other studies from India found 29.1% & 16% of menstrual irregularity [19,20], a Chinese study conducted among adolescent girls found 19.8% [21], and Ghana's study found 10% menstrual irregularity [22]. According to multiple research, menstrual irregularity was reported to affect 35.7% and 64.2% of women in India and Nepal, respectively [23,24].

In addition, irregular menstrual cycles affected 55% of women in Sudan [25]. Our study's prevalence of menstrual irregularity is somewhat higher than in other countries. Multiple factors are responsible for menstrual irregularity, some varying from country to country [26,27]. The reason for the higher prevalence of menstrual irregularity in our study could be the selection of our study participants as we assessed only school-going adolescent girls, and they are more prone to suffer from it compared to women [28]. Additionally, being LMICs and having parents who are unaware of menstrual irregularity and hardly consulting physicians for this can also contribute to this high prevalence.

Our study showed that participants who had menstrual irregularity were two times more likely to have depression. Prior studies also showed similar results. Depression and menstrual irregularities have a nonlinear association. A study conducted in India among adolescent girls also found a similar result [29]. Likewise, the chance of menstruation irregularity increases with the severity of depressed symptoms. The outcome is consistent with prior study findings [10,30].

A longitudinal study also reported that individuals with irregular menstruation reported a higher prevalence of depression [31]. In their 2017 study on irregular menstrual cycles in Korean women, Jung et al. showed an association between abnormal periods and depression [32]. It is known that females are more vulnerable to these issues for many biological and hormonal issues demonstrated in previous articles [33].

However, we found participants who were 15 years old or younger were three times more likely to have depression. In line with our findings, a study conducted among 26 LMIC adolescents also reported similar results [34]. Another study conducted in the United States (USA) reported that adolescents aged between 12-17 years were likelier to have depression [35], although a bidirectional study reported that adolescents aged 15-19 years were more likely to have depression than adolescent girls aged 10-14 years [36]. Adolescent girls aged between 10-15 experience a lot of changes, including puberty, menstruation, and other reproductive changes [40], which might lead them to depression. Additionally, the study participants may not be well cared for by their parents, which drives them to depression.

Our study revealed that adolescents who experienced menarche at 13 years or more were less likely to have loneliness compared to those who experienced it at 12 years or less. In line with our findings, a study assessed puberty's psychosocial aspects and reported that loneliness mostly appears when adolescents experience puberty [37]. Mendelian randomization study also suggested similar findings [38]. Another study also reported loneliness was common in early menarche [39,40]. Adolescent girls who experienced menarche at a later age may have enough knowledge, guidance, and support to face this transitional period of their health compared to those who experienced it at an early age. Additionally, girls who experienced menarche at the age of 13 or later may have enough time to prepare for their menarche mentally. Therefore, they are less likely to suffer from loneliness.

In the present study, we also found that adolescent girls who had secondary or less secondary education were more prone to suffer from anxiety and depression compared to other girls who had at least intermediate-level education. An earlier study also showed adolescent girls who have secondary education or attend high school are likelier to have anxiety and depression [41]. A survey among Iranian teenage girls also reported similar findings [42]. A review article also supported our findings [43]. Adolescent participants with comparatively less education might have less knowledge of overcoming a bad situation. Additionally, they might have experienced less, whether menstrual irregularity or other health conditions, than a girl with an intermediate-level education. Consequently, they become more likely to have anxiety and depression. In addition, we also found that girls who were living in lower SES were more likely to be lonely. Earlier studies showed that socioeconomic status is crucial in determining psychological well-being [44,45]. Aligning with our findings, a study conducted in Denmark suggested that poor socio-economic status is responsible for social isolation and loneliness [46]. Another study in Germany also reported similar findings [47].

Moreover, our study also showed that participants who were stressed by irregular menstrual cycles were two times more likely to have anxiety. Menstrual irregularity is a common phenomenon among adolescent girls [48]. However, girls who feel stress from their irregular menstruation are more likely to have anxiety [49]. Prior studies also supported our findings [48,49].

Our study found that participants who use sanitary napkins for their menstrual hygiene were less likely to have anxiety, and those who use only cloths for their hygiene maintenance were four times more likely to have depression. In support of our findings, prior studies suggested that girls who suffer from period poverty, like not having enough proper menstrual hygiene materials, including sanitary products, were more likely to report anxiety and depression [50,51]. A study in Gambia also said that girls who fail to maintain menstrual hygiene management were more likely to have depressive symptoms [52].Maybe practicing menstrual

hygiene gives a sense of confidence to girls, which helps to cut anxiety and depression, and failing to do so results in anxiety and depression. Additionally, menstrual hygiene through proper sanitary products helps girls stay healthy and less worried [53]. Therefore, using hygienic napkins helps adolescent girls not be anxious and depressed.

Furthermore, the present study revealed the prevalence of anxiety, depression, and loneliness were 24.5%, 25.5%, and 20%, respectively. Aligning with our findings, a study conducted in India found 16% depression and 20% anxiety among adolescent girls [58], and a study in Jordan reported 21% anxiety and 25.7% depression among school-attendant adolescent girls [41]. Another study in Norway reported nearly 10% anxiety among preschool to adolescent girls [54]. Aligning with the present study, a Japanese study reported 29% loneliness among adolescent girls who face menstrual irregularity [55]. A Chinese study conducted among international female students found 17.89% loneliness while facing problematic menstrual cycles [56]. However, the findings of our study are comparatively higher than other studies. This might be because of the difference in their socio-economic status, including the participants' and their parents' knowledge and concerns regarding the adolescent period, how they treat participants, and what support the participants received from their families and society. The difference in psychometric tools could be another reason for the differences in the prevalence. However, living in LMICs where most parents are not aware of their adolescent girl's mental health [52], and hardly guide and support them mentally, which could have increased the current prevalence.

Strengths, limitations, and recommendations

To the best of the author's knowledge, this study is the first that has examined menstrual irregularities and other mental health conditions among school-aged adolescent girls in Dhaka, Bangladesh. However, despite its large sample size and use of a validated questionnaire, significant flaws should be acknowledged. One notable drawback is its cross-sectional nature, which limits the ability to establish causality and draw definitive conclusions. Additionally, the study focused exclusively on adolescent schoolgirls, raising concerns about the generalizability of the findings to all women, as their experiences may not represent the broader population. Another potential limitation is the reliance on self-reports from the students to determine menstrual patterns rather than incorporating clinical examinations or hormone measures. Finally, the study was conducted among adolescent girls living in the capital, Dhaka. Consequently, it may not represent the other parts, particularly rural or remote areas of Bangladesh. This method might have introduced inaccuracies in the results due to potential biases or memory lapses. To improve future research in this area, it is recommended that the scope be broadened by including participants from various colleges to enhance the diversity of the sample. In addition, incorporating questions about the mentioned confounding variables could offer a more comprehensive understanding of the factors influencing the normal menstrual cycle. By addressing these limitations, researchers can work towards producing more robust and reliable findings in the field.

Conclusion

The present study reported a high-level prevalence of menstrual irregularity and showed a noteworthy correlation between menstrual irregularity and mental health problems. Mental health problems like anxiety, depression, and loneliness were also common among the participants. However, addressing and treating mental health issues in adolescent girls is crucial for their overall well-being. Doing so not only helps alleviate the symptoms of mental illness but also holds the potential to improve their reproductive health. To provide comprehensive support to adolescent girls facing mental health and menstrual challenges, a multidisciplinary approach involving healthcare professionals, educators, and parents is essential. By collaborating, they can effectively address the complex issues these girls may encounter, promoting better mental and menstrual health outcomes.

Conflict of interest

Each author confirms that they have no personal stake in published results.

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Data Availability Statement

If interested parties make a fair request, the data used in this study will be available to the corresponding author.

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