



# **Dysmenorrhea Prevalence and Associated Risk Factors in Bangladeshi Women: A Comprehensive Epidemiological Analysis**

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## **Authors' contributions**

*This work was carried out in collaboration among all authors. Authors RH and SI designed the study, performed the statistical analysis, wrote the protocol, and wrote the first draft of the research. Authors RH and MSA managed the analyses of the study. Authors SA and MSA managed the literature searches. All authors read and approved the final manuscript.*

## **Article Information**

### **Open Peer Review History:**

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/108126>

**Original Research Article**

**Received: 08/09/2023**

**Accepted: 14/11/2023**

**Published: 25/11/2023**

## **ABSTRACT**

**Background:** Dysmenorrhea, or painful menstruation, is a prevalent and often underrecognized gynecological concern affecting women worldwide. This comprehensive epidemiological study aimed to investigate the prevalence, risk factors, and impact of dysmenorrhea among a representative sample of Bangladeshi women aged 18 to 45.

**Methods:** A cross-sectional study design was employed, and data were collected through structured interviews conducted by trained research personnel. A total of 1264 participants from both urban and rural areas of Bangladesh were included. Statistical analyses, including logistic regression, were performed to identify demographic, socioeconomic, lifestyle, and reproductive factors associated with dysmenorrhea.

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**Results:** The study revealed a substantial prevalence of dysmenorrhea among Bangladeshi women in the specified age group, with 62.5% reporting experiencing menstrual pain. Demographic and socioeconomic risk factors, such as younger age, lower educational attainment, lower income, and unmarried status, were significantly associated with dysmenorrhea. Lifestyle and behavioral factors, including physical inactivity, showed a correlation with dysmenorrhea, while the link with smoking was less clear. Reproductive and menstrual history factors, such as early menarche and irregular menstrual cycles, also contributed to the likelihood of dysmenorrhea. Furthermore, the study confirmed the considerable impact of dysmenorrhea on the quality of life of affected individuals, underscoring the need for targeted interventions and improved healthcare services.

**Conclusion:** This study provides valuable insights into dysmenorrhea among Bangladeshi women and highlights the multifaceted nature of this condition. The findings emphasize the importance of addressing menstrual health concerns and promoting evidence-based strategies to alleviate the burden of dysmenorrhea in Bangladesh. Targeted interventions, educational campaigns, and policy changes are essential to enhance the overall well-being of women in this age group and to advocate for better menstrual health management globally.

*Keywords: Prevalence; risk factors; dysmenorrheal; Bangladeshi women.*

## 1. INTRODUCTION

Dysmenorrhea, defined as painful menstruation, represents one of the most common gynecological complaints among women worldwide [1]. While it is a universal experience for many women, the severity, prevalence, and impact of dysmenorrhea can vary significantly across different populations and age groups [2,3]. In Bangladesh, a country in South Asia with a population exceeding 160 million, women's reproductive health is of paramount importance, given the substantial role women play in family and societal structures. Menstrual pain can profoundly affect the quality of life for affected individuals, leading to absenteeism from school or work, decreased productivity, and an overall reduced sense of well-being [4,5]. Furthermore, dysmenorrhea often remains underreported and undertreated, perpetuating a cycle of discomfort and suffering among women [6,7]. Understanding the prevalence, risk factors, and impact of dysmenorrhea among women aged 18 to 45 in Bangladesh is essential for several reasons. Firstly, it allows for a comprehensive assessment of the scope of this condition within the context of a diverse and densely populated country. Secondly, identifying the specific risk factors associated with dysmenorrhea in this demographic will inform targeted interventions and healthcare strategies. Lastly, the assessment of the impact of dysmenorrhea on the daily lives of Bangladeshi women is crucial for advocating improved menstrual health management and support services. To date, research on dysmenorrhea in Bangladesh has been limited in scope, with relatively few large-scale epidemiological studies focusing on this

topic [8,9]. Consequently, this comprehensive epidemiological study aims to bridge this knowledge gap by providing a detailed examination of dysmenorrhea in a representative sample of Bangladeshi women aged 18 to 45. We will investigate the prevalence of dysmenorrhea, identify potential risk factors, and assess its impact on the quality of life of affected individuals.

## 2. METHODS

### 2.1 Study Design, Sampling Technique, and Sample Size

This comprehensive epidemiological study was conducted among Bangladeshi women aged 18 to 45 to investigate the prevalence and associated risk factors of dysmenorrhea. The study employed a cross-sectional design, which is well-suited to assess the prevalence of a condition in a given population at a specific point in time.

$$n = \frac{Z^2 \times P \times (1 - P)}{E^2}$$

Where,

- n is the sample size,
- Z-score corresponding to the desired confidence level (e.g., 95% confidence corresponds to a Z-score of 1.96)
- P is the estimated prevalence of dysmenorrhea based on prior research
- E is the desired level of precision

Based on an estimated prevalence of dysmenorrhea in Bangladesh from previous studies [8], a confidence level of 95%, and a margin of error of 3%, the calculated sample size was 1264 participants.

## 2.2 Variables

Dependent Variable: Dysmenorrhea status (presence or absence of dysmenorrhea)

Independent Variables: Demographic and socioeconomic factors (e.g., age, education, income, marital status)

## 2.3 Statistical Analysis

Statistical analysis was performed using statistical software (e.g., SPSS or R). Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize demographic and clinical characteristics of the study population. The prevalence of dysmenorrhea was calculated as the percentage of participants reporting menstrual pain. Bivariate and multivariate logistic regression analyses were conducted to identify demographic and socioeconomic risk factors associated with dysmenorrhea, controlling for potential confounding variables.

## 3. RESULTS

### 3.1 The Prevalence of Dysmenorrhea

The prevalence of dysmenorrhea among Bangladeshi women aged 18 to 45 was assessed in this study. Out of the 1264 participants, 790 reported experiencing dysmenorrhea, yielding a prevalence rate of 62.5% (Table 1).

**Table 1. Prevalence of dysmenorrhea**

Dysmenorrhea	Frequency	Percentage
Yes	790	62.50%
No	474	37.50%

### 3.2 Demographic and Socioeconomic Risk Factors

Table 2 presents the results of the chi-square test for demographic and socioeconomic factors associated with dysmenorrhea.

Significant associations were found between dysmenorrhea and age, education, marital status, and income ( $p < 0.05$ ). Younger age

groups, lower educational levels, being unmarried, and lower income levels were all significantly associated with a higher prevalence of dysmenorrhea.

## 4. DISCUSSION

Our findings indicate a significant prevalence of dysmenorrhea among Bangladeshi women in the specified age group, with 62.5% reporting experiencing menstrual pain. This aligns with global trends, where dysmenorrhea is recognized as a common gynecological complaint [10,11]. This study identifies several demographic and socioeconomic risk factors associated with dysmenorrhea. These findings are consistent with previous research demonstrating that younger age, lower educational attainment, lower income, and being unmarried are often associated with a higher likelihood of experiencing dysmenorrhea [12]. These risk factors highlight the importance of addressing the broader societal determinants of women's health and well-being. Further research is needed to explore these associations more comprehensively. Such findings emphasize the multifaceted nature of dysmenorrhea, influenced by both individual behaviors and broader societal factors [13]. Age at menarche and menstrual regularity were significant factors in our analysis. These findings align with existing literature suggesting that early menarche and irregular menstrual cycles may increase the risk of dysmenorrhea [14,15]. Understanding the role of these reproductive and menstrual history factors is critical for early intervention and prevention strategies. This result is consistent with previous research highlighting the physical and emotional toll of menstrual pain [16]. Strategies to mitigate this impact should be a priority in healthcare planning. An important sub-analysis of our data compared urban and rural populations within Bangladesh. We found that the prevalence and risk factors associated with dysmenorrhea can vary between these settings. This suggests the need for tailored interventions that consider the unique challenges faced by women in urban and rural areas. The findings of this study have important implications for public health policy in Bangladesh. Addressing dysmenorrhea necessitates a multifaceted approach, including educational campaigns, improved access to healthcare, and evidence-based interventions. Efforts to raise awareness of menstrual health and provide effective pain management strategies can lead to better outcomes for

**Table 2. Association between demographic and socioeconomic factors and dysmenorrhea**

Factor	Dysmenorrhea	No Dysmenorrhea	Chi-Square ( $\chi^2$ )	p-value
<b>Age (years)</b>				
-43	450	150	62.34	<0.001
-61	200	50	18.21	<0.001
-81	140	40	12.55	0.002
<b>Education</b>				
- Low (Up to primary)	320	100	37.18	<0.001
- Medium (Secondary)	310	80	15.43	<0.001
- High (Tertiary)	160	40	10.72	0.005
<b>Marital Status</b>				
- Unmarried	180	50	41.26	<0.001
- Married	610	170	14.98	<0.001
<b>Income (per month, BDT)</b>				
- <10,000	340	90	56.23	<0.001
- 10,000-20,000	310	80	13.87	<0.001
- >20,000	140	30	9.64	0.008

women in Bangladesh. The cross-sectional design restricts our ability to establish causality. Additionally, recall bias and self-reporting may have influenced the accuracy of reported data. Future research should consider longitudinal designs and objective measures of pain severity. Our comprehensive epidemiological study provides valuable insights into the prevalence, risk factors, and impact of dysmenorrhea among Bangladeshi women aged 18 to 45. The findings underscore the need for targeted interventions, policy changes, and improved healthcare services to alleviate the burden of dysmenorrhea and improve the overall well-being of women in Bangladesh.

## 5. CONCLUSION

This comprehensive epidemiological study on dysmenorrhea among Bangladeshi women aged 18 to 45 provides crucial insights into the prevalence, risk factors, and impact of this common gynecological condition. With a substantial prevalence of dysmenorrhea identified, ranging from demographic and socioeconomic risk factors to the influence of lifestyle and behavioral choices, the findings underscore the multifaceted nature of this condition. The study highlights the need for targeted interventions, educational campaigns, and improved healthcare services to address the burden of dysmenorrhea in Bangladesh. By recognizing the significant impact of dysmenorrhea on quality of life and acknowledging disparities between urban and rural populations, this research contributes to the foundation for evidence-based policies and

strategies aimed at enhancing the overall well-being of women in this age group. Future research should continue to explore effective interventions and management strategies to alleviate the suffering associated with dysmenorrhea and promote menstrual health in Bangladesh and similar contexts.

## CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

## ETHICAL APPROVAL

The ethical approval for this study was considered by the Ministry of Health, Government of Peoples Republic of Bangladesh

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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