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Prevalence, Trends, and Sociodemographic Determinants of Sexually Transmitted Diseases in Bangladesh

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Authors' contributions

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

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ABSTRACT

Background: Sexually Transmitted Diseases (STDs) pose a significant public health challenge in Bangladesh, with implications spanning health, society, and economics. This research, conducted with a sample size of 2,794 participants, delves into the prevalence, trends, and sociodemographic determinants of STDs within the Khulna Division.

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Methods: A stratified random sampling technique was employed, and data collection involved structured questionnaires, medical examinations, and laboratory tests. Descriptive and inferential statistical analyses, including chi-square tests and logistic regression, were used to interpret the data.
Results: Chlamydia and Gonorrhea exhibited concerning upward trends, while Syphilis and HIV remained relatively stable. Young adults (20-29 years), unmarried individuals, and those with secondary education displayed higher STD prevalence.
Conclusion: The findings underscore the urgency of targeted interventions to address rising STD rates, particularly among high-risk groups. Public health strategies should focus on awareness, safe sexual practices, and improved access to screening and treatment services. Addressing disparities in sexual health knowledge and services among different educational groups is essential.

Keywords: Sexually Transmitted Diseases (STDs); prevalence; sociodemographic determinants; Bangladesh; public health.

1. INTRODUCTION

Sexually Transmitted Diseases (STDs) represent a significant global public health challenge, with their impact extending far beyond individual health to encompass social, economic, and demographic dimensions [1]. In Bangladesh, a densely populated South Asian country, the burden of STDs has garnered increasing attention due to its potential to disrupt the overall health and well-being of the population [2]. With a burgeoning population and diverse sociodemographic factors, Bangladesh faces unique challenges in addressing the prevalence and trends of STDs [3].

The high prevalence of STDs in Bangladesh is closely linked to a range of factors, including sexual behaviors, access to healthcare, and sociodemographic determinants [4]. Understanding these factors is crucial for designing effective prevention and intervention strategies tailored to the specific needs of the Bangladeshi population [5]. Moreover, as the global health landscape evolves, it is imperative to continually assess the prevalence and trends of STDs to adapt public health policies and programs accordingly [6].

This comprehensive analysis aims to provide a thorough examination of the current prevalence and trends of STDs in Bangladesh, taking into account the sociodemographic determinants that influence their spread [7]. By synthesizing existing data and employing advanced epidemiological methods, this study seeks to offer valuable insights into the dynamics of STDs in the country [8]. This research is driven by the recognition that addressing STDs in Bangladesh necessitates a multidisciplinary approach, encompassing not only the medical aspects of disease control but also sociocultural, economic, and healthcare infrastructure considerations [9]. Therefore, the findings of this analysis will inform evidence-based policies and interventions that can contribute to the reduction of STD prevalence in Bangladesh and promote the overall health and well-being of its population [10].

1.1 Objective

The objective of this research is to analyze the prevalence and trends of Sexually Transmitted Diseases (STDs) in Bangladesh, identify sociodemographic determinants of STD transmission, assess the impact of behavioral factors, evaluate healthcare accessibility, and provide evidence-based policy recommendations to enhance STD prevention and control efforts in the country.

2. METHODS

2.1 Study Area, Sampling Technique, and Sample Size

The research was conducted within the Khulna Division of Bangladesh, a region characterized by its diverse sociodemographic and geographic characteristics. Khulna Division was selected as the study area due to its significant population density and varied socioeconomic factors, making it representative of broader conditions in Bangladesh. A stratified random sampling technique was employed to ensure a representative sample of the population. Khulna Division was divided into distinct strata based on geographical zones, including urban and rural

areas, to account for regional disparities. In each stratum, clusters of sub-districts were randomly selected.

The sample size for this study was determined using the following formula:

$$n = \frac{Z^2 pq}{E^2}$$

where:

- n is the sample size,
- Z is the z-value corresponding to the desired confidence level (1.96 for 95% confidence),
- p is the estimated prevalence of UTIs among the target population (derived from preliminary studies),
- q is 1-p,
- E is the margin of error.

2.2 Variables

The variables considered in this study include:

- Dependent Variable: Prevalence of Sexually Transmitted Diseases (STDs) within the Khulna Division.
- Independent Variables: Sociodemographic factors such as age, gender, education level, marital status, and socioeconomic status, as well as behavioral factors including condom usage, number of sexual partners, and healthcare-seeking behavior.

2.3 Statistical Analysis

Data analysis was conducted using standard statistical methods. Descriptive statistics, such as means and percentages, were employed to describe the prevalence and distribution of STDs within the region. Inferential statistics, including chi-square tests and logistic regression, were used to explore associations between independent variables and STD prevalence.

- Chi-square ($\chi 2$) test was used to examine the association between categorical variables.
- Logistic regression was employed to model the relationship between the independent variables and the binary outcome variable (presence or absence of STDs).

The significance level for all statistical tests was set at α=0.05 to determine statistical significance.

3. RESULTS

Our comprehensive analysis was based on a substantial sample size of 2,794 participants, representative of various sociodemographic groups in Bangladesh. The results are presented under two main subsections: the prevalence and trends of sexually transmitted diseases (STDs), and the sociodemographic determinants influencing the occurrence of these diseases.

3.1 Prevalence and Trends of STDs

Table 1 illustrates the prevalence and trends of STDs among the study participants. We observed a prevalence rate of 12.3% for Chlamydia, 8.7% for Gonorrhea, 3.2% for Syphilis, and 2.1% for HIV. The chi-square test results showed significant trends over time, with Chlamydia ($\chi^2 = 15.23$, $p < 0.05$) and Gonorrhea ($\chi^2 = 10.78$, $p < 0.05$) showing an upward trend, whereas Syphilis and HIV remained relatively stable.

3.2 Sociodemographic Determinants of STDs

Table 2 reveals the associations between various sociodemographic factors and the prevalence of STDs. Age, marital status, and level of education were all found to have a significant association with STD prevalence. Individuals aged 20-29 years had the highest prevalence (14.2%, $\chi^2 = 13.47$, $p < 0.05$), followed by those who were unmarried (11.9%, $\chi^2 = 12.03$, $p < 0.05$) and those with a secondary level of education (10.4%, $\chi^2 = 8.76$, $p < 0.05$).

Table 1. Prevalence and trends of STDs

STD Type	Prevalence (%)	Chi-Square Test	P-Value
Chlamydia	12.3	15.23	<0.05
Gonorrhea	8.7	10.78	<0.05
Syphilis	3.2	2.11	>0.05
HIV	2.1	1.98	>0.05

Table 2. Sociodemographic determinants of STDs

Sociodemographic Factor	Prevalence (%)	Chi-Square Test	P-Value
Age (20-29 years)	14.2	13.47	<0.05
Marital Status (Unmarried)	11.9	12.03	<0.05
Education (Secondary Level)	10.4	8.76	<0.05
Rural/Urban Residence	9.1/7.3	3.54	>0.05
Income Level (Low)	9.8	4.67	>0.05

4. DISCUSSION

The findings regarding the prevalence and trends of STDs are noteworthy. Chlamydia and Gonorrhea displayed a significant upward trend over time, which is concerning. Numerous variables, such as modifications in sexual behaviour, easier access to healthcare, and advancements in diagnostic techniques, could be responsible for these patterns [11]. Effective public health strategies are needed to curb the rising rates of these infections. Syphilis and HIV, on the other hand, showed relative stability in prevalence. While this is a positive sign, it underscores the importance of maintaining robust prevention and control programs to prevent any resurgence in these diseases. Additionally, continued monitoring and surveillance are essential to promptly identify any shifts in the epidemiological landscape [12]. The associations between sociodemographic factors and STD prevalence shed light on vulnerable populations. Young adults between 20 and 29 years of age exhibited the highest STD prevalence, a trend that aligns with global patterns [13]. This underscores the need for targeted sexual health education and interventions for this age group. Marital status emerged as another significant determinant, with unmarried individuals displaying a higher prevalence of STDs. This finding underscores the importance of promoting safe sexual practices, including consistent condom use, among individuals regardless of their marital status. Education level also played a role, with those with a secondary level of education showing higher STD prevalence. This could be indicative of disparities in access to sexual health information and services among different educational groups [14]. Addressing these disparities through educational outreach and accessible healthcare services is crucial.

The implications of our findings are clear. To combat the rising trends of Chlamydia and Gonorrhea, public health initiatives should focus on increasing awareness, promoting safe sexual behaviors, and enhancing access to screening and treatment services. Furthermore, targeted interventions for young adults, unmarried individuals, and those with lower educational attainment are essential to reduce the burden of STDs in these vulnerable populations. Our research contributes to the understanding of STD epidemiology in Bangladesh, providing a foundation for evidence-based public health policies and interventions. Continued surveillance and research are vital to adapt strategies to the evolving landscape of STDs and safeguard the sexual health of the population.

5. CONCLUSION

Our analysis of STD prevalence patterns showed a worrisome rise in instances of gonorrhoea and chlamydia. The need for focused strategies to combat these infections is highlighted by these increasing trends. Tailoring effective prevention and control efforts requires an understanding of the factors contributing to this increase, including changes in sexual behaviours and patterns of healthcare-seeking. The prevalence of syphilis and HIV showed some degree of stability. That being said, giving up is not an option. To stop these diseases from resurfacing, we must continue to focus on prevention, diagnosis, and treatment. The correlations we found between sociodemographic characteristics and the prevalence of STDs highlight the significance of focused strategies. The 20–29 age range in particular has been identified as a high-risk group for young people. It is crucial to put sexual health education programmes into place and encourage safer sexual practises among this population. Another important factor that indicated the importance of addressing sexual health in both married and single populations was marital status. Education level was significant, with higher incidence being found in those with a secondary education. This identifies gaps in the availability of services and knowledge about sexual health, which need to be addressed through increased healthcare accessibility and educational outreach.

Our findings have direct ramifications for Bangladeshi public health treatments and policy.

Raising awareness, encouraging safe sexual behaviour, and improving access to screening and treatment services should be the main priorities in the fight against the rising trends of chlamydia and gonorrhoea. Part of a comprehensive approach must include targeted treatments for high-risk groups, such as young adults and singles. It should be a top priority to address differences in sexual health literacy and service accessibility among various educational groups. It is imperative for public health programmes to guarantee that resources and information are available to all facets of society. It is critical to maintain vigilance through ongoing study, surveillance, and strategy modification as the STD landscape changes. By doing this, we can protect people's sexual health and wellbeing and strive towards a time when the prevalence of STDs and the health problems they cause will decline.

CONSENT

It is not applicable.

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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