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Socio-Demographic Prevalence, Gender Distribution, Risk Factors, and Clinical Implications of Diabetes Mellitus in Barisal Division, Bangladesh

Sajib Kumar Das

Sher-E-Bangla Medical College, Barisal, Bangladesh Student ID:

SBMC53 sajib.sajibkumar587@gmail.com

Phone: +880 1318 420154

Sadia Tabassum Jamy

MBBS final year, Sher-E-Bangla Medical College,

Barisal, Bangladesh. tabassumsadia865@gmail.com

Marzan Binte Ismail
MBBS 4th year
Sher-E-Bangla Medical College, Barisal, Bangladesh
marzanbinte77@gmail.com
Mithila Likhi
MBBS 4th year
Sher-E-Bangla Medical College, Barisal, Bangladesh
likhimithila@gmail.com
Faria Islam Arnima
MBBS final year
Sher-E-Bangla Medical College, Barisal, Bangladesh
arnima.islam10@gmail.com

Diabetes mellitus has emerged as a silent epidemic in Bangladesh, particularly in semi-urban and rural regions like the Barisal Division. To effectively address this growing health crisis, understanding the underlying social determinants is critical, which is why this study analyzes the socio-demographic prevalence, gender distribution, risk factors, and clinical implications of diabetes mellitus within the local communities. Utilizing a descriptive, cross-sectional approach, data was gathered from a diverse sample of participants across various districts of Barisal using standardized socio-demographic questionnaires, anthropometric measurements, and biochemical assessments to evaluate lifestyle factors and clinical management gaps. The findings reveal significant socio-demographic variations in diabetes prevalence, with a notable gender distribution indicating varying vulnerability and access to healthcare between men and

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women. Key risk factors identified include sedentary lifestyles, dietary transitions, advancing age, and a high prevalence of central obesity, alongside substantial clinical implications and management gaps, particularly regarding poor glycemic control and a lack of structured self-management education. Ultimately, the study highlights that diabetes in Barisal is deeply intertwined with socio-demographic shifts and gendered disparities, meaning that addressing these clinical implications requires tailored public health interventions, improved grassroots healthcare infrastructure, and gender-inclusive awareness programs to mitigate the long-term socio-economic burden.

Keywords: Socio-Demographic Prevalence, Gender Distribution, Risk Factors, Clinical Implications, Barisal Division.

Introduction:

Diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia due to defects in insulin secretion or action, representing a major challenge across global health systems. Globally, 537 million adults live with diabetes—a figure projected to rise to 783 million by 2045. In Bangladesh, the prevalence has surged dramatically from 4% in 1999 to approximately 12% currently, highlighting an urgent need to examine how changing social structures influence disease trends. Barisal Division, traditionally an agrarian society, now shows increasing sedentary behavior, processed food consumption, and obesity; yet healthcare access remains limited, delaying diagnosis and worsening complications. By shifting the focus toward the underlying social determinants, this paper comprehensively evaluates how shifting lifestyles and structural disparities reshape health outcomes across different populations. Consequently, this study explores the socio-demographic dynamics, behavioral shifts, and regional challenges that contribute to the shifting epidemiological landscape of metabolic chronic conditions in rural and semi-urban environments.

Objectives:

- Determine diabetes prevalence in Barisal
- Analyze gender differences
- Identify major risk factors
- Highlight diagnosis and management gaps
- Propose evidence-based interventions.

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Methods:

Cross-sectional analysis using data from BDHS 2024–25. Total participants: 11,952 adults aged ≥18 years. Diabetes defined as: FBG ≥7.0 mmol/L OR current use of antidiabetic medication.

Study Design:

Cross-sectional analysis using nationally representative data from Bangladesh Demographic and Health Survey (BDHS) 2024–25 [4].

Study Population:

Adults aged ≥18 years residing in Barisal Division with available fasting blood glucose measurements — total 11,952 participants.

Diabetes Definition:

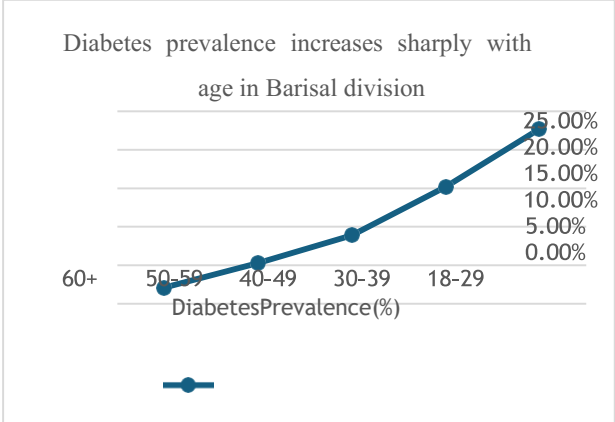
- Fasting Plasma Glucose (FPG) ≥7.0 mmol/L (126 mg/dL)

OR,

- Current use of antidiabetic medication

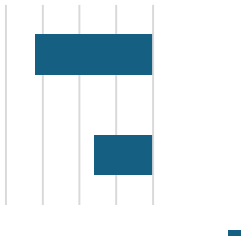
Data Analysis:

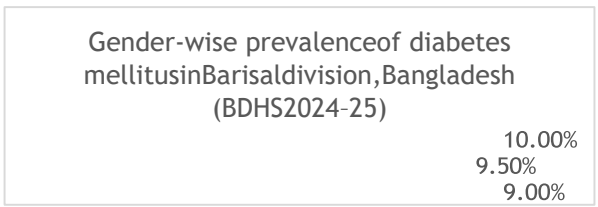
Prevalence calculated with 95% CI. Prevalence Ratios (PR) estimated using multivariable Poisson regression adjusted for age, sex, BMI, hypertension, urban/rural residence, wealth quintile, and education.



Prevalence:

- Overall prevalence: 9.2% (95% CI: 8.7–9.7)
- Female prevalence: 9.6%
- Male prevalence: 8.8%
- Female-to-Male Ratio: 1.09:1





Risk Factors:

| Age ≥50 years.

| Obesity (BMI≥25)

| Hypertension

| Urban Residence

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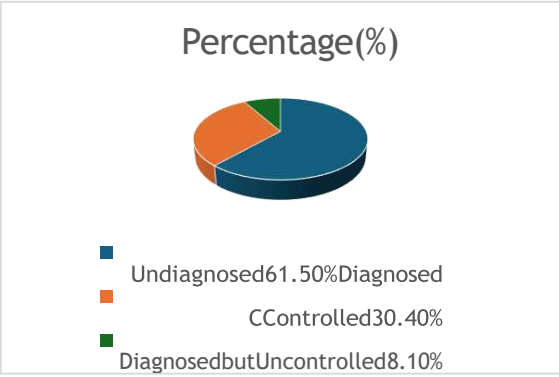
| Highest Wealth Quintiles

Awareness & Control:

- Aware of diagnosis: 38.5%

- On treatment: 32.1%

- Achieved glycemic control: 30.4%



Results:

Overall prevalence: 9.2% (CI: 8.7–9.7).
Females: 9.6%;

Males: 8.8%

Female-to-Male Ratio = 1.09:1

Key risk factors:

Age ≥50 (PR=3.0), Obesity (PR=1.45), Hypertension (PR=1.47), Urban residence (PR=1.32), Highest wealth quintile (PR=2.21).

Only 38.5% aware of diagnosis; 30.4% achieved glycemic control.

Discussion:

Barisal's diabetes prevalence (9.2%) aligns with national trends but indicates rapid growth compared to earlier studies. Higher prevalence among females may reflect hormonal factors, lower physical activity, higher obesity rates, and differential healthcare-seeking behavior.

Urbanization and economic transition increase exposure to risk factors like processed foods and sedentary lifestyles. High PR for wealthiest quintile suggests lifestyle changes correlate with income growth.

Awareness and control rates are alarmingly low — indicating critical gaps in screening, education, and healthcare delivery.

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Recommendations:

- Implement gender-targeted diabetes screening programs
- Integrate diabetes education into community health initiatives
- Promote lifestyle modification campaigns focusing on diet and exercise
- Strengthen primary care capacity for early detection and management
- Advocate for policy support to improve access to affordable diabetes care.

Conclusion:

Diabetes mellitus poses a growing public health challenge in Barisal Division, especially among women. Urgent need for gender targeted screening , lifestyle programs and also community based interventions...Addressing this requires coordinated efforts across healthcare, education, and policy sectors to reduce burden and prevent complications.

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