

Prevalence of Diabetes Mellitus among the Rural Population of Gazipur in Bangladesh

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Abstract:

Background: The prevalence of diabetes mellitus is increasing in the developing world; we assessed their prevalence among the rural area of Gazipur in Bangladesh. As no study were previously done in rural area of Bangladesh, this is our first attempt. All the record of diabetic patients in Bangladesh are kept by Diabetic Association of Bangladesh (BADAS).

Objective: To assay the prevalence of diabetes mellitus (registered by BADAS and not registered from BADAS) in rural areas of Gazipur.

Materials and Methods: In this cross-sectional survey (n = 932), we randomly selected consenting adults (18 to 73 years) from a middle-income neighborhood in Gazipur. We assessed demography, lifestyle and health status and measured blood pressure. We evaluated two primary outcomes: (1) diabetic patients registered under Diabetic Association of Bangladesh and (2) history of hypertension.

Results: This study included a total of 932 adults (693 males and 239 females) aged between 18 and 73 years. Majority of the participants were married (92.2%). More than half of the participants either had diabetes mellitus (51.4%) or hypertension (54.5%). Out of the diabetic patients, 38.2% were registered under Diabetic Association of Bangladesh.

Conclusions: The prevalence of diabetes mellitus among the rural area of Gazipur is alarmingly high. Screening services should be implemented while researchers focus on strategies to lessen the incidence and morbidity associated with these conditions.

Keywords: prevalence of diabetes mellitus; rural population of Gazipur; BADAS; Bangladesh.

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Introduction:

Diabetes mellitus is a leading cause of death and disability worldwide.^{1,2} Diabetes is one of the largest global health emergencies of the 21st century. Each year more and more people live with this condition, which can result in life-changing complications.³ Its global prevalence was One in 11 adults have diabetes (415 million) in 2015 and is predicted to rise to One in 10 adults (642 million) by 2040.³ Some 415 million

people worldwide (8.8%) of adults aged 20-79, are estimated to have diabetes and about 75% of these live in low- and middle-income countries.³ Asia and the western Pacific region are particularly affected:³⁻⁸ in 2015, China was home to the largest number of adults with diabetes (i.e. 109.6 million), followed by India (69.2 million) and Bangladesh (7.1 million).³ However, many governments and public health planners remain largely unaware of the current prevalence of diabetes and prediabetes, the potential for a future rise in prevalence and the serious complications associated with the disease. Consequently, knowledge of the prevalence of diabetes and prediabetes and of related risk factors could raise awareness of the disease and lead to new policies and strategies for prevention and management.

In Bangladesh, which had a population of 161 million in 2015⁹, a recent meta-analysis showed

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that the prevalence of diabetes among adults had increased substantially, from 4% in 1995 to 2000 and 5% in 2001 to 2005 to 9% in 2006 to 2010.⁵ According to the International Diabetes Federation, the prevalence will be 13.6 million by 2040.³ However, no nationally representative, epidemiological study of the prevalence of diabetes mellitus and its risk factors has been carried out in the country. Previous studies have been limited to specific urban or rural regions or to a single sex or had a small sample.^{4, 10-13} Moreover, no previous study has fully assessed the effect of individual, household and community factors on diabetes and prediabetes. The aims of this study, therefore, were to obtain prevalence of diabetes mellitus in rural area of Gazipur Bangladesh.

Materials and Methods:

Sample

This was a cross sectional study was carried out among 932 adults (18 years and above) who were residents of rural area of Gazipur (Gutia, Gusulia, Sataish, Khortoil, Dewra, Mudafa) during November, 2015 to April, 2016.

Sampling strategy

Participants were selected through a random sampling procedure. All adults aged between 18

to 73 years from every household were included in this study.

Covariates

We considered the following demographic and life-style variables: age (<20, 21-30, 31-40, 41-50, 51-60, ≥61 years), sex (Male, Female), married (yes, no), family history of diabetes (father and mother only) and most importantly whether the diabetic individual is registered under Diabetic Association of Bangladesh (registered, non-registered).

We considered a participant to be hypertensive if he or she reported medication use for hypertension or if his or her blood pressure was ≥130/90 mmHg during measurement.

Statistical analysis

Data were presented as proportions in percentage for categorical variables and mean ± standard deviation (SD) for continuous variables.

Results:

This study included a total of 932 adults (693 males and 239 females) aged between 18 and 73 years. Majority of the participants were married (92.2%). More than half, 51.4% of the participants were diabetic and 54.5% were

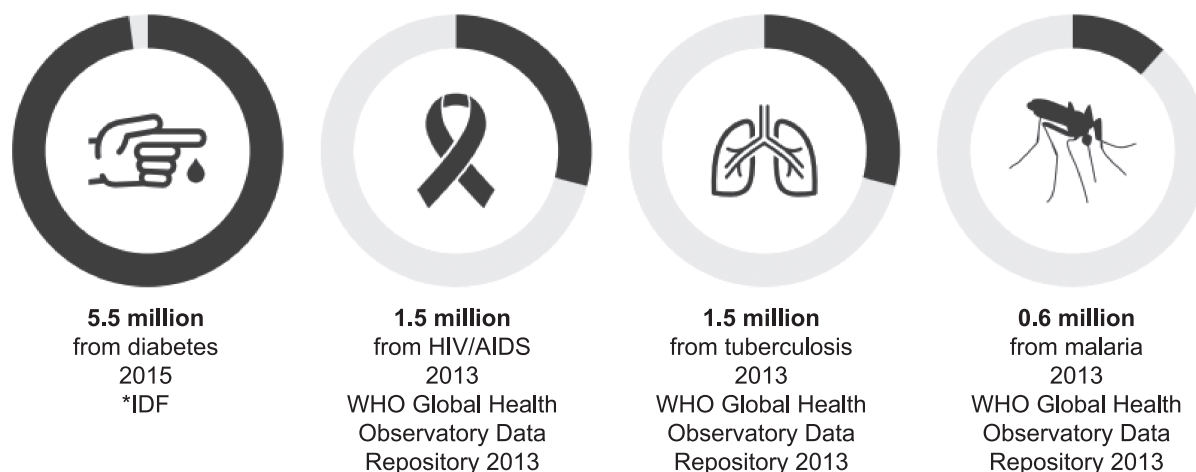


Fig.-1: Adults who died from diabetes, HIV/AIDS, tuberculosis, and malaria³

*IDF – International Diabetes Federation

hypertensive. Among the participants 39.4% had a positive family history of diabetes where as 47.4% had no family history of diabetes and 13.2% didn't know about it. The socio-demographic and clinical characteristics of the participants are given below [see Table 1].

Table-I

Socio-demographic and clinical characteristics of the participants (n=932)

Variables	Category	Number (%)
Gender	Male	693 (74.4)
	Female	239 (25.6)
Age	Mean \pm SD	49.3 \pm 7.1
Marital Status	Married	859 (92.2)
	Unmarried	73 (7.8)
Diabetic Status	Diabetic	479 (51.4)
	Non-diabetic	453 (48.6)
Family History of Diabetes	Positive	367 (39.4)
	Negative	442 (47.4)
	Don't know	123 (13.2)
History of Hypertension	Yes	508 (54.5)
	No	424 (45.5)

The percentage of diabetic and non-diabetic within different age group are given in the table below [see Table 2]. The prevalence of diabetes mellitus is more after the age of 41 years (57.4%) but maximum within the age group 41 – 50 years old.

Table-II

Comparison between age distribution and diabetes mellitus

Age Group (years)	Non-diabetic (%)	Diabetic (%)
< 20	26 (5.7)	0 (0)
21 – 30	83 (18.3)	77 (16.1)
31 – 40	119 (26.3)	127 (26.5)
41 – 50	107 (23.6)	134 (28.0)
51 – 60	71 (15.7)	78 (16.3)
≥ 61	47 (10.4)	63 (13.1)
Total	453 (100)	479 (100)

Among the diabetic adults, 38.2% are registered under Diabetic Association of Bangladesh (BADAS) where as 61.8% are not registered [see Table 3].

Table-III

Registration status of diabetic patient (n=479)

Diabetic patient category	Number of patients	Percentage
Registered under BADAS	183	38.2
Not registered under BADAS	296	61.8
Total	479	100

Discussion:

In this, the first, study of prevalence of diabetes mellitus among the rural population of Gazipur in Bangladesh, we estimated the prevalence of diabetes mellitus among the population and the number of diabetic population who were registered with Diabetic Association of Bangladesh (BADAS).

The findings suggests that more than half, 51.4% of the participants were diabetic and 54.5% were hypertensive. Among the participants 39.4% had a positive family history of diabetes where as 47.4% had no family history of diabetes and 13.2% didn't know about it. Majority of the participants were married (92.2%).

The prevalence of diabetes mellitus was more after the age of 41 years (57.4%) but maximum within the age group 41 – 50 years old. But the most important part of our study was that among the diabetic adults, 38.2% were registered under Diabetic Association of Bangladesh (BADAS) where as 61.8% were

The study strengths include large number of sample size covering a relatively a larger area. In addition, we maintained random selection from every household. However, the study has important limitations. We used self-reported data on diabetes to calculate prevalence of diabetes mellitus where the participants did not provide blood samples for glucose estimation. In addition, no information was collected on physical activity levels, tobacco use or dietary habits. Therefore, further studies in rural areas in Bangladesh are needed.

Conclusions:

Our study found very high proportions of diabetic individuals in rural area in Bangladesh and even higher proportion of diabetic

individuals not registered under Diabetic Association of Bangladesh (BADAS). Screening services should be implemented while researchers focus on strategies to lessen the incidence and morbidity associated with these conditions.

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