

The Diabetes TRACK (by NEHEP) Vs Bangladesh

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Abstract

With the increasing burden of non-communicable diseases in low-income and middle-income countries (LMICs), biological risk factors, such as hyperglycemia, are a major public health concern in Bangladesh. Optimization of diabetes management by positive lifestyle changes is urgently required for prevention of comorbidities and complications, which in turn will reduce the cost. Diabetes had 2 times more days of inpatient treatment, 1.3 times more outpatient visits, and nearly 10 times more medications than non-diabetes patients, as reported by British Medical Journal. And surprisingly, 80% of people with this so called “Rich Man’s Disease” live in low- and middle-income countries. According to a recent study of American Medical Association, China and India collectively are home of nearly 110 million diabetic patients. The prevalence of diabetes in this region is projected to increase by 71% by 2035. Bangladesh was ranked as the 8th highest diabetic populous country in the time period of 2010-2011. In Bangladesh, the estimated prevalence of diabetes among adults was 9.7% in 2011 and the number is projected to be 13.7 million by 2045. The cost of diabetes care is considerably high in Bangladesh, and it is primarily driven by the medicine and hospitalization costs. According to Bangladesh Bureau of Statistics, in 2017 the annual average cost per T2DM was \$864.7, which is 52% of per capita GDP of Bangladesh and 9.8 times higher than the general health care cost. Medicine is the highest source of direct cost (around 85%) for patients without hospitalization. The private and public financing of diabetes treatment will be severely constrained in near future, representing a health threat for the Bangladeshi population.

Keywords: chronic diseases, hospitalization, T2DM

Background

Bangladesh is among the top 10 countries with the highest rates of projected age-standardized mortality among selected LMICs due to chronic diseases, particularly for CVDs and diabetes [1]. The age adjusted death rate 40 per 100,000 of population ranks Bangladesh 57 in the world, says WHO [2]. Diabetes is one of the four major types of noncommunicable diseases that make the largest contribution to morbidity and mortality worldwide. The International Diabetes Federation (IDF) estimated that, worldwide, approximately 425 million people had diabetes in 2017, projected to be 629 million by 2045. Again, worldwide \$727 billion was spent in 2017 for treating and preventing diabetes, projected to be US\$776 billion by 2045 [2]. In Bangladesh, specifically, the IDF projects the prevalence of diabetes will increase to more than 50% in the next 15 years [4]. About 129,000 deaths were attributed to diabetes in Bangladesh in 2015, as reported by leading research organization ICDDR, B [5]. According to the WHO-Diabetes country profile of Bangladesh in 2016, the physical inactivity was prevailing among 25.1% of population [6]. Around 85% population of age group 25-65 never checks for diabetes [7]. A recent study by British Medical Journal says, 1 in 10 Bangladeshi adults aged ≥18 years have hyperglycemia (among urban residents) [4]. Even in rural Bangladeshi community, undiagnosed diabetes was high, 7.2% found in a 2016 [8] and 10% in 2019. 20–30% of adults in rural areas of Bangladesh have abnormal fasting glucose or impaired glucose tolerance [9]. And IDF says, there are 7.1 million people with undetected diabetes in Bangladesh and this number will be double by 2025 [10]. Das et.al, 2019 reported prevalence of dyslipidemia was over 70% to both male and female

subjects, which indicates the urgency of lifestyle intervention strategies to prevent and manage this important health problem and risk factor [11]. Among 8400 stroke patients from different hospitals in Bangladesh over a period of sixteen years, diabetic patients were nearly 25% [12]. Prevention strategies should focus on increasing physical activity, weight loss, smoking cessation, and more strict control of hypertension and glycemic level [13].

TRACK Vs Bangladesh: Perplexity of the Present Situation

A. Compliance Issue

Poor adherence is a well-documented obstacle in therapeutic control of diabetes. For an effective control and prevention of diabetes, 87% of Bangladeshis were noncompliant, compared to 71% of Indians and 52% Europeans [16]. Out-of-pocket expenditure, emotional status, frequency of counseling, patient’s family priorities, availability of medication (mainly insulin) are the factors greatly influence patient compliance to treatment guidelines. In 2016, the median monthly cost of diabetes maintenance was close to \$10, approximately 10% of the median monthly income [17]. According to a 2018 BBC record, insulin availability found supplies were low in six countries - Bangladesh, Brazil, Malawi, Nepal, Pakistan and Sri Lanka [18]. Also, huge gap between the number of diabetic patients and doctors are well-known. The Diabetic Association of Bangladesh (DAB) record shows, except Dhaka and Chittagong, there are no tertiary facilities in Bangladesh to preventing blindness due to diabetic retinopathy [19].



Figure 1. TRACK, A program of National Institute of Health (NIH), England to memorize the factors that can contribute to health while living with diabetes [14].

B. Overweight Issue

Overweight or obese children have a higher risk of becoming obese in adulthood and are at higher risk of associated chronic diseases [20]. Al Muktadir et.al, 2019 revealed that around 22% to 27% Bangladeshi youth were recorded as obese with different stages of obesity [21]. Another study says nearly 40% Bangladeshi youth, taking fast foods were recognized as overweight where 32% were noted as obese with different phases of obesity and overall prevalence of fast food consumption was about 53.8% [22]. In a newspaper interview, Professor AK Azad Khan, President, Diabetic Association of Bangladesh said 40% school going children of Dhaka city were either obese or overweight [23]. “Children with type 2 diabetes is rising “alarmingly” in Bangladesh. A 300% raise in the last five years”, according to the Changing Diabetes in Children Program of the BIRDEM hospital [24]. A community level study shows 35% of mothers perceived that childhood overweight/obesity could be a health problem and nearly 70% were not aware of any health consequences of childhood obesity [25]. Another study shows 97.4% students consume fast food contain Monosodium Glutamate which causes obesity and other body discomforts [26]. In a similar study among students of 4 private universities of Dhaka, 98% of the students were well informed about the negative effects associated with excessive fast food consumption, they were still profoundly addicted to it [27]. Prevalence rates of overweight and obesity are higher in urban peoples compared to rural peoples living in Bangladesh [28]. Tanwi et.al, 2019 reported prevalence of overweight and obesity was 34% among urban Bangladeshi women [29], increased by 17.5% between 1996 and 2011 [30]. Another study reveals that a nearly 30% married women in Bangladesh are overweight [31]. Women’s employment status was only associated with overweight or obesity for urban residents. Working urban women had a lower probability of being overweight. Sociodemographic factors including age, education, wealth index, marital status, watching TV and employment status were associated with the increased trend of overweight

and obesity [32]. The highest prevalence of overweight and obesity were observed in those women with the highest education level and wealth, larger family size, living in urban areas and not being in paid employment [33].

C. Lifestyle Issues

According to the WHO-Diabetes country profile of Bangladesh in 2016, the physical inactivity was prevailing more than 25% of population. Bangladeshi women more at health risk than men due to inactivity. Two big reason to diabetes among Bangladeshi people are carbohydrate-dependent food pattern and sedentary lifestyle [34-36]. While males can go outside, socialize and take part in outdoor activities such as cricket or football or cycling, females are often confined to domestic chores and not allowed to go outside freely. Parents are likely to restrict or discourage their daughters from outdoor activities such as recreational walking or bicycling. Young females are vulnerable to crime while travelling and so are more likely to avoid walking. Uddin et.al, 2019 reported that 80% young adults in Dhaka City, did not meet the WHO recommended level of physical activity (150 minutes of moderate- to vigorous-intensity activity per week) for optimal health, with higher rates of insufficient activity among females than males [37]. unplanned urbanization in the cities where people have very limited scope for physical activities. Even in the rural areas people now take rickshaw vans or other rides to go to marketplaces. Evidence shows that prevalence of physical inactivity 35% to 38% in Bangladeshi adults aged 25 years and older [38]. Adults engage in high levels of sedentary behavior during waking hours, said another study [39]. Prevalence of self-reported depression was respectively 47.7% in Bangladesh. Lower frequency of vigorous physical activity was significantly associated with higher rates of depression diagnosed [40]. People with depressive disorders have a 65% greater risk of developing diabetes than the general population, which is a double-trouble according to WHO [41].

D. Regular Health Checkup

Despite the high levels of diabetes and intermediate hyperglycemia, awareness and control of the condition is low in rural Bangladesh. Fottrell et.al, 2019 reported only 25% of diabetics were aware of their status, women with diabetes were 37% less likely than men to know that they were diabetic and, even among known diabetics, 75% had suboptimal control of the condition [42]. It is mentioned earlier that 1 in 10 Bangladeshi urban adult (aged ≥ 18 years) have hyperglycemia, with dyslipidemia prevalent over 70% male and females. Among those aged over 35, the Bangladesh Demographic and Health Survey (BDHS) reported that approximately 25% had abnormal fasting glucose [43]. The glycated hemoglobin (HbA1c) method does not require the candidate to fast for eight hours or take glucose and he or she can have the test done by the HbA1c method any time [44]. However, for individuals diagnosed with diabetes, screening is associated with a reduction in mortality and cardiovascular disease risk [45].

E. Tobacco Smoking

Tobacco kills more than seven million people a year worldwide and responsible for 1 in 5 deaths in Bangladesh, according to WHO, kills more than 161,000 people on average every year [46]. A number of experimental and clinical studies suggest that smoking decreases insulin sensitivity, and indirectly role plays in elevated blood sugar and LDL, decreased HDL and postprandial lipid intolerance [47-55]. A 2018 survey by BRAC University shows several risk factors of diabetes includes smoking (almost 60%), abdominal obesity (43.3%), hypertension (14.3%), depression (43%) whereas the incidence of routine bodily

exercise (only 1.3%) and the habit of consuming seasonal fruits as well as vegetables (8.6%) remain significantly low among the people of Bangladesh [56]. Bangladesh has been identified as a high-achieving country for several tobacco control measures, including tobacco taxation, health warning labels and anti-tobacco mass-media campaigns. The high level of achievement for Bangladesh in cigarette taxation is, however, contradicted by an increase in per capita cigarette consumption [57]. Urban male smokers in Bangladesh consume more cigarettes than bidis and smoke more per day than rural smokers. More than half of Bangladeshi men over the age of 25 years smoke cigarettes or bidis, small handmade cigarettes containing about one fourth the amount of tobacco found in cigarettes [58]. Despite the reduction in overall tobacco use, the male smoking prevalence in Bangladesh is still high at 37% [59]. Although, government is taking initiatives from administration, more than one fourth (25.5%) of the police personnel in Bangladesh are currently smokers and this should be intervened [60].

F. Other Issues

Not only food and lifestyle, global warming also plays an important role in diabetes prevalence. A Netherlands based study in CNN Health says, "a 1-degree Celsius rise in environmental temperature could account for more than 100,000 new diabetes cases per year in the USA alone" [18]. A similar study says Bangladesh will exceed 35-degree Celsius before the end of the century [61]. Consuming arsenic contaminated food grains could be another reason of high diabetes prevalence [62]. Again, 15% of expecting women are diagnosed with gestational among these 60% contribute to permanent diabetes within 10 years, says Dr Samsad Jahan (professor of Obstetrics and Gynecology, BIRDEM) [63].

Fasting during Ramadan is significantly associated with decrease in blood lipid profile, blood pressures, glucose, and HbA1C level among diabetic patients [64-70]. The total energy intake decreases during Ramadan, whereas the dietary fat consumption increases because of an augmentation of fatty food that does not occur during other periods [71]. Even more unfortunate is the fact that nefarious practice food adulteration increases exponentially during the month of Ramadan in Bangladesh, according to a study of European Journal of Sustainable Development Research, 2019 [72]. The number of patients suffering from cancer, diabetes, and kidney diseases is on the rise due to food adulteration [73-76].

Conclusion

The prevalence of type 2 diabetes showed an increasing trend in both urban and rural population in Bangladesh. People with no education, lower socio-economic status, and those who lived in disadvantaged regions in terms of education and economic profile were found lacking of diagnosis, treatment, and control of diabetes. Children with diabetes are still managed by adult physicians or occasionally by adult diabetologists, except in institutions like BIRDEM, and Dhaka Shishu Hospital. Children and adolescents have special needs at different stages e.g., nutrition, schooling, growth, puberty etc. Improving detection, awareness, and treatment strategies is urgently needed to prevent the growing burden associated with diabetes. Emphasizing medication adherence with multiple comorbid diseases should be strongly considered in future diabetes management programs to improve glycemic control in patients with type 2 diabetes. The most important thing is patient education, that the modern world is giving the highest priorities. Rich or poor, privileged or unprivileged, all segment of population should be brought under the arena of compliance through patient education, at least by health campaign. Both government and profit taking medicine companies should take initiatives in this regard.

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Abbreviations

Low- and middle-income countries (LMICs); International Diabetes Federation (IDF); National Eye Health Education Program (NEHEP); Bangladesh Demographic and Health Survey (BDHS); Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM)

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