



TRACK Implementation: a Bangladesh Scenario

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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: *Blood sugar Screening; Compliance; Overweight; Lifestyle; Regular health checkup; Ramadan fasting; Climate issue of diabetes*

TRACK (by NEHEP) Implementation: a Bangladesh Scenario

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News: research and practice

Bangladesh was ranked as the 8th highest diabetic populous country in the time period of 2010-2011 [1]. 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 [2].

In Bangladesh, specifically, the IDF projects the prevalence of diabetes will increase to more than 50% in the next 15 years [3,4]. 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) [8]. Even in rural Bangladeshi community, undiagnosed diabetes was high, 7.2% found in a 2016 and 10% in 2019 [9,10]. Roughly 20%–30% of adults in rural areas of Bangladesh have abnormal fasting glucose or impaired glucose tolerance, with the prevalence of diabetes (mostly type 2 diabetes) expected to reach 24%–34% by 2030 [10-12]. And IDF says, there are 7.1 million people with undetected diabetes in Bangladesh and this number will be double

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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].

by 2025 [13]. 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

[15]. Among 8400 stroke patients from different hospitals in Bangladesh over a period of sixteen years, diabetic patients were nearly 25% [16].

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Risk Factors	Prevalence
Physical inactivity (overall)	25.1%
Physical inactivity (among adults)	35% to 38%
Young adults among capital who unmet recommended physical activity	80%
Adults who never checks diabetes	85%
Undiagnosed diabetes among rural population	7.2%
Adults with hyperglycemia	10%
Abnormal fasting glucose among rural population	20%-30%
People over the age of 35 having diabetes under control	12%
People over 35 had abnormal fasting glucose	25%
Stroke among diabetic patients	25%
Non-compliance with medication	87%
Prevalence of dyslipidemia	More than 70%
Obesity among young adults	22% to 27%
Obesity among school going children	40%
Mothers unaware of consequences of childhood obesity	70%
Obesity among urban women	34%
Obesity among married women	30%
Obesity increase among women in 15 years study	17.5%
Higher prevalence of diabetes among males	7.4%
Overall consumption of fast food consumption among youth and children	Around 54%
Prevalence of self-reported depression	47%
Smokers (male)	37%
GDM	15%
Adulterated food in daily consumption	50%
Child marriage	30%
Undernourished women	33%
Underweight among children aged less than five years	40%
Low health literacy (among urban people)	60%

Table 1. Summary of Diabetic Risk Factors in Bangladesh

ICDDR, B, estimated 150 food items in the country. More than 50% of the food samples they tested were adulterated reported by the Institute of Public Health (IPH) [17]. Undoubtedly human health is now under the domination of formalin, in Bangladesh about 400 tons of formalin is being imported which are goes to human stomach, creates deadly mistreats on long term exposure

[18]. Several studies highlighted formaldehyde-induced neurodegeneration, diabetes risk and diabetes-associated cognitive impairments [19-21]. Even more unfortunate is the fact that nefarious practice of food adulteration increases exponentially during the month of Ramadan in Bangladesh [22].

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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" [23]. A similar study says Bangladesh will exceed 35-degree Celsius before the end of the century [24]. Consuming arsenic contaminated food grains could be another reason of high diabetes prevalence [25]. In sex-stratified analyses with 641 subjects from rural Bangladesh, a study reported arsenic exposure (50.01-150 µg/L) showed a clearer pattern of dose-dependent risk for hyperglycemia in females than males [26]. Again, 15% of expecting women are diagnosed with gestational diabetes among these 60% contribute to permanent diabetes within 10 years, says Dr Samsad Jahan (professor of Obstetrics and Gynecology, BIRDEM) [27].

According to a 2018 BBC record, insulin availability found supplies were low in six countries - Bangladesh, Brazil, Malawi, Nepal, Pakistan and Sri Lanka [28,29]. Also, huge gap between the number of diabetic patients and doctors are well-known [30]. 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. Children with diabetes are still managed by adult physicians or occasionally by adult diabetologists, except in institutions like BIRDEM, and Dhaka Shishu Hospital [31].

Around 22% to 27% Bangladeshi youth were recorded as obese with different stages of obesity [32]. 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% [33]. 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 [34]. "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 [35]. 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 [36]. Another study shows 97.4% students consume fast food contain Monosodium Glutamate which causes obesity and other body discomforts [37]. 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 [38]. Prevalence rates of overweight and obesity are higher in urban peoples compared to rural peoples living in Bangladesh [39].

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 reasons to diabetes among Bangladeshi people are carbohydrate-dependent food pattern and sedentary lifestyle [40-42]. Evidence shows that prevalence of physical inactivity 35% to 38% in Bangladeshi adults aged 25 years and older [43].

Despite the high levels of diabetes and intermediate hyperglycemia, awareness and control of the condition is low [44]. In a cross-sectional study in urban population of Bangladesh, more than 60% of the diabetic patients had inadequate functional health literacy of them and nearly 90% had inadequate glycemic control (HbA1c>8%) [45]. Also, another study says that diabetes-related health literacy in rural Bangladesh is a major factor associated with diabetic retinopathy (DR) screening [46].

The IDF atlas estimated the incidence of type 1 diabetes in Bangladesh as 4.2 new cases of T1DM/100,000 children (0-14 years)/year, in 2013 [31]. The social challenges faced by T1DM children are numerous. Many of them are poor, with little access to education. They are often considered a burden on the

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family, especially girls; they have little prospect of getting married or being employed. According to UNICEF, Bangladesh has the fourth highest prevalence rate of child marriage in the world, and the second highest number of absolute child brides – 4.5 million. Around 30% of girls in Bangladesh married before the age of 15 and nearly 80% got married before the age of 18 [47-49]. The prevalence of nutritional deficiency was relatively higher among rural, illiterate and early married women and among those with a low standard of living. Child marriage, low-birthweight, mother nutrition and diabetes closely related to each other [50].

Recently, Telenor Health and DAB have launched the first- ever diabetes management service, Dia360, to help people with diabetes manage their blood sugar levels and reduce risks of complications. People can enroll in three DAB centers in Dhaka—Bangladesh Institute of Health and Sciences, Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM) General Hospital, and the National Health Network Hospital. It has more than 400,000 diabetics registered at its tertiary center, BIRDEM in Dhaka. However, 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, profit taking NGOs and pharmaceutical companies should take initiatives in this regard.

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); Institute of Public Health (IPH).

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