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# Type 2 Diabetes in Bangladesh: A Looming Public Health Crisis

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***Abstract***

***Introduction:*** *Type 2 diabetes mellitus (T2DM) is a rapidly rising public health concern worldwide and a major burden in Bangladesh due to urbanization, lifestyle changes, and socioeconomic disparities. The rising prevalence rates of T2DM pose a threat to overwhelm an already overburdened health system. The current article aims to highlight the rising burden of T2DM in Bangladesh and assess existing disease management policies in the context of a health system burden and equity.* ***Materials and Methods:*** *A qualitative study was conducted by reviewing various journal articles and reports published by international health organizations and national policies. The findings and evidence on various aspects of T2DM in Bangladesh were synthesized under various themes and subheadings.* ***Discussion:*** *Based on the findings, it is evident that Bangladesh has made considerable progress in developing national policies to address non-communicable diseases. However, there is a need to address various challenges and gaps in primary care services and high out-of-pocket expenditure. Socioeconomic disparities and gender disparities also need to be addressed. Furthermore, mental health comorbidities need to be addressed to improve disease outcomes.* ***Conclusion:*** *The problem of T2DM in Bangladesh is an emerging public health crisis that requires a concerted, equitable, and multi-faceted response. Strengthening primary care, mental health care, affordability, and community-based prevention are critical steps in controlling the rising tide of T2DM.*

***Keywords:*** *Type 2 Diabetes Mellitus, Bangladesh, Non-Communicable Diseases, Health Policy, Health System Strengthening, Socioeconomic Inequity.*

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**Introduction:**

Globally, type 2 diabetes mellitus (T2DM) is a dire and escalating non-communicable disease (NCD) burden. Due to growing urbanization, changes in lifestyle, and socioeconomic disparities, the prevalence of type 2 diabetes is horrendously on the increase in Bangladesh. As of 2021, there were more than 13 million Bangladeshi adults living with diabetes, of whom Type 2 comprised more than 90%, according to the International Diabetes Federation


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(Kundu et al., 2022)[1]. This number can surpass 22 million by 2045 if current trends are sustained, subjecting the already strained healthcare system to inordinate pressure.

Physical activity levels and eating habits have been affected by urbanization and economic transformation, especially in urban areas where diets of processed foods and sedentary lifestyles are increasingly becoming the norm (Selim et al., 2023)[2]. Outcomes of diabetes are highly linked with socioeconomic status. In Bangladesh, the majority of the expenditure on health is obtained through out-of-pocket payments, which means that poorer households tend to forego treatment or seek out illegal doctors. Financial limitation and limited knowledge regarding nutrition seriously handicapped personal capacity to manage diabetes on their own, according to Selim et al. (2023)[2]. Physical inactivity, dietary imbalance, family history, co-morbid conditions like hypertension and prediabetes, obesity, and ethnic group are some of the modifiable and non-modifiable risk factors for type 2 diabetes (T2DM) (Yesmin, Ali and Saha, 2023)[3].

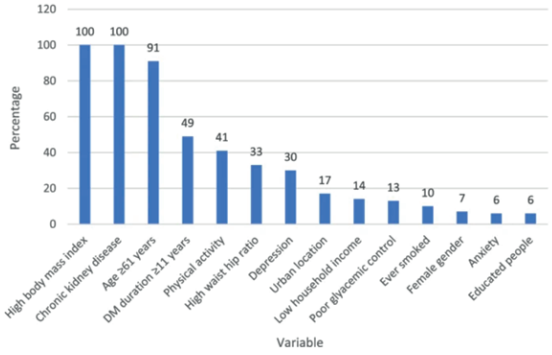


Figure: The percentage of the time that variables were significant for hypertension in bootstrap analysis (Alsaadon et al., 2022)[4]. Risk factors are further aggravated among ethnic minorities, like the Bishnupriya Manipuri population, due to low education levels, restricted access to health care, and poor awareness (Singha et al., 2024)[5]. Diabetes also causes intense psychological distress in addition to its clinical presentation. Depression and anxiety are frequent comorbidities. Namdeo et al. (2023)[6] illustrated that type 2 diabetes and depression have a strong association, and existing diabetes care approaches mainly do not fulfill mental health needs.

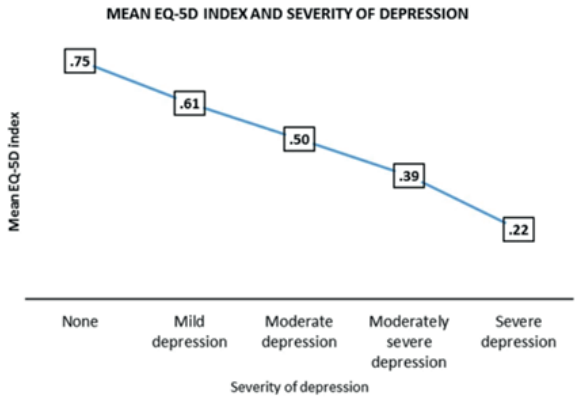


Figure: The graph shows a clear decrease in the mean EQ-5D-5L index score (European Quality of Life Five Dimension and Five Level) as depression severity increases, indicating that depression is associated with lower HRQOL (Health-Related Quality of Life) (Namdeo et al., 2023)[6]. Because of structural impediments to healthy living, diabetes has the deepest impact on Bangladesh's economically vulnerable people, even though it is most commonly envisioned as a disease of industrialized countries. In urban slums and rural poor communities, low-nutrient but high-calorie foods are easily accessible and affordable compared to fruits and vegetables, thereby increasing the vulnerability of the population to obesity and insulin resistance (Selim et al., 2023)[2]. Gender-specific aspects of diabetes are also crucial. With limited mobility, poor economic independence, and male-dominated service settings, Bangladeshi women are frequently confronted with structural obstacles in accessing healthcare services, particularly in rural and peri-urban areas. The factors lead to poor follow-up care and delayed diagnosis, as per Namdeo et al. (2023)[6]. Moreover, a cycle of metabolic ill health is perpetuated across generations due to underdiagnosis and inadequate control of gestational diabetes, which causes long-term risks to both mothers and their children (Haque et al., 2023)[7].

**Discussion:**

The evidence reviewed above indicates that the aetiology of Type 2 Diabetes in Bangladesh is multifactorial, ranging from lifestyle to socioeconomic and systems issues. Rapid urbanization is a major contributor to lifestyle changes, including a sedentary lifestyle and increased consumption of processed foods, whereas socioeconomic status and low health literacy levels limit the population's ability to practice preventive measures[8]. Although the government's policy to establish NCD corners at primary healthcare facilities is a major achievement, the implementation and preparedness of services are a cause of concern[9]. Furthermore, the healthcare infrastructure is not equally accessible to the rural population, ethnic minorities, and females, which creates a barrier to receiving care in a timely manner[4]. In addition, the economic burden on patients to adhere to treatment regimens is a major barrier to receiving care, as out-of-pocket expenses are prohibitively expensive, causing a significant number of patients to stop receiving essential medications[10]. Furthermore, the prevalence of psychosocial disorders, including depression, which negatively impacts the course of the disease, is not addressed within the healthcare system itself[7]. The absence of integrated health information systems and national diabetes registries has hindered the process of evidence-based planning and monitoring, especially for disadvantaged populations[11]. In addition, the lack of collaboration between different sectors has hindered the process of addressing the upstream factors of diabetes, such as the food environment, urban design, and education system. Overall, the findings of the study indicate that diabetes control in Bangladesh needs to be addressed through structural reforms, community engagement, and policy coherence, among other aspects.

**Evaluation of Relevant Disease Management Policy:**

With a special emphasis on type 2 diabetes, Bangladesh has launched several programs to curb the NCD epidemic. The Directorate General of Health Services (DGHS) is responsible for the National Strategic Plan for NCDs (2017–2022), which calls for the creation of NCD corners

in Upazila Health Complexes so that diabetes screening and treatment are made part of primary healthcare. Despite this policy framework, different regions still apply it unevenly (Kabir, Karim and Billah, 2023)[12]. According to studies like Selim et al. (2023)[2], diagnosis and treatment facilities, particularly in rural areas, cannot always comprehensively treat type 2 diabetes. Additionally, the capacity for providing continuous care is also hampered by drug shortages and inadequate laboratory facilities. One of the areas of weakness in service provision at present is the cultural appropriateness of care. Haque et al. (2023)[7] report that to enhance patient compliance and confidence, culturally appropriate models of treatment are required. Their research points out how crucial it is to incorporate regional attitudes, communication patterns, and eating habits into diabetes management models.

The WHO Global Action Plan for NCDs (2013 - 2020) is aligned with Bangladesh, yet local implementation has lagged behind global best practice. Inefficiency and duplication are caused by broken monitoring systems and the absence of public-private integration among health providers. Diabetes registries, which are an essential tool for planning and monitoring, do not exist or are inadequate in most settings (Kabir, Karim and Billah, 2023)[12].

For bridging the gaps in service, non-governmental organizations, particularly the most prominent Diabetic Association of Bangladesh (BADAS), play a pivotal role. The management of diabetes is also worsened by a lack of human resources. The majority of primary healthcare workers are not adequately trained in managing chronic diseases or applying the most current clinical guidelines. Afsana Habib Sheuly et al. (2022)[8] uncovers that there is a high correlation between patient outcomes and the quality of care that they receive, particularly health-related quality of life. Another ongoing obstacle is cost. Since 70% of healthcare costs are paid out of pocket, diabetic patients tend to skip regular lab work or medication. Particularly with comorbidities, the expense of insulin and oral hypoglycemic agents tends to be more than a family can afford (Namdeo et al., 2023)[6]. Although there is substantial evidence that mental health and diabetes are strongly connected, psychosocial care is not at all present in the policy context. Depression among diabetic patients is common, according to Namdeo et al. (2023)[6], but screening or support services are scarce. Statistically, up to 42% of diabetics in Bangladesh are depressed; yet, diabetes care does not typically involve mental healthcare. Results could be greatly improved by implementing regular screening and counseling within clinics (Firoj Al-Mamun et al., 2023)[10].

In conclusion, although Bangladesh has made impressive policy initiatives, these are limited by the frailties of the health system, including underfunding, unequal access, and implementation fragmentation. For increased equity and quality of diabetes care, better coordination, education, funding, and culturally sensitive strategies are an urgent necessity. The lack of multisector engagement in addressing the upstream determinants of diabetes is the most critical issue. Whereas diabetes care programs are managed by the Ministry of Health, coordination with sectors like education, agriculture, and urban planning, sectors that have a significant role in the food environment and physical activity (Kundu et al., 2022)[1] is not much. For instance, educational health curricula rarely address diet or exercise, missing important early intervention opportunities, and urban places are still predominantly unfriendly to pedestrians and bicycles. Moreover, the absence of timely, disaggregated health information often prevents health policy from being developed. Current data systems are fragmented and largely hospital-based, and there is no national diabetes registry. Thus, they are not favorable predictors of the true burden of type 2 diabetes among rural and disadvantaged groups (Selim et al., 2023)[2]. Inadequate data decelerates evidence-based planning and makes it more difficult to track progress. Moreover, most policy measures tend to be less sensitive to patient requirements and local circumstances because they lack intrinsic mechanisms for community feedback (Afsana Habib Sheuly et al., 2022)[8].

**Recommendations or Strategic Plans:**

The following specific steps are suggested to minimize the increasing risk of Type 2 Diabetes to public health:

- Increase Primary Care Services: Fully operationalize NCD clinics with trained personnel, necessary diagnostic equipment, and regular monitoring devices. Provide coverage in remote and hard-to-reach areas.

With pilot initiatives providing free diabetes and hypertension drugs in community clinics around Sylhet, Bangladesh is expanding NCD services in primary care. However, the impact in rural areas is limited since many facilities still lack regular care pathways, skilled personnel, and diagnostic instruments (Kabir, Karim and Billah, 2023).

- Incorporate Mental Health Screening: In diabetes clinics, implement regular screening for anxiety and depression. Establish referral pathways for counseling and psychological support.
- Increase Public Awareness: Launch community-oriented and mass media programs supporting physical activity, diet, and prevention of diabetes, especially in low-income rural communities and slums.
- Subsidize Key Medicines: Provide lipid-lowering medications, insulin, and metformin consistently and subsidize at public health facilities.
- Digital Health Expansion: For enhanced self-management and adherence, utilize mHealth tools for tracking blood glucose, appointment reminders, and patient education. Adherence in diabetes patients has been enhanced by mobile health technologies like SMS reminders and electronic platforms. In resource-scarce environments in Bangladesh, these are particularly promising for rural care and follow-up (Yasmin et al., 2020)[13]. Integration of diabetes prevention and control into current community-based primary care networks is likely to be a more sustainable approach. Community health workers and family welfare visitors could conduct glucose screening, lifestyle counseling, and treatment adherence monitoring at the household level if they receive appropriate training and support (Ahmed et al., 2024)[9]. This decentralized approach has worked in other LMICs and would be especially helpful in remote or underserved communities in boosting access (Afsana Habib Sheuly et al., 2022)[8]. By offering culturally appropriate support, lifestyle counseling, and home visiting, community health workers can play an important role in diabetes treatment (Islam et al., 2018)[11].

Along with policy measures to limit exposure to unhealthy food items, Bangladesh must also alter the nutritional environment. Consumers can be empowered to make healthier choices by regulatory measures like

front-of-package food labeling, taxation of sugar-sweetened beverages, and prohibition of trans fatty acids (Selim et al., 2023)[2]. Schools and workplaces can also be sites of intervention by providing access to healthy food and formal health education. The reversal of rising trends of obesity and tackling the underlying causes of the diabetes epidemic requires these improvements (Kundu et al., 2022)[1].

**Conclusion:**

Type 2 diabetes is a rising and pressing public health issue in Bangladesh, fueled by demographic change, socioeconomic inequality, and challenges within the healthcare system. Although current country policies reflect political will to control non-communicable diseases, their effectiveness is hampered by fragmented implementation, a lack of capacity in primary care, and significant financial costs of care. To meet this challenge, there is a need to enhance primary healthcare services, incorporate mental health services, make essential medications more affordable, and enhance community-based preventive programs. Another important area is the development of effective surveillance systems and improved multi-sectoral collaboration to address the upstream factors that contribute to diabetes. Unless there are comprehensive and equity-oriented changes, the burden of T2DM will continue to escalate, disproportionately affecting Bangladesh's most disadvantaged groups.

**Conflict of Interest:** None.

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