DOI: https://doi.org/10.3329/medtoday.v37i2. 83363

CASE REPORT OPEN ACCESS

Challenges and Strategies to Strengthen Diabetes Prevention Programmes in Bangladesh

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Abstract

Accelerated urbanization, changing lifestyle, and growing health inequality have all contributed towards Bangladesh's diabetes burden unfolding as a serious public health emergency. Structural, social, and policy-level impediments to the effective prevention and control of diabetes in the country are critically examined in this research. Despite the recognition of the threat of non-communicable disease (NCD) and of diabetes at the national programs and policy levels, implementation has been patchy and disproportionately concentrated in urban areas. Inequities are compounded by an un-integrated healthcare system, lack of funding, substandard primary care centers, and a severe shortage of trained staff.

This paper highlights the intricacies of these barriers, various social determinants of health through to policy intransigence and digital divides, and the need for a multisectoral, equity-oriented, and integrated response. The potential of public-private partnerships, digital health innovations, and community interventions is examined in the context of Sustainable Development Goal 3 (SDG 3). Drawing from a close integration of policy briefs, epidemiological data, and the subject literature, this paper proffers strategic recommendations to augment the agenda for diabetes prevention in Bangladesh. It recommends scaling up primary prevention, capacity development, and reorientation of the health system towards chronic disease management to reduce morbidity, mortality, and socioeconomic consequences of diabetes.

Keywords: Diabetes Prevention, Non-Communicable Diseases (NCDs), Bangladesh Health Policy, Primary Healthcare, Health Systems Strengthening, Social Determinants of Health, mHealth and Digital Interventions, Public-Private Partnerships, SDG 3, Chronic Disease Management.

Number of References: 09; Number of Correspondences; 04.

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Introduction and Background:

In Bangladesh, the prevalence of diabetes is escalating quickly, posing a public health concern nationwide. Rapid urbanization, coupled with changing dietary habits, sedentary lifestyles, and increasing rates of obesity, has placed an increasing burden on the healthcare system. The rise in diabetic prevalence creates an urgent need to improve preventive techniques, particularly in the marginalized and underprivileged population. The increasing prevalence of diabetes is particularly concerning in a country like Bangladesh, where the healthcare infrastructure is not sufficiently equipped to manage the long-term medical needs of people diagnosed with diabetes. It is imperative to understand the urgency of addressing this concern, given its substantial health and economic impacts.

Received: 20 March 2025 *Accepted revised version:* 23 May 2025

More specifically, SDG 3, which has the aim to "ensure healthy lives and promote well-being for all at all ages (Martin, n.d.) falls in line with the UN's Sustainable Development Goals. To countries like Bangladesh, which is in the lower-middle-income group of nations, the increasing prevalence of non-communicable diseases, such as diabetes, poses a serious issue. This is in addition to a combination of poverty, lack of high-quality available health care, and the increased burden of chronic diseases. The most recent estimates are proven to suggest that diabetes affects 8.4% of adults in Bangladesh, which will increase substantially over the coming decades (Saleh et al., 2014)[1].

Untreated or improperly managed diabetes can result in serious side effects that impair quality of life, including blindness, renal failure, stroke, and cardiovascular disorders. Diabetes also has a significant financial impact on households and the country's healthcare system. Bangladesh will not be an exception to the International Diabetes Federation's (IDF) prediction that the expense of managing diabetes, and its consequences will increase internationally (Hasan et al., 2019)[2]. Furthermore, the epidemiological transition that Bangladesh is undergoing is impacting health infrastructures and services, which have been built for fighting infectious diseases, thus making responding appropriately to people's needs caused by chronic illnesses such as diabetes increasingly difficult (Aziz et al., 2021)[3]. These facts therefore evidently indicate that strengthening existing diabetes preventive programs as well as implementing newer concepts are of utmost importance.

This paper will discuss the challenges Bangladesh faces in fighting diabetes, critically review the current initiatives and regulations taken by the government, and propose ways in which diabetes prevention initiatives can be improved. This, by extension, will pinpoint the weaknesses of the current initiatives and provide remedies to enhance access, coverage, quality, and equity for diabetes care, especially in light of achieving Sustainable Development Goals-3 (SDG-3).

Materials and Methods:

In order to explore the current barriers and strategic opportunities for diabetes prevention in Bangladesh, a narrative and qualitative review method was used in this research. For the purpose of identifying trends, gaps, and interventions in diabetes prevention, a search of peer-reviewed journal articles, national policy documents, WHO and IDF reports, and grey literature published between 2010 and 2024 was conducted. Using keywords like "diabetes prevention," "non-communicable diseases," "Bangladesh," "policy response," and "primary healthcare," sources were retrieved from databases (PubMed, Google Scholar, and Bangladesh Ministry of Health archives).

Discussion:

Government Policies and Responses

Recognizing the emerging burden of diabetes, along with other non-communicable diseases, the current Bangladeshi government has taken several context-appropriate or relevant initiatives through various programs and policy frameworks to prevent a nationwide health crisis, particularly in peripheral locations. The National Health Policy adopted in 2011, recognizing Non-Communicable Diseases, including diabetes, as a major public health concern, forms a very important part of Bangladesh's strategy for improving public health (Murshid and Haque, 2020)[4]. The policy fervently indicates that, as the prevalence of Non-Communicable Diseases is increasing and requires a more strategic and integrated approach regarding health promotion, prevention, and care, the focus of the healthcare system should gradually be shifted from communicable diseases.

Bangladesh has framed a National Non-Communicable Disease Strategy for 2018 to 2025 considering the growing burden of chronic diseases like diabetes. The overall goals of the strategy for prevention and control of diabetes include:

1. Primary Prevention: This essentially involves the reduction of risk factors, such as obesity, bad nutrition, and lack of physical activity that are associated with diabetes.

2. Improved Screening and Early Detection: Screening for Diabetes is quite imperative; this should especially be done on the high-risk populations. It needs to be taken with equal attention in the peripheral areas as it is in metropolitan cities like Dhaka.

3. Health Care Delivery System Strengthening: It ensures access to quality diabetes care, integrates services at the Primary Health Care (PHC) level and assures access to the essential drugs and diagnostic tools. Strengthening these delivery systems will provide a valid ground for future management of the disease burden as well.

4. Public awareness campaigns: Increased knowledge of diabetes and its risk factors to support early detection and lifestyle changes.

These policies do exist; however, their implementation has been inconsistent, and very slow. Among the major impediments to preventing diabetes in Bangladesh is the lack of an integrated effort by the national government, local governments, and the private sector. Most of the suggested policies have not seen effective implementation, especially in neglected and distal peripheral areas.

The MOHFW initiated the illustrious National Program for Prevention and Control of Diabetes, Cardiovascular Disease, and Stroke in 2007 to develop diabetes education, screening, and care in Bangladesh. Resource allocation, a deficiency of appropriate healthcare

facilities, and a shortage of adequately trained personnel pose challenges that must be faced by this program (Saleh et al., 2014)[1].

Moreover, most of these activities have been hindered by inadequate funding and sufficient infrastructural support, even though the National Strategy for Health Sector Development has outlined measures relating to the treatment of Non-Communicable Diseases, including diabetes, for the period 2017-2030. As a matter of fact, diabetes care and prevention continue to be provided principally and exclusively in metropolitan areas, thereby denying the rural population access to this important category of medical services. This unfortunate discrepancy represents a significant barrier to the provision of diabetes care to all citizens.

The lack of medical practitioners who have been trained in the management of diabetes also contributes to the way these guidelines are implemented. The continued lack of training in chronic disease management among the primary healthcare workforce perpetuates ineffective prevention and treatment of diabetes in rural and poor communities (Hossain et al., 2022)[5]. This gap further worsens as the number of people affected by diabetes keeps increasing, hence increasing demand for specialized care.

The multi-year Health, Nutrition, and Population Sector Program supports the overall objectives of Bangladesh for the growth of the health sector. Strengthening health systems to address diabetes by increasing the ability of healthcare professionals at the local level is one of the main focal points of the program. The training of CHWs and other frontline health professionals to conduct early detection of diabetes, along with brief counselling on lifestyle modifications, is included in this multimodal approach. This service has also been integrated into the wide network of community clinics, aiming to reach the poor, especially those in rural areas where specialists are scarce (Afroz et al., 2020)[6]. However, the implementation of such programs has been marred by various challenges in the form of inadequate budgets, lack of comprehensive monitoring systems, and challenges in scaling the intervention effectively across the entire population.

A review of the body of research indicates several important shortcomings and difficulties in Bangladesh's diabetes prevention program implementation. While the government has tried to develop methods and regulations to fight the diabetes epidemic, empirical research shows that such efforts have not achieved much success.

Identified Gaps

1. Understanding and Education: The general lack of understanding among the public about diabetes is one of the primary barriers to its treatment in Bangladesh. A study conducted by Hasan et al. (2019)[2] also indicated that most of the population was still ignorant about the risk factors for diabetes, which include obesity and a lack of activity. This results in inappropriate management of the disease, including delayed diagnosis, hence adverse health outcomes. Besides, the studies show that most of the diabetic patients were diagnosed at a very advanced stage when complications have already set in, hence worsening their prognosis.

2. Access to Health Care: Lack of access to quality health care within the country is one of the major impediments to Bangladesh's successful management of diabetes. According to Islam et al. (2014)[7], access to diabetes care is highly challenging for people living in rural and remote areas. These challenges include a lack of medical practitioners trained in the management of diabetes, limited access to essential drugs on prescription, and diagnostic equipment. Most people cannot afford the high out-of-pocket costs of private healthcare services, which aggravates this issue (Saleh et al., 2014)[1].

3. Social Determinants of Health: It is well documented that social determinants of health such as income, education, and urbanization play a role in preventing diabetes. Because of sedentary lifestyles, poor diets, and elevated stress levels, diabetes is more common in metropolitan settings. On the other hand, rural communities are less likely to obtain preventative treatment or early diagnosis since they frequently lack access to basic health services (Aziz et al., 2021)[3]. The burden of diabetes is increased by this social difference, underscoring the necessity of focused interventions in both urban and rural settings.

4. Systemic Health Care Challenges: The health system of Bangladesh remains burdened by communicable diseases; as such, there has been a minimum level of focus and funding devoted to NCDs like diabetes. Generally, the health system remains fragmented and views diabetes prevention as a separate concern rather than a part of a systemic response within the greater health system. Indeed, according to Hasan et al. (2019)[2], integrating diabetes care into the larger primary health system would improve both access and effectiveness.

5. Policy Gaps: Although Bangladesh has developed a few frameworks and policies regarding NCDs, including diabetes, the implementation of those has been spasmodic and episodic. Rather than being proactive, the policy response has been reactive, often until the burden of the diabetes epidemic has worsened. Such a late policy response leads to missed opportunities for early intervention, increasing healthcare costs and burdens associated with diabetes, according to Chowdhury et al. (2015)[8].

Case Study Examples

Teleconsultation, SMS reminders, and health education through mobile apps are some examples of mobile health treatments that may significantly improve diabetes self-management and medication adherence, according to studies by Chowdhury et al. (2015)[8]. A study by Islam et

al. (2014)[7] found that mobile health solutions that allowed for remote consultations with specialists in diabetes management, nutritional advice, and exercise suggestions benefited rural communities that often face barriers to accessing health care. Even as these technologies hold promise for increasing access to care, lower-income populations face barriers in the areas of digital literacy, internet connectivity, and device affordability, and thus these solutions must be tailored to the local environment. This means that even though mobile health treatments can help bridge some gaps in care, they must be employed in addition to other diabetes care strategies.

Barriers to Success

A critical analysis of the barriers to successful implementation of diabetes preventive and management initiatives identifies the following:

1. Economic Constraints: Bangladesh being a lower-middle-income country with very tight budgetary allocations, certainly has some significant economic restrictions as a nation. While diabetes is a non-communicable disease that attracts relatively less attention, as the health budget is typically prioritized for communicable disease emergencies. Inadequate resources in the healthcare budget impede the development of programs on diabetes screening, provision of essential drugs, and training of health professionals (Chowdhury et al., 2015)[8].

2. Healthcare Infrastructure: The health infrastructure in rural Bangladesh remains one of the major barriers in the management of diabetes. Effective diabetes preventive initiatives are difficult to undertake due to a shortage of well-equipped healthcare facilities in most areas, particularly in rural areas. This is further compounded by the lack of qualified specialists in diabetes care in these areas as well (Islam et al., 2014)[7].

3. Workforce Shortages: The shortage of medical professionals trained in the management of chronic diseases is a significant barrier to diabetes prevention. Diabetes control measures are less effective in rural areas where health workers are not trained to a sufficient level. Training of healthcare workers in rural areas remains insufficient, which limits their ability to provide effective treatment for diabetic patients (Saleh et al., 2014)[1].

4. Social Inequalities: Urbanization, income, and education are some of the major social determinants of health that have a strong impact on the risk of diabetes and access to care. Two major unhealthy behaviours that are more prevalent among urban populations and increase the risk of diabetes include poor diet and a sedentary lifestyle. However, access to healthcare is challenging for rural populations, and they often get diagnosed later in the course of illness (Hasan et al., 2019)[2]. It therefore calls for policies to be formulated that address urban and rural settings in terms of the socio-economic factors influencing the risk of diabetes.

5. Enhancing Public-Private Partnerships: One way to overcome these challenges is the development of public-private partnerships in the management of diabetes. Access to diabetes care services can be improved, especially in disadvantaged areas, by partnering with private sector healthcare providers. The approach of PPPs could also offer a more sustainable approach to diabetes prevention and reduce the economic costs of diabetes care to the government (Chowdhury et al., 2015)[8].

6. Technology and Innovation: Care and prevention of diabetes can be further facilitated by leveraging technology in the form of mobile health (mHealth) technologies. mHealth treatments have the capability to monitor blood sugar levels, actively remind patients when to take their medication, facilitate lifestyle changes, and generally raise awareness. Individuals with diabetes can employ these technologies to manage their disease remotely, which is especially useful in resource-poor settings (Chowdhury et al., 2015)[8].

The lack of inter-sectoral collaboration within the sectors of health, education, agriculture, and urban planning is one of the main reasons for Bangladesh not being able to successfully implement diabetes preventive programs. Prevention of diabetes requires a multidimensional approach beyond medical care. In Bangladesh, these various sectors often work in isolation, which diminishes the effectiveness of efforts to prevent diabetes. As noted by Ahmed et al. (2022)[9], what is evidently needed is a more integrated approach that unites policy, education, and health sectors in providing a common environment for healthy lifestyle promotion at every level of society. Partnerships such as these will have to be further strengthened in their efforts to tackle diabetes from different perspectives and enhance the general effectiveness of health promotion and disease prevention efforts.

Recommendations:

The following recommendations are advanced to enhance diabetes prevention programs in Bangladesh:

1. Diabetes Screening: Increased and expanded diabetes screening at the primary healthcare level, with particular emphasis on high-risk groups in both urban and rural areas.

2. Diabetic Care in Primary Health Services: Strengthen the capacity of primary healthcare facilities to provide diabetic care, including training of medical personnel in the management of chronic diseases.

3. Expand Access to Drugs and Diagnostics: Ensure access to essential diabetes drugs and diagnostic equipment at an affordable price, particularly in the most remote areas.

4. Encourage Public-Private Partnerships: Engage public-private partnerships to reduce costs and increase access to services for diabetes care.

5. Technology for Diabetes Care: Promote the use of 'mHealth' and other technologies, especially in rural

areas, to improve diabetes care, create awareness, and monitor the disease.

6. Address Social Determinants of Health: Implement policies to address the social determinants of diabetes risk, including unhealthful urban lifestyles, poverty, and education.

By addressing these gaps and improving the implementation of diabetes prevention programs, Bangladesh can reduce the burden of diabetes, improve health outcomes, and move closer to achieving SDG 3.

Conclusion:

Investment in data collection and surveillance systems is crucial to track the prevalence of diabetes and monitor the outcome of treatments, which is an integral part of enhancing diabetes prevention and care in Bangladesh. With a robust surveillance system, the policymakers would be able to make necessary adjustments in their plans and make well-informed decisions based on real-time data. This will include integrating diabetes indicators into routine health surveys and the improvement of local data collection capacity via community health workers.

Additionally, expanded EHRs will facilitate the coordination of care, particularly for individuals with diabetes requiring ongoing care. Current data infrastructure is still weak to appropriately monitor trends and assess the impact of interventions despite the government's efforts to collect data on NCDs, including diabetes (Aziz et al., 2021)[3]. Investments in more comprehensive data systems will enable Bangladesh to monitor progress toward SDG 3 and ensure that diabetes preventive and treatment plans are evidence-based and flexible enough to meet the country's evolving medical needs. **"A unified, equity-focused approach—combining digital innovation, policy reform, and community engagement—will be critical to reversing the diabetes epidemic and achieving SDG 3 in Bangladesh**".

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