

Diabetes mellitus: Is Pakistan the epicenter of the next pandemic?

To the Editor,

Diabetes mellitus (DM) is an endocrine disorder of chronic hyperglycemia diagnosed by fasting blood sugar levels of ≥ 126 mg/dL or glycated hemoglobin (HbA1c) levels of $\geq 6.5\%$. Type 1 DM involves a lack of insulin secretion by the pancreas, whereas the human body's resistance to insulin combined with impaired function of beta cells causes type 2 DM. Despite numerous efforts, the total number of adult (20–79 years) diabetic patients has reached an all-time high that is, 536.6 million globally. According to the International Diabetes Federation (IDF), over three in four adults in low- and middle-income countries are living with DM.¹ South-East Asia consistently exhibits a high prevalence of DM, with Pakistan being particularly alarming in this context. The IDF Diabetes Atlas 2021 estimated the comparative adult (20–79 years) prevalence rate of DM in Pakistan to be 30.8%—the highest in the world¹ (Figure 1).

In this regard, the role of genetics in DM prevalence in South Asians is noteworthy. Chambers et al.² found that South Asians are three times more susceptible to developing type 2 DM as compared to Europeans. The comparatively lower levels of adipokines in Asian Indian men for example, adiponectin, encoded by the adiponectin (ADIPOQ) gene, resulted in decreased metabolism of glucose and lipids in insulin-sensitive tissues. Similarly, the genetic polymorphism in growth factor receptor-bound protein 14 (GRB14) caused lower insulin sensitivity in South Asians requiring higher levels of insulin to maintain euglycemia. Polymorphism in peroxisome proliferator-activated receptor gamma 2 (PPARG2) resulted in variable pancreatic beta cell function and adiposity among South Asians as compared to Caucasians.³

Recent studies have shown that severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) binds to the ACE2 receptors in the lungs, which are also present in large quantities on pancreatic cells leading to

the speculation of possible pancreatic damage and the development of DM in previously nondiabetic patients.⁴ Moreover, COVID-19 infection-induced cytokine storm leads to a highly inflammatory and prothrombotic state which can cause direct or indirect pancreatic damage.⁵ Globalization of the Western diet in the form of ultra-processed food in the last few years has led to obesity and DM.⁶ The public's lack of awareness and oblivious attitude is a well-established factor in the escalation of the DM rate in Pakistan.⁷

Unequal access to insulin, especially in low- and middle-income countries due to the lack of government policies on the selection of insulin, standardization of prices, and compensation, has created a gap in the effective management of DM.⁸ The substandard insulin supply due to Pakistan's low-quality cold storage system and poor transport regulation during the lockdowns of the COVID-19 pandemic is also a contributing factor in the inefficient DM management.⁹ Other contributing factors include low healthcare budgets, inflation, and insufficient private sector entities' contributions over the past few years. Although the government of Pakistan has introduced the "Sehat card" to cover the healthcare expenses of the masses, it fails to cover the outpatient visits and medications that are crucial for diabetic patients.¹⁰

It is the dire need of the day to mobilize the electronic, print, and social media, NGOs, as well as government institutions to tackle this situation. A boost in the production of insulin, transparency in its price-setting, engagement of the private sector entities in making evidence-based policies and drawing the attention of major diabetes forums towards countries with high DM prevalence like Pakistan should be prioritized. Raising the tax on sugar-containing foods can discourage the public's excessive use of beverages and bakery items. Improving domestic manufacturing and supply chain management of insulin, including cold storage,

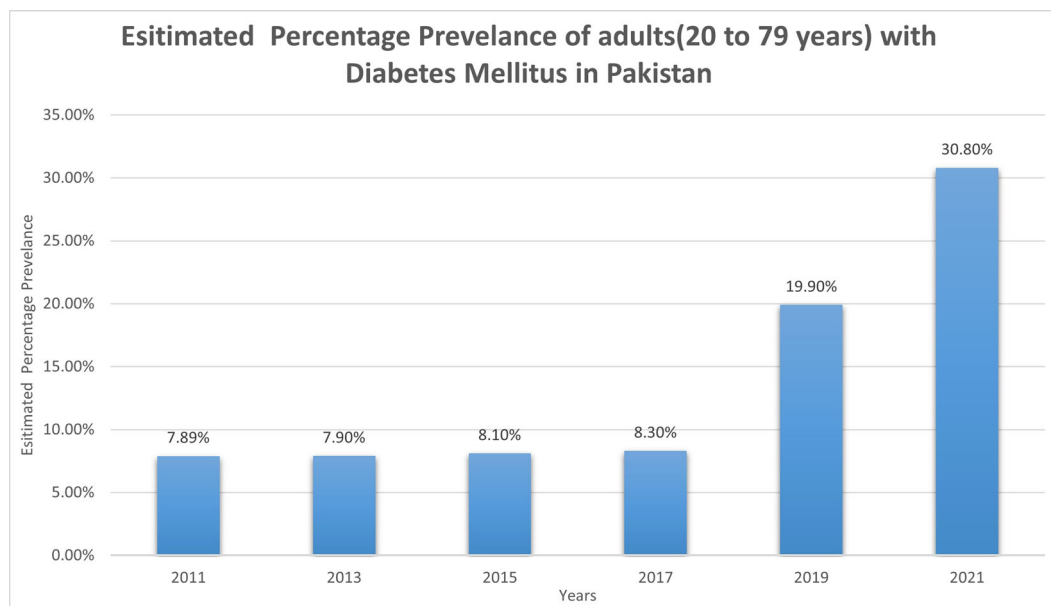


FIGURE 1 Estimated age-adjusted comparative diabetes prevalence in adults (20–79 years) in Pakistan from the year 2011 to 2021.¹

can help improve the quality of the product consumed by the patients. The public should be educated regarding healthy dietary habits, and exercise, the importance of regular screening, and early symptoms of DM. Keen follow-up of COVID-19-affected patients should be done to explore the avenue of new-onset type 2 DM. Only through a robust multidisciplinary approach can we hope to combat this catastrophe.

AUTHOR CONTRIBUTIONS

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ACKNOWLEDGMENTS

None.

CONFLICT OF INTEREST STATEMENT





The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

None.

ETHICS STATEMENT

None.

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How to cite this article: Shahid MB, Saeed M, Naeem H, Kumari U. Diabetes mellitus: Is Pakistan the epicenter of the next pandemic? *Chronic Dis Transl Med*. 2024;10:75-77. doi:10.1002/cdt3.96