JOURNAL OF AMERICAN MEDICAL SCIENCE & RESEARCH

Review Article
ISSN: 3041-5578
Journal homepage: https://medical.researchfloor.org/

Diabetes as a Public Health Dilemma in India: Understanding the Ripple Effects on Society

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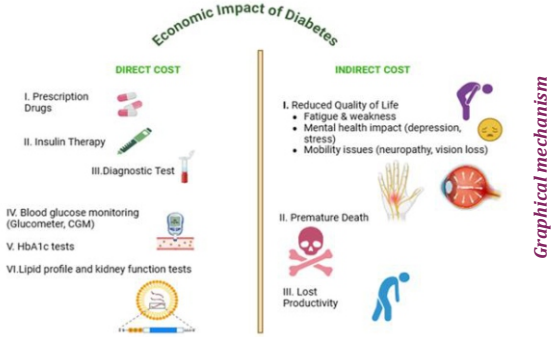
ABSTRACT

In India, diabetes has emerged as a major public health issue and has been responsible for a significant amount of disease burden in the country. This study investigates the extent of diabetes within Indian populations, including the risk factors and consequences of diagnosing patients with diabetes. It also highlights the cost associated with the disease and the challenges in managing it, along with possible prevention and control strategies. Finally, the report proposes changes in policy to lessen the impact of diabetes on the population in conjunction with recommendations for campaigns targeting the public.

Keywords: *Diabetes mellitus; hyperglycemia; BMI; T2DM*



Graphical mechanism

Citation: Kissa Zaidi, Aakriti Chouhan and Divya kulshreshtha (2025). Diabetes as a Public Health Dilemma in India: Understanding the Ripple Effects on Society.
Journal of American Medical Science and Research.
DOI: https://doi.org/10.51470/AMSR.2025.04.02.01

Received 20 May 2025
Revised 15 June 2025
Accepted 11 July 2025

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Introduction

The medications given tend to result in many micro and macrovascular complications, like heart, kidney, and neuron-associated diseases. One of the deadly kidney diseases, diabetic nephropathy, is growing in incidence pattern along with hard to treat. So, this too becomes a significant limitation of the treatment with any of the currently available drugs for diabetes mellitus. Therefore, instead of concentrating on drugs like oral antihyperglycemic agents that treat hyperglycemia, perhaps researchers should think about targeting physiological circadian rhythms that govern the sleep and awake cycle [1-2].

Chronic hyperglycemia, which is a result of a deficiency or excess in the secretion or action of insulin, has become one of the churning issues worldwide, the diabetes infection, and it is one of the major problems facing India, given the fact that it is a perfect storm of communicable and non-communicable. It is expected that by 2045, India will have the largest population of people suffering from diabetes due to the growing prevalence across the country. Surveys conducted across the nation have suggested plans with coping strategies within India that are compatible. This article aims to analyze the broad spectrum of unfavorable effects of Diabetes Mellitus in India and Diabetic Management strategies alongside [3]. The degenerative sickness of type 2 diabetes is an increasing threat, specifically for the older population or even for middle-aged individuals whichseems to be getting more pervasive across the globe. The primary cause of the illness is the absence of sufficient production of insulin that results either due to sluggish or abrupt destruction of the beta-Langerhans islet cells of the pancreas.

Further, the grade to which tissues in the peripheral area would utilize the insulin is yet another contributing factor. There is an important relationship between BMI and diabetes, along with insulin resistance [2].

Prevalence of Diabetes in India

In recent years, diabetes cases in India have gone up a lot. In 2021, around 74 million people in India had diabetes, as per the International Diabetes Federation (IDF). Changes in diet, moving to cities, and less active lives have played a big role in this growth. Similar trends are also happening in rural areas because of lifestyle changes [1].

Diabetes mellitus (DM) is a big factor in health issues in India. It's becoming a serious public health problem. Recent data shows that over 77 million people in India have diabetes, and this number is expected to grow significantly in the coming years. The main reasons for this rise include genetics, moving to cities, lazy lifestyles, unhealthy eating, and increasing obesity rates [4]. Negative results from drugs used often are a big issue in handling Type 2 Diabetes Mellitus (T2DM), even with new medicine options. So, it is important to look at treatment plans and consider new therapy approaches that focus on improving patients' quality of life and managing their disease [5].

Oral drugs and the use of insulin to manage the blood sugar levels of the patient are crucial in the management of type 2 diabetes mellitus. However, these drugs do have some significant adverse effects. Diabetic patients who receive treatment for extended periods often develop unpleasantside effects such as diabetic kidney disease, retinopathy, heart disease, and nerve damage due to damage on small and

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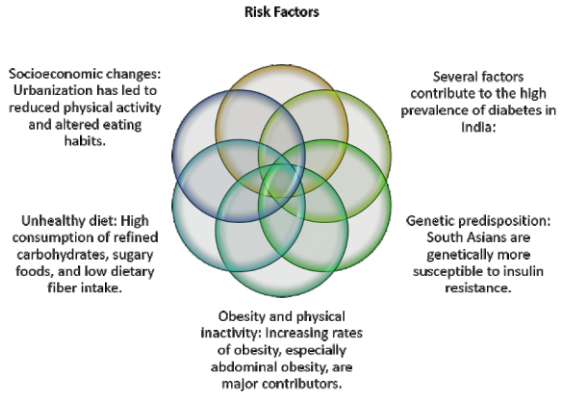
largeblood vessels [6]. The failure to address diabetic nephropathy, which is an advanced stage of diabetes and has several health consequences such as paralysis of the kidney, then may result in other threats, is among the most concerning complications. The current medications to control the sugar level do not seem to work, as there are no means to reverse the harm done, and existing medicines to treat the condition or disease are unable to do so as well [7].

There is need to shift the focus, as far as the negative effects of diabetes medicine are concerned. Despite that medications are needed for critical care conditions, there is an up surging trend towards adopting unconventional approaches that operate through the body's own biological mechanisms. As new horizons in diabetes management open, cir cerebrospinal quant acoustic rhythm is one such new avenue which seems very encouraging to work its control over the metabolism, hormones, and sleep-wake cycle.[8] Insulin resistance and glucose intolerance have been linked with disturbances in circadian rhythms; therefore, re-establishing these can improve metabolic health. Timed interventions e.g., light exposure, sleep hygiene and meal time,haveproven by studies to help improve glycemic control besides reducing other complications associated with diabetes [8].

Also, the possibility of reducing the dependence on drugs with high adverse effects by coordinating therapeutic strategies with circadian biology is emerging. As a holistic replacement that encompasses broader physiological and behavioral factors affecting diabetes pathophysiology, this avenue has been gaining popularity. In contrast to current pharmaceutical therapies that largely focus on lowering blood glucose, circadian-based therapies aim at boosting the body clock in an attempt to tackle potentially root causes of metabolic dysfunction. These strategies could be harnessed clinically and within public health strategies for patient-centric and sustainable diabetes management [9]**.**

Despite the availability of pharmacological therapies, a multisectoral effort is required to combat India's diabetes epidemic. While drugs are needed for immediate glycemic control, their limitations underscore the need for exploratory studies on newer paradigms, including the regulation of circadian rhythms. Public health campaigns encouraging behavior modifications and early interventions, along with policy reforms aimed at improving access to integrated diabetes care, will serve to reduce the population burden of diabetes. To achieve better clinical outcomes along with improved quality of life in general, future research should focus on incorporating circadian biology as a high-priority component within an integrated protocol for diabetes management [10].

Risk Factors



Complications from diabetes can lead to damage in several organ systems of the body over the course of many years.

Cardiovascular disorders (CVD): Heart attacks and strokes are several times more likely to occur in those with diabetes.

Renal complications: Diabetic nephropathy is a leading cause of end-stage renal disease.

Neuropathy: Foot ulcers are more likely to develop in people with peripheral neuropathy, which causes pain and numbness.

Retinopathy: Diabetes is a leading cause of blindness and visual impairment [11].

Economic Impact of Diabetes

The costs for people with diabetes and the healthcare system are substantial:

Direct costs: Cost of prescription drugs, insulin, diagnostic tests, and hospitalization.

Indirect costs: Reduced quality of life, premature death, and lost productivity due to disability [12].

Challenges in Diabetes Management

In India, several factors prevent diabetes from being well managed:

i. Inadequate healthcare access: Often, rural areas are lacking in adequate medical facilities.

ii. Financially out of reach: Out-of-pocket money is spent by many patients to avail these services as there is no insurance coverage.

Lack of awareness: poor knowledge in managing and preventing diabetes [10].

Prevention and Control Strategies

Extensive and multifaceted strategies are required to interrupt the consequences of diabetes:

i. Public health education: Campaigns to enhance awareness ofthe benefits of regular health checks and healthy living practices.

ii. Policy actions such as a sugar levy, regulation on the promotion of unhealthy foods.

iii. Community-based interventions: Activities to promote a healthy diet and increase physical activity.

Improved healthcare infrastructure: Expanding access to affordable drugs and diabetes care [13].

Conclusion

A major impediment to India's public health system is diabetes. Synergistic efforts amongst the community, health care providers, and government oriented towards prevention, early detection, and effective management can reduce the disease burden of diabetes in India and improve millions of lives [14].

No Conflicts of Interest: The authors declare that they have no conflicts of interest regarding the publication of this manuscript.

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