Diabetes: A Lifestyle Disorder Rather Than a Disease

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Abstract

Diabetes mellitus is a major health issue affecting millions of people worldwide which has been viewed as a hereditary and metabolic disorder. Sedentary behaviour, irregular and suboptimal dietary patterns, chronic psychological stress, and obesity have been notified as large contributors to the increasing prevalence of this condition globally. These factors constitute major threat factors driving the global increase in diabetes prevalence. This paper examines diabetes mellitus as a lifestyle-related disorder with particular emphasis on current epidemiological trends and identifying key behavioural and nutritional risk factors. Additionally, obesity is widely identified as a major risk factor for type 2 diabetes mellitus(T2DM) is discussed in association to contemporary lifestyle patterns because of urbanisation and emerging psychosocial patterns which influences health behaviour. The paper shed lights on the management and prevention strategies emphasizing lifestyle changes. In addition to medication, healthy eating, regular physical activities, weight management, and stress reduction are some significant approaches to prevent and manage diabetes. Functional foods such as whole grains, fibre rich foods, antioxidants, and bioactive compounds are considered for their benefits in improving blood sugar control and overall metabolic health.

The findings suggest that consistent healthy lifestyle modifications can considerably reduce the risk of developing diabetes. In several cases, proper and dietary management including active physical activity can postpone the onset of the disease, enlarge quality of life, and reduce the dependence on medication. This paper concludes that diabetes should be regarded not only as a medical condition but also as a lifestyle-related disorder that can be effectively managed through a balanced diet, regular physical activity, stress reduction, and the maintenance of an overall health-conscious lifestyle in the contemporary context.

Keywords: Diabetes Mellitus, Lifestyle Disorder, Nutrition Therapy, Physical Activity, Functional Foods

Introduction

Diabetes mellitus is characterized by chronically elevated blood glucose levels resulting from defects in insulin secretion, insulin action, or both. It disrupts the body's ability to metabolize sugars, leading to complications such as cardiovascular diseases, kidney failure, blindness, and neuropathy. According to the International Diabetes Federation (IDF), over 537 million adults worldwide were living with diabetes in 2021, a figure projected to rise to 643 million by 2030. India alone accounts for nearly 77 million cases, earning the title of the "diabetes capital of the world." The escalating prevalence

underscores the urgent need to understand diabetes not only as a medical condition but also as a lifestyle-driven phenomenon.

Diabetes Mellitus (DM) has traditionally been viewed as a chronic, progressive disease requiring lifelong medication. However, contemporary medical research increasingly classifies **Type 2 Diabetes Mellitus (T2DM)**—which accounts for 90–95% of all cases—as a **lifestyle disorder**. Unlike Type 1 Diabetes, which is an autoimmune deficiency, T2DM is primarily a metabolic failure resulting from prolonged exposure to poor dietary habits, physical inactivity, and chronic stress. This paper examines the shift in medical paradigms from "management of symptoms" to "resolution through lifestyle intervention."

1.1 Lifestyle Factors in Diabetes

- **Dietary habits:** High intake of refined carbohydrates, sugary beverages, and processed foods contributes to insulin resistance.
- **Physical inactivity:** Sedentary lifestyles compound the risk by lowering glucose uptake by muscles and worsening insulin resistance.
- **Stress and sleep patterns:** Chronic stress and poor sleep quality elevate cortisol, which increases blood glucose and appetite, leading to weight gain and insulin resistance. Poor sleep patterns further disrupt glucose metabolism.
- **Obesity:** Central obesity is a major risk factor, tightly linked to lifestyle choices. Research shows that **over 50% of global Type 2 diabetes disability-adjusted life years (DALYs)** are attributable to high body mass index (BMI).

1.2 Obesity and Diabetes Relationship

Table 1: Diabetes Risk Based on Body Mass Index (BMI)

BMI Category	Diabetes Risk
Normal (18.5–24.9)	Low
Overweight (25–29.9)	Moderate
Obese (≥30)	High
Morbidly Obese (≥35)	Very High

Abdominal obesity is one of the strongest predictors of insulin resistance and Type 2 diabetes, reinforcing the lifestyle connection.

1.3 Pathophysiology Linked to Lifestyle

Unhealthy lifestyle habits lead to insulin resistance, where body cells fail to respond to insulin efficiently. To compensate, the pancreas produces more insulin. Over time, beta-cell exhaustion occurs, resulting in persistent hyperglycaemia and Type 2 diabetes. Type 2 diabetes, which constitutes over 90% of global cases, is closely linked to poor dietary habits, physical inactivity, obesity, and stress. These factors contribute to insulin resistance and impaired glucose metabolism. Consequently, public health discourse increasingly emphasizes prevention through lifestyle modification.

However, framing diabetes solely as a lifestyle disorder risks oversimplification. Type 1 diabetes, for instance, is an autoimmune condition unrelated to lifestyle. Even in Type 2 diabetes, genetic

predisposition, environmental exposures, and socioeconomic determinants play significant roles. Moreover, labelling diabetes as a lifestyle disorder may inadvertently stigmatize patients, suggesting personal blame rather than recognizing the complex interplay of biological and social factors.

1.4 Epidemiology of Diabetes

Table 2: Global Diabetes Prevalence (Adults 20–79 years)

Year	Estimated Adults with Diabetes	% of Adult Population
2000	~151 million (approx.)	—
2010	~285 million (approx.)	—
2021	537 million	—
2024	589 million	11.10%
2050 (Projected)	853 million	12–13% (projected)

Sources: IDF Diabetes Atlas 2025; WHO Global Diabetes Reports.

These figures show a rapid escalation in diabetes prevalence worldwide, more than tripling over just two decades. The proportion of adults with diabetes doubled from about **7% in 1990 to 14% by 2022**.

India contributes significantly to the global diabetes burden

Table 3: Diabetes in India (20–79 years)

Year	Adults with Diabetes (millions)	Prevalence (%)
2000	32.7	—
2011	61.3	~9%
2024	89.8	10.50%
2050 (Projected)	156.7	~12.8%

Data Source: IDF Diabetes Atlas 2025.

Recent studies report that India had **nearly 90 million adults with diabetes in 2024**, the second-largest global population of diabetics after China.

1.5 Significance of the Study

This research seeks to critically evaluate the framing of diabetes as a lifestyle disorder rather than a disease. By synthesizing global and Indian literature, the study aims to:

- Explore lifestyle determinants of diabetes onset and progression.
- Examine biological and genetic dimensions that complicate the lifestyle narrative.
- Assess public health implications of framing diabetes as lifestyle-driven.
- Propose a balanced perspective that integrates medical and behavioral approaches.

1.6 Objectives

➢ To analyse the role of lifestyle factors—diet, exercise, stress, and sleep—in the development of Type 2 diabetes.
➢ To review literature on genetic, autoimmune, and environmental contributors to diabetes.
➢ To evaluate the effectiveness of lifestyle interventions in prevention and management.
➢ To discuss the risks of stigma and oversimplification in labelling diabetes as a lifestyle disorder.

➢   To recommend integrated strategies for prevention, management, and policy.

2. Review of Literature

The transition of T2DM from a rare clinical condition to a global epidemic correlates directly with the "nutrition transition."

- **The Weight Factor:** Anderson et al. (2021) established that visceral adiposity acts as an endocrine organ, secreting inflammatory cytokines that drive insulin resistance.

- **Preventative Efficacy:** The landmark *Diabetes Prevention Program (DPP)* trial demonstrated that intensive lifestyle intervention (diet and exercise) reduced the incidence of T2DM by **58%**, whereas the leading drug, Metformin, only reduced it by **31%**.

- **Remission Potential:** Recent studies, such as the *DIRECT* trial (2018), proved that significant weight loss through nutritional management can lead to diabetes remission, meaning patients maintain normal blood sugar levels without any medication.

2.1 Lifestyle Factors and Quality of Life

- Mahajan & Muley (2024) conducted a study in India assessing lifestyle factors, stress levels, and quality of life among individuals with Type 2 diabetes. Their findings revealed that most participants experienced moderate stress and low physical activity, both of which negatively impacted quality of life. The study emphasized that lifestyle behaviours are not only risk factors for diabetes onset but also determinants of disease progression and patient well-being.

- A 2025 comparative study examined lifestyle influences on Type 2 diabetes and hypertension across urban and rural populations in India. Key factors included diet, physical activity, stress, tobacco/alcohol use, sleep habits, and BMI. The findings emphasized that lifestyle determinants cut across geographic contexts, though urban populations showed higher prevalence due to sedentary routines and processed food consumption.

2.2 Dietary Patterns and Lifestyle Disorders

- Roy & Saha (2025) reviewed dietary patterns in relation to lifestyle diseases, including Type 2 diabetes, obesity, cardiovascular disease, and metabolic syndrome. Diets high in processed foods, saturated fats, and refined sugars were consistently associated with increased risk, while Mediterranean and DASH-style diets were linked to lower incidence of diabetes. This review underscores the preventive potential of healthy eating habits in reducing lifestyle-related disease burden.

2.3 Lifestyle Patterns in Society

- A broader societal study highlighted that unhealthy lifestyle patterns—such as poor diet, lack of exercise, and sedentary routines—are major contributors to the rising prevalence of Type 2 diabetes. The research concluded that community-level interventions focusing on lifestyle education are essential to curb the epidemic.

- Mahajan & Muley (2024) assessed lifestyle factors among individuals with Type 2 diabetes in India. Their study revealed that most participants experienced moderate stress and low physical activity, both of which negatively impacted quality of life. The findings highlight how lifestyle behaviours and psychosocial stressors directly influence disease management and patient well-being.

- A comprehensive review of randomized controlled trials, cohort studies, and meta-analyses (2024) concluded that lifestyle modifications—dietary changes, increased physical activity, and behavioural interventions—are highly effective in preventing and managing Type 2 diabetes. These interventions were shown to delay onset in high-risk populations and improve glycaemic control in diagnosed patients.

3. Methodology

3.1 Research Design

This study adopts a qualitative-descriptive design supported by secondary data analysis. A qualitative approach allows for thematic exploration of lifestyle determinants, biological dimensions, and public health implications.

The design is structured around three guiding questions:

1.   What lifestyle factors contribute to the onset and progression of Type 2 diabetes?
2.   How do genetic, autoimmune, and environmental factors complicate the lifestyle narrative?
3.   What are the implications of framing diabetes as a lifestyle disorder versus a disease for public health policy and patient care?

3.2 Data Sources

The study relies on secondary data drawn from: Peer-reviewed journals, Institutional reports, Meta-analyses and systematic reviews and National health surveys. These sources provide both global and Indian perspectives, ensuring contextual relevance.

3.3 Sampling and Scope

Since this is a literature-based study, sampling refers to the selection of studies and reports.

Criteria for inclusion were:

- Published between 2015–2025 to ensure contemporary relevance.
- Focus on Type 2 diabetes and its association with lifestyle factors.
- Studies addressing genetic, autoimmune, or environmental contributors.
- Research discussing public health framing of diabetes.

Exclusion criteria included:

- Studies limited to Type 1 diabetes without lifestyle context.
- Non-peer-reviewed articles lacking methodological rigor.

3.4 Analytical Framework

The analysis follows a **thematic synthesis approach**:

- Identification of themes: Lifestyle determinants (diet, exercise, stress, sleep), biological factors (genetics, autoimmunity), and public health framing.
- Comparison of perspectives: Contrasting diabetes as a lifestyle disorder versus a disease.
- Integration of findings: Synthesizing evidence to propose a balanced framing.

3.4 Limitations

- **Secondary data reliance**: The study does not generate primary clinical data, limiting its scope to existing literature.
- **Contextual bias**: Most available studies are urban-centric, potentially underrepresenting rural perspectives.

- **Framing sensitivity**: The debate around lifestyle versus disease framing carries risks of stigma, which must be carefully addressed.

4. Analysis of Secondary Data

The classification of diabetes, particularly Type 2 diabetes, as a lifestyle disorder is supported by extensive evidence linking modifiable behaviours to disease onset and progression. Poor dietary habits, sedentary lifestyles, chronic stress, and inadequate sleep are consistently identified as risk factors. Urbanization and modernization have accelerated these trends, leading to increased consumption of processed foods and reduced physical activity.

A 2024 study in *Discover Public Health* found that individuals with Type 2 diabetes in India reported moderate stress levels and low physical activity, both of which correlated negatively with quality of life. Similarly, large-scale intervention studies demonstrate that lifestyle modification programs—focusing on diet, exercise, and behavioural change—significantly reduce the risk of diabetes progression in prediabetic populations.

Table 4: Global Prevalence and Correlation with Lifestyle

| Life style factors	Contribution (% estimated global impact)
Poor Diet	35%
Physical inactivity	25%
Obesity	20%
Stress & poor sleep	10%
Other factors	10%

Secondary data from the **International Diabetes Federation (IDF)** and the **World Health Organization (WHO)** reveals a direct correlation between urbanisation (a proxy for sedentary lifestyle) and diabetes prevalence.

Table 5: Global Diabetes Prevalence and Projected Growth (2021–2045)

Region	2021 Cases (Millions)	2045 Projected (Millions)	% Increase	Primary Drivers
Africa	24	55	129%	Urbanisation & Diet
Middle East & North Africa	73	136	86%	High Sedentary Rates
South-East Asia	90	152	68%	High Carbohydrate Intake
Europe	61	67	10%	Aging Population
North America	51	63	24%	Processed Food Access

4.1 Graphical Analysis of Risk Factors

The following data represents the "Population Attributable Fraction" (PAF), showing how much various lifestyle choices contribute to the development of T2DM.

Figure 1: Contribution of Lifestyle Factors to T2DM Development Percentage
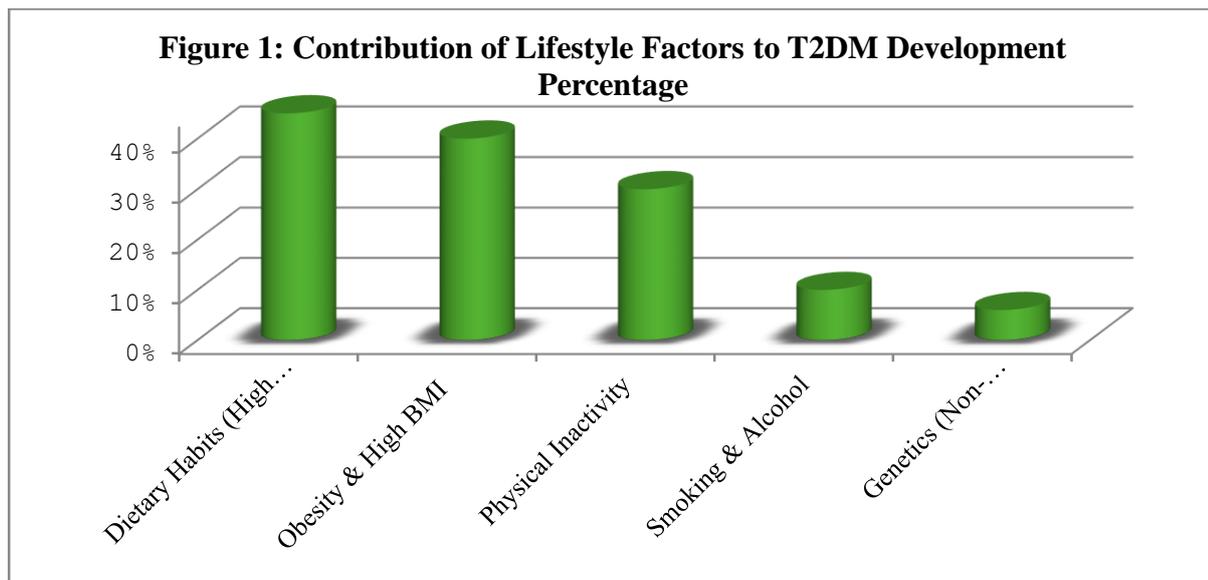
4.2 Impact of Intervention Types

Analysis of clinical outcomes shows that "Lifestyle First" approaches yield higher success rates in long-term glycaemic control (HbA1c < 6.5%) compared to pharmaceutical intervention alone.

Table 6: Impact of Intervention types

Intervention Type	Success Rate (Remission/Prevention)	Sustainability
Pharmacotherapy (Medication)	15–20%	Low (Requires dose escalation)
Intensive Diet (Low Carb/Calorie)	46–60%	Moderate (Requires behavior change)
Combined Lifestyle (Diet + Exercise)	58–65%	High (Improves overall metabolic health)

5. Conclusion

Diabetes mellitus, particularly Type 2 diabetes, represents one of the most significant public health challenges of the modern era. The analysis of secondary data and current literature confirms that Type 2 Diabetes is not a "fate" determined by genetics, but a consequence of modern environmental stressors. The term "Disease" implies a state of being that is victim-cantered, whereas "Lifestyle Disorder" implies an actionable condition. The strong correlation between lifestyle habits and the development of Type 2 diabetes supports its classification as a lifestyle disorder rather than merely a disease. The evidence overwhelmingly supports that modern lifestyle factors—diet, inactivity, obesity, stress—are the primary drivers of the global Type 2 diabetes epidemic. These modifiable behaviours explain much of the global rise in prevalence, especially in urbanized and industrialized societies. Although genetic susceptibility contributes, the rapid rise in cases over recent decades mirrors lifestyle changes far more than genetic shifts. Therefore, diabetes—especially Type 2—should be conceptualized as a lifestyle disorder rather than just a disease.

Framing diabetes solely as a lifestyle disorder risks oversimplification, stigma, and victim-blaming. Conversely, viewing it only as a disease may neglect the preventive potential of lifestyle interventions. The most accurate and constructive framing is that diabetes is a chronic disease with strong lifestyle-related risk factors. This dual perspective ensures seriousness in treatment while empowering individuals and communities to adopt preventive strategies.

6. Recommendation/ Suggestions:

Data from prevalence trends, risk factors, and intervention outcomes clearly demonstrate that diabetes is largely preventable and manageable through lifestyle modification. Public health strategies must prioritize education, physical activity, and healthy dietary habits to combat this growing epidemic.

Prevention through lifestyle modification emerges as the most effective strategy for controlling the diabetes epidemic and reducing its immense economic and social burden.

6.1 Prevention: Lifestyle Modification

Lifestyle intervention is the cornerstone of diabetes prevention.

Table 7: Effectiveness of Lifestyle Changes

Intervention	Estimated Risk Reduction (%)
Healthy diet	30–40
Regular exercise	35–50
Weight loss (5–7%)	Up to 60
Stress management	10–15

6.2 Dietary Recommendations

Shifting toward diets rich in vegetables, whole grains, lean proteins, and healthy fats has been shown to reduce progression to diabetes and improve glucose metabolism.

6.3 Physical Activity

At least 150 minutes of moderate exercise per week reduces the risk of developing Type 2 diabetes and helps maintain weight. Movement improves insulin sensitivity and cardiovascular health.

6.4 Weight Management

Even modest weight loss (5–7% body weight) can significantly delay or prevent the onset of diabetes among high-risk individuals.

6.5 Meditation

Meditation is not a cure for diabetes, but it is a powerful complementary practice that supports medical treatment and lifestyle management.

It helps as:

- **Stress reduction**: Stress hormones (like cortisol) can raise blood sugar. Meditation lowers stress, helping stabilize glucose levels.
- **Improved self-regulation**: Meditation enhances mindfulness, making individuals more aware of diet, exercise, and medication adherence.
- **Better circulation & relaxation**: Practices like deep breathing and mindfulness improve blood flow and reduce tension.
- **Mental health support**: Living with diabetes can feel overwhelming; meditation provides emotional balance and resilience.

10–20 minutes daily meditation is effective for most people. It should be practised in quiet, comfortable space with minimal distractions and regular basis.

Conclusion

Diabetes can be better understood as a lifestyle disorder rather than merely a disease, especially in the case of Type 2 diabetes. The study highlights that unhealthy eating habits, physical inactivity, stress, and poor daily routines play a significant role in its development and progression. Unlike many infectious diseases, diabetes is largely influenced by personal lifestyle choices and environmental factors.

The findings emphasize that diabetes is not only a medical condition requiring treatment but also a condition that can be effectively managed—and in some cases prevented—through healthy lifestyle modifications. Balanced nutrition, regular physical activity, weight management, and stress control are key factors in maintaining normal blood glucose levels and improving overall health.

Therefore, awareness, early detection, and positive lifestyle changes are essential in reducing the risk and impact of diabetes. Adopting a healthy lifestyle not only helps in controlling diabetes but also improves the quality of life. This supports the idea that diabetes is more of a lifestyle-related disorder that can be managed with conscious and consistent efforts.

References

- Mahajan, A., & Muley, A. (2024). Assessment of lifestyle factors, stress levels, and quality of life among people with Type 2 Diabetes Mellitus. *Discover Public Health, 21*(51). Springer Nature.
- Manish, A. (2023). Diabetes mellitus: A lifestyle disorder. *International Journal of Clinical Biochemistry and Research, 10*(3), 255–257.
- Frontiers Editorial. (2023). A critical review on diabetes mellitus type 1 and type 2. *Frontiers in Endocrinology.*
- International Diabetes Federation. (2021). *IDF Diabetes Atlas* (10th ed.). Brussels: IDF.
- World Health Organization. (2021). *Global Diabetes Compact: Strategy for Action.* Geneva: WHO.
- Chan, J. C. N., et al. (2009). Diabetes in Asia: Epidemiology, risk factors, and pathophysiology. *JAMA, 301*(20), 2129–2140.
- Misra, A., & Khurana, L. (2008). Obesity and the metabolic syndrome in developing countries. *Journal of Clinical Endocrinology & Metabolism, 93*(11), S9–S30.
- World Health Organization. *Diabetes Fact Sheet* (2024).
- International Diabetes Federation. *Diabetes Facts and Figures* (2025).
- IDF Diabetes Atlas Data (India & Global).
- Global burden study on diabetes risk factors.
- WHO analysis on rising diabetes trends (1990–2022).