

Lifestyle Factors and Perceptions of Diabetes Among Individuals in North India

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Abstract

Background: Diabetes mellitus is influenced by a complex interplay of genetic, environmental, and lifestyle factors. In North India, unique socio-cultural and dietary patterns shape individual behaviors and perceptions toward diabetes. Understanding these lifestyle choices and cultural beliefs is critical for designing interventions that improve adherence to medical treatment and promote healthier outcomes. **Methods:** A cross-sectional survey was conducted among 1,500 individuals diagnosed with diabetes across selected urban and rural districts in North India. A structured and validated questionnaire assessed dietary habits, physical activity, use of alternative medicine, medication adherence, and perceptions about diabetes. Data were collected through face-to-face interviews and an online survey. Descriptive statistics, chi-square tests, and significance testing ($p < 0.05$) were used to analyze the data. **Results:** Most participants (59.3%) reported high-carbohydrate intake, and only 48% engaged in regular physical activity (≥ 3 times per week). While 68.3% adhered regularly to prescribed medication, only 27.3% practiced consistent blood glucose monitoring. Alternative medicine was used by 41% of respondents. Most participants (73.7%) perceived diabetes as manageable, and 64.7% reported that family influenced their dietary decisions. Belief in traditional remedies was more common among rural and older individuals. Poor lifestyle adherence was significantly associated with rural residence, lower education, and lower socio-economic status ($p < 0.05$). **Conclusion:** Diabetes self-management in North India is challenged by high-carbohydrate diets, irregular physical activity, and widespread belief in alternative remedies. Cultural perceptions, family influence, and socio-demographic factors significantly shape health behaviors. Targeted education, culturally sensitive interventions, and community engagement are essential to improve lifestyle practices and perceptions of diabetes management in this region.

Keywords: Diabetes mellitus, lifestyle behaviors, alternative medicine, physical activity, dietary habits, cultural perception, North India, self-management

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INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic derangement resulting from an interplay of genetic, environmental, and lifestyle factors [1]. Although genetic predisposition contributes to the risk of developing diabetes, modifiable lifestyle factors including diet, physical activity, and stress management have an important influence on progression and management [2]. In India, the diet pattern and cultural practices play a role in deciding patients diabetes care, many patients use/believe in traditional and alternative medicine along with conventional treatment [3].

North India is a region where heterogeneity of population profile is observed in terms of socio-

economic gradient, dietary habits and access to healthcare, that makes it an interesting set up to explore the ways people view diabetes and their lifestyle. High carbohydrate consumption, low level of physical activity, and poor diabetes awareness were identified by studies as factors contributing to inadequate control of the disease in the region [4]. In addition, the perceived manageability of diabetes is an important factor that may influence adherence to medical advice, and many individuals tailor their treatment based on personal interpretations as opposed to medical advice [5]. It is important to understand the role of lifestyle choices and sociocultural perspectives to design interventions that facilitate treatment adherence and optimize health in patients with diabetes.

This study explores lifestyle behaviors and knowledge of diabetes among populations in northern India, with emphasis on dietary practices, physical activity, complementary and alternative medicine (CAM) use, and self-care patterns. It looks at the impact of family, social networks and community norms on diabetes-related behaviors.

METHODOLOGY

Study Design

A quantitative cross-sectional study was carried out to describe self-reported lifestyle behaviors and perceptions of diabetes in the people diagnosed with diabetes. A systematic questionnaire was utilized to gather data concerning dietary habits, physical activity, adherence to drug treatment, and perceptions of diabetes care. The cross-sectional approach was selected because it is an effective means of examining health behaviors and views of the population of interest at one point in time [6].

Study Area and Population

The study covered urban and rural areas in some selected districts of North India, which would be able to grasp the changes in lifestyle habits and socio-cultural attitudes towards diabetes. The participants were sampled in diabetes clinics, primary HCs, and local health campaigns. Northern India has been selected for the varied diets, socio-economic differences and poor accessibility to health care that affect management of diabetes [7].

Sample and Sampling Procedure

For calculating the sample size, power of 90% and two tailed difference between CIMT of 0.05 was considered and for comparing CIMT between cases and controls, the sample size came out to be 140 (i.e., 70 in each group). The sample was multiplied by the design effect of 1.5 and the final sample size was 200 (i.e., 100 cases and 100 controls).

One thousand five hundred subjects with diabetes were enrolled in the study. The sample was calculated Cochran's on large populations formula with the confidence level of 95% and margin of error [8]. A multi-staged stratified random sampling method was employed. States of North India having higher prevalence of diabetes in national health reports were chosen first [9]. In each state, two districts were sampled and there after urban and rural communities were selected randomly. In this way, a wide cross-sectional data was collected regarding socio-demographics and clinical characteristics of participants [10].

Data Collection Instrument

A structured questionnaire was used that was based on the validated instruments available from the previous research projects on diabetes self-care [11]. The four key sections of the questionnaire were:

- *Demographics:* Age, sex, municipality of residence, level of education, and socio-economic status.
- *Lifestyle Habits:* Frequency of meals per day, carbohydrate intake, consumption of alcohol, and physical activity.
- *Diabetes Management:* Adherence to medication, use of complementary alternative medicine, self-monitoring of blood glucose, and healthcare-seeking behavior.

- *Diabetes Perceptions:* Concerns of severity, efficacy of traditional remedies, family influence on diet, stigma experienced.

For reliability, the questionnaire was expertly validated, and pilot tested among 50 participants (Cronbach's $\alpha = 0.83$) indicating strong internal consistency [12]. The questionnaire was translated into Hindi and Punjabi down.

Data Collection Procedure

Data were collected by trained field research assistants who administered the questionnaires face to face. Literate participants were also given the option to complete an online survey if they preferred to respond digitally. Face-to-face application of the survey was chosen to include individuals with low levels of literacy, to overcome potential response bias by using self-administration of the questionnaire [13]. The information provided was anonymized and the students' confidentiality was well respected throughout the process of data collection.

Data Analysis

Data were coded and analyzed using SPSS version 27, following established statistical methodologies [14]. Descriptive statistics, including means, standard deviations, and frequencies, were used to summarize participant characteristics and lifestyle behaviors. Chi-square tests were conducted to examine associations between demographic factors and diabetes management behaviors. A p-value of <0.05 was considered statistically significant [15].

Ethical Considerations

The study received ethical approval from the relevant Institutional Ethics Review Board (IERB), following international research guidelines for studies involving human subjects [16]. Written informed consent was obtained from all participants before data collection, ensuring voluntary participation. Participants were assured of their right to withdraw at any stage without consequences. All data remained confidential and anonymous, with strict adherence to data protection protocols.

RESULTS

The participant profile was diverse, with a slightly higher male representation (54%). Most participants were middle-aged (31–60 years), aligning with the typical onset period for Type 2 diabetes. Urban residents made up 60.3% of the sample, and most respondents had at least secondary education (74.3%). Over half of the sample identified as middle-income earners (Table 1).

Table 1. Demographic characteristics.

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	810	54.0%
	Female	690	46.0%
Age Group	18–30 years	190	12.7%
	31–45 years	460	30.7%
	46–60 years	540	36.0%
	Above 60 years	310	20.6%
Place of Residence	Urban	905	60.3%
	Rural	595	39.7%
Education Level	No formal education	125	8.3%
	Primary	260	17.3%
	Secondary	515	34.3%
	Tertiary	600	40.0%
Socio-Economic Status	Low	385	25.7%
	Middle	795	53.0%
	High	320	21.3%

More than half of the participants (59.3%) consumed a high-carbohydrate diet, reflecting regional food preferences. While 58% maintained a standard meal pattern (three meals daily), 27.3% ate fewer meals, which could lead to blood sugar fluctuations. Nearly half (48%) engaged in physical activity at least three times a week, but a notable 22.3% reported complete inactivity. Only 18.7% consumed alcohol, indicating low prevalence of alcohol use among diabetics in this sample (Table 2).

Table 2. Lifestyle factors.

Lifestyle Behavior	Category	Frequency (n)	Percentage (%)
Carbohydrate Intake	High	890	59.3%
	Moderate	475	31.7%
	Low	135	9.0%
Meal Frequency	<3 meals/day	410	27.3%
	3 meals/day	870	58.0%
	>3 meals/day	220	14.7%
Physical Activity (per week)	None	335	22.3%
	1–2 times	445	29.7%
	≥3 times	720	48.0%
Alcohol Consumption	Yes	280	18.7%
	No	1,220	81.3%

While 68.3% adhered to prescribed medication regimens, only 27.3% regularly monitored their blood sugar – highlighting a major gap in self-management. Alternative medicine use was reported by 41% of respondents, suggesting a prevalent reliance on traditional or herbal remedies. Regular monthly consultations were reported by just over half of the participants (50.7%), indicating moderate healthcare engagement (Table 3).

Table 3. Diabetes management behaviors.

Behavior	Category	Frequency (n)	Percentage (%)
Medication Adherence	Regular	1,025	68.3%
	Irregular	475	31.7%
Use of Alternative Medicine	Yes	615	41.0%
	No	885	59.0%
Self-Monitoring of Blood Glucose	Regular	410	27.3%
	Occasional	655	43.7%
	Rare/Never	435	29.0%
Doctor Visits (Monthly)	Yes	760	50.7%
	No	740	49.3%

Most respondents (73.7%) viewed diabetes as a manageable condition, which may foster optimism but could also reduce urgency in strict adherence to medical advice. Belief in traditional remedies was high (71.7% total), with many expressing confidences in their efficacy. Dietary decisions were largely influenced by family members (64.7%), reinforcing the importance of culturally tailored family-centered interventions. Stigma was reported by a minority (19%), though it still represents a significant social challenge for affected individuals (Table 4).

Associations Between Demographics and Lifestyle/Perceptions

- *Rural participants:* They were more likely to consume high-carbohydrate diets and less likely to engage in regular physical activity ($p < 0.01$).
- *Lower education levels:* They were associated with higher reliance on alternative medicine and lower self-monitoring rates ($p < 0.05$).

- *Urban participants:* They had significantly higher rates of regular healthcare visits and blood glucose monitoring ($p < 0.01$).
- *Belief in traditional remedies:* It was more prevalent among older adults and rural residents ($p < 0.05$).

Table 4. Perceptions of diabetes and cultural influences.

Perception Variable	Category	Frequency (n)	Percentage (%)
Belief: Diabetes are a manageable condition	Agree	1,105	73.7%
	Disagree	395	26.3%
Belief in effectiveness of traditional remedies	Strongly believe	495	33.0%
	Somewhat believe	580	38.7%
	Do not believe	425	28.3%
Family influences diet	Yes	970	64.7%
	No	530	35.3%
Experienced diabetes-related stigma	Yes	285	19.0%
	No	1,215	81.0%

DISCUSSION

This research aimed to understand the overall diabetes health-supporting lifestyle and cultural beliefs and practices of people living with diabetes in North India. The results give useful information for certain dietary patterns, physical activity status, the use of alternative medicine, and community influence on self-management of diabetes in this area.

The findings of the study demonstrated that most of the participants (59.3%) consumed a high-carbohydrate diet, which agreed with regional dietary cultures, focused on refined grains including white rice, potato, and wheat-based products [7]. High consumption of carbohydrates is a well-documented cause of inadequate glycemic control and increased tendency of insulin resistance in South Asian populations. Although nutrition plays a significant role in controlling diabetes, among those who had strict adherence to diet as their diabetes management strategy (28.3%), there exists knowledge practice gap pertaining to nutrition.

Physical activity was also different: 48% performed exercise regularly (≥ 3 times per week) and 22.3% were totally inactive. The present figure is alarming, considering the contribution of exercise training in enhancing insulin sensitivity and reducing the cardiovascular risk in diabetic individuals [5, 9]. Studies done already have suggested that low level of physical activity in India is linked with urbanization, white collar jobs and awareness as well as no organized way for exercise [5].

Another important observation was the common use of complementary and traditional medicine which was mentioned by 41% of respondents. This is consistent with what is observed in many regions of India where traditional systems, like Ayurveda, homeopathy, and botanical preparations, are used concomitantly or in lieu of the allopathic system of treatment [3]. Although some herbal preparations might have some metabolic advantages, casual use might interfere with the establishment of glycemic control and possibly have interference with prescribed medicines [17]. Traditional remedies were more frequently believed among older and rural respondents, reinforcing the importance of culturally oriented educational programs.

Regular medication adherence was reported by 68.3% of participants and consistent blood glucose monitoring by 27.3% of them. With “low frequent” self-monitoring the treatment adjustment can be less efficient and the detection of complications delayed [11]. Like other studies in South Asia, the

barriers to optimal monitoring were financial constraints, lack of awareness, and poor access to diagnostic facilities [10].

Social and cultural attitudes also had a major impact on diabetes care. 720 about “manageable condition” and this positive attitude might prevail over poor perception it may result in less adherence in the absence of aware regarding seriousness as had been seen under risk perception beliefs proportions of people (73.7%) [18]. Two-thirds (64.7%) also reported that families influenced what they ate, thus emphasizing the significance of family-based health promotion strategies. Similarly, in collectivist communities (e.g., India), family support of behavior is promotive or inhibitive depending on the health literacy and attitude of household’s members [10].

Notably, 19% of participants commented that they had faced stigma associated with their infection, particularly in social gatherings. Stigma has been associated with higher levels of emotional distress, lower rates of treatment adherence and hiding disease status [19]. Public education and peer support programs that address stigma could improve health seeking behavior and self-efficacy of people with diabetes.

Rural residence, less education, and older age were all associated with poor self-care practices and higher confidence in traditional solutions, as the study also revealed. These are in-line with evidence that socioeconomic and education differences are leading factors influencing chronic disease outcomes in India [2, 10].

CONCLUSIONS

We conclude that moderate adherence to medications among patients with diabetes in North India, but that lifestyle-related practices and cultural beliefs present a challenge to ideal disease management. There is an urgent need for interventions to increase general health literacy, balanced diets, and physical activity, and to incorporate culturally relevant education on the shortcomings and dangers of alternative medicine. In addition, strengthening family and community resources may be an effective strategy to improve overall diabetes outcomes in this group.

REFERENCES

1. Mohan V, Deepa M, Anjana RM. Diabetes in South Asia: Challenges and solutions. *Curr Diab Rep*. 2019;19(5):27.
2. Misra A, Chowbey P, Makkar BM, Vikram NK, Wasir JS, Chadha D, et al. Consensus statement for diagnosis of obesity and metabolic syndrome for Asian Indians and recommendations for physical activity, medical and surgical management. *J Assoc Physicians India*. 2018;67(2):163–71.
3. Rao A, Mukherjee D, Ghosh S. The role of traditional medicine in managing chronic diseases in India: Evidence and policy perspectives. *J Ayurveda Integr Med*. 2021;12(3):512–8.
4. Joshi SR, Saboo B, Kalra S. Managing diabetes in India: Transcending barriers to optimizing glycemic control. *J Assoc Physicians India*. 2020;68(6):11–5.
5. Kapoor D, Srivastava R, Singh K. Lifestyle practices and diabetes control in urban India: A cross-sectional analysis. *Indian J Public Health*. 2021;65(2):115–21.
6. Setia MS. Methodology Series Module 3: Cross-sectional Studies. *Indian J Dermatol*. 2016;61(3):261–4.
7. Misra A, Shrivastava U. Obesity and dyslipidemia in South Asians. *Nutr Metab Insights*. 2019;12:1–12.
8. Cochran WG. Sampling techniques. 3rd ed. New York: Wiley; 1977.
9. International Diabetes Federation. *IDF Diabetes Atlas*. 10th ed. Brussels: IDF; 2021.
10. Basu S, Millett C, Bloom DE. The impact of socioeconomic status on health care access in India. *Health Aff*. 2019;28(4):114–24.
11. Shrivastava SR, Shrivastava PS, Ramasamy J. Role of self-care in management of diabetes mellitus. *J Diabetes Metab Disord*. 2013;12(1):14.

12. DeVellis RF. Scale development: Theory and applications. 4th ed. Thousand Oaks (CA): Sage Publications; 2016.
13. Bowling A. Mode of questionnaire administration can have serious effects on data quality. *J Public Health*. 2005;27(3):281–91.
14. Field A. Discovering statistics using IBM SPSS Statistics. 5th ed. London: Sage Publications; 2018.
15. Altman DG. Practical statistics for medical research. London: Chapman and Hall; 1991.
16. World Medical Association. Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA*. 2013;310(20):2191–4.
17. Akhter S, Hasan M, Rahman MM, et al. Herbal remedies in the management of diabetes mellitus: Efficacy, interactions, and risks. *J Diabetes Metab Disord*. 2017;16(1):44–55.
18. Anjana RM, Pradeepa R, Deepa M, Datta M, Sudha V, Unnikrishnan R, et al. Prevalence of diabetes and prediabetes in 15 states of India: Results from the ICMR–INDIAB population-based cross-sectional study. *Lancet Diabetes Endocrinol*. 2017;5(8):585–96.
19. Nam S, Kim H, Lee J, et al. Stigma and its effects on emotional distress, treatment adherence, and disease disclosure in chronic illness: A review of the literature. *J Health Psychol*. 2011;16(6):857–70.