

Original Research Article

Trends in self-reported diabetes prevalence and management: insights from NFHS-4 to NFHS-5

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ABSTRACT

Background: Diabetes mellitus is a rapidly increasing non-communicable disease in India, driven by demographic and epidemiological transitions. Understanding changes in prevalence and treatment-seeking behaviour across population is crucial for successful public health planning. This study aimed to assess trends in self-reported diabetes prevalence and treatment-seeking behaviour among men and women in India and to examine socio-demographic variations using data from NFHS-4 (2015-16) and NFHS-5 (2019-21).

Methods: This study utilized nationally representative data from NFHS-4 and NFHS-5. The analysis included men aged 15-54 years and women aged 15-49 years. Outcome variables were self-reported diabetes and treatment-seeking behaviour. Sociodemographic characteristics included age, gender, education, marital status, religion, caste/tribe, and wealth index. Descriptive comparative analysis was performed to identify trends across the surveys.

Results: The prevalence of self-reported diabetes increased from 1.7% to 2.1% among men and from 1.7% to 1.9% among women between NFHS-4 and NFHS-5. Treatment-seeking behaviour showed a slight decline. Higher prevalence was consistently associated with increasing age, urban residence, and higher wealth status. Individuals aged 35-49 years exhibited the highest burden. Socioeconomic gradients were evident, with wealthier groups showing higher prevalence and better treatment uptake. Women demonstrated higher treatment-seeking behaviour than men across most categories. However, disparities persisted among lower socioeconomic and marginalized groups, particularly in treatment access.

Conclusions: Diabetes prevalence in India has increased over time, with notable socio-demographic inequalities in both disease burden and treatment-seeking behaviour. Strengthening early screening, improving awareness, and ensuring equitable access to diabetes care especially among disadvantaged populations are critical to addressing the growing burden.

Keywords: Diabetes mellitus, India, NFHS, Prevalence, Socio-demographic factors, Treatment-seeking behaviour

INTRODUCTION

Diabetes mellitus has emerged as one of the major non-communicable diseases (NCDs) globally. India is among the countries with the largest number of people affected by diabetes, mostly due to rapid urbanization, lifestyle

changes, and population aging.¹ This disease contributes eventually to morbidity, mortality and healthcare expenditure.² These include type 1 diabetes which is mainly characterized by autoimmune destruction of pancreatic β -cells; type 2 diabetes, caused by insulin resistance and lifestyle factors; and gestational diabetes, which emerges during pregnancy.^{1,3} Persistent elevation

of blood glucose contributes to many micro and macrovascular complications causing damage to various organs leading to retinopathy, nephropathy, neuropathy, and cardiovascular disease. India, with its large population and rapid socio-economic shifts, faces a particularly higher burden of the disease, suggesting the importance of monitoring trends through nationally representative surveys like NFHS (National family health survey).^{1,4,5}

The various socio-demographic factors play an important role in determining both the prevalence of diabetes and the likelihood of seeking treatment. Differences in education, socioeconomic status, and place of residence influence health awareness, access to healthcare services and disease management.

The burden of diabetes has increased rapidly in low and middle-income countries, including India, driven by factors such as urbanization, sedentary lifestyles and changing dietary patterns. In India, diabetes contributes substantially to morbidity and mortality leading to significant strain on the healthcare system.

The rising burden of type 2 diabetes is a major concern in healthcare worldwide. In 2017, approximately 462 million individuals were affected by type 2 diabetes corresponding to 6.28% of the world's population (4.4% of those aged 15-49 years, 15% of those aged 50-69, and 22% of those aged 70+). Over 1 million deaths per year can be attributed to diabetes alone, making it the ninth leading cause of mortality. The gender distribution is equal, and the incidence peaks at around 55 years of age. Global prevalence of type 2 diabetes is projected to increase to 7079 individuals per 100,000 by 2030, reflecting a continued rise across the globe.⁶

The National Family Health Survey (NFHS) provides nationally representative data that allows for examination of these patterns across demographic groups. The present study compares prevalence and treatment-seeking behaviour between NFHS-4 (2015-16) and NFHS-5 (2019-21), focusing on socio-demographic variations among men and women. Despite of the growing burden, there is limited nationally representative evidence comparing changes in diabetes prevalence and treatment-seeking behaviour across survey rounds in India. Few studies have comprehensively examined these trends using large-scale datasets. This study aims to assess the prevalence of self-reported diabetes and treatment-seeking behaviour in India using data from NFHS-4 and NFHS-5.

This study aimed to assess trends in self-reported diabetes prevalence and treatment-seeking behaviour among men and women in India, and to examine socio-demographic variations using data from NFHS-4 (2015-16) and NFHS-5 (2019-21).

METHODS

Study design

This study is a secondary data analysis of nationally representative cross-sectional surveys, namely the National Family Health Survey rounds 4 and 5 (NFHS-4 and NFHS-5).

Data source

The study utilizes data from the National Family Health Survey (NFHS-4, 2015-16) and NFHS-5 (2019-21), which are large-scale nationally representative household surveys conducted in India.

Study period

The data were collected from January 2015 to December 2016 (NFHS-4) and June 2019 to April 2021 (NFHS-5).

Sampling technique

Both the NFHS surveys used a multistage stratified cluster sampling technique to obtain nationally representative samples. The sample size was predetermined by the NFHS surveys, and all eligible individuals meeting inclusion criteria were included in the analysis.

Study population

The analysis includes men aged 15-49 years (and 50-54 in NFHS male dataset) and women aged 15-49 years.

Variables

Outcome variables

The study examined two primary outcome variables. First, self-reported diabetes prevalence was assessed based on respondents' reports of having been diagnosed with diabetes by a health professional. Second, treatment-seeking behaviour among individuals with diabetes was evaluated by identifying whether individuals who reported a diabetes diagnosis sought any form of medical care or treatment for their condition.

Sociodemographic variables

A range of sociodemographic characteristics were included as explanatory variables. These comprised age group, categorized into appropriate intervals; place of residence (urban or rural); education level, reflecting the highest level of formal education attained; and marital status. In addition, religion and caste/tribe were included to capture social and cultural stratification. Economic status was assessed using the wealth index, which classifies households into quintiles based on asset ownership and living conditions

Data analysis

Descriptive analysis was performed to assess the prevalence of diabetes and treatment-seeking behaviour across socio-demographic groups. Comparisons were made between NFHS-4 and NFHS-5 to identify trends over time.

RESULTS

Overall prevalence and treatment

The prevalence of self-reported diabetes increased between NFHS-4 and NFHS-5 among both men and women. Among men, aged 15-49 years prevalence increased from 1.7% to 2.1%, while among women it increased from 1.7% to 1.9%.

Treatment-seeking behaviour showed a slight decline among men (72.5% to 71.5%) and women (81.3% to 80.7%), indicating a marginal reduction in treatment uptake despite rising prevalence.

Age-wise trends

Diabetes prevalence increased markedly with age in both surveys. Among men, diabetes prevalence increased from 0.4% in the 15-19 age group to 3.9% in the 35-49 age group in NFHS-5. Similarly, among women, prevalence increased from 0.4% to 3.9% across the same age groups.

The 35-49 years age group consistently showed the highest prevalence in NFHS 4 as well as 5 data, confirming this group as the most vulnerable, possibly due to the onset of clinical symptoms and cumulative exposure to risk factors.

In terms of treatment, younger age groups showed improvement over time among men (e.g., 15-19 years: 36.5% to 55.9%), whereas treatment declined slightly among older men (79.6% to 75.1%). Among women, treatment remained highest in the 35-49 age group (85.3% to 85.8%), but declined in younger age groups.

Table 1: Prevalence of self-reported diabetes and treatment seeking by background characteristics, India (NFHS-4 vs NFHS-5).

Background characteristic	NFHS-4 diabetes (%)	NFHS-5 diabetes (%)	NFHS-4 treatment (%)	NFHS-5 treatment (%)
Age in years				
15-19	0.4	0.5	36.5	55.9
20-34	0.8	1.1	54.1	63.8
35-49	3.6	3.9	79.6	75.1
Residence				
Urban	2.1	2.5	75.5	75.4
Rural	1.5	1.8	69.8	68.6
Schooling				
No schooling	1.4	2.1	64.0	67.7
<5 years	1.8	2.1	68.9	68.2
5-7 years	1.8	2.1	72.5	69.9
8-9 years	1.4	1.8	78.5	60.3
10-11 years	1.8	2.2	72.6	78.4
≥12 years	2.0	2.1	72.5	75.7
Marital status				
Never married	0.6	0.8	45.4	49.7
Currently married	2.4	2.9	76.5	75.3
Widowed/separated	3.1	3.0	87.3	72.2
Religion				
Hindu	1.7	2.2	72.9	71.1
Muslim	1.6	1.4	73.3	70.5
Christian	3.6	1.8	58.7	62.5
Sikh	1.7	4.1	79.4	83.8
Buddhist/Neo-Buddhist	1.2	1.1	67.5	60.4
Jain	2.9	2.7	90.5	100.
Other	1.7	9.4	95.5	96.3
Caste/tribe				
Scheduled caste	1.6	1.7	64.2	77.1
Scheduled tribe	1.1	1.7	63.3	64.3
Other backward class	1.8	2.0	70.1	67.4

Continued.

Background characteristic	NFHS-4 diabetes (%)	NFHS-5 diabetes (%)	NFHS-4 treatment (%)	NFHS-5 treatment (%)
Other	1.9	2.5	82.7	75.7
Don't know	1.9	5.4	48.4	55.2
Wealth index				
Lowest	1.0	1.1	57.8	61.4
Second	1.1	1.5	63.8	60.7
Middle	1.4	2.0	65.2	69.2
Fourth	2.0	2.4	73.6	72.5
Highest	2.7	3.1	81.6	80.3
Total (15-49)	1.7	2.1	72.5	71.5

Table 2: Prevalence of self-reported diabetes and treatment seeking among women, India (NFHS-4 vs NFHS-5).

Background characteristic	NFHS-4 diabetes (%)	NFHS-5 diabetes (%)	NFHS-4 treatment (%)	NFHS-5 treatment (%)
Age in years				
15-19	0.3	0.4	60.8	52.0
20-34	0.8	0.8	71.7	66.5
35-49	3.5	3.9	85.3	85.8
Residence				
Urban	2.6	2.6	85.3	85.1
Rural	1.2	1.5	76.8	77.1
Schooling				
No schooling	1.6	2.1	79.3	79.8
<5 years	2.2	2.7	81.5	83.0
5-7 years	2.0	2.3	80.1	81.8
8-9 years	1.4	1.7	81.7	79.9
10-11 years	1.8	1.8	83.4	82.8
≥12 years	1.5	1.4	83.1	79.3
Marital status				
Never married	0.4	0.4	65.4	60.4
Currently married	2.0	2.2	82.3	81.7
Widowed/separated	2.9	3.8	81.8	83.3
Religion				
Hindu	1.6	1.8	80.6	80.0
Muslim	2.0	2.3	82.2	81.8
Christian	2.7	2.8	88.6	89.6
Sikh	1.7	2.3	87.3	86.1
Buddhist/Neo-Buddhist	1.9	1.2	82.5	81.1
Jain	3.2	1.7	83.9	89.5
Other	0.3	1.0	74.6	62.5
Caste/tribe				
Scheduled caste	1.5	1.8	78.7	79.8
Scheduled tribe	1.1	1.0	79.1	69.6
Other backward class	1.7	1.8	80.5	80.5
Other	2.1	2.4	84.3	83.1
Don't know	1.4	2.2	78.7	87.4
Wealth index				
Lowest	0.8	1.1	64.6	68.1
Second	0.9	1.3	71.4	72.2
Middle	1.3	1.8	76.2	79.1
Fourth	2.3	2.4	84.1	84.6
Highest	2.9	2.7	88.2	87.2
Total (15-49)	1.7	1.9	81.3	80.7

Residence

Urban populations had higher diabetes prevalence than rural populations in both surveys. Among men, urban prevalence increased from 2.1% to 2.5%, compared to 1.5% to 1.8% in rural areas. Among women, urban prevalence remained stable at 2.6%, while rural prevalence increased from 1.2% to 1.5%.

Treatment patterns differed by sex. Among men, treatment was slightly higher in urban areas and remained stable. However, in terms of treatment, a higher proportion of rural women were found to be under treatment compared to urban women, indicating a contrasting trend in healthcare utilization.

Educational status

The prevalence of diabetes varied across education levels. Individuals with higher levels of education showed slightly higher prevalence. Among men, education did not show a significant association with treatment or prevalence. However, among women, an inverse relationship was observed, where higher education was associated with better awareness and possibly preventive measures being practiced, resulting in relatively lower disease burden and better management. While prevalence was relatively lower among women with ≥ 12 years of schooling (1.5% to 1.4%), treatment rates declined slightly (83.1% to 79.3%). Women with lower education levels showed higher prevalence but relatively stable or improved treatment rates.

Marital status

Currently married individuals had higher diabetes prevalence compared to never-married individuals in both surveys. Among men, prevalence increased from 2.4% to 2.9%, while among women it increased from 2.0% to 2.2%.

Widowed/separated individuals showed consistently high prevalence, particularly among women (2.9% to 3.8%). Treatment-seeking behaviour declined among widowed/separated men (87.3% to 72.2%), whereas it improved slightly among women (81.8% to 83.3%). Additionally, widowed and separated individuals showed higher prevalence across both survey rounds, possibly reflecting the role of psychosocial stress as a contributing factor.

Religion

Variations in diabetes prevalence were observed across religious groups. Among men, the most notable increase was seen in the Sikh population (1.7% to 4.1%). A sharp increase was also observed in the "Other" category (1.7% to 9.4%), although this may reflect small sample size effects.

Among women, prevalence increased across most groups, with Christians (2.7% to 2.8%) and Muslims (2.0% to 2.3%) showing relatively higher prevalence.

Treatment-seeking behaviour remained generally high across all religious groups, with some groups such as Jain men population reporting very high treatment coverage (up to 100% in NFHS-5).

Caste/tribe

Diabetes prevalence increased across most of the caste groups. Among men, prevalence notably high among Scheduled Tribes (1.1% to 1.7%) and other categories (1.9% to 2.5%). Among women, increases were observed in Scheduled Castes (1.5% to 1.8%) and other categories (2.1% to 2.4%).

Treatment patterns improved over the years among Scheduled Castes in both sexes. However, among Scheduled Tribe women, treatment declined significantly (79.1% to 69.6%), indicating a potential gap in healthcare access and treatment availability.

Wealth index

A clear socioeconomic gradient was evident in diabetes prevalence. Among men, prevalence increased from 1.0% in the lowest income group to 3.1% in the highest in NFHS-5. Similarly, among women, prevalence increased from 0.8% to 2.7%.

Treatment-seeking behaviour was consistently higher among wealthier groups. However, slight declines were observed in higher income groups (e.g., men: 81.6% to 80.3%; women: 88.2% to 87.2%). Lower wealth groups showed lower prevalence as well as lower treatment coverage, suggesting possible underdiagnosis and limited healthcare access.

DISCUSSION

The findings highlight a gradual increase in the prevalence of self-reported diabetes in India between NFHS-4 and NFHS-5.⁵ The rising burden of diabetes is consistent with national and global trends associated with increasing urbanization, sedentary lifestyles, and dietary changes.² Age remains one of the strongest determinants of diabetes prevalence.⁷ The significantly higher prevalence among individuals aged 35-49 years suggests that this group is particularly vulnerable, likely due to cumulative risk exposure and the onset of symptomatic disease.⁸ This emphasizes the importance of early screening and preventive interventions in younger populations.⁹

Urban populations exhibited higher diabetes prevalence, likely due to lifestyle factors such as reduced physical activity and increased consumption of processed foods.¹⁰

Education showed a gender-specific pattern. While no clear association was observed among men, women with higher education appeared to have lower disease burden and better preventive behaviour, suggesting the protective role of awareness and health literacy.¹¹

Marital status, particularly among widowed and separated individuals, was associated with higher diabetes prevalence.¹² This may reflect the influence of psychosocial stress and reduced social support on health outcomes.¹³

Similarly, socioeconomic gradients indicate that wealthier populations have higher prevalence reflecting the impact of lifestyle-related risk factors associated with economic development.¹⁴

In contrast, lower-income groups showed reduced treatment uptake, highlighting disparities in healthcare access and possible underdiagnosis.¹⁵

However, the observation that rural women had relatively better treatment uptake compared to urban women suggests that public health outreach programs in rural areas may be effective, while urban healthcare utilization patterns require further investigation.¹⁶

Treatment-seeking behaviour was generally higher among women compared to men. This may reflect greater engagement with healthcare services among women due to maternal and reproductive health programs.¹⁷ However, gaps in treatment seeking among certain socio-economic groups indicate the need for improved awareness, access to health care and strengthening long-term disease management strategies.¹⁸

A key limitation of this study was the reliance on self-reported diabetes status without biochemical confirmation. This approach may lead to underestimation or misclassification of cases due to recall bias. Variations in reporting and access to diagnosis may also influence observed prevalence.

CONCLUSION

The analysis demonstrates an increasing trend in diabetes prevalence in India between NFHS-4 and NFHS-5. Significant socio-demographic disparities exist in both prevalence and treatment-seeking behaviour. Older age, urban residence, and higher socioeconomic status are associated with greater prevalence, while treatment-seeking is higher among women and wealthier populations. Public health strategies should prioritize early detection, awareness, and equitable access to diabetes care, particularly among vulnerable populations and even urban population must be aware about the risk factors, early diagnosis and appropriate treatment to avoid complications related to diabetes.

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REFERENCES

1. International Diabetes Federation. IDF Diabetes Atlas, 10th ed. Brussels: IDF; 2021.
2. World Health Organization. Global report on diabetes, 2016. Available at: <https://www.who.int/publications/i/item/9789241565257>. Accessed 01 January 2026.
3. Harrison's Principles of Internal Medicine. 21st ed. New York: McGraw-Hill; 2022.
4. Emerging Risk Factors Collaboration. Diabetes mellitus, fasting glucose, and risk of cause-specific death. *New Engl J Med*. 2011;364(9):829-41.
5. International Institute for Population Sciences (IIPS), Ministry of Health and Family Welfare. National Family Health Survey (NFHS-5), 2019-21: India. Mumbai: IIPS; 2021. Available at: <https://dhsprogram.com/pubs/pdf/FR375/FR375.pdf>. Accessed 01 January 2026.
6. Khan MAB, Hashim MJ, King JK, Govender RD, Mustafa H, Al Kaabi J. Epidemiology of Type 2 Diabetes - Global Burden of Disease and Forecasted Trends. *J Epidemiol Glob Health*. 2020;10(1):107-111.
7. International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Brussels: IDF; 2021.
8. Anjana RM, Deepa M, Pradeepa R, Mahanta J, Narain K, Das HK, et al. Prevalence of diabetes and prediabetes in 15 states of India: results from the ICMR-INDIAB population-based cross-sectional study. *Lancet Diabet Endocrinol*. 2017;5(8):585-96.
9. American Diabetes Association. Standards of medical care in diabetes-2022. *Diabetes Care*. 2022;45(Suppl 1):S1-264.
10. Gupta R, Misra A. Type 2 diabetes in India: regional disparities. *Br J Diabetes Vasc Dis*. 2007;7(1):12-6.
11. Agarwal S. Socioeconomic position and self-reported diabetes in India: results from a national survey. *PLoS One*. 2015;10(4):e0123769.
12. Corsi DJ, Subramanian SV. Association between socioeconomic status and self-reported diabetes in India: a cross-sectional multilevel analysis. *BMJ Open*. 2012;2:e000895.
13. Hackett RA, Steptoe A. Psychosocial factors in diabetes and cardiovascular risk. *Curr Cardiol Rep*. 2017;19(10):95.
14. World Bank. World development report 2019: The changing nature of work. Washington, DC: World Bank; 2019.
15. Mohan V, Mathur P, Deepa R, Deepa M, Shukla DK, Menon GR, et al. Urban rural differences in prevalence of self-reported diabetes in India-The WHO-ICMR Indian NCD risk factor surveillance. *Diabet Res Clin Pract*. 2008;80(1):159-68.
16. National Health Mission. Ministry of Health and Family Welfare. National Programme for Prevention

and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS), 2020. Available at: <https://nhm.gov.in/index1.php?lang=1&level=2&sublinkid=1048&lid=604>. Accessed 01 January 2026.

17. UNICEF. United Nations Children's Fund. Maternal health services utilization in India, 2019. Available at: <https://www.unicef.org/health/maternal-and-newborn-health>. Accessed 01 January 2026.
- World Health Organization. Package of essential noncommunicable (PEN) disease interventions for primary health care, 2020. Available at:

[https://www.who.int/publications/i/item/who-package-of-essential-noncommunicable-\(pen\)-disease-interventions-for-primary-health-care](https://www.who.int/publications/i/item/who-package-of-essential-noncommunicable-(pen)-disease-interventions-for-primary-health-care). Accessed 01 January 2026.

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