Research Article

Prevalence of Diabetes and Patterns of Health Seeking Behaviour Among Known Diabetics in a Rural Area of Lucknow District

Trideep Jyoti Deori[1], Jyoti Das[2]

[1]Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi, India.
[2]Department of Sociology, Cotton University, Guwahati, India.
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Corresponding Author:
Jyoti Das, Department of Sociology, Cotton University, Guwahati, India.
E-mail Id:
jyoti.das@cottonuniversity.ac.in
Orcid Id:
https://orcid.org/0000-0003-4917-3183

A B S T R A C T

Introduction: Diabetes has emerged as a global public health crisis, with a rapidly increasing prevalence, especially in low- and middle-income countries. India is often referred to as the 'Diabetes Capital of the World', with a substantial portion of its population suffering from diabetes or at risk of developing it. Health-seeking behaviour plays a crucial role in managing this disease and minimizing complications, making it a pertinent subject of study. This research aims to understand the current health-seeking behaviours and the influencing factors among individuals with diabetes in a rural area of Lucknow, India.

Methods: This community-based cross-sectional study, conducted between September 2017 and August 2018, targeted adults aged 40 years and older using multistage random sampling. Data was collected through face-to-face interviews and fasting blood glucose measurements using the Accu-Chek active blood glucose meter kit. Ethical approval was obtained before the study commenced.

Results: The study found that 15.6% of the study population had diabetes, with a similar prevalence among males and females. Among these, over half were already diagnosed with diabetes, but only about one-fifth of those on medication had their blood sugar under control. The majority of known diabetic patients preferred private healthcare facilities, often citing shorter waiting times. Socioeconomic and demographic factors significantly influenced health-seeking behaviour, with the lower socio-economic classes, government employees, and housewives being less likely to have their blood sugar checked regularly.

Conclusion: This study highlights the need for improved diabetes-related services and care-seeking behaviours to effectively manage diabetes, especially in economically disadvantaged and marginalised populations. Understanding the reasons for seeking healthcare, especially the gendered dimensions, is vital for tailoring diabetes management strategies. Policymakers and healthcare professionals must work toward achieving Sustainable Development Goal 3.4, which aims to reduce premature mortality from non-communicable diseases like diabetes by one-third by 2030.

Keywords: Health-Seeking Behaviour, Diabetes, Rural Population, Prevalence, Care-Seeking Behaviour

Introduction

Diabetes has emerged as a significant global public health challenge, with the prevalence of diabetes mellitus escalating to epidemic proportions across the globe. From 1980 to 2014, the global diabetes population surged from 108 million to 422 million, and the increase has been more pronounced in low- and middle-income nations compared to high-income countries.[1] In 2014, 8.5% of adults aged 18 years and older were diagnosed with diabetes. Over the period from 2000 to 2019, there was a 3% rise in diabetes-related mortality rates across different age groups. In 2019, diabetes directly contributed to 1.5 million fatalities, with 48% of these deaths occurring before individuals reached the age of 70.[2]

India is considered the 'Diabetes Capital of the World,' constituting 17% of the global diabetic population. Approximately 77 million individuals aged 18 and above in India are grappling with type 2 diabetes, and an additional 25 million are in a prediabetic state, putting them at a heightened risk of developing diabetes soon. Alarmingly, over half of the population remains unaware of their diabetic condition, emphasising the need for early detection and treatment to avert potential health complications.[3]

Disease incidence, prevalence, and complications are linked to individual health-seeking behaviour, influenced by broader societal structures.[4] Timely symptom recognition, seeking care, and adhering to treatments can reduce morbidity and mortality, aligning with the sustainable development goal of ensuring healthy lives. For individuals with diabetes, early and appropriate health-seeking behaviour can improve their quality of life and minimize complications.[5]

The concept of health-seeking behaviour proves elusive and context-dependent, deeply rooted in a society's cultural understanding of health and medicine. Sociological literature reveals diverse definitions, acknowledging the multifaceted influences on health-seeking decisions at individual, family, and community levels.[6,7] These determinants vary across social strata, including factors like an individual's perception of well-being, culture-specific illness beliefs, biomedical perspectives, and healthcare accessibility.[8–10]

Treatment choices in diabetes management are influenced by various factors, including illness severity, sociodemographic factors, perceived causes of illness, and the availability and effectiveness of treatments.[6–10] Appropriate health-seeking behaviour involves seeking modern treatments from healthcare facilities, including unconventional treatments. Understanding these choices is vital to prevent adverse interactions and improve diabetes management.

The objective of this study is to examine the prevailing health-seeking behaviour patterns, with a specific focus on identifying factors that influence such behaviour among individuals with diabetes in a rural area of the Lucknow district.

Methods

This study was a component of a broader community-based cross-sectional study[11] conducted between September 2017 and August 2018, in the Rural Health Training Centre of Sarojini Nagar, affiliated with the Department of Community Medicine at King George's Medical University in Lucknow. The study targeted adults aged 40 years or older, employing a multistage random sampling approach for participant selection. The sample size was calculated by using the formula for the estimation of proportion for one sample situation. To detect the prevalence of 6.8% of moderate (10–20%) CVD risk population, as determined by a previous study conducted in South India[12], the minimum sample size required was 397 with allowable error of 3.5%, and a design effect of 2.

Sarojini Nagar, a specific block within rural Lucknow, was purposefully chosen for this research. Three subcentres affiliated with the Primary Health Centre (PHC) in Sarojini Nagar were randomly selected from a list. These three subcentres covered a total of 14 villages. In the third stage of sampling, three villages were randomly chosen. Each selected village included at least 133 individuals aged 40 and above, resulting in a total of 397 participants in the study. Household lists from these villages were obtained from records at the Rural Health Training Centre, Sarojini Nagar. Every second household was selected for participation, and one eligible individual from each chosen household was included, regardless of gender (Figure 1).

Data collection involved notifying participants a day in advance for fasting blood glucose measurements, requiring at least an 8-hour overnight fast. Written consent was obtained from participants and ethical approval was obtained from the Institutional Ethics Committee of the King George's Medical University, Lucknow, UP before commencing the study.

Face-to-face interviews were conducted using a pretested, validated interview schedule. Blood glucose levels were assessed using the Accu-Chek active kit, with diabetes defined as a fasting blood sugar level of ≥ 126 mg/dL and/or post-prandial blood sugar level of ≥ 200 mg/dL.[13] SPSS version 23 was used for statistical analysis.
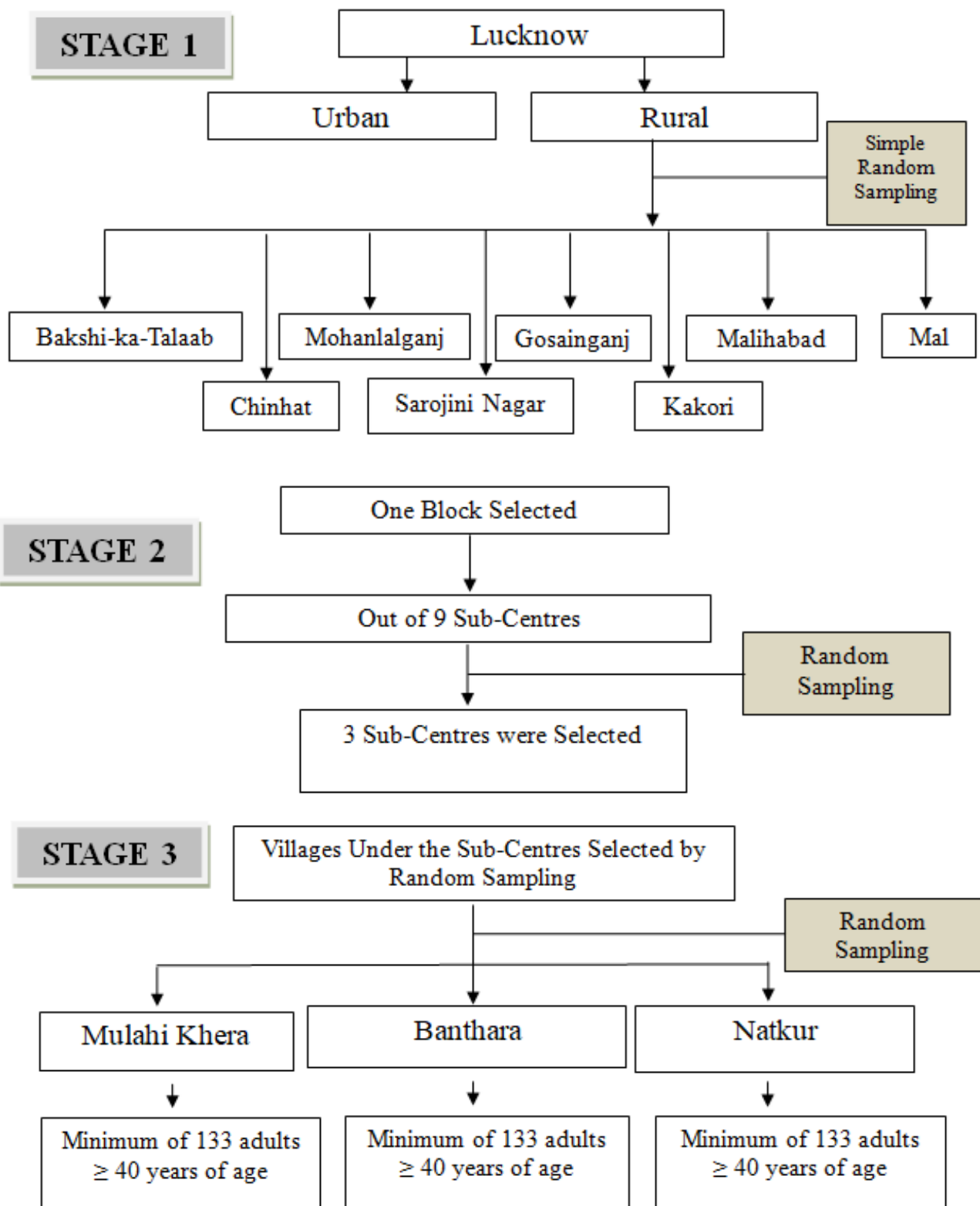
Figure 1.Sampling Technique

Results

Out of the total study population of 397 study participants, 289 (72.8%) were females and 108 (27.2%) were males. The mean age of the male participants was 53.6 years (CI 45.7–63.9) and that of female participants was 50.9 years (CI 42.2–59.6), respectively. The prevalence of diabetes among the total study population (N = 397) was observed to be 15.6% with the prevalence among males (15.7%) and females (15.6%) being almost similar (Table 1).

Table 1.Prevalence of Diabetes and Gender-Wise Distribution

Blood Glucose Level	Males n (%) N = 108	Females n (%) N = 289	Total n (%) N = 397
Diabetes (FBS ≥ 126 mg/dL and/ or PPBS ≥ 200 mg/dL)	17 (15.7)	45 (15.6)	62 (15.6)

Of all the diabetics, most were female (72.6%), married (93.5%), Hindu (100.0%), and from the OBC category (50.0%), with over half having no formal education. The majority were housewives (66.1%) in nuclear families (64.5%), and no statistical association with diabetes was observed regarding these variables (Table 2).

Table 2.Sociodemographic Profile of Diabetic Participants

Characteristics	Total N = 62 n (%)
Gender	
Male	17 (27.4)
Female	45 (72.6)
Age groups (years)	
40–49	23 (37.0)
50–59	21 (33.9)
60–69	13 (21.0)
≥ 70	5 (8.1)
Marital status	
Married	58 (93.5)
Widowed	4 (6.5)
Religion	
Hindu	62 (100.0)
Others	0 (0.0)
Category	
Unreserved	14 (22.6)
Other Backward Class	31 (50.0)
SC/ ST	17 (27.4)
Education level	
No formal schooling	35 (56.5)
Primary school completed	12 (19.4)
High school completed	12 (19.4)
College/ university completed	3 (4.7)
Employment status	
Government employee	0 (0.0)
Non-government employee	2 (3.2)
Self-employed	15 (24.2)
Housewife	41 (66.1)
Retired	4 (6.5)
Type of family	
Nuclear family	40 (64.5)
Joint family	22 (35.5)
Socio-economic status (According to Modified BG Prasad Scale)	
Upper	3 (4.8)
Upper-middle	5 (8.1)
Middle	10 (16.1)
Lower-middle	12 (19.4)
Lower	32 (51.6)

Out of the 397 study participants, only 22.2% had undergone blood sugar checks in the past year. The majority (58.0%) of these participants favoured private healthcare over government facilities, with the primary reason being shorter waiting times (84.3%). Government institutions were preferred because of free testing and medication (100.0%) (Table 3).

Table 3.Health-Seeking Behaviour of the Study Participants with Respect to Diabetes

Behaviour	Males n = 108 n (%)	Females n = 289 n (%)	Total N = 397 N (%)
Study participants who had their blood sugar measured in the last 12 months	21 (19.4)	67 (23.2)	88 (22.2)

Type of health institution services sought from	n = 21 n (%)	n = 67 n (%)	n = 88 n (%)
Government	6 (28.6)	31 (46.3)	37 (42.0)
Private	15 (71.4)	36 (53.7)	51 (58.0)
Reasons for getting their blood sugar checked	**n = 21 n (%)**	**n = 67 n (%)**	**n = 88 n (%)**
Periodic check-up	10 (47.6)	21 (31.3)	31 (35.2)
Was unwell	2 (9.5)	3 (4.5)	5 (5.7)
Suggested by doctor	6 (28.6)	28 (41.8)	34 (38.6)
Suggested by family/ friends	3 (14.3)	15 (22.4)	18 (20.5)
Reasons for choosing private clinics/ hospitals (multiple answers)	**n = 15 n (%)**	**n = 36 n (%)**	**n = 51 n (%)**
Lesser waiting time	12 (80.0)	31 (86.1)	43 (84.3)
More reliable	6 (40.0)	17 (47.2)	23 (45.1)
Near to home	5 (33.3)	23 (63.9)	28 (54.9)
Reasons for choosing government institutions (multiple answers)	**n = 6 n (%)**	**n = 31 n (%)**	**n = 37 n (%)**
Free testing/ medication	6 (100.0)	31 (100.0)	37 (100.0)
Near to home	3 (50.0)	19 (61.3)	21 (56.8)
Among already-known diabetics	**n = 17 n (%)**	**n = 45 n (%)**	**n = 62 n (%)**
Ever been to a traditional healer for diabetes	0 (0.0)	2 (8.7)	2 (5.7)

**Table 4.Factors Affecting Treatment Adherence and Response Among Already Known Diabetics**

Factors	Males n = 17 n (%)	Females n = 45 n (%)	Total N = 62 N (%)
Already known diabetics	12 (70.6)	23 (51.1)	35 (56.4)
Newly screened as diabetics	5 (29.4)	22 (48.9)	27 (43.6)
Type of health institution services sought from			
Government	4 (23.5)	16 (35.6)	20 (32.3)
Private	13 (76.5)	29 (64.4)	42 (67.7)
Already known diabetics on medication for diabetes	10 (83.3)	19 (82.6)	29 (82.9)
Diabetes under control in patients on medication	2 (20.0)	4 (21.1)	6 (20.7)
Reasons for not taking medication, if no			
No need for treatment	2 (100.0)	1 (25.0)	3 (50.0)
Medicines not available	0	3 (75.0)	3 (50.0)
Medicine missed in last 15 days			
Never	8 (80.0)	12 (63.2)	20 (69.0)
Sometimes	2 (20.0)	7 (36.8)	9 (31.0)
Reasons for missing medicine			
Intentional	0 (0.0)	1 (14.3)	1 (11.1)
Forgot to take	2 (100.0)	6 (85.7)	8 (88.9)

Among the diabetics in our study, 56.4% had been previously diagnosed, and the majority were on diabetes medication, but only 20.7% achieved normal blood sugar levels. Notably, males cited "no need for treatment" as the main reason for not taking medication, while females mentioned medicine unavailability. 20.0% of males and 36.8% of females, occasionally missed doses due to forgetfulness, and a small percentage of known diabetic females (8.7%)

turned to traditional healers and herbal remedies (Table 4).

In summary, the study found that 15.6% of the total participants were diabetic, with 56.5% having been previously diagnosed. Among the known diabetics, 82.9% were on medication, but only 20.7% achieved normal blood sugar levels (Figure 2).
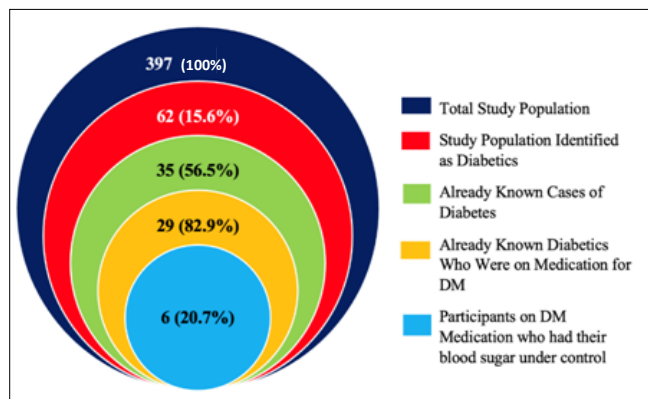
Figure 2. Distribution of Diabetics with Their Treatment Adherence and Response

Multiple logistic regression analysis was utilized to identify socio-demographic predictors of individuals seeking blood sugar check-ups within the last year. Out of five variables showing statistical significance (p value < 0.05) in univariate analysis, four remained significant in the multivariate analysis. Notably, individuals from the unreserved and OBC categories were less likely (odds ratio 0.80 and 0.40) to undergo blood sugar checks compared to SC/ ST category members. Similarly, government employees, non-government employees, self-employed individuals, and housewives were less likely (odds ratio 0.71, 0.15, 0.59, and 0.22, respectively) to get checked compared to retired individuals. Nuclear family members were twice as likely to get checked compared to those from joint families, while those from upper, upper-middle, middle, and lower-middle classes were less likely (odds ratio 0.14, 0.98, 0.51, and 0.57, respectively) than those from lower socio-economic backgrounds (Table 5).

Table 5. Predictors of Blood Sugar Check-Up

Variable	Adjusted Odds Ratio	95% CI		p Value
		Lower limit	Upper limit	
Category				**0.017**
General	0.802	0.338	1.902	0.617
OBC	0.403	0.195	0.830	0.014
SC/ ST	Reference			

Employment status				**0.015**
Government employee	0.713	0.099	5.147	0.737
Non-government employee	0.152	0.021	1.098	0.062
Self-employed	0.598	0.106	3.366	0.030
Housewife	0.220	0.042	1.146	0.072
Retired	Reference			
Type of family				
Nuclear	2.687	1.524	4.738	0.001
Joint	Reference			
Socio-economic status				**0.005**
Upper	0.138	0.046	0.407	< 0.001
Upper-middle	0.978	0.329	2.908	0.968
Middle	0.511	0.238	1.097	0.085
Lower-middle	0.565	0.278	1.146	0.114
Lower	Reference			

Discussion

The prevalence of diabetes in our study was 15.7% for males, 15.6% for females, and 15.6% overall. This differs notably from Balaji et al.'s study,[14] which reported a higher prevalence of 34.0%, with 38.0% for males and 31.0% for females. Conversely, Singh et al.[15] found a lower overall prevalence at 8.03%, with 6.79% for males and 9.91% for females. Discrepancies are likely due to varied study regions, population demographics, and distinct blood sugar measurement techniques and instruments.

Among the diabetic participants, 56.5% were previously diagnosed, with 82.9% of those on medication, but only 20.7% achieving controlled blood sugar levels. These results align with Savitharani et al.'s findings.[16] Among the diagnosed diabetes patients, 65.6% preferred private healthcare facilities for treatment. Of those on medication, 31.0% occasionally missed doses, mainly due to forgetfulness. These trends resemble Manocha et al.'s research,[17] but differ from Abidin et al.'s study,[18] where 81.7% sought treatment in government hospitals. Population composition and regional healthcare systems likely contribute to these variations.

The majority of the males (47.6%), who identified themselves as breadwinners of their respective families got their blood sugar checked as a periodic check-up while the majority of the females who were home-makers (41.8%) got their blood sugar tested as a secondary measure (opportunistic screening) when it was suggested by a doctor on their visit for some ailment. For these females, going for check-ups to the doctor seemed to serve another latent function in the form of leisure activity where they met other females from the community and had some time off from their domestic chores, engaged in chit-chat. In this backdrop of a patriarchal set-up embedded in sexual division of labour, the male members were mostly unavailable during data collection as they were off to work and the female members of the household, mostly house-makers (60.2%) constituted the majority of research participants. This patriarchal arrangement of the given society in the study area seemed to bear a considerable impact on individual understanding of health and illness for instance, the reasons for not taking medicines as well as reasons for taking blood-sugar tests were different for men versus women. These reasons were impacted by traditional gendered roles pinpointing the differential lived-in experiences of men and women. However, there needs to be further follow-up research to explore the gendered dimension of the health-seeking behaviour of the participants.

Strengths

- There are limited studies exploring the health-seeking behaviour of diabetic patients. This study thus contributes to the bridging of the knowledge gap in this regard.
- The study is able to flag off the need to look at gendered aspects of health-seeking behaviour owing to the larger sample being females.
- The study identified diabetes in a significant number of research participants who were previously unaware of their health condition.

Limitations

The study predominantly included female participants (72.8%) due to challenges in recruiting males during morning and daytime hours in rural areas. Consequently, the study's generalisability is constrained by this gender distribution.

Conclusion

The current study revealed that more than half of the identified diabetics were already diagnosed cases of diabetes. Among these, most were taking medication, but only around 20% had well-controlled blood sugar. While many diabetic patients were on medication, the overall health-seeking behaviour was lacking, with just 22.2% of participants having recent blood sugar checks. This subgroup exhibited differences in check-up reasons and

treatment protocols. Private healthcare facilities were preferred over government institutions. These findings underscore the need to improve public healthcare for economically disadvantaged and marginalized communities and address the educational gaps, as over half of diabetic patients had no formal education.

Thus, an intersectionality between class and gender produced differences in the health-related lived-in experiences of the research participants. Only a small percentage owned glucometers and knew how to use them. To enhance health-seeking behaviours, including regular consultations and awareness activities, there is a need for Information, Education, and Communication (IEC) initiatives. These efforts can lead to better glycaemic control and improve diabetes management, aligning with Sustainable Development Goal 3.4 to reduce non-communicable disease-related mortality by 1/3rd by 2030. Policymakers and healthcare professionals must address barriers to behaviour change in diabetic patients, as diabetes is a significant part of non-communicable diseases. This study highlights the necessity for more research to enhance diabetes care for underserved populations.

Conflict of Interest: None

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