International Journal of Community Medicine and Public Health
Goenka H et al. Int J Community Med Public Health. 2026 Sep;13(9):5080-5087
https://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20263189

Original Research Article

Assessment of dietary knowledge, lifestyle and management of long-duration type 2 diabetes in middle-aged adults (55-65 years) residing in Mumbai city: a cross-sectional study

Hema Goenka*, Reema Mathur

Department of Food Science and Nutrition, SNDT Women's University, Mumbai, Maharashtra, India

Received: 13 June 2026
Revised: 14 August 2026
Accepted: 17 August 2026

***Correspondence:**
Hema Goenka,
E-mail: hemagoenka26@gmail.com

ABSTRACT

Background: Type 2 Diabetes Mellitus (T2DM) is a major public health problem in India. Dietary knowledge and self-management are important for effective diabetes management, yet adherence to recommended dietary practices may remain suboptimal in individuals with long-duration disease. This study assessed lifestyle, dietary knowledge and management practices among middle-aged adults with long-duration T2DM attending a tertiary care hospital in Mumbai.
Methods: An observational cross-sectional study was conducted among 75 participants aged 55-65 years with T2DM for more than five years. Data were collected from January 2023 to February 2023 using a structured interview schedule covering sociodemographic profile, lifestyle, medical management, and dietary knowledge and management. Data were analyzed using SPSS version 25, and descriptive statistics were computed.
Results: Most participants (97.3%) recognized that diet influences diabetes. Awareness of the My Plate Method was 60.0%, while 50.7% recognized low-carbohydrate diets as a management approach. Carbohydrates were correctly identified as the macronutrient most affecting blood glucose by 82.7% of participants. However, 34.6% were unaware of established dietary frameworks, 18.7% considered jaggery a safer sweetener, and 53.3% selected farsan as an appropriate snack. Medication adherence was high (90.4%), while 34.7% reported no physical exercise. Despite good dietary knowledge, practices remained inconsistent with recommendations.
Conclusions: A substantial knowledge-to-practice gap was observed among middle-aged adults with long-duration T2DM. Structured, individualized and culturally sensitive dietary counselling, reinforced through regular follow-up, is needed to improve dietary self-management.

Keywords: Dietary knowledge, Dietary management, Middle-aged adults, Self-management, Type 2 diabetes mellitus, Urban India

INTRODUCTION

Diabetes Mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia, with type 2 diabetes mellitus (T2DM) accounting for over 90% of all diabetes cases globally. According to the International Diabetes Federation (IDF) 2021 Atlas, approximately 537 million adults aged 20-79 years are living with diabetes worldwide, with the global prevalence expected to rise to 783 million by 2045.[1] India bears a disproportionate burden, with an estimated 74.2 million people affected, making it the second-highest country by prevalence of diabetes. The National NCD Monitoring Survey (NNMS) reported a diabetes prevalence of 9.3% in India, with the highest burden among urban middle-aged adults aged 50-69 years.[2] Recent evidence from the National Family Health Survey (NFHS-6, 2023-24) further highlights the growing diabetes burden in Maharashtra, where 16.0% of women and 17.7% of men aged 15 years and above were

reported to have high blood sugar levels or were receiving medication for diabetes, reflecting a substantial increase compared to NFHS-5 estimates.[3]

T2DM is associated with serious macrovascular complications (cardiovascular, cerebrovascular, and peripheral artery diseases) and microvascular complications (retinopathy, nephropathy, and neuropathy), which significantly reduce quality of life and increase mortality risk. Men and women aged 50 years and older with diabetes live, on average, 7.5 and 8.2 years less respectively than non-diabetic counterparts.[2]

Dietary management is one of the most critical and modifiable components of diabetes self-management. Medical Nutrition Therapy (MNT) has been shown to reduce hospitalizations and improve glycemic control. However, adherence to dietary guidelines in long-standing T2DM is frequently suboptimal, with dietary fatigue a gradual relapse to pre-diagnosis eating habits commonly reported.[4,5] Self-management education and support (DSME/S), as endorsed by the American Diabetes Association, is recommended for all individuals with diabetes at diagnosis and periodically thereafter; yet barriers including limited access, poor reinforcement, and cultural factors impede its effectiveness.[6]

Despite the growing evidence on T2DM management, there is a notable gap in hospital-based studies from urban western India specifically examining dietary knowledge and management practices in individuals with long-duration disease. Studies have shown that the level of knowledge, skills, and confidence needed for adequate self-management is often insufficient among Indian populations, particularly in the context of culturally specific diets.[7,8] The present study was, therefore, undertaken to assess dietary knowledge and management practices among middle-aged adults (55-65 years) with long-duration T2DM attending a tertiary care hospital in Mumbai, India.

METHODS

Study design

An observational cross-sectional study was conducted among patients attending the outpatient diabetes clinic of Lokmanya Tilak Municipal General Hospital, a tertiary care hospital in Mumbai, Maharashtra, India. The study was approved by the ISBEC (Inter System Biomedica Ethics Committee), Mumbai, and written informed consent was obtained from all participants before data collection. The study was conducted from January 2023 to Feb 2023.

Study population and sample size

A total of 75 middle-aged adults (55-65 years) diagnosed with T2DM for more than five years were recruited through non-probability convenience sampling. All consecutive eligible patients attending the clinic during the data collection period were approached.

Inclusion and exclusion criteria

Participants were included if they had a confirmed diagnosis of T2DM, were aged 55-65 years, had a disease duration of more than five years, were willing to provide informed consent, and could communicate in English or Hindi. Participants with Type 1 or gestational diabetes, those critically ill, or with severe complications significantly affecting dietary intake (advanced nephropathy, gastroparesis, severe neuropathy, advanced retinopathy, hospitalized foot ulcers, or severe cardiovascular disease) were excluded.

Data collection

Data were collected using a structured interview schedule. The questionnaire included sections on:

Sociodemographic profile

Age, gender, marital status, occupation, education, annual family income, and family type.

Medical management

Treatment regimen, medication adherence, frequency of follow-up, home blood sugar monitoring, biochemical investigations, and experience of hypoglycemic episodes.

Dietary knowledge and management

A structured dietary questionnaire assessing participants' knowledge of the role of diet in diabetes, food groups, macronutrients, meal frequency, dietary methods (My Plate, carb counting, glycemic index), snack and beverage choices, and meal planning behavior in response to exercise and blood glucose levels.

Data were entered into MS Excel and analyzed using SPSS version 25. Descriptive statistics including frequencies, percentages, means, and standard deviations were computed.

RESULTS

Sociodemographic profile

The study comprised 75 participants (30 males and 45 females). The mean age of all participants was 59±3.58 years. All males were married while 20% of females were widowed. The majority of females were homemakers (84.4%), while 83.4% of males were employed. Two-thirds of participants resided in joint families. Approximately three-fourths had an annual family income below INR 10 lakhs. Educational attainment was largely similar across gender groups, with 42.7% having completed higher secondary education.

Medical management

All participants had been diagnosed with T2DM for more than five years prior to the study. The predominant treatment regimen was a combination of medicine, dietary advice, and exercise (62.6%). Medication adherence was high, with 90.4% of participants reporting compliance with prescribed medication or insulin regimens. The majority (77.3%) attended monthly follow-up visits with their physician. Only a minority (4.0%) experienced hypoglycemic episode. Home blood glucose monitoring was practiced by 72.0% of participants. Among participants who received dietary guidance, 53.3% reported a dietician as their primary source of nutrition information, while 45.3% relied on their treating doctor. Table 1 presents the detailed medical management data.

Table 1: Distribution of participants according to medical management.

Parameters	Male n=30, N (%)	Female n=45, N (%)	Total n=75, N (%)
Treatment regimen			
Medicine + dietary advice + exercise	20 (66.7)	27 (60.0)	47 (62.6)
Medicine + dietary advice	4 (13.3)	3 (6.7)	7 (9.3)
Dietary advice + exercise	2 (6.7)	4 (8.9)	6 (8.0)
Insulin + dietary advice + exercise	0 (0.0)	4 (8.9)	4 (5.3)
Medicine	0	4 (8.9)	4 (5.3)
Medicine/insulin adherence			
Yes	26 (89.7)	40 (90.9)	66 (90.4)
No	3 (10.3)	4 (9.1)	7 (9.6)
Frequency of doctor visit			
Once a month	20 (66.7)	38 (84.4)	58 (77.3)
Sometimes	10 (33.3)	7 (15.6)	17 (22.7)
Home blood sugar monitoring			
Yes	20 (66.7)	34 (75.6)	54 (72.0)
No	10 (33.3)	11 (24.4)	21 (28.0)
Source of dietary knowledge			
Doctor	18 (60.0)	16 (35.6)	34 (45.3)
Dietician	12 (40.0)	28 (62.2)	40 (53.3)
Friends and relatives	0 (0.0)	1 (2.2)	1 (1.3)

Dietary knowledge and management

Table 2 presents the detailed dietary knowledge and management findings. A large majority of participants (97.3%) acknowledged that diet has a direct effect on diabetes management. Among the established dietary management frameworks, the My Plate Method was the most widely recognized (60.0%), while awareness of carb counting was negligible (1.3%). Nearly half (49.3%) were unaware of low-carbohydrate diet as a management strategy.

Table 2: Distribution of participants according to dietary knowledge and management.

Do you think diet has any effect on diabetes?	Male (n=30), N (%)	Female (n=45), N (%)	Total (n=75), N (%)
Yes	28 (93.3)	45 (100)	73 (97.3)
No	2 (6.7)	0	2 (2.7)
Do you know any of the following?			
My plate method	17 (56.6)	28 (62.2)	45 (60.0)
Carb counting	0 (0.0)	1(2.2)	1 (1.3)
Glycemic index	1 (3.3)	2(4.4)	3 (4.0)
Don’t know	12 (40.0)	14 (31.11)	26 (34.6)
Do you think any of the latest diet trends are good for diabetes?			
Low carbohydrate diet	14 (46.7)	24 (53.3)	38 (50.7)
Intermittent fasting	3 (10.0)	0 (0.0)	3 (4.0)
Don’t know	13 (43.3)	21 (46.7)	34 (45.3)
How many meals should a diabetic have?			
4 main meals+2 snacks	0 (0.0)	1 (2.2)	1 (1.3)

Continued.

Do you think diet has any effect on diabetes?	Male (n=30), N (%)	Female (n=45), N (%)	Total (n=75), N (%)
3main meals+1/2 snacks	21(70.0)	43(95.6)	64 (85.3)
2 main meals+1/2 snacks	8(26.7)	1(2.2)	9 (12.0)
Only 3 meals	1(1.3)	0(0.0)	1 (1.3)
Which of the following have the most impact on blood sugar?			
Carbohydrate	21 (70.0)	41 (91.1)	62 (82.7)
Protein	7(23.3)	4(8.9)	11 (14.7)
Fat	1 (3.3)	0 (0.0)	1 (1.3)
None	1(3.3)	0 (0.0)	1 (1.3)
Do you think diabetic should avoid any food group?			
Cereals	13 (43.3)	15(33.3)	28 (37.3)
Pulses	1 (3.3)	0 (0.0)	1(1.3)
Fruits	0(0.0)	1 (2.2)	1 (1.3)
Meat, poultry, fish	16 (53.3)	29(64.4)	45 (60.0)
Which fruits are restricted during diabetes?			
Apple	3 (10.0)	0 (0.0)	3 (4.0)
Berries	8(26.7)	13 (28.9)	21(28.0)
Don’t know	19 (63.3)	32 (71.1)	51 (68.0)
What do you think are the carbohydrate sources?			
Wheat and rice	1(3.2)	1 (3.3)	2(5.3)
Wheat, rice, sugar, egg/meat/fish and oil/ghee	12 (43.65)	27 (59.9)	39 (52.0)
Rice, sugar, egg/meat/fish, oil/ghee	14 (46.6)	16(35.5)	30 (40.0)
Pulse, sugar, oil/ghee	3(6.3)	2 (2.2)	4 (2.6)
What do you think are the protein sources?			
Pulse and vegetable	18 (60.0)	26 (57.8)	44 (58.6)
Pulse, veg, fruit, egg/meat/fish	7((23.3)	12(26.6)	19 (25.3)
Pulse and milk	0 (0.0)	3 (6.6)	3(4.0)
Pulse and egg/meat/fish	5 (16.6)	4 (8.9)	9 (12.0)
What do you think are the good fat sources?			
Asli ghee	1 (3.3)	0 (0.0)	1 (1.3)
Asli ghee and mustard oil	21 (70.0)	34 (75.6)	55 (73.3)
Mustard oil	8 (26.7)	11 (24.4)	19 (25.3)
Do you know about the complex carbohydrate/ refined carbohydrate?			
Yes	14 (46.7)	22 (48.9)	36 (48.0)
No	16 (53.3)	23 (51.1)	39 (52.0)
What are the good snacks options?			
Nuts	2 (6.7)	4 (8.9)	6 (8.0)
Fruits	11 (36.7)	18 (40.0)	29 (38.7)
Farsan	17 (56.7)	23 (51.1)	40 (53.3)
What are the good beverages options?			
Juice	5 (16.7)	10 (22.2)	15 (20.0)
Milk	25 (83.3)	35 (77.8)	60 (80.0)
Which is better choice for a diabetic patient?			
Jaggery	7 (23.3)	7 (15.6)	14 (18.7)
Honey	0(0.0)	1 (2.2)	1 (1.3)
Sucralose	6 (20.0)	15 (33.3)	21 (28.0)
None of them	17 (56.7)	22 (48.9)	39 (52.0)
Can I make my carbohydrate rich meal better?			
Yes	16 (53.3)	29 (64.4)	45 (60.0)
No	14(46.6)	16 (35.6)	30 (40.0)
If yes, how?			
By adding vegetables to it	13 (81.3)	20 (69.0)	33 (73.3)
By adding pulse to it	3 (18.8)	9 (31.0)	12 (26.7)
What will you consume when you have low sugar?			
Milk	5 (16.7)	4 (8.9)	9 (12.0)

Continued.

Do you think diet has any effect on diabetes?	Male (n=30), N (%)	Female (n=45), N (%)	Total (n=75), N (%)
Salty snack	25 (83.3)	41 (91.1)	66 (88.0)
What is the amount of carbohydrate recommended in one serving for carb counting?			
15gm	1 (3.3)	0 (0.0)	1 (1.3)
Don't know	29 (96.7)	45 (100.0)	74 (98.7)
What would happen if alcohol is taken on an empty stomach?			
Don't know	30 (100.0)	45 (100.0)	75 (100.0)
Can product like diet coke freely consume?			
No	30 (100.0)	45 (100.0)	75 (100.0)
What is the source of your knowledge of dietary management?			
Doctor	18 (60.0)	16 (35.6)	34 (45.3)
Dietician	12 (40.0)	28 (62.2)	40 (53.3)
Friends and relatives	0 (0.0)	1 (2.2)	1 (1.3)
Do you adjust your food according to sugar level or medication?			
Yes	30 (100)	44 (97.8)	74 (98.7)
No	0 (0.0)	1 (2.2)	1 (1.3)
What could be reason for low sugar level?			
Missing meals	28 (93.3)	44 (98.4)	72(96.0)
Too much activity	2 (6.7)	0 (0.0)	2 (2.7)
Medicine	0(0.0)	1 (2.2)	1 (1.3)
What could be reason for high sugar level?			
Heavy meal	1 (3.3)	4 (8.9)	5 (6.7)
Heavy meal, stress, delaying medicine, physical inactivity	8(26.7)	12 (26.6)	20 (16.6)
Heavy meal, delaying medicine, physical inactivity	21 (70.0)	29(64.4)	50 (77.2)

Carbohydrate was correctly identified as the macronutrient with the greatest impact on blood glucose by 82.7% of participants, with a higher proportion of females (91.1%) demonstrating this knowledge compared to males (70.0%). The optimal meal frequency of three main meals with one to two snacks was recognized by 85.3% of participants. Awareness of the distinction between complex and refined carbohydrates was reported by 57.3% overall, though this knowledge was lower among males (46.7%) compared to females (64.4%).

Misconceptions were evident regarding food group avoidance, with 60.0% incorrectly restricting meat, poultry, and fish, and 37.3% restricting cereals. The majority (68.0%) could not identify fruits appropriate for diabetics, while 28.0% correctly identified berries. Macronutrient classification knowledge was also limited, with partial accuracy in identifying carbohydrate, protein, and fat sources across participants.

A notable misconception was observed regarding sweetener choice: 18.7% of participants believed jaggery to be a safer alternative to refined sugar for individuals with diabetes. This is clinically significant, as studies have established that both jaggery and sugar have a similar glycemic index and jaggery is not an appropriate dietary substitute for individuals with T2DM.[9]

Regarding snack selection, 53.3% of participants chose farsan (a high-fat, high-sodium savory Indian snack) as a preferred snack option, indicating an incorrect dietary practice despite having some awareness of food group concepts. In contrast, 80.0% correctly identified milk as a preferred beverage over juice.

Regarding hypoglycemia management, 88.0% incorrectly reported consuming a salty snack during low blood sugar episodes. Knowledge of carbohydrate serving size for carb counting was virtually absent (98.7%), as was awareness of alcohol risks on an empty stomach (100%). All participants (100%) correctly recognized that diet cola should not be consumed freely. Dietary knowledge was primarily sourced from dieticians (53.3%) and doctors (45.3%). While 96.0% attributed hypoglycemia solely to missing meals, 77.2% recognized the combined role of heavy meals, delayed medication, and physical inactivity in hyperglycemia.

Almost all participants (98.7%) reported adjusting their food intake in response to blood glucose levels or medication changes. Sixty-four percent planned their meals or medication adjustments in relation to exercise. However, 34.7% of participants reported not engaging in any physical exercise, indicating a significant lifestyle management gap.

Eighty percent correctly preferred milk over juice as a beverage. Regarding meal and exercise planning, 64.0% of participants reported planning their meals or medication in relation to exercise; however, 34.7% reported not engaging in any physical exercise at all. Almost all participants (98.7%) stated they adjust food intake in response to blood glucose levels or medication changes, reflecting a degree of responsive self-management behavior despite the noted knowledge-practice gaps.

Lifestyle assessment revealed several noteworthy findings. Regarding addictive habits, none of the participants consumed alcohol, cigarettes, or tobacco; however, the majority consumed tea (96.7% males and 91.1% females). Concerning sleep, majority of males slept between 11 pm to 12 am (70.0%) and females between 10-11 pm (51.1%), with maximum participants (males 63.3% and females 48.9%) reporting 7 hours of sleep per day. With regard to mental health, 49.3% of participants felt that diabetes made their life difficult, and 60.0% reported feeling odd outside due to dietary restrictions a condition analogous to "diabetes distress".[17] Only 6.7% reported major life stressors prior to diagnosis, and 2.7% experienced societal pressure related to their condition. Regarding physical activity, 61.3% of participants engaged in regular exercise, predominantly brisk walking (76.1%) and yoga (23.9%) for 30 minutes per day, 7 days a week. However, 38.7% were not involved in any structured exercise. Females (91.1%) were more involved in household activities than males (13.3%). These findings highlight significant lifestyle-related gaps particularly physical inactivity that compound the dietary management challenges in this population.

DISCUSSION

The present study evaluated dietary knowledge and management practices among middle-aged adults with long-duration T2DM in an urban tertiary care setting in Mumbai, India. The findings reveal a paradox commonly observed in diabetes management: participants demonstrated adequate theoretical dietary knowledge, yet their actual dietary practices were inconsistent with established recommendations.

The near-universal recognition (97.3%) that diet affects diabetes is encouraging and reflects the benefit of prolonged engagement with healthcare professionals over the course of disease management. This finding is consistent with Pahuja et al (2018), who reported high awareness of diet-disease relationships among T2DM patients attending a tertiary hospital in Mumbai.[10] Similarly, Fatema et al (2017), in a study of Bangladeshi participants with T2DM, found that diabetes-related knowledge was generally adequate, particularly among individuals who had received medical care for extended periods.[11]

Awareness of the My Plate Method (60.0%) was notably higher than awareness of carb counting (1.3%) or the glycemic index (4.0%). This distribution reflects the limitations of existing diabetes education programs in India, which often provide broad dietary guidance without equipping patients with quantitative tools for carbohydrate management. The American Diabetes Association recommends carbohydrate-focused counselling as a cornerstone of T2DM dietary education; however, such structured education remains infrequently delivered in resource-limited outpatient settings.[6]

The misconception that jaggery is a safer sweetener than refined sugar, held by 18.7% of participants, is a well-documented concern in Indian populations. Pathirana et al (2022) confirmed that both cane sugar and coconut jaggery produce comparable blood glucose responses, challenging the widely held belief in their differential metabolic effects.[9] The persistence of this belief underscores the need for targeted, evidence-based nutritional counselling addressing culturally specific food misconceptions.

The high selection of farsan as a preferred snack option (53.3%) is particularly concerning, given that such processed savory foods are high in refined carbohydrates, sodium, and fat all of which can adversely affect glycemic control and cardiovascular risk in individuals with T2DM. This finding is consistent with previously reported poor snack choices among urban Indian diabetic populations and aligns with the SUN cohort data demonstrating elevated consumption of ultra-processed foods among individuals with T2DM.[12]

The high medication adherence (90.4%) observed in this study contrasts starkly with the low dietary adherence implied by the food practice data. This dichotomy where pharmacological compliance is maintained while dietary adherence is neglected has been reported in prior Indian studies. A cross-sectional study found that high dietary adherence was observed in only 4.2% of participants despite medication adherence exceeding 90%, underscoring the persistent gap between disease knowledge and behavioral change.[13] This may partly be explained by the concept of 'dietary fatigue,' whereby individuals with long-standing disease gradually revert to habitual food patterns despite continued awareness of dietary recommendations.[5]

The predominant source of dietary knowledge being a dietician (53.3%) rather than a physician (45.3%) reflects a positive shift in diabetes care toward specialist nutritional guidance. However, given that most participants continued to exhibit dietary knowledge gaps and suboptimal practices, these interactions may be insufficient in frequency and depth. Van Smoorenburg et al (2019) similarly emphasized that the role of healthcare professionals especially dieticians must extend beyond a single educational encounter, with ongoing reinforcement

at key transitions in the disease trajectory being most effective.[13]

Despite good knowledge, dietary practices did not align with recommendations as evidence by high fat and carbohydrate intake and low dietary diversity scores as reported in detail elsewhere.[14]

Wu et al (2019), in a qualitative study among middle-aged adults with T2DM in Taiwan, highlighted that patients often misconceive diet control as food restriction rather than informed food selection, contributing to persistent dietary imbalances.[15] The present study corroborates this finding, as participants demonstrated broad awareness of concepts (carbohydrate as a blood glucose modulator; the value of the My Plate framework) while failing to translate this into appropriate day-to-day food choices.

The personalized diabetes management framework, as outlined by the American Diabetes Association and the European Association for the Study of Diabetes, emphasizes that "one size does not fit all" in T2DM management.[16] Culturally tailored interventions that account for the characteristic features of Indian diets high cereal and fat intake, limited dietary diversity, and prevalent food misconceptions are essential to improve dietary outcomes in this population.

This hospital-based study provided real-world insights into dietary knowledge and self-management practices of patients with long-duration T2DM. The structured dietary knowledge questionnaire captured multiple dimensions of nutritional awareness specific to an Indian context. However, the moderate sample size (n=75) and convenience sampling limit generalizability. The hospital-based setting may not represent community-dwelling individuals with T2DM. Additionally, as a cross-sectional design, causal inferences cannot be drawn.

CONCLUSION

The study demonstrates that middle-aged adults with long-duration T2DM attending a tertiary care hospital in Mumbai possessed adequate awareness of the role of diet in diabetes management. However, a significant knowledge-to-practice gap persisted, with dietary misconceptions around culturally specific foods (jaggery, farsan) and inadequate application of evidence-based dietary strategies. The high medication adherence, contrasted with poor dietary adherence, highlights the need for structured, individualized, and culturally appropriate dietary counselling integrated into routine outpatient diabetes care. Regular follow-up, patient support groups, and collaboration among physicians, dieticians, and diabetes educators are essential for reinforcing dietary knowledge and translating it into sustained healthy dietary behavior. Future studies should explore the impact of structured dietary education interventions on dietary adherence and glycemic outcomes in this population.

Recommendations

Future research should include larger, multi-center samples across diverse regions of India to capture dietary diversity. Community-based studies would complement hospital-based findings. Longitudinal studies examining the impact of structured dietary education on glycemic outcomes and dietary adherence are particularly warranted. Integration of digital dietary tracking tools and mobile health platforms may enhance dietary monitoring and support continuity of dietary education.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the ISBEC (Inter System Biomedica Ethics Committee), Mumbai

REFERENCES

1. International Diabetes Federation. IDF Diabetes Atlas. 10th ed. Brussels: International Diabetes Federation; 2021. Available at: https://www.diabetesatlas.org. Accessed on 01 January 2026.
2. Mathur P, Leburu S, Kulothungan V. Prevalence, awareness, treatment and control of diabetes in India from the countrywide National NCD Monitoring Survey. Front Public Health. 2022;10:748157.
3. National Family Health Survey (NFHS-6), Maharashtra Fact Sheet, 2023-24. Available at: https://www.nfhsiips.in/nfhsuser/assets/National%20Family%20Health%20Survey%20(NFHS-6)%202023-2024%20Fact%20Sheets.pdf. Accessed on 01 January 2026.
4. Selvam J, Thangaraj P, Hemalatha K, Subbian P. Diet adherence and factors associated with nonadherence among patients with type 2 diabetes in Tamil Nadu, India. Int J Acad Med. 2023;9(1):25-30.
5. Pourhabibi N, Mohebbi B, Sadeghi R, Shakibazadeh E, Sanjari M, Tol A, et al. Determinants of poor treatment adherence among patients with type 2 diabetes and limited health literacy: a scoping review. J Diabetes Res. 2022;2022:2980250.
6. Powers MA, Bardsley J, Cypress M, Duker P, Funnell MM, Hess Fischl A, et al. Diabetes self-management education and support in type 2 diabetes: a joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. Diabetes Care. 2015;38(7):1372-82.
7. Vasconcelos C, Almeida A, Cabral M, Ramos E, Mendes R. The impact of a community-based food education program on nutrition-related knowledge in middle-aged and older patients with type 2 diabetes: results of a pilot randomized controlled

trial. Int J Environ Res Publ Heal. 2019;16(13):2403.

8. Ranasinghe P, Pigera AS, Ishara MH, Jayasekara LMDT, Jayawardena R, Katulanda P. Knowledge and perceptions about diet and physical activity among Sri Lankan adults with diabetes mellitus: a qualitative study. BMC Public Health. 2015;15:1-10.
9. Pathirana HPDTH, Wijesekara I, Yalegama LLWC, Garusinghe C, Jayasinghe MA, Waidyarathne KP. Comparison of blood glucose responses by cane sugar (Saccharum officinarum) versus coconut jaggery (Cocos nucifera) in type 2 diabetes patients. J Future Foods. 2022;2(3):261-65.
10. Pahuja V, Fernandes G, Chatterjee N. Knowledge of the disease among type 2 diabetes patients in a tertiary care hospital in Mumbai, India. Management. 2018;12:18.
11. Fatema K, Hossain S, Natasha K, Chowdhury HA, Akter J, Khan T, et al. Knowledge attitude and practice regarding diabetes mellitus among nondiabetic and diabetic study participants in Bangladesh. BMC Public Health. 2017;17(1):1-10.
12. Llavero-Valero M, Escalada-San Martin J, Martinez-Gonzalez MA, Basterra-Gortari FJ, de la Fuente-Arrillaga C, Bes-Rastrollo M. Ultra-processed foods and type-2 diabetes risk in the SUN project: A prospective cohort study. Clin Nutr. 2021;40(5):2817-24.
13. Han CY, Chan CGB, Lim SL, Zheng X, Woon ZW, Chan YT, et al. Diabetes-related nutrition knowledge and dietary adherence in patients with type 2 diabetes mellitus: a mixed-methods exploratory study. Proc Singapore Healthc. 2020;29(2):81-90.
14. Van Smoorenburg AN, Hertroijs DF, Dekkers T, Elissen AM, Melles M. Patients' perspective on self-management: type 2 diabetes in daily life. BMC Health Serv Res. 2019;19(1):1-8.
15. Goenka H, Mathur R. Assessment of anthropometric profile, dietary intake and nutrient adequacy among middle-aged adults with long duration type 2 diabetes in Mumbai: a cross-sectional study. (Indian J Publ Heal Res Developm. 2026;*17*(3):63-70.
16. Wu FL, Tai HC, Sun JC. Self-management experience of middle-aged and older adults with type 2 diabetes: a qualitative study. Asian Nurs Res. 2019;13(3):209-15.
17. Williams DM, Jones H, Stephens JW. Personalized type 2 diabetes management: an update on recent advances and recommendations. Diabetes Metab Syndr Obes. 2022;15:281.
18. Mallon L, Broman JE, Hetta J. High incidence of diabetes in men with sleep complaints or short sleep duration: a 12-year follow-up study of a middle-aged population. Diabetes Care. 2005;28(11):2762-7.
19. Robinson DJ, Luthra M, Vallis M. Diabetes and mental health. Can J Diabetes. 2018;42(1 Suppl):S130-S141.

Cite this article as: Goenka H, Mathur R. Assessment of dietary knowledge, lifestyle and management of long-duration type 2 diabetes in middle-aged adults (55-65 years) residing in Mumbai city: a cross-sectional study. Int J Community Med Public Health 2026;13:5080-7.