

DIETARY PRACTICES, CLINICAL MONITORING AND DIABETES MANAGEMENT AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS

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ABSTRACT

Type 2 diabetes mellitus is one of the most prevalent chronic non-communicable diseases and has become a major public health concern. Hyderabad was purposively selected for the study as it has emerged as one of the metropolitan cities with a high incidence of diabetes and its associated complications. The present study was conducted during 2024 with the purpose of assessing the dietary patterns, lifestyle habits, clinical characteristics, treatment practices, diagnostic monitoring, diabetes-related complications, and anthropometric status of adults with Type 2 diabetes mellitus. A descriptive research design was adopted for the study. A total of 90 diabetic patients attending the outpatient departments of different hospitals in Hyderabad were randomly selected for the study. Data were collected using a structured interview schedule and analysed using descriptive statistics. The findings revealed that the majority of the respondents (64.44%) were non-vegetarians, while 91.11 percent consumed junk foods, 84.44 percent consumed cold beverages, and 80.00 percent regularly consumed desserts and confectionery. Nearly half of the respondents (45.55%) had been living with diabetes for 3–6 years, and 83.34 percent reported a family history of diabetes. Most respondents (91.11%) managed diabetes with diet and oral hypoglycaemic drugs during the initial stages, whereas dependence on insulin increased with disease duration. Although 88.89 percent of the respondents underwent fasting and non-fasting blood glucose tests, only 27.77 percent underwent HbA1c testing and 8.88 percent underwent regular foot examinations. Delayed wound healing (46.66%) and cataract or vision problems (45.55%) were the most commonly reported complications. Anthropometric assessment indicated that 44.44 percent of the respondents were overweight and 38.88 percent were obese. The study emphasizes the need for nutrition education, healthy lifestyle promotion, regular diagnostic monitoring, and effective diabetes self-management interventions to reduce complications and improve the quality of life among individuals with Type 2 diabetes mellitus.

Key Words: Type 2 diabetes mellitus, dietary patterns, lifestyle habits, diabetes management, anthropometric status, complications

Type 2 diabetes mellitus is a chronic health condition with elevated blood sugar levels characterized by insulin resistance and progressive pancreatic β -cell dysfunction, resulting in persistent hyperglycaemia and long-term metabolic complications. Diabetes mellitus (DM), or simply diabetes, is a group of metabolic diseases in which a person has high blood sugar, either because the body does not produce enough insulin, or because cells do not respond to the insulin that is produced. It represents one of the most pressing global public health challenges, with both prevalence and incidence rates continuing to rise.

Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease. According to the 11th edition IDF Diabetes Atlas, an estimated 11.11% of adults worldwide were living with diabetes in 2024, and the prevalence is expected to reach 12.96% by 2050. This finding confirms that diabetes prevalence continues to rise globally,

highlighting it as one of the fastest-growing global health emergencies of the 21st century. According to Wild *et al.* the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India. India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country. Although several studies have investigated diabetes prevalence, limited information is available regarding comprehensive management practices including dietary behaviour, treatment practices, diagnostic monitoring and complications among adults attending tertiary hospitals in Hyderabad. Few studies are available that examine dietary/lifestyle patterns, treatment trajectories, diagnostic monitoring and anthropometry together within one cohort, limited evidence on how treatment escalates over disease duration in routine outpatient settings and its relation to monitoring and outcomes. Hence the study

was undertaken to assess dietary habits, evaluate treatment practices, examine diagnostic monitoring and identify diabetes complications.

MATERIAL AND METHODS

This study was conducted by descriptive cross-sectional research design to assess the dietary patterns, life style habits, clinical characteristics, treatment practices, diagnostic monitoring, diabetes related complications and anthropometric status of adults with type 2 diabetes mellitus. The study area, Hyderabad, Telangana was selected purposively as it has emerged as one of the metropolitan cities with high incidence of diabetes and its associated complications. The study population were adults diagnosed with Type 2 diabetes mellitus attending the outpatient departments of selected hospitals of Hyderabad. The eligibility criteria to include the respondents were adults (≥ 18 years) with clinically confirmed T2DM attending outpatient departments (OPDs) of selected hospitals and willing to participate. Patients with Type 1 or Gestational Diabetes Mellitus were excluded from the study. Ninety diabetic patients were included in this study. The respondents were randomly selected by visiting diabetic OPDs of Premier Hospital and Olive Hospital (Mehdipatnam, Hyderabad). during outpatient hours. Participants were recruited from the Simple random sampling. Primary data were gathered via face-to-face interviews using a pre-tested structured schedule covering to obtain information on socio-demographic characteristics, dietary patterns, lifestyle habits, history of diabetes, treatment practices, diagnostic monitoring, diabetes-related complications and anthropometric measurements. Informed consent was secured from all respondents prior to enrolment. Data were analysed using Microsoft Excel.

RESULTS AND DISCUSSION

The results are based on the data collected from 90 adults with Type 2 diabetes mellitus attending selected hospitals of Hyderabad.

It was found that the majority of the respondents in the study were non-vegetarians which constituted 64.44% followed by vegetarians 30.00% and ova vegetarians 5.55%. Almost 92% of the respondents had a habit of taking junk foods. 80.00% of the respondents regularly consumed desserts and confectionary. The risk factors for diabetes among

respondents may be the junk foods in diet with desserts and confectionery. Respondents drinking cold beverages, including cold drinks and sweetened fruit drinks, were 84.44%. These drinks have a lot of sugars and can increase the levels of sugar tremendously. Of the respondents 24.44 % indicated themselves as smokers and about 12.22% of them were at least occasional alcohol consumers.

Gong and Lai (2025) opined that dietssuch as vegetarian, Mediterranean, and DASH diets—consistently demonstrate beneficial effects in the prevention and management of T2D.

Souza *et al.* (2025) highlighted that UltraProcessed Food consumption was significantly associated with an increased risk of diabetes compared with the lowest Ultra Processed Food intake. They also pointed out public health efforts are needed to promote the reduction of UPF consumption worldwide.

Table 1: Diet category and other habits of the diabetic respondents

n= 90		
Dietcategory	Frequency	Percentage
Vegetarian	27	30.00
Nonvegetarian	58	64.44
Ova vegetarian	5	5.55
Other Habits	Frequency	Percentage
Junkfoods	82	91.11
Cold beverages	76	84.44
Desserts & confectionary	72	80.00
Smoking	22	24.44
Alcohol	11	12.22

Table 2: Inheritanceofthediabetic respondents

n= 90		
Inheritance	Frequency	Percentage
Paternal grandparent	10	11.11
Paternalparent	26	28.88
Maternalgrandparent	8	8.88
Maternalparent	31	34.44
Noinheritance	15	16.66

Majority of diabetes occurrences was to be linked with genetic inheritance, according to data presented above. As much as 83% of the diabetic respondents indicated that they had inheritance of the disease from parents and grandparents. Out of these 34.44% of them indicated the inheritance from a maternal parent, 28.88% from a paternal parent. Paternal grandfather inheritance consisted 11.11% and maternal grandmother 8.88%. However, there was no inheritance also but only 16.66%.

Table 3. Predetective symptoms of diabetes of the diabetic respondents

n= 90

Predetective symptoms	Frequency	Percentage
Polyuria	35	38.88
Polydipsia	9	10.00
Polyphagia	3	3.33
Weight loss	16	17.77
Delayed wound healing	4	4.44
Routine health check-up	16	17.77
Doctors' incidental advice	22	24.44

Muthoni (2024) discussed that environmental and lifestyle factors significantly contribute to the manifestation of diabetes; genetic predisposition is a central factor in determining individual susceptibility.

Majority of respondents (38.88%) said that polyuria was the predictive symptom which helped them identify their condition of diabetes. Through doctors' incidental advice 24.44% of the respondent's identified and equal percentage (17.77%) identified due to weight loss and while routine checkup. Up to some extent polydipsia (10%), delayed wound healing (4%) and polyphagia (4%) lead the respondents for diagnosis of diabetes. From the above table it is also evident that a very less proportion of population have a habit of undergoing routine health check-up, which is most essential for diabetes management.

Aglarci and Karakurt (2025) identified eight key symptoms that significantly contribute to diabetes risk when they occur together: gender, polyuria, polydipsia, sudden weight loss, weakness, blurred vision, partial paresis and obesity. The co-occurrence of these symptoms increases the likelihood of developing diabetes by 1.63 times.

Table 4. Diabetes chronology and treatment plan

Diabetes chronology and treatment After 6 months	Frequency	Percentage
Diet + exercise	8	8.88
Diet + oral hypoglycaemic drugs	78	86.66
Diet + insulin	0	0
Diet + Insulin + Oral hypoglycaemic drugs	4	4.44
At 1 year		
Diet + exercise	4	4.44
Diet + oral hypoglycaemic drugs	82	91.11
Diet + insulin	0	0
Diet + Insulin + Oral hypoglycaemic drugs	4	4.44
At 2 years		
Diet + exercise	2	2.22
Diet + oral hypoglycaemic drugs	64	71.11
Diet + insulin	0	0
Diet + Insulin + Oral hypoglycaemic drugs	23	25.55
At 3 and more years		
Diet + exercise	0	0
Diet + oral hypoglycaemic drugs	51	56.66
Diet + insulin	0	0
Diet + Insulin + Oral hypoglycaemic drugs	39	43.33

The above table furnished data of diabetes chronology and treatment which the respondents underwent to manage diabetes. At 6 months of diagnosis i.e. during initial diagnostic of diabetes 86.66% of the respondents had diet + oral hypo glycaemic drugs to manage diabetes, 8.88% of the respondents managed their diabetes with diet + exercise, and 4.44% of the respondents were in diet insulin + Oral hypoglycaemic drugs.

After 1 years of diabetes diagnosis 91.11 % of respondents managed diabetes with diet + exercise, while 4.44% of the respondents with diet + exercise and also diet + insulin or alhypoglycaemic drugs equally.

After 2 years the majority of population i.e. 71.11% were on diet+ oral hypoglycaemic drugs, followed by 25.55% with diet + insulin oral hypo glycaemic drugs. It was noticeable that only 2.22% of the respondents managed their diabetes with diet + exercise.

After 3 and above years, 56.66% of the respondents were on diet + oral hypoglycaemic drugs, followed by 43.33% of the respondents using treatment option of diet+ insulin+ oral hypoglycaemic drugs.

Data evidently indicated that as the diabetes age is increasing the management of diabetes among the respondents becomes poor and they are relying more on insulin to manage their diabetes. The sugar

combinations of oral drugs and insulin to keep blood sugar under control.

Martinez *et al.* (2023) found that a high percentage of participants would like to have fewer daily pills/injections or the option of temporarily stopping their medication. Realistic expectations ranged from 47% to 70%, and unrealistic expectations from 31 to 65%. More insulin users wished they could take a temporary break ($p < 0.05$) or would like to be able to change the route of administration ($p < 0.001$) than metformin users.

Diagnostic test

The data in the following is with regard to the tests the respondents were undergoing for management of the disorder. Because diabetes is a life style disorder which has to be diagnostically monitored constantly.

Among the list of tests to be undergone is evident from the above table majority of respondents (88.89%) were found to undergo only fasting and non-fasting glucose tests, only a meagre proportion (27.77% & 22.22%) was going for HbA1c test and cholesterol test respectively. Very negligible percentage was going for urea and creatinine test (13.33%), dilated eye exam (11.11%) and foot exam (8.88%). The possible reason for this could be that

Table 5. Diagnostic test for diabetes management n= 90

Diagnostic test for diabetes management	Frequency	Percentage
Fasting and Nonfasting glucose test	80	88.89
Haemoglobin A1c test	25	27.77
Cholesterol test	20	22.22
Urea and creatinine test	12	13.33
Dilated eye exam	10	11.11
Foot exam	8	8.88

levels of the respondents are remaining constantly high due to poor management and hence more respondents after 3 years of diagnosis were on insulin. When people are first diagnosed, high motivation and medical advice help them manage sugar levels through diet, exercise, and basic medication. However, as time passes, Type 2 diabetes naturally progresses—the pancreas produces less insulin, and maintaining strict lifestyle habits gets harder. As a result, diet and exercise alone stop working, forcing doctors to add stronger

simple blood sugar tests are cheap, fast, and accessible everywhere. In contrast, comprehensive tests—like HbA1c, cholesterol, kidney checks, and eye or foot exams—are much more expensive. When patients have to pay for healthcare out of their own pockets, these extra costs often force them to skip essential long-term screening.

All these tests have to be undergone regularly because diabetes is followed by acute and chronic

complications. These complications can affect heart, kidneys, eyes, and feet of the and thereby quality of life. Most of the respondents were found to be unaware and ignorant of all the necessary routine diagnostic tests as well as morbid complications of diabetes and consequently were less motivated to undergo the necessary tests for diabetes management. Banerjee and Vasikaran (2020) found in his study 58% respondents used random plasma glucose >200mg/dl as a diagnostic cut off for the diagnosis of DM. Only 56% respondents reported that OGTT was recommended for the diagnosis of gestational DM. It was also found that majority of respondents (99%) reported that the HbA1c threshold for the control of DM.

Table 6. Critical events

Critical events	Frequency	Percentage
Sugar level too high	36	40.00
Sugar level too low	34	37.77
Heart diseases	33	36.66
Kidney diseases	15	16.66
Cataract and vision problem	41	45.55
Gastric problems	30	33.33
Delayed healing of wounds	42	46.66
Any other	25	27.77

Critical events were referred to adverse condition which the respondents underwent as diabetic patient. The above table reveals that critical events for 46.66% was delayed healing wounds, 45.55% had cataract and vision problems. Sugar level too high was indicated by 40.00 %, sugar level was indicated by 37.77% of people. Heart diseases were seen among 36.66%. This data clearly indicates that diabetes leads to further complication which affects almost all the organs of the body if not managed properly. Chronic hyperglycemia damages small and large blood vessels and, coupled with irregular diagnostic screening, erratic meal and medication habits, leads to high incidence of delayed wound healing, visual impairment, heart disease and extreme blood sugar fluctuations. Hence, the respondents should adopt tailored dietary changes, regular physical activity, and mobile tracking tools to maintain stable blood sugar levels.

Zhao *et al.* (2024) highlighted that Diabetic complications represent a formidable clinical challenge characterized by hyperglycaemia-induced multiorgan dysfunction and dysregulated intercellular signalling networks. It was also pointed that approximately 22–40% of diabetes patients develop DKD, making it the leading cause of end-stage kidney disease. CVD remains the leading cause of mortality in individuals with T1D and T2D, accounting for 44% and 52% of deaths. Diabetes Retinopathy, affecting 34.6% of individuals with diabetes, is a leading cause of blindness.

Anthropometric measurement

Table 7. Anthropometric measurement

BMI	Frequency	Percentage
18.50 (Underweight)	0	0
18.5 –24.9 (Normal weight)	15	16.66
25.00 – 29.90 (Overweight)	40	44.44
30.00 (Obese)	35	38.88

BMI is an important indicator to assess the risk of diabetes and play a vital role in formulating an efficient plan to manage the condition. Duly following the method of calculation of BMI, recommended by WHO (2004), the respondents were graded based on their height and weight. The above table indicates the BMI data of respondents. Overweight category (44.4%) and obese (38.8%) were more than normal weight (16.6%). But, none of the respondents in the study were found underweight. Data evidently indicates that obesity and excess weight were the factors that caused diabetes. Maintaining optimal weight is necessary for this group to effectively manage diabetes. Zakri (2025) opined that anthropometric measures are indispensable for evaluating obesity, a key risk factor for type 2 diabetes mellitus (T2DM)

CONCLUSION

The present study provides a detailed assessment of dietary patterns, lifestyle habits, clinical characteristics, treatment practices, diagnostic monitoring, diabetes-related complications, and anthropometric status of adults with Type 2 diabetes mellitus in Hyderabad. The growing burden of Type 2 Diabetes Mellitus (T2DM) in urban centres like Hyderabad demands a shift from solely managing

glycemic control to embracing comprehensive, patient-centric care. The observed gaps between routine pharmacological management and key diagnostic, lifestyle and preventive practices highlight important areas in need of optimization of interventions.

The clinical management of T2DM should focus on routine multi-system screening rather than reactive treatment. Clinical care should include structured diabetes self-management education (DSME) and tailored medical nutrition therapy to directly target modifiable risk factors such as diet quality and weight management at the clinical interface.

Public health approaches need to focus on creating enabling environments for the long term management of chronic disease. Healthcare policy should focus on improving access to multidisciplinary care teams (including registered dietitians and certified diabetes educators) in the community, in primary and secondary healthcare settings. Public health campaigns and local policy interventions should also tackle the urban dietary transition by creating healthier food environments, supporting physical activity infrastructure, and subsidizing essential monitoring tools to reduce the socioeconomic burden of long-term diabetic complications.

The findings emphasize that effective management of Type 2 diabetes mellitus requires a multidisciplinary approach integrating medical treatment with healthy dietary practices, regular physical activity, weight management, periodic screening, and continuous patient education. Strengthening nutrition counselling, promoting diabetes self-management education, and encouraging adherence to recommended monitoring practices are essential to improve glycaemic control and reduce the burden of diabetes-related complications.

Future research can be done on use of new media and social media for effective diabetes management. Social media is a place to share real-world day-to-day self-care tips like low-glycaemic recipe ideas, to manage your blood sugar while exercising, or how to travel with insulin or continuous glucose monitors (CGMs).

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