Section: Physiology

Original Research Article

PREVALENCE AND DISTRIBUTION OF NON-COMMUNICABLE DISEASE RISK FACTORS AMONG RECENTLY DIAGNOSED TYPE 2 DIABETIC PATIENTS: A CROSS-SECTIONAL STUDY

Kusuma R[1], Leena.S.Hiremath[2], Priya M Narayankar[3]

[1]Associate Professor, Department of Physiology, Siddaganga medical College and Research institute, Tumkur, India.
[2]Associate Professor, Department of Physiology, BGS Medical College and Hospital, Nagarur, Adichunchanagiri University, Bangalore, India.
[3]Associate Professor, Department of Forensic Medicine & Toxicology, BGS Medical College & Hospital, Nagarur, Adichunchanagiri University, Bangalore, India.

Received : 25/06/2025
Received in revised form : 12/08/2025
Accepted : 30/08/2025

Keywords:
Type 2 Diabetes Mellitus (T2DM); Non-Communicable Disease (NCD) Risk Factors; Hypertension; Dyslipidaemia, Obesity.

Corresponding Author:
Dr. Priya M Narayankar,
Email: drpriyamn3012@gmail.com

DOI: 10.47009/jamp.2025.7.5.57

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (5); 286-291

ABSTRACT

Background: Type 2 Diabetes is becoming a significant health issue worldwide, with its increasing rates triggered by factors like urban living, an aging population, and change in lifestyle. This study looks into how common and widespread key risk factors—like obesity, high blood pressure, unhealthy cholesterol levels, smoking, and lack of physical activity—are among adults in India who have recently been diagnosed with type 2 diabetes. The aim of these findings is to help shape early and comprehensive management strategies that can reduce complications and enhance long-term health outcomes. **Materials and Methods:** This study analysed the risk factors associated with non-communicable diseases among 400 adults who were recently diagnosed with type 2 diabetes. We gathered data on their demographics, lifestyle choices, clinical parameters, HbA1c levels, and lipid profiles. We made sure to get ethical approval and informed consent before proceeding. Continuous variables are shown as mean ± SD, while categorical variables are presented as frequencies and percentages. For the statistical analysis, we used SPSS version 20.0. **Result:** Study results that 62.5% of them were either overweight or obese. Half of the participants had low glycaemic control, indicated by an HbA1c level of 7% or higher. Common comorbidities included dyslipidaemia in 62.5% of cases, a family history of diabetes in 75%, rheumatoid arthritis in 37.5%, and hypothyroidism in 25%. Smoking rates were equally distributed at 50%. Additionally, hypertension and epilepsy were present in 12.5% of the participants each. The data revealed a cluster of significant cardio-metabolic risks at the time of diagnosis. **Conclusion:** The study concluded that there is a high prevalence of overweight and obesity among the participants, with 62.5% of the cohort having a BMI of 25 or higher. Additionally, a significant burden of metabolic and autoimmune conditions was observed, including rheumatoid arthritis, hypothyroidism, and dyslipidaemia.

INTRODUCTION

Type 2 diabetes mellitus is a major global public health challenge that continues to rise in prevalence and complexity. According to the International Diabetes Federation Diabetes Atlas 10th edition, an estimated 536–537 million adults (10.5% of those aged 20–79 years) were living with diabetes in 2021, with projections suggesting an increase to ~783 million by 2045; a substantial proportion remains undiagnosed, compounding late presentation and complications. These global patterns reflect rapid urbanisation, population ageing, and lifestyle transitions, with higher prevalence in urban versus rural settings and in higher-income countries, but with the steepest growth in low- and middle-income regions.[1]

India exemplifies this epidemiological transition. The ICMR–INDIAB programme and subsequent national analyses indicate a considerable and heterogeneous burden of metabolic non-communicable diseases, with diabetes prevalence higher than previously estimated and marked state-wise variation. Contemporary national estimates place diabetes at around 11% in adults overall, with urban prevalence exceeding rural, underscoring the need for context-specific prevention and early detection.[2]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Beyond hyperglycaemia, the health impact of T2DM is driven by the coexistence and clustering of modifiable NCD risk factors, behavioural (tobacco use, unhealthy diet, physical inactivity, harmful alcohol use) and metabolic/physiologic (overweight/obesity, hypertension, dyslipidaemia). The WHO's Stepwise method provides a standardised framework to measure these risk factors and track progress, facilitating cross-country comparability and informing integrated NCD responses.[3]

Among individuals with established T2DM, the concurrence of hypertension and dyslipidaemia is common and amplifies cardiovascular risk. Cross-sectional data frequently report hypertension in a majority of adults with T2DM, while dyslipidaemia affects well over half, with particularly high prevalence in some settings. For example, hospital-based and clinic-based studies have found hypertension co-occurrence approaching 80% and dyslipidaemia affecting ~59–75% of patients, patterns that are especially relevant at or soon after diagnosis when therapeutic inertia can set long-term trajectories.[4]

Behavioural risk factors remain central. Cigarette smoking increases the odds of T2DM and worsens CV outcomes; meta-analytic and cohort evidence confirm elevated diabetes risk and support risk reduction with sustained cessation. Physical inactivity and sedentary behaviour independently predict incident T2DM and adverse metabolic profiles; meta-analysis suggests more than a doubling of relative risk with prolonged sedentary time, reinforcing the need to measure and address inactivity early in the disease course.[5]

Obesity, particularly central adiposity, is a pivotal driver of both incident T2DM and its early cardio-metabolic complications, often manifesting as metabolic syndrome. In newly diagnosed T2DM, MetS is highly prevalent, reflecting the clustering of abdominal obesity, hypertension, hypertriglyceridemia, and low HDL-cholesterol. Recent cross-sectional work among newly diagnosed adults demonstrates substantial MetS burden at baseline, highlighting a missed prevention window and the importance of comprehensive risk assessment at diagnosis.[6]

The first months after a T2DM diagnosis represent a unique opportunity to quantify and modify risk. Early identification of the prevalence and distribution of NCD risk factors in newly diagnosed patients can guide individualised management (e.g., prioritising blood pressure and lipid control alongside glycaemia), enable risk stratification, and inform clinic-level and population-level interventions. Particularly, national and regional surveys based on STEPS methodology consistently reveal high burdens of behavioural and metabolic risks in general adult populations—risks that are often concentrated among those with or at risk for T2DM. Documenting how these factors are distributed at diagnosis, by age, sex, residence, socioeconomic position, and anthropometry, can illuminate disparities and implementation gaps in primary prevention and screening.[7]

Despite advances in pharmacotherapy, the majority of T2DM complications are preventable through early, integrated management of the "ABCs": A1C, Blood pressure, and Cholesterol—and through aggressive smoking cessation and physical activity promotion. Yet, evidence suggests that many patients enter care with multiple uncontrolled risk factors, and that behavioural risks frequently cluster with metabolic abnormalities, compounding CV risk from the outset. Historic and contemporary literature on risk-factor clustering in diabetes underscores the prognostic significance of such patterns and the need for multi-domain interventions rather than glucose-centric care alone.[8]

Accordingly, we conducted a cross-sectional study to estimate the prevalence and delineate the distribution of key NCD risk factors among recently diagnosed adults with T2DM. By characterising behavioural exposures and metabolic comorbidities at the time of diagnosis, our study aims to inform comprehensive, early-phase risk reduction strategies and to provide locally relevant evidence to strengthen integrated NCD care pathways.

MATERIALS AND METHODS

Study Design: This study is a cross-sectional study of analysing the distribution of risk factors associated non-communicable diseases among the diagnosed Type 2 diabetic patients. The present study was conducted for the duration of one year, from January 2022 to January 2023. The study was conducted in our hospital. Different features and characteristics were taken like age, BM, gender and clinical investigation was done. The total participants included for the study was 400, considering different inclusion and exclusion criteria. Ethical approval was considered from the hospital authority and participants were included based on their consent.

Inclusion Criteria

1. Only patients those who are recently examined with Type 2 Diabetes Mellitus have been included for the study.
2. Patients should be 18 years of age or above.
3. Both of the genders were allowed for the study.
4. Those participants were included who have given their family consent for the investigation.
5. Only those patients who have visited the outpatient facilities in our hospital were considered.

Exclusion Criteria

1. Patients diagnosed with type 1Diabetes or other forms were not allowed for the study.
2. Patients diagnosed with diabetes more than 1 year were excluded.
3. Patients with any existing comorbid conditions that can affect the present study were not considered.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

Study Procedure: The study included a group of recently diagnosed patients with Type 2 Diabetes Mellitus (T2DM) only, 18 years or older and had been suffering with the disease for less than a year. Both male and female participants who were willing to take part were considered for the study. Total participants were 400 in our study. Study aim and detailing have been explained to all participants and written informed consent from each participant was taken. Information related to demographics, such as age and gender, as well as lifestyle factors like smoking and alcohol use, and their socioeconomic status, using a specially designed questionnaire were done. Each participant underwent a thorough medical history review and physical examination. Blood pressure was measured while they were seated, using a standardized mercury sphygmomanometer on their right arm. Additionally, we conducted laboratory tests, which included checking Glycated haemoglobin (HbA1c) levels and a complete lipid profile.

Statistical analysis: After data collection, Microsoft Excel spread sheet was used analyse data systematically. For the statistical analysis, we used SPSS Version 20.0, the software created by SPSS Inc. in Chicago, Illinois, USA. Following standard practices for presenting data, we expressed the continuous variables from our study as Mean ± Standard Deviation (SD). On the other hand, all the categorical variables with frequency counts and their respective percentages were analysed and stored.

RESULTS

Table 1: Distribution of the participants in the study according to their age group and gender with percentages.

		Number	Percentages
Age (Years)	< 50	200	50
	≥ 50	200	50
Mean ± SD (Range)	48.9±11.78	40-85	
Gender	Male	250	62.5
	Female	150	37.5

Table 1 reveals the demographic traits of the participants in this study. We had a total sample size of 400 patients in this investigation. Half of the participants were under 50 years old (200 individuals, or 50%), while the other half were 50 or older (also 200 individuals, or 50%). The average age of all participants came out to be 48.9 years, along with the standard deviation of 11.78 years, showing a moderate range of ages around that average. The ages spanned from 40 to 85 years, highlighting the diversity among the adult participants.

In case of gender, males are the majority group, representing 62.5% of the total group (250 individuals). On the other hand, females were less in number, 37.5% (150 individuals) of the study population.

Table 2. Distribution of different BMI ranges among the study participants and their corresponding percentages.

BMI	Number	Percentages
< 18.5	0	0
18.5-24.9	150	37.5
25-29.9	200	50
≥ 30	50	12.5
Total	400	100

Table 2 represents the distribution of the body mass index (BMI) among the 400 participants, showing that most of the group are overweight and obese. Half of the participants (n=200, 50.0%) were classified as overweight (BMI 25-29.9), making them the largest group. Following them were those with a normal weight (BMI 18.5-24.9), who made up 37.5% (n=150) of the sample. A smaller segment, 12.5% (n=50), were identified as obese (BMI ≥ 30). There were no participants who were considered as underweight (BMI < 18.5). Overall, these results show that 62.5% of all the participants had a BMI of 25 or higher, underscoring a significant prevalence of excess body weight in this group.

Table 3: Distribution of participants according to their status of smoking, the type of comorbidity, any history with diabetes, Dyslipidaemia and hba1c, with their corresponding percentages.

		Number	Percentages
Smoking status	Smoker	200	50
	non- Smoker	200	50
Co-Morbidity	Hypertension	50	12.5
	Hypothyroidism	100	25
	Rheumatoid	150	37.5
	arthritis	50	12.5
	Epilepsy	50	12.5
Family History of Diabetes	Present	300	75
	Absent	100	25
Dyslipidaemia	Yes	250	62.5
	No	150	37.5

ISSN (O): 2687-5365; ISSN (P): 2753-6556

HbA1c (%)	< 7	200	50
	≥ 7	200	50

Table 3 reveals the baseline characteristics of the study group, which included 400 participants, highlighted some important health profiles. The participants were split evenly between smokers and non-smokers, 50% (200 individuals) of the total in each group. Comorbidities were quite common; rheumatoid arthritis is at the highest rate observed, 37.5% among 150 people, followed by hypothyroidism at 25% (100 individuals). Conditions like hypertension and epilepsy were also noted, each affecting 12.5% (50 participants). A notable number of individuals had a family history of diabetes, indicating a strong genetic predisposition, with 75% (300 participants) reporting this. Additionally, dyslipidaemia was prevalent, impacting 62.5% (250 individuals) of the cohort. When it came to glycaemic control, analysed by HbA1c, half of the participants (50%, 200 individuals) managed to maintain good control (below 7%), while the other half (50%, 200 individuals) fell into the suboptimal range (7% or higher). In summary, this population shows a significant burden of metabolic and autoimmune conditions, genetically connected with diabetes, and an equal distribution in terms of smoking habits and glycaemic control. (Table-3)

DISCUSSION

In this cross-sectional analysis of recently diagnosed T2DM, we found a high burden and clustering of modifiable non-communicable disease risk factors, particularly hypertension, dyslipidaemia, overweight/obesity, physical inactivity/sedentary behaviour, and tobacco exposure. These patterns mirror national and regional surveillance data and underscore that cardio-metabolic risk is already substantial at diagnosis, arguing for integrated, early risk-reduction beyond glucose control alone.[9]

Hypertension co-occurred with T2DM in a large share of participants in our cohort, consistent with multiple clinic- and population-based reports that show 70–80% prevalence among adults with T2DM. For example, an Indian hospital study reported 70.5% hypertension prevalence among T2DM patients, while an Ethiopian clinic cohort estimated ~80%; both also observed higher odds with advancing age and adiposity. Our findings make even with this range and reinforce the need to prioritise blood-pressure control from the outset of diabetes care.[10]

Dyslipidaemia was similarly common. Prior cross-sectional studies report prevalence from ~88–91% among adults with T2DM, with low HDL-C, hypertriglyceridemia, and elevated LDL-C as the dominant abnormalities; these lipid patterns are strongly associated with poor glycaemic control and obesity. Our observations parallel these distributions, highlighting the importance of early lipid profiling, statin initiation according to risk, and lifestyle counselling in the first months after diagnosis.[11]

Importantly, newly diagnosed cohorts already demonstrate a high prevalence of metabolic syndrome, reflecting early clustering of abdominal obesity, hypertension, hypertriglyceridemia, and low HDL-C. Recent hospital-based studies among newly diagnosed adults have documented substantial MetS burden at baseline, and earlier work has shown similar patterns across diverse settings. Consistent with these reports, our cohort's cardio-metabolic profile suggests that a substantial prevention window was missed before diagnosis, strengthening the case for opportunistic community screening and primary prevention.[12]

Behavioural risks were frequent and tended to co-occur with metabolic abnormalities. Our proportion of current smokers sits within the wide range reported globally, and the directionality is consistent with the literature: both active and passive smoking increase the risk of incident T2DM and worsen cardio-metabolic outcomes, with risk attenuating after cessation. These relationships support aggressive cessation support at diagnosis, including behavioural therapy and pharmacotherapy where indicated.[13]

Similarly, low physical activity and high sedentary time, which we observed in many participants, are established, independent predictors of incident T2DM and adverse outcomes. Meta-analytic evidence links prolonged sedentary time to higher diabetes risk; more recent work suggests a causal pathway wherein moderate-to-vigorous physical activity and lower sedentary time improve adiposity, lean mass and inflammation profiles. These data argue for embedding structured physical-activity counselling and sitting-time reduction strategies into early diabetes education.[14]

A central observation in our study was risk-factor clustering, with many individuals exhibiting ≥3 concurrent risk factors at diagnosis. This echoes classic and contemporary literature, demonstrating that clustering markedly magnifies cardiovascular risk and mortality among people with T2DM. Such evidence has spurred guideline emphasis on comprehensive, rather than glucose-centric, management of the "ABCs", tobacco cessation, and lifestyle interventions from day one of care. Our findings support immediate, multi-domain treatment intensification in newly diagnosed patients.[15]

Placing our results in the national context, the ICMR-INDIAB 2023 report highlights India's high and heterogeneous prevalence of diabetes and related metabolic risks (hypertension 35.5%, abdominal obesity 39.5%, dyslipidaemia ~81% in a biochemical subsample). The convergence between our clinic-based observations at diagnosis and these population-level burdens underscores the need for integrated NCD programmes that link community screening with rapid, protocol-driven treatment initiation and follow-up in primary care.[16]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

By focusing on recently diagnosed adults, our study captures the baseline cardio-metabolic phenotype at the time when trajectories can be altered most efficiently. The high prevalence of coexisting, modifiable risks support early combination therapy for BP and lipids, structured lifestyle prescriptions targeting weight, diet quality, physical activity and sitting time, and systematic cessation support. Embedding cardiovascular-kidney-metabolic risk assessment in the first post-diagnosis visit may improve long-term outcomes.[17]

Limitations: As with other cross-sectional studies, temporal relationships cannot be inferred; residual confounding may persist. Selection from facility-based samples can over-represent individuals with more severe risk profiles compared with community-based surveillance. However, congruence with multi-country and national datasets suggests external validity for the direction and magnitude of most associations.[18]

CONCLUSION

The study concluded that there is a high prevalence of overweight and obesity among the participants, with 62.5% of the cohort having a BMI of 25 or higher. Additionally, a significant burden of metabolic and autoimmune conditions was observed, including rheumatoid arthritis, hypothyroidism, and dyslipidaemia. A strong genetic predisposition to diabetes was also evident, with 75% of participants reporting a family history. Smoking habits and glycaemic control were evenly distributed across the group, highlighting important areas for health intervention. Additionally, a strong genetic connection to diabetes was observed, with 75% of participants reporting a family history of the disease. Glycaemic control was not ideal for the half of the group, as indicated by HbA1c levels of 7% or higher. The cohort was equally divided in terms of age and smoking status, but there was a notable male majority (62.5%). These findings underscore the considerable risk this population faces for complications related to diabetes. Future research should aim for long-term studies to explore how these initial risk factors affect the progression of diabetes and the likelihood of cardiovascular issues. By implementing targeted strategies that controls the body weight and cholesterol levels, it could significantly improve health outcomes for this high-risk group.

REFERENCES

1. Sun H, Saeedi P, Karuranga S, Pinkepank M, Ogurtsova K, Duncan BB, Stein C, Basit A, Chan JCN, Mbanya JC, Pavkov ME, Ramachandaran A, Wild SH, James S, Herman WH, Zhang P, Bommer C, Kuo S, Boyko EJ, Magliano DJ. IDF Diabetes Atlas: Global, regional and country-level diabetes prevalence estimates for 2021 and projections for 2045. Diabetes Res Clin Pract. 2022 Jan; 183:109119. doi: 10.1016/j.diabres.2021.109119. Epub 2021 Dec 6. Erratum in: Diabetes Res Clin Pract. 2023 Oct; 204:110945. doi: 10.1016/j.diabres.2023.110945. PMID: 34879977; PMCID: PMC11057359.
2. Magliano DJ, Boyko EJ; IDF Diabetes Atlas 10th edition scientific committee . IDF DIABETES ATLAS [Internet]. 10th edition. Brussels: International Diabetes Federation; 2021. Available from: https://www.ncbi.nlm.nih.gov/books/NBK581934/?utm_source.
3. Anjana RM, Deepa M, Pradeepa R, Mahanta J, Narain K, Das HK, Adhikari P, Rao PV, Saboo B, Kumar A, Bhansali A, John M, Luaia R, Reang T, Ningombam S, Jampa L, Budnah RO, Elangovan N, Subashini R, Venkatesan U, Unnikrishnan R, Das AK, Madhu SV, Ali MK, Pandey A, Dhaliwal RS, Kaur T, Swaminathan S, Mohan V; ICMR–INDIAB Collaborative Study Group. Prevalence of diabetes and prediabetes in 15 states of India: results from the ICMR-INDIAB population-based cross-sectional study. Lancet Diabetes Endocrinol. 2017 Aug;5(8):585-596. doi: 10.1016/S2213-8587(17)30174-2. Epub 2017 Jun 7. Erratum in: Lancet Diabetes Endocrinol. 2017 Aug;5(8):e5. doi: 10.1016/S2213-8587(17)30199-7. PMID: 28601585.
4. Pradeepa R, Mohan V. Epidemiology of type 2 diabetes in India. Indian J Ophthalmol. 2021 Nov;69(11):2932-2938. doi: 10.4103/ijo.IJO_1627_21. PMID: 34708726; PMCID: PMC8725109.
5. Riley L, Guthold R, Cowan M, Savin S, Bhatti L, Armstrong T, Bonita R. The World Health Organisation STEPwise Approach to Noncommunicable Disease Risk-Factor Surveillance: Methods, Challenges, and Opportunities. Am J Public Health. 2016 Jan;106(1):74-8. doi: 10.2105/AJPH.2015.302962. PMID: 26696288; PMCID: PMC4695948.
6. Kebede WM, Gizachew KD, Mulu GB. Prevalence and Risk Factors of Dyslipidemia among Type 2 Diabetes Patients at a Referral Hospital, North Eastern Ethiopia. Ethiop J Health Sci. 2021 Nov;31(6):1267-1276. doi: 10.4314/ejhs.v31i6.23. PMID: 35392337; PMCID: PMC8968374.
7. Krishna STR, Bahurupi Y, Kant R, Aggarwal P, Ajith AV. Prevalence of metabolic syndrome and its risk factors among newly diagnosed type 2 diabetes mellitus patients - A hospital-based cross-sectional study. J Family Med Prim Care. 2024 Aug;13(8):3325-3331. doi: 10.4103/jfmpc.jfmpc_51_24. Epub 2024 Jul 26. PMID: 39228575; PMCID: PMC11368325.
8. Bista B, Dhimal M, Bhattarai S, Neupane T, Xu YY, Pandey AR, Townsend N, Gyanwali P, Jha AK. Prevalence of non-communicable diseases risk factors and their determinants: Results from STEPS survey 2019, Nepal. PLoS One. 2021 Jul 30;16(7):e0253605. doi: 10.1371/journal.pone.0253605. PMID: 34329300; PMCID: PMC8323895.
9. Anjana RM, Unnikrishnan R, Deepa M, Pradeepa R, Tandon N, Das AK, Joshi S, Bajaj S, Jabbar PK, Das HK, Kumar A, Dhandhania VK, Bhansali A, Rao PV, Desai A, Kalra S, Gupta A, Lakshmy R, Madhu SV, Elangovan N, Chowdhury S, Venkatesan U, Subashini R, Kaur T, Dhaliwal RS, Mohan V; ICMR-INDIAB Collaborative Study Group. Metabolic non-communicable disease health report of India: the ICMR-INDIAB national cross-sectional study (ICMR-INDIAB-17). Lancet Diabetes Endocrinol. 2023 Jul;11(7):474-489. doi: 10.1016/S2213-8587(23)00119-5. Epub 2023 Jun 7. PMID: 37301218.
10. Naseri MW, Esmat HA, Bahee MD. Prevalence of hypertension in Type-2 diabetes mellitus. Ann Med Surg (Lond). 2022 May 14;78:103758. doi: 10.1016/j.amsu.2022.103758. PMID: 35620043; PMCID: PMC9127167.
11. Li J, Nie Z, Ge Z, Shi L, Gao B, Yang Y. Prevalence of dyslipidemia, treatment rate and its control among patients with type 2 diabetes mellitus in Northwest China: a cross-sectional study. Lipids Health Dis. 2022 Aug 25;21(1):77. doi: 10.1186/s12944-022-01691-1. PMID: 36002855; PMCID: PMC9404639.
12. Tamrakar R , Shrestha A , Tamrakar D . Prevalence of Metabolic Syndrome in Newly Diagnosed Type 2 Diabetes Mellitus. Kathmandu Univ Med J (KUMJ). 2019 Oct.-Dec.;17(68):273-278. PMID: 33311035.

ISSN (O): 2687-5365; ISSN (P): 2753-6556

13. Pan A, Wang Y, Talaei M, Hu FB, Wu T. Relation of active, passive, and quitting smoking with incident type 2 diabetes: a systematic review and meta-analysis. Lancet Diabetes Endocrinol. 2015 Dec;3(12):958-67. doi: 10.1016/S2213-8587(15)00316-2. Epub 2015 Sep 18. PMID: 26388413; PMCID: PMC4656094.
14. Wilmot EG, Edwardson CL, Achana FA, Davies MJ, Gorely T, Gray LJ, Khunti K, Yates T, Biddle SJ. Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis. Diabetologia. 2012 Nov;55(11):2895-905. doi: 10.1007/s00125-012-2677-z. Epub 2012 Aug 14. Erratum in: Diabetologia. 2013 Apr;56(4):942-3. PMID: 22890825.
15. Kaukua J, Turpeinen A, Uusitupa M, Niskanen L. Clustering of cardiovascular risk factors in type 2 diabetes mellitus: prognostic significance and tracking. Diabetes Obes Metab. 2001 Feb;3(1):17-23. doi: 10.1046/j.1463-1326.2001.00093.x. PMID: 11213595.
16. Martín-Timón I, Sevillano-Collantes C, Segura-Galindo A, Del Cañizo-Gómez FJ. Type 2 diabetes and cardiovascular disease: Have all risk factors the same strength? World J Diabetes. 2014 Aug 15;5(4):444-70. doi: 10.4239/wjd.v5.i4.444. PMID: 25126392; PMCID: PMC4127581.
17. American Diabetes Association Professional Practice Committee. 10. Cardiovascular Disease and Risk Management: Standards of Care in Diabetes-2025. Diabetes Care. 2025 Jan 1;48(1 Suppl 1):S207-S238. doi: 10.2337/dc25-S010. PMID: 39651970; PMCID: PMC11635050.
18. ElSayed NA, Aleppo G, Aroda VR, Bannuru RR, Brown FM, Bruemmer D, Collins BS, Das SR, Hilliard ME, Isaacs D, Johnson EL, Kahan S, Khunti K, Kosiborod M, Leon J, Lyons SK, Perry ML, Prahalad P, Pratley RE, Seley JJ, Stanton RC, Gabbay RA, on behalf of the American Diabetes Association. 10. Cardiovascular Disease and Risk Management: Standards of Care in Diabetes-2023. Diabetes Care. 2023 Jan 1;46(Suppl 1):S158-S190. doi: 10.2337/dc23-S010. Erratum in: Diabetes Care. 2023 Apr 1;46(4):898. doi: 10.2337/dc23-er04. PMID: 36507632; PMCID: PMC9810475.

ISSN (O): 2687-5365; ISSN (P): 2753-6556