

Original Research Article

THE PREVALENCE OF DIABETES AND ITS RISK USING INDIAN DIABETES RISK SCORE AMONG ADULTS AT RURAL HEALTH TRAINING CENTRE OF TERTIARY MEDICAL COLLEGE, KOLAR: A CROSS SECTIONAL STUDY

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 Received
 : 13/05/2025

 Received in revised form : 19/05/2025
 Accepted

 Accepted
 : 23/05/2025

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DOI: 10.70034/ijmedph.2025.2.252

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

Int J Med Pub Health 2025; 15 (2); 1402-1406

ABSTRACT

Background: Diabetes, is a chronic, metabolic disease characterised by elevated levels of blood glucose leading to serious complications over time, impact harshly on the finances of individuals, their families and economies of nations. The disease often remains asymptomatic in its early stages, leading to delayed diagnosis and the onset of complications by the time medical care is sought. Early identification of individuals at high risk for diabetes is critical to enable timely lifestyle interventions and prevent disease progression. The Indian Diabetes Risk Score (IDRS), a simple, cost-effective, and non-invasive screening tool, combines four key parameters such as age, family history, physical activity, and waist circumference to stratify diabetes risk in community settings. The present study was done to estimate the prevalence of Diabetes risk among adults in Rural using Indian Diabetic Risk Score(IDRS): **Objective:** To study prevalence of Diabetes Mellitus and its risk using Indian Diabetic Risk Score among adults at Rural Health Training Centre of Tertiary Medical College, Kolar and to correlate Diabetes with self-care practices among diabetic patients.

Materials and Methods: Cross sectional study carried out in Rural field practice areas of department of community medicine. List of all households are visited and information regarding Diabetic patient if available in the house is collected and one person available at the time of visit are enrolled into the study and required sample of 300 were recruited through random sampling. Pre-tested, semi-structured questionnaire is used to collect the information on socio-demographic details, Diabetic self-care practices and Indian Diabetic Risk Score. Data entered into Excel sheet and analysed using SPSS software. P value less than 0.05 considered statistically significant.

Results: Present study showed that IDRS risk components- Age of onset, Family history of diabetes, decreased physical activity and increased abdominal circumference were 149 (50% >50 years), 10 (3.7%), 26 (8.7%) and 62 (20.7%) respectively. Among 300 participants, 83 (27.7%), 95 (31.7%) and 122 (40.6%) were in high, moderate and low risk category as per IDRS respectively.

Conclusion: Early Identification of risk factors play a vital role in preventing/delaying the onset of Diabetes and its complications in future. **Key words**: Diabetes Mellitus, Non-Communicable Disease, Self-care.

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INTRODUCTION

India is often referred to as the "Diabetes Capital of the World," owing to its exceptionally high number of individuals living with diabetes. This growing public health concern underscores the urgent need for effective strategies focused on both prevention and early management. A particularly alarming aspect is that nearly half of all diabetes cases in developing countries remain undiagnosed and untreated, significantly increasing the risk of longterm complications among individuals who are unaware of their condition.^[1]

Diabetes has emerged as a critical global health emergency, with alarming data revealing that one person dies from the disease every six seconds and that one in every eleven adults is currently affected. These stark statistics highlight the pressing need to prioritize diabetes as a major public health concern effective implement timely and and to interventions.2Non-communicable diseases (NCDs) pose a significant global health challenge, causing approximately 41 million deaths each yearaccounting for 74% of all deaths worldwide. Among these, diabetes represents a growing concern, particularly in India, which currently has an estimated 69.^[2] million people living with the condition. This number is projected to surge to 123.5 million by 2040. Such a dramatic rise highlights the urgent need for comprehensive and effective strategies focused on the prevention and management of diabetes.^[3]

Key risk factors contributing to the development of diabetes include unhealthy dietary habits, physical inactivity, and the consumption of tobacco and alcohol. Alarmingly, over 50% of individuals with diabetes in India remain undiagnosed, further intensifying the disease burden and hindering timely management and prevention efforts.^[4]

In India, a significant proportion of individuals with diabetes remain unaware of their condition, as the disease is often asymptomatic in its early stages. As a result, many do not seek medical attention until the disease has progressed to a more advanced stage, by which time serious complications may have already developed, making timely intervention more challenging.^[5]

Identifying individuals at risk for diabetes using simple screening tools. The Indian Diabetes Risk Score (IDRS), developed by the Madras Diabetes Research Foundation, is presented as an effective method for this purpose. The use of such tools can facilitate early intervention and lifestyle modifications to prevent or delay

the onset of diabetes.^[6]

The Indian Diabetes Risk Score (IDRS) is a prescreening tool designed to assess the risk of Type 2 Diabetes Mellitus. Developed in Chennai, this tool incorporates four key parameters: age, abdominal obesity, family history of diabetes, and physical activity levels. It is a cost-effective, non-invasive, and time-efficient method for identifying individuals at high risk. However, the performance and predictive accuracy of the IDRS may vary depending on the health profiles and demographic characteristics of populations in different regions or countries.^[7]

Type 2 Diabetes Mellitus (T2DM) is a chronic, noncommunicable metabolic disorder characterized by progressive β -cell dysfunction and insulin resistance, primarily affecting adults. In India, the number of individuals living with diabetes was estimated at 40.9 million in 2010, and this figure is projected to rise sharply to 69.9 million by 2025 and 79.4 million by 2030. Alarmingly, more than half of those affected remain unaware of their condition, thereby contributing significantly to the growing burden of undiagnosed and unmanaged diabetes.^[8]

largely attributed to a combination of genetic predisposition, the growing influence of fast food culture, and increasingly sedentary lifestyles.^[9]

Epidemiological studies on Type 2 diabetes in India have identified several key risk factors contributing to its development. These include genetic predisposition, increasing age, family history of diabetes, and ethnicity. In addition, modifiable lifestyle factors such as unhealthy dietary habits, physical inactivity, tobacco and alcohol use, elevated body mass index (BMI), high blood glucose levels, and abnormal lipid profiles play a significant role in the rising burden of the disease.^[10]

MATERIALS AND METHODS

Cross sectional study carried out in Rural field practice areas of department of community medicine. List of all households are visited and information regarding Diabetic patient if available in the house is collected and one person available at the time of visit are enrolled into the study and required sample of 300 were recruited through random sampling. Pre-tested, semi-structured questionnaire is used to collect the information on socio-demographic details, Diabetic self-care practices and Indian Diabetic Risk Score. Data entered into Excel sheet and analyzed using SPSS software. P value less than 0.05 considered statistically significant.

Inclusion Criteria

1. Adult consenting individuals with Diabetes diagnosed atleast 6 months prior to start of study.

2. Aged above 18 years.

Exclusion Criteria

- 1. Adult individuals suffering from other comorbidities (Coronary heart disease/stroke/Vascular diseases).
- 2. Participants not available during house visits even after two consecutive visits.

RESULTS



Figure 1: Distribution of participants according to age and gender

Figure 1 illustrates the distribution of study participants based on age and gender. A total of 300 participants were included, with the majority (152; 50.7%) being over 49 years of age. Among this age group, males constituted a larger proportion (92), compared to females (60). In the 35–49 years age group, there were 90 participants, with females (51) slightly outnumbering males (39). The youngest age group (<35 years) included 58 participants, with 33 males and 25 females. Overall, male participants (164) slightly outnumbered females (136), and the age group >49 years had the highest representation among both genders.





Figure 2 depicts the distribution of risk factors contributing to elevated Indian Diabetes Risk Scores (IDRS) among the study participants. Age emerged as the most prominent risk factor, accounting for 50% of the total risk burden. This was followed by low physical activity, contributing 20.7%, indicating lifestyle as a key modifiable factor. Waist circumference, a measure of central obesity, contributed 8.7%, while family history of diabetes was the least common risk factor, accounting for 3.7%. These findings highlight the significant role of age and physical inactivity in increasing diabetes risk in the urban adult population.



IDRS: Indian Diabetic Risk score

Figure 3 illustrates the distribution of study participants according to their Indian Diabetes Risk Score (IDRS) categories. Among the total participants, 40.6% were categorized as having a low risk of developing diabetes, while 31.7% fell under the moderate risk category. Notably, 27.7% of the participants were identified as being at high risk for diabetes. These findings indicate that nearly one-third of the study population is at significant risk, emphasizing the need for targeted screening and preventive interventions in this urban adult population.

DISCUSSION

The present study revealed the distribution of Indian Diabetes Risk Score (IDRS) components among participants as follows: age >50 years in 149 individuals (50%), family history of diabetes in 10 (3.7%), decreased physical activity in 26 (8.7%), and increased abdominal circumference in 62 (20.7%). Based on the IDRS classification, 83 participants (27.7%) were categorized as high risk, 95 (31.7%) as moderate risk, and 122 (40.6%) as low risk for developing diabetes.

In the present study, 27.7% of participants were classified under the high-risk category according to the Indian Diabetes Risk Score (IDRS), which is slightly higher than the findings reported by Sarit Sharma et al., where 26.2% of participants fell into the high-risk category. This marginal difference may be attributed to variations in the study population, demographic profile, or urban lifestyle factors influencing diabetes risk in our study setting.^[11]

Study by Karthika et al shows that almost 41.2% comes under high risk category according to IDRS which is higher than our study. Our study was focused only on adults attending tertiary medical college.^[12]

Another study by Abhinav et al reported that majority comes under intermediate and high risk for diabetes which is slightly higher compared to our findings.^[13]

Similarly, study conducted by Mallic et al, the majority of participants were categorized as having a moderate to high risk of developing diabetes, with 16.07% classified as high risk, 57.14% as moderate

risk, and only 26.78% falling into the low-risk category.^[14]

A study by Saurav Basu using the Indian Diabetes Risk Score (IDRS) identified 30.93% of older adults as being at high risk for diabetes, with 61.8% falling into the moderate-risk category. In comparison, our study found a slightly lower proportion of high-risk individuals (27.7%) and a significantly lower percentage in the moderate-risk category (31.7%), while a larger proportion (40.6%) were classified as low risk.^[15]

In the study conducted by Saraswati et al., the Indian Diabetes Risk Score (IDRS) revealed a high risk of diabetes in 58.2% of the population, with 27.2% at moderate risk and only 14.6% at low risk. In contrast, our study found a significantly lower proportion of high-risk individuals (27.7%), a comparable percentage at moderate risk (31.7%), and a notably higher proportion (40.6%) classified as low risk. This discrepancy may be attributed to differences in study populations, such as age distribution, lifestyle patterns, or geographic and socio-economic factors. For instance, in our study, although 50% of participants were aged above 50 years-an important risk factor-the prevalence of other risk factors was relatively low: only 3.7% reported a family history of diabetes, 8.7% had decreased physical activity, and 20.7% had increased abdominal circumference.[16]

The study by Raghuram et al. assessed diabetes risk among young adults (<35 years) using the Indian Diabetes Risk Score (IDRS), reporting 10.2% at high risk (IDRS > 60), 33.1% at moderate risk (IDRS 30–50), and 56.7% at low risk (IDRS < 30). Additionally, the prevalence of self-reported diabetes was 1.8%, with minimal gender variation— 1.7% in men and 1.9% in women—and notably higher (8.4%) among those with a parental history of diabetes.

In contrast, our study found a higher proportion of individuals in the high-risk category (27.7%) and a slightly lower proportion in the moderate-risk group (31.7%). However, only 40.6% were in the low-risk category—significantly less than in the Raghuram et al. study. These differences could be attributed to the age composition of our sample, which included a higher percentage of older adults (50% aged >50 years), a key contributor to elevated IDRS scores.^[17] The study by Pritam et al., conducted among nondiabetic females aged above 30 years, found that 15.8% of participants were in the low-risk category, 44.6% in the moderate-risk category, and 39.6% in the high-risk category based on the Indian Diabetes Risk Score (IDRS) compared to our study which has lower proportion of participants in the high- and moderate-risk categories due to demographic characteristics.[18]

Kumaran et al.'s study showed a far higher proportion of individuals in the high-risk category (48.2%) compared to our study (27.7%), and a much smaller proportion in the low-risk group (3.5% vs. our 40.6%). This suggests that their population had a generally higher risk profile.^[19]

The study by Raghuram et al. reported that 40.9% of subjects in both urban and rural regions were identified as high-risk, known, or newly diagnosed diabetes mellitus (DM) cases using IDRS. This finding reflects a substantial burden of diabetes and high-risk individuals across both geographic settings.

In contrast, our study—conducted specifically in an urban area—found a lower proportion of high-risk individuals at 27.7%. Additionally, 31.7% were categorized as moderate risk, and 40.6% as low risk.^[20]

CONCLUSION

This study highlights a significant burden of diabetes risk among the urban adult population, with 27.7% identified as high risk and 31.7% at moderate risk according to the Indian Diabetes Risk Score (IDRS). Notably, 40.6% of participants were in the low-risk category, reflecting a comparatively better risk profile than some previously reported studies. Despite this, the presence of key risk factors such as age above 50 years (50%), increased abdominal circumference (20.7%), and low levels of physical activity (8.7%) underscores the need for proactive screening and early intervention. The low prevalence of family history (3.7%) suggests lifestyle and age-related factors may play a more prominent role in this setting. These findings reinforce the importance of community-based risk assessment and targeted public health strategies to curb the growing threat of diabetes in urban populations.

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