Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/21756
DOI URL: http://dx.doi.org/10.21474/IJAR01/21756

RESEARCH ARTICLE

CLINICAL STUDY OF TYPE 2 DIABETES MELLITUS AT PRESENTATION AND ITS RELATION TO GLYCEMIC STATUS

Grace Madhuri John[1] and Paul Kiran Ganthala[2]

1. MBBS, MD (General Medicine).
2. MBBS, MD, DM (Cardiology).

Manuscript Info

Manuscript History
Received: 11 July 2025
Final Accepted: 13 August 2025
Published: September 2025

Key words:-
Type 2 Diabetes Mellitus, HbA1c, Complications, Clinical presentation

Abstract

Background: Type 2 Diabetes Mellitus (T2DM) is the most prevalent form of diabetes worldwide, with India contributing significantly to the global burden. Delayed diagnosis often results in patients presenting with established complications.
Objectives: To study the clinical presentation of T2DM at diagnosis and its relationship with glycemic status(HbA1c).
Methods:A cross-sectional study of 200 patients with newly diagnosed T2DM was conducted. Clinical profiles, complications, anthropometric parameters,lipid profile,and glycemic indices were analyzed.
Results: Mean age at diagnosis was 50.9 years, male-to-female ratio 1.7:1. Mean BMI was 24.2 kg/m2 and waist-hip ratio 0.93. Retinopathy (33%) was the most common complication at presentation, followed by infections (12%), nephropathy (10%), and ischemic heart disease (6%). Mean HbA1c was 9.27%. Dyslipidemia was prevalent in 45% of patients.
Conclusion: Many patients present late with advanced complications and poor glycemic control. Early screening and intervention are vital to reduce morbidity and mortality associated with T2DM.

Introduction:-

Diabetes mellitus, known since antiquity, has emerged as the most prevalent metabolic disorder globally. Type 2 Diabetes Mellitus (T2DM) accounts for more than 95% of all diabetes cases. Its insidious onset, prolonged asymptomatic phase, and strong association with metabolic syndrome contribute to delayed diagnosis. India, with over 70 million cases, is recognized as the diabetes capital of the world.

Hyperglycemia contributes to microvascular and macrovascular complications such as retinopathy, nephropathy, neuropathy, ischemic heart disease, and stroke. Glycated hemoglobin (HbA1c) provides a reliable index of chronic glycemia, and elevated levels correlate strongly with complication risk. This study evaluates the clinical profile of patients with newly diagnosed T2DM and correlates their presentations with glycemic status.

Corresponding Author:-Grace Madhuri John
Address:-Mbbs, Md (General Medicine).

Review of literature:-

Type 2 Diabetes Mellitus is a heterogeneous disorder characterized by insulin resistance, impaired insulin secretion, and increased hepatic glucose output. Epidemiological data from the International Diabetes Federation (IDF) highlight that India ranks second only to China in diabetes prevalence. Studies such as UKPDS and DCCT have established the relationship between glycemic control and long-term complications.

Pathophysiology: Insulin resistance in muscle and liver combined with beta-cell dysfunction underlies the disease. Obesity, particularly central adiposity, plays a central role. Genetic predisposition also influences susceptibility.

Complications: Microvascular complications(retinopathy,nephropathy,neuropathy)and macrovascular complications (coronary artery disease, cerebrovascular disease, peripheral arterial disease) constitute the major burden. The prevalence of these complications at presentation varies by region but often exceeds 20%.

Role of HbA1c: HbA1c is widely accepted as the gold standard for assessing long-term glycemic control. Levels above 6.5% are diagnostic of diabetes, and higher levels correlate with increased risk of complications. Indian studies reveal that a majority of patients present with HbA1c>8%.

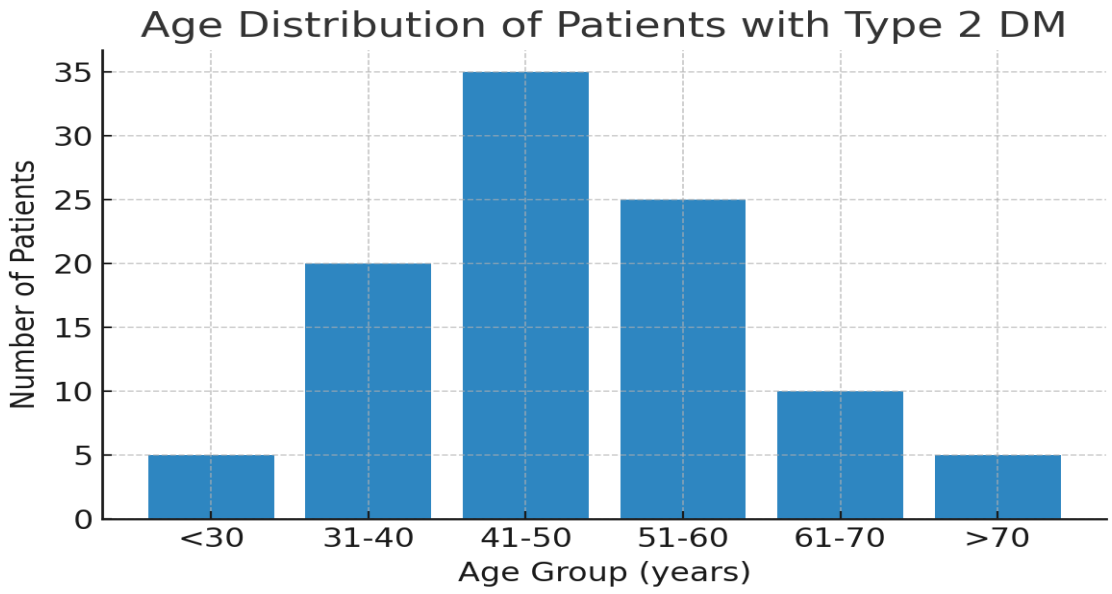
Global and Indian Studies: The UKPDS demonstrated that intensive glucose control reduces microvascular complications. Indian cohorts consistently show late presentation with poor glycemic control. The Chennai Urban Rural Epidemiology Study (CURES) reported mean HbA1c levels above 9% at diagnosis.

Materials and Methods:-

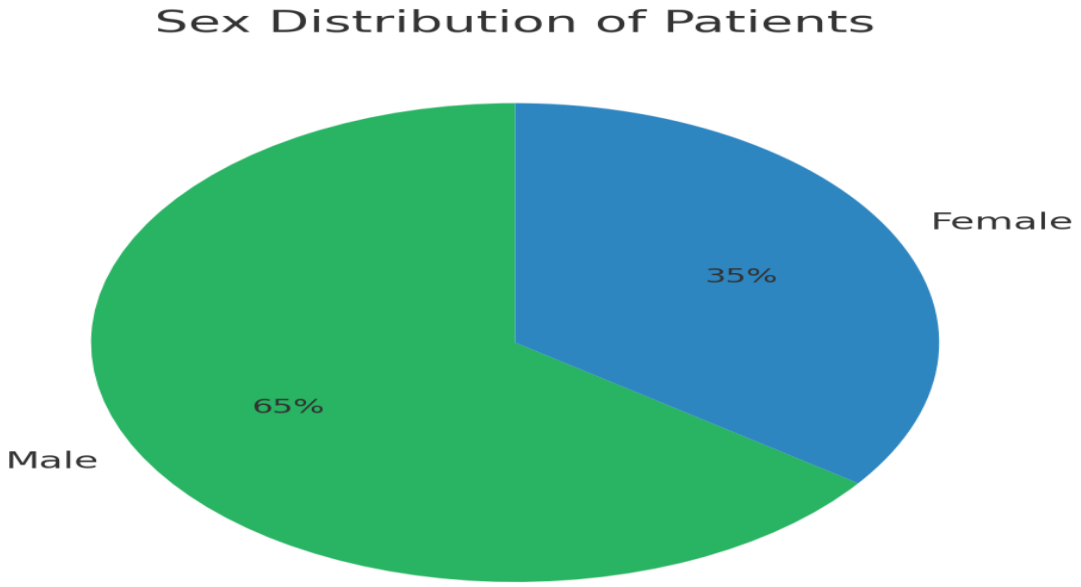
StudyDesign: Cross-sectional observational study.
Setting: Tertiary care hospital in South India.
Sample Size:200 patients newly diagnosed with T2DM as per WHO criteria.
Inclusion Criteria: Newly diagnosed Type 2 DM,age≥18 years.
Exclusion Criteria: Type 1 DM, gestational DM, secondary DM, MODY, syndromic diabetes, patients on steroids, beta-blockers,or diuretics.
Data Collection: Clinical history, anthropometry (BMI, waist-hip ratio), blood pressure, laboratory investigations (FBS, PPBS, HbA1c, lipid profile). Fundoscopy, ECG, and renal profile were performed where indicated.
Statistical Analysis: Descriptive statistics (mean, SD, percentages). Association of complications with HbA1c levels was analyzed using chi-square and t-tests. SPSS software was used for analysis.

Results:-

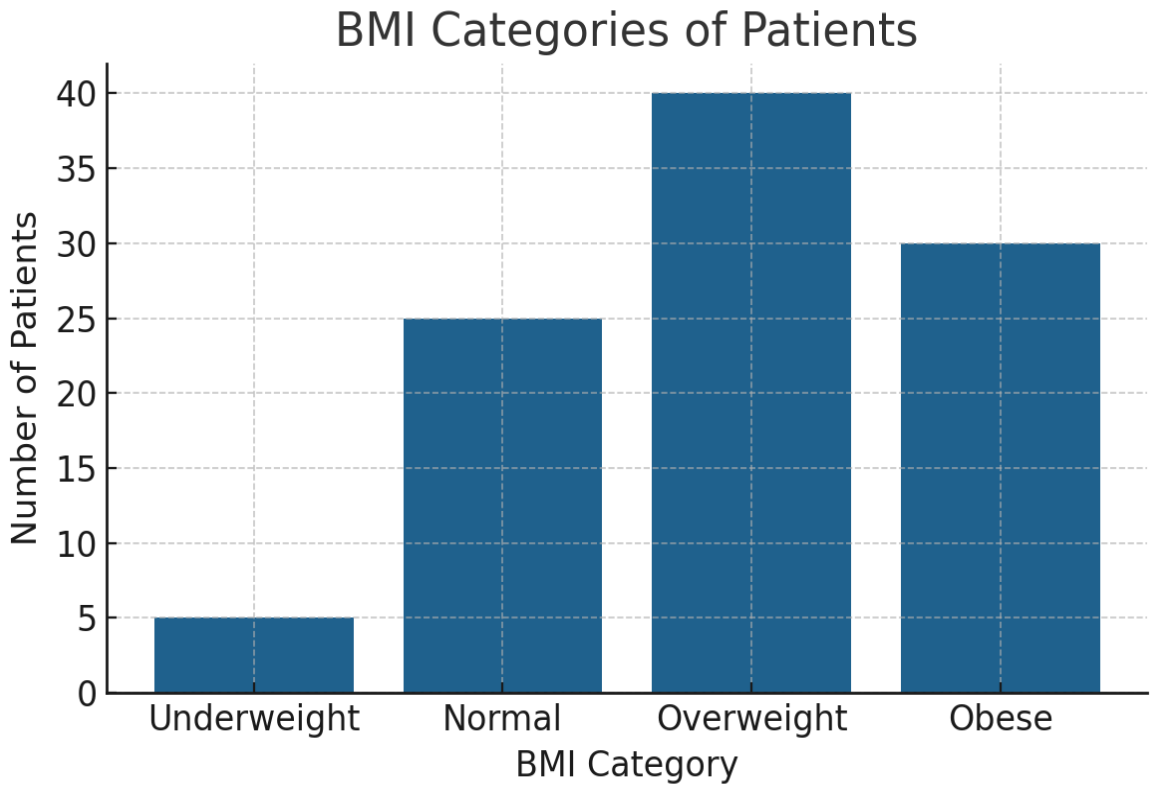
Age distribution of patients:



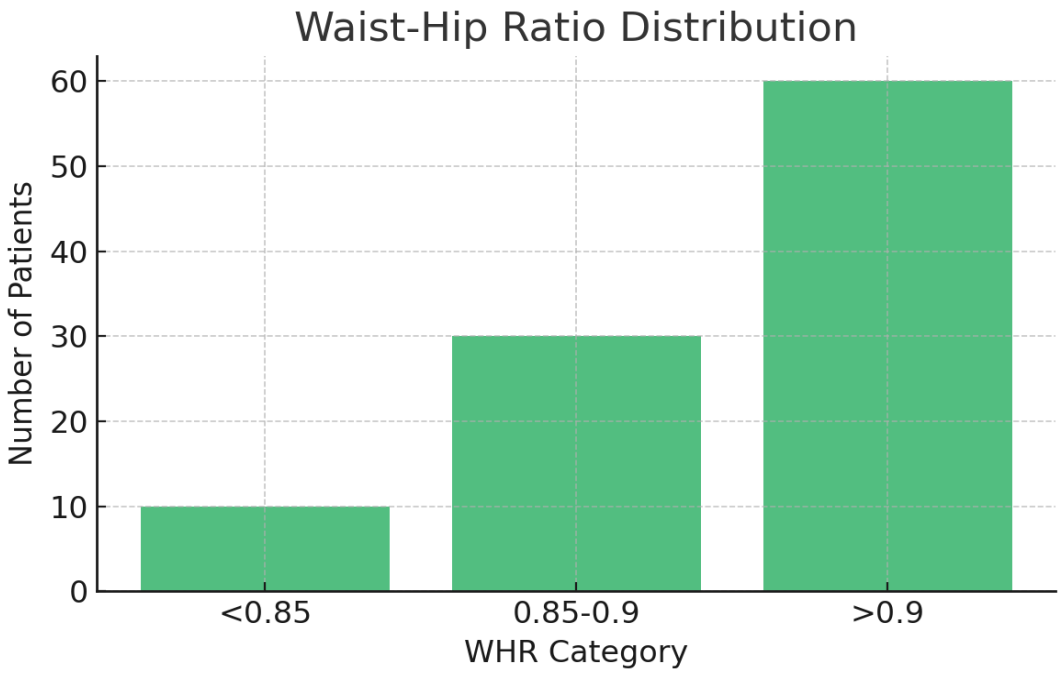
Sex distribution of patients:



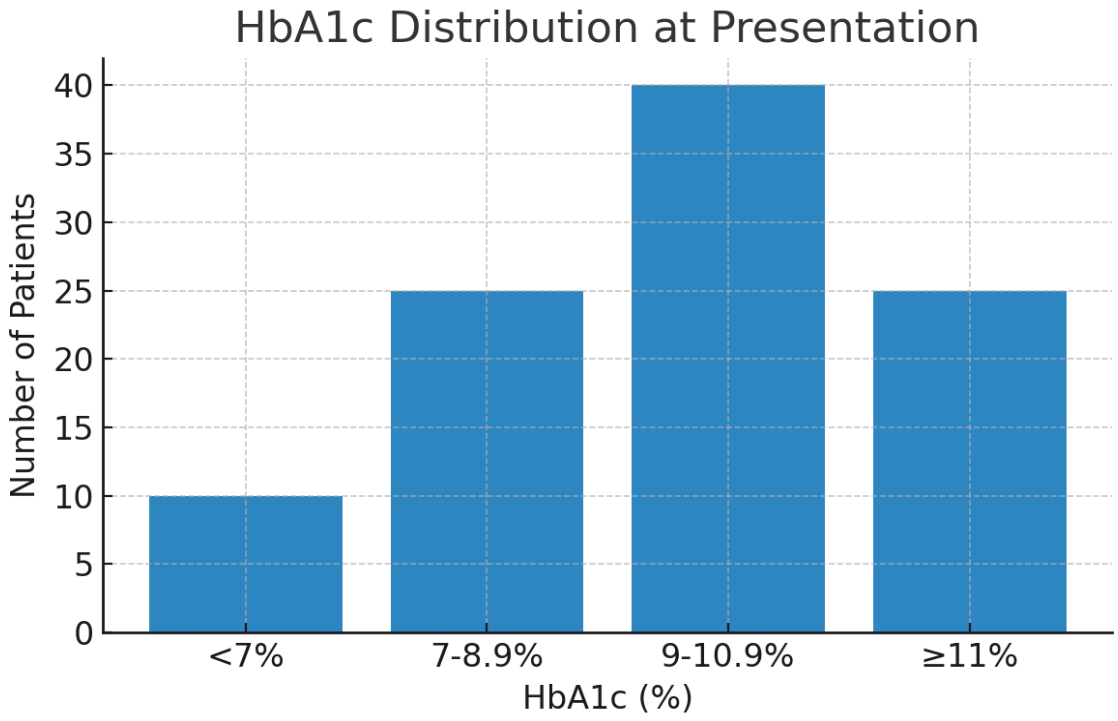
BMI categories of patients:



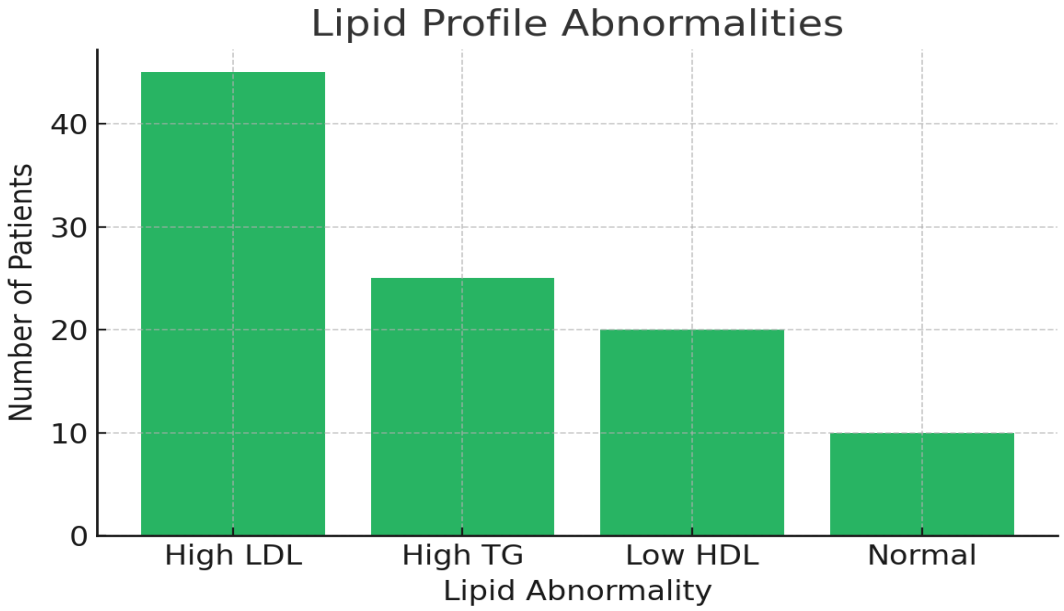
Waist-Hip ratio distribution:



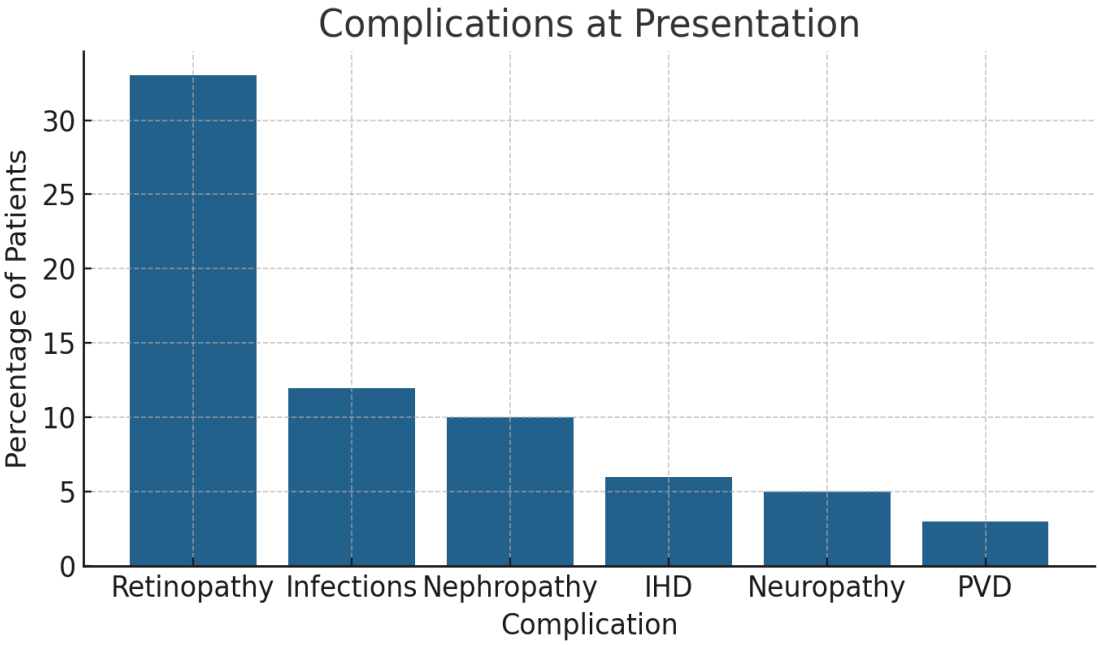
HbA1c distribution at presentation:



Lipid profile abnormalities:



Complications at presentation:



Discussion:-

This study highlights the delayed diagnosis of T2DM in India, with patients presenting at an average age of 51 years and often with established complications. Retinopathy was the most common complication, aligning with studies from Southern India. The mean HbA1c of 9.27% indicates poor glycemic control at presentation. Dyslipidemia was common,contributing to macrovascular risk.Comparison with international studies shows similar trends. The UKPDS confirmed that improved glycemic control reduces the risk of microvascular complications. Indian studies, such as CURES and INDIAB, confirm high HbA1c levels at presentation, similar to the findings of this study.

Public health strategies must focus on awareness, lifestyle modification, and routine screening to reduce the burden of diabetes-related morbidity.

Conclusion:-

Type 2 Diabetes Mellitus often presents late in India with advanced complications and poor glycemic status. Early screening, prompt initiation of therapy, and aggressive risk factor management are essential to mitigate long-term morbidity and mortality. Community-based preventive strategies and national programs must prioritize early detection and sustained glycemic control.

Acknowledgements:-

The authors thank the patients, hospital staff, and colleagues who contributed to this study.

Conflict Of Interest:-

The authors declare no conflict of interest.

References:-

1. UK Prospective Diabetes Study (UKPDS) Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes. Lancet. 1998.
2. American Diabetes Association. Classification and diagnosis of diabetes. Diabetes Care. 2023.
3. Mohan V, et al. Epidemiology of type 2 diabetes in India. Indian J Med Res. 2007.
4. DCCT Research Group. The effect of intensive treatment of diabetes on the development of long-term complications. NEJM. 1993.
5. Ramachandran A, et al. Rising prevalence of NIDDM in an urban population in India. Diabetologia. 1997.
6. Anjana RM, et al. Prevalence of diabetes and pre-diabetes in 15 states of India: results from the INDIAB study. Diabetologia. 2017.
7. IDF Diabetes Atlas, 10th Edition. International Diabetes Federation. 2021.