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Original Article

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Prevalence of Complications in Patients with Newly Detected Type-2 Diabetes Mellitus in Dr. B.R. Ambedkar Medical College and Hospital

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ABSTRACT

Background: In 2019, diabetes was the direct cause of 1.5 million deaths. DM (DM), long considered a disease of minor significance to world health, is taking its place as one of the main threats to human health in the 21st century [1]. It is the most common non-communicable disease worldwide and the fifth leading cause of death in developed countries. It has been estimated that by the year 2025, India will have the largest number of diabetic subjects in the world.
Objectives: To study the prevalence of macrovascular and microvascular complications in newly diagnosed T2DM patients.
Methods: The study is a clinical, cross-sectional study of 180 newly detected type 2 diabetics attending medicine department outpatient/ inpatient, Dr. B. R. Ambedkar Medical College, Kadugondanahalli, and Bangalore from November 2020 to May 2022(18 months) who matched the inclusion criteria.
Results: In this, 84 were males and 66 were females. The prevalence of macrovascular complications CAD, and PVD was 17.0% and 8.0% respectively and microvascular complications of retinopathy, nephropathy, and neuropathy were 21.0%, 17.0%, and 22.0% respectively.
Conclusion: There is a high prevalence of neuropathy and retinopathy at the time of diagnosis. HbA1c levels predict the prevalence of complications. Screening for neuropathy, retinopathy, and nephropathy at diagnosis is statistically significant. Screening with simple tests at diagnosis for all cases of diabetes is essential to identify the complications at an early reversible stage.

Key Words: *HbA1c, Microvascular, T2DM, Macrovascular*

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INTRODUCTION

Diabetes mellitus is a common and serious disease with chronic complications and constitutes a substantial burden for both patients and the health care system. The latest estimates show a global prevalence of 382 million people with diabetes in 2013 In 2014, 8.5% of adults aged 18 years and older had diabetes, expected to rise to 592 million by 2035 [2]. In 2019, diabetes was the direct cause of 1.5 million deaths[3]. To present a more accurate picture of the deaths caused by diabetes, however, deaths due to higher-than-optimal blood glucose through cardiovascular disease, chronic kidney disease, and Hyperlipidemia should be added [4].

Type 2 diabetes frequently develops slowly and subtly. Type 2diabetes is caused by a variety of pathogenic mechanisms, including anomalies that result in resistance to insulin action and autoimmune death of pancreatic cells with subsequent insulin shortage. The comparatively high occurrence of complications at initial presentation is attributed to the asymptomatic phase of hyperglycemia [5].

This study aims in assessing the prevalence and to study the clinical profile of macrovascular and microvascular complications in newly diagnosed T2DM patients. This will highlight the need for screening for complications at the initial presentation irrespective of the presence or absence of symptoms of the complications. Early detection and intervention will reduce morbidity and mortality due to complications[6].

METHODOLOGY

Source of Data

The present study was a single-center, cross-sectional study conducted on patients with newly detected T2DM in the department of General Medicine, Dr. B. R. Ambedkar Medical College, Kadugondanahalli, and Bangalore from November 2020 to May 2022(18 months)

Method of Collection of Data

Study Design- A Hospital based cross- sectional study.
Study Period- a study period from November 2020 to May 2022
Sample size: 180

Human Ethics

The study was approved by Ethical and Research Committee clearance from Dr. B. R. Ambedkar Medical College, Kadugondanahalli, Bangalore

Personal Information, Specimen Collection and Laboratory

Information on demographic including age, sex was collected after obtaining informed consent. Blood samples were collected by trained nurses. Venous blood samples were stored in a refrigerator at 4°C prior to analysis in the hospital laboratory. FBS, PPBS, HbA1c were measured using blood sample collected from each participant in a hospital laboratory.

Statical Analysis

The collected data were entered into Microsoft Excel Worksheet-2010 and data was taken into IBM SPSS Statistic for windows, version 24(IBM Corp., Armonk, N.Y., USA) software for calculation of frequency, percentage, mean, standard deviation, and Probability value. Qualitative data was represented in the form of frequency and percentage.

RESULTS

Table 1: The distribution of basic details of the study participants

Items	Sub Group	Frequency (%)
Age Group	30-45 years	38(25.3)
	46- 60 years	70(46.7)
	>60 years	42(28.0)

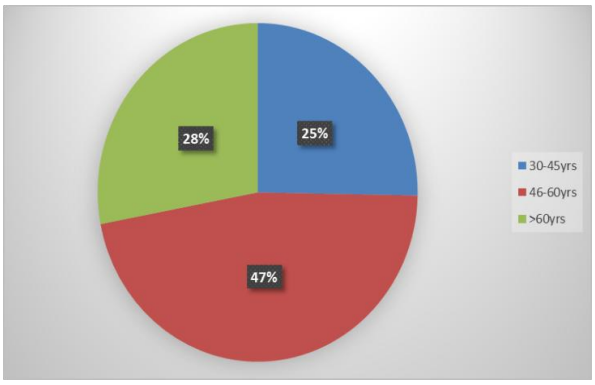


Figure 1

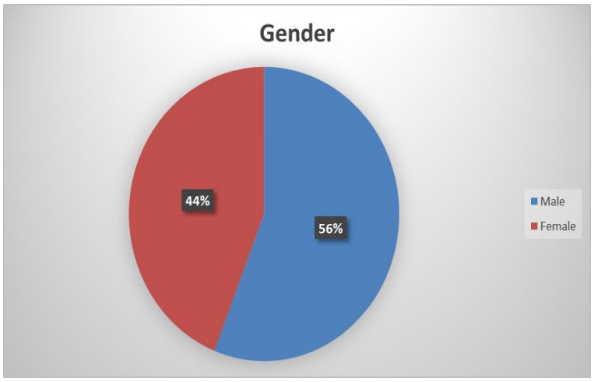


Figure 2

Table 2: Gender distribution of Diabetes

Gender	Male	84 (56.0)
	Female	66 (44.0)

In this present study, 56 % and 44% comprised males and females respectively and male: female ratio was 1.2:1 as presented in Figure (2).

Table No 3: Prevalence of Complications of Diabetic Mellitus

Diabetic Nephropathy	Present	26 (17.3)
	Absent	124 (82.7)

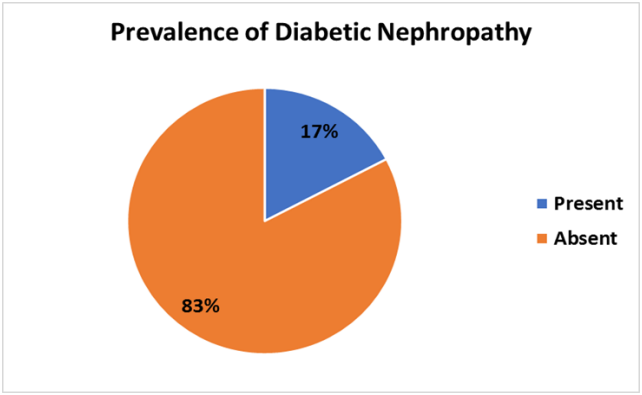


Table 4: Distribution according to diabetic retinopathy

Diabetic Retinopathy	Present	31 (20.7)
	Absent	119 (79.3)

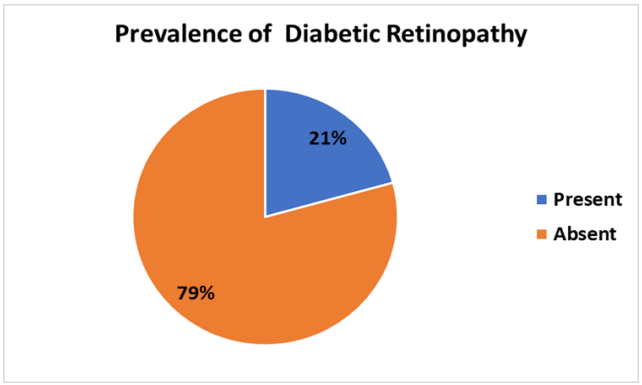


Table 5: Distribution according to diabetic neuropathy

Diabetic Neuropathy	Present	33 (22.0)
	Absent	117 (78.0)

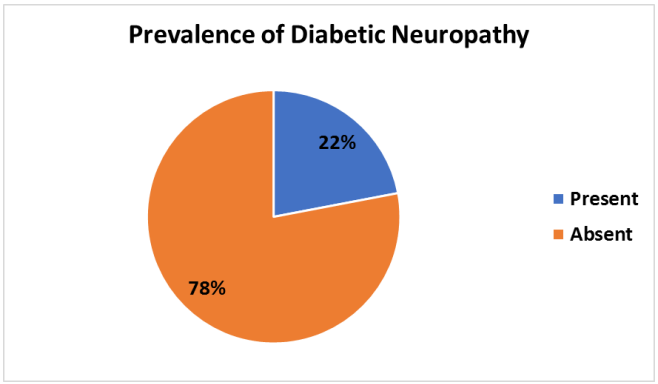
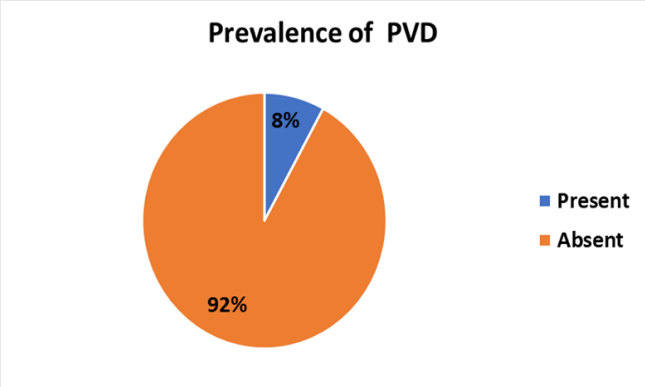


Table 6: Distribution according to PVD

PVD	Present	12 (8.0)
	Absent	138 (92.0)



DISCUSSION

This study was conducted on patients with newly diagnosed type 2 diabetes mellitus attending the inpatient and outpatient departments of Dr. B.R. Ambedkar Medical College and hospital over 18 months. Between the ages of 46 and 60, the highest incidence of diabetes was observed. The prevalence of macrovascular complications CAD, and PAD was 16.0%, and 8.0% respectively and microvascular complications of retinopathy, nephropathy, and neuropathy were 20.0%, 17.0% and, 22% respectively.

CONCLUSION

In our study, the prevalence of diabetes rises with age and the predominance of male participants. A large proportion of the population presented because of complications occurring due to diabetes- a silent killer[7].

At the time of diagnosis, screening for nephropathy, retinopathy, and CAD was statistically significant. There is a high prevalence which is statistically significant of retinopathy (20%) [8] and nephropathy (17%) [9] and neuropathy (22%) at diagnosis.

- HbA1c levels predict the prevalence of complications.
- There is a moderate correlation between HbA1c and blood glucose levels
- Screening with simple tests such as ECG, ECHO, fundoscopy, and urine microalbuminuria at diagnosis for all cases of diabetes is essential to identify the complications at an early reversible stage.

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