ORIGINAL RESEARCH

Prevalence of microvascular complications among newly diagnosed type 2 diabetes mellitus patients in southern India

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INTRODUCTION

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 [2]. Developing countries such as India have had the maximum increases in the last few years. The current prevalence of type 2 diabetes is 2.4% in the rural population and 11.6% in the urban population of India. It has been estimated that by the year 2025, India will have the largest number of diabetic subjects in theworld.

The vascular complications of DM are subdivided into microvascular [retinopathy, neuropathy, nephropathy] and macrovascular complications [coronary artery disease [CAD], peripheral arterial disease [PAD], cerebrovascular disease]. Untreated long standing hyperglycemia is responsible for a relatively high prevalence of microvascular complications in newly detected T2DM. The present study aims to study the prevalence and clinical profile of microvascular complications in newly diagnosed T2DM patients.

METHODOLOGY

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) .Before initiation of the study obtained Ethical and Research Committee clearance from Dr. B. R. Ambedkar Medical College, Kadugondanahalli, Bangalore (Annexure B). During the present study, a total of 180 Patients were reviewed in OPD, 150 patients were enrolled in the study according to the present study inclusion criteria and 37 patients were excluded according to the exclusion criteria. Patients were included in the study based on the inclusion and exclusion criteria mentioned below.

INCLUSION CRITERIA

- Age group >18 years
- Patients with a diagnosis of type 2 DM for less than 3 months based on ADA criteria as follows-(FBS -126mg/dl, PPBS-200mg/dl, HbA1c of 6.5% or higher

EXCLUSION CRITERIA

1. Patients on any drug therapy
2. Gestational diabetes
3. Type 1 DM
4. Steroid induced diabetes
5. Newly detected diabetes after COVID infection

A total of 150 patients with new onset T2DM, who are admitted or visited, were chosen for the study after satisfying the inclusion and exclusion criteria.
Statistical analysis was done using SPSS 24 version.

RESULTS

In this present study, 56 % and 44% comprised males and females respectively and male: female ratio was 1.2:1 as presented. Around 25.3% patients belonged to age group 30 to 45 years , 46.7% were in the age

group 46 to 60 years and 28% belonged to age group above 60 years.

Table No 1: Prevalence of Complications of Diabetic Mellitus

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

Figure 1: Prevalence of Diabetic Nephropathy

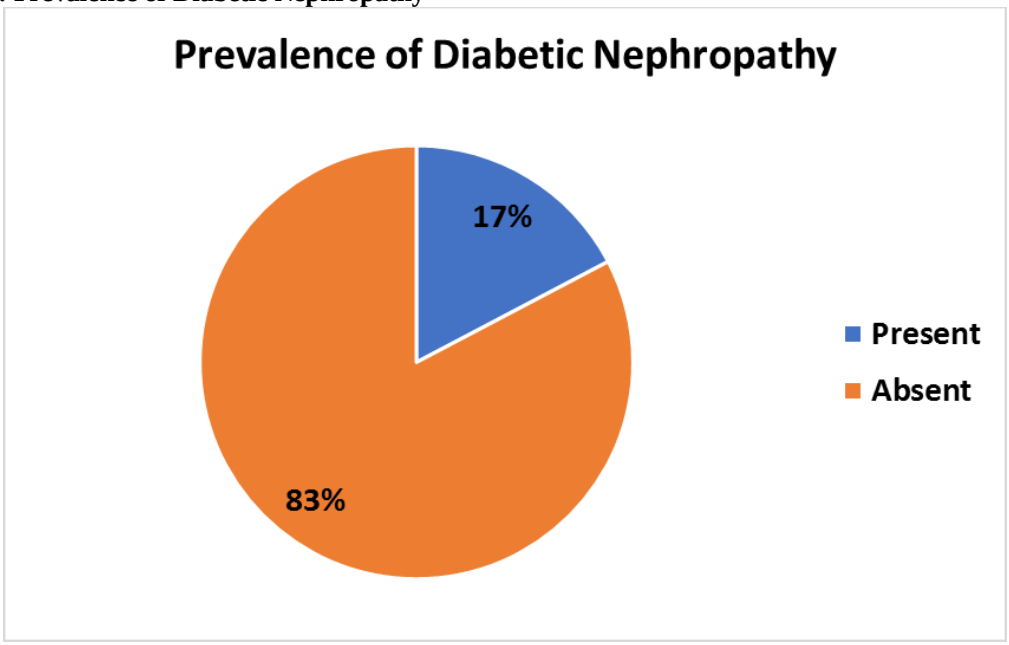

Table 2: Distribution according to diabetic retinopathy

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

Figure 2: Prevalence of Diabetic Retinopathy

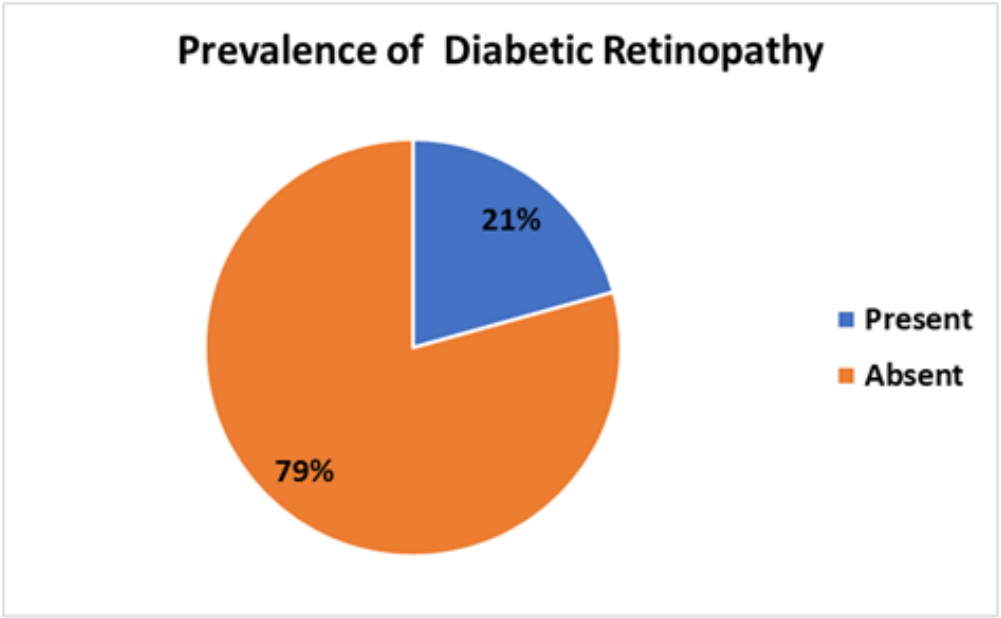

Table 3: Distribution according to Diabetic Neuropathy

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

Figure 3: Prevalence of Diabetic Neuropathy

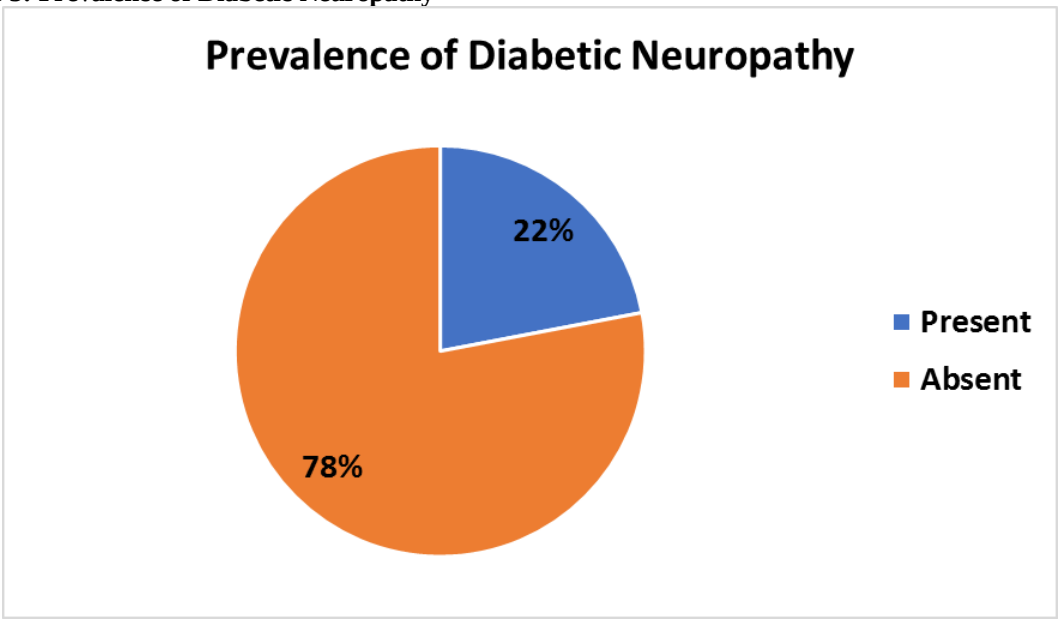

Table 4:

Monofilament	Normal	119 (79.3)
	Reduced	31 (20.7)
ECG Finding	Normal	125 (83.3)
	Abnormal	25 (16.7)

Figure 4: Prevalence of Abnormal Monofilament examination

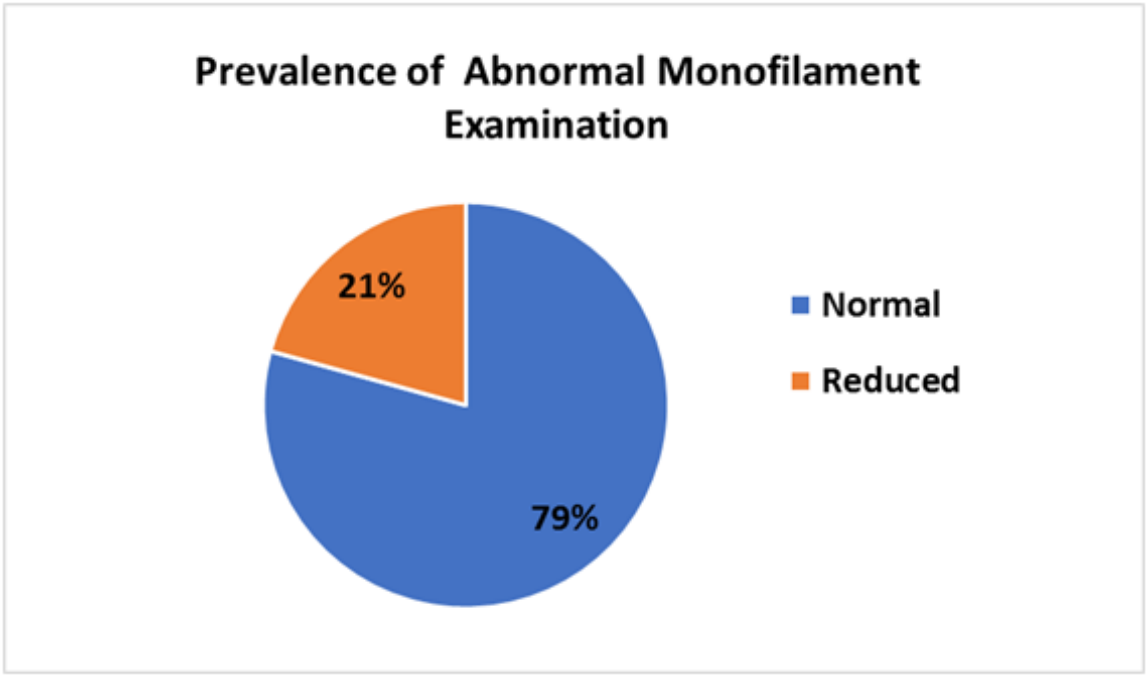

Table 5: Distribution according to PVD

PVD	Present	12 (8.0)
	Absent	138 (92.0)

Figure 5: Prevalence of Abnormal ECG findings

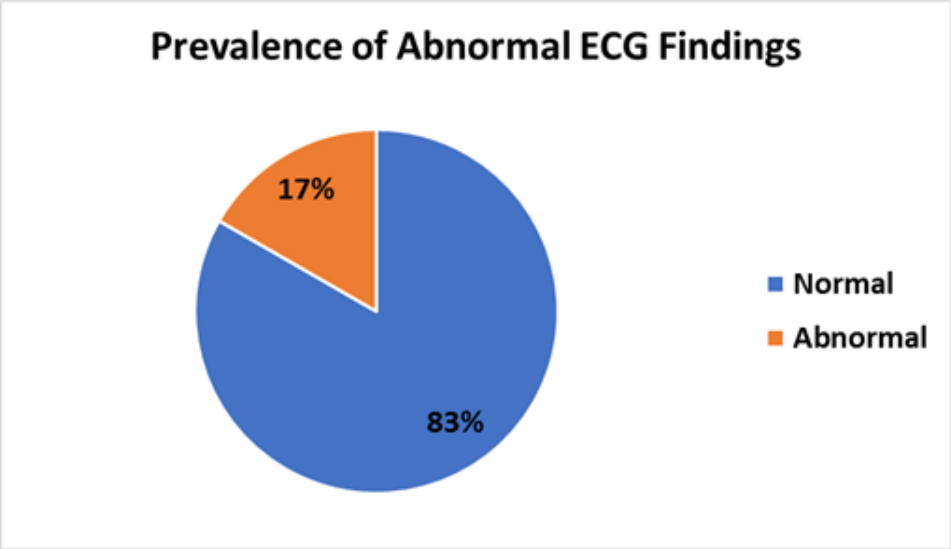

Table 6: Distribution according to coronary artery disease

CAD	Present	25 (16.7)
	Absent	125 (83.3)

The study showed the most common complication was neuropathy(22%), retinopathy (21%), and nephropathy (17%), Macrovascular complications coronary artery disease (17%), PVD (8%).

DISCUSSION

Family history of Diabetes in our study was 19% and in Nambuya AP et al study was 16%. This variation is probably due to high illiteracy and lack of awareness of diabetes among the people.

On routine checkups (32%) had symptoms of polydipsia, (38%) had polyuria and polyphagia(27%), tingling and numbness (49%) were incidentally detected when they attended the hospital for other illnesses, and the rest of them presented with multiple complications due to diabetes

Table 7: Comparison of prevalence of complications with other studies

Complications	Drivsholm et al[5]		V Mohan et al[4]	Hoorn Study[3]	Present study
	M	F			
Diabetic Nephropathy	48	37	-	26	17.3
Diabetic Neuropathy	19	19	-	48	22
Diabetic Retinopathy	6	6	34.2	12	20
CAD	28	27	7.9	-	16.7
PVD	16	17	2.3	-	8

In type 2 diabetes mellitus, at diagnosis, there is a high prevalence of complications. Our study showed similar results as Hoorn Study. Drivsholm study showed a higher prevalence of nephropathy in males.

CONCLUSION

Between the ages of 46 and 60, the highest incidence of diabetes was observed. Statistics also show that the chances of developing diabetes increase with age.

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.

REFERENCES

1. Forouhi NG, Wareham NJ. Epidemiology of diabetes. Medicine (Abingdon). 2014 Dec;42(12):698-702. doi: 10.1016/j.mpmed.2014.09.007. PMID: 25568613; PMCID: PMC4282306.
2. World Health Organisation "Global report ondiabetes"
3. Spijkerman AMW, Dekker JM, Nijpels G, Adriaanse MC, Kostense PJ, Ruwaard D etal.Microvascular complications at the time of diagnosis of type 2 diabetes are similar among diabetic patients detected by targeted screening and patients newly diagnosed in general practice. The Hoorn Screening Study. Diabetes Care.2003;26:2604-08.
4. Premlatha G, Rema M, Mohan V. Complications of diabetes mellitus at diagnosis in South Indian type 2 diabetic patients. Int J Dev Ctries. 1998;18:1-
5. Drivsholn T, Olivarius NDF, Nielsen ABS, Siersma V, Symptoms, signs andcomplications in newly diagnosed type 2 diabetic patients, and their relationship to glycaemia, blood pressure and weight, Denmark. 2004. Diabetolgia 2005; 48;210-214.