

## Prevalence of Diabetic Retinopathy in Newly Diagnosed Cases of Type 2 Diabetes Mellitus

Anupama Raju Taklikar<sup>1</sup>, Navya C<sup>2</sup>, Pooja Rathod<sup>3</sup>, Sheshank V Sajjanshetty<sup>4</sup>

### Abstract

*Purpose:* A severity of diabetic retinopathy is well to have a close association with duration of diabetes mellitus, appropriate examinations to eliminate the possibility of diabetic retinopathy is much needed. Therefore, this study is to estimate the prevalence of diabetic retinopathy in recently diagnosed Type 2 diabetes mellitus patients. *Methods:* This was a hospital based study conducted in the department of ophthalmology. A total of 200 eyes of 100 newly diagnosed diabetic patients underwent detailed ocular examination for diabetic retinopathy. Early Treatment for Diabetic Retinopathy Study (ETDRS) classification of diabetic retinopathy was followed to categorize the severity of retinopathy. *Results:* Overall prevalence of diabetic retinopathy was found to be 18%, which includes 77.7% of mild, 16.6% of moderate, 5.5% of severe and no advanced diabetic retinopathy cases. *Conclusion:* Our study support the strong co-relation of diabetic retinopathy with duration of diabetes mellitus, our study also created awareness among the patients about DR who were evaluated during the course of the study.

**Keywords:** Diabetic retinopathy; Early Treatment for Diabetic Retinopathy Study (ETDRS); Type 2 Diabetes Mellitus.

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### Introduction

Diabetes being a progressive disease with its micro vascular and neurological complications can be considered as a threat to public health. India is set to emerge as the diabetic capital of the world. According to the WHO, 31.7 million people were affected by diabetes mellitus (DM) in India in the year 2000. This figure is estimated to rise to 79.4 million by 2030, the largest number in any nation

in the world. Almost two-thirds of all Type 2 and almost all Type 1 diabetics are expected to develop diabetic retinopathy (DR) over a period of time.<sup>1</sup> Type 2 Diabetes Mellitus (T2DM), a global epidemic, is a consortium of diseases linked to chronic hyperglycemia due to insulin resistance. The incidence rates of T2DM have increased alarmingly with World Health Organization predicting the occurrence of more than 200 million Type 2 diabetes cases in the next decade.<sup>3</sup> As said by Sir Michael J Fox “medical science has proven time and again that when the resources are provided, great progress in the treatment, cure, and prevention of disease can occur.” Therefore quantifying the people affected by diabetic retinopathy; now, will help us in the proper utilization of resources for prevention in the near future.

### Materials and Methods

**Study design:** This was a hospital based cross-

**Author Affiliation:** <sup>1</sup>Professor and Head, <sup>2-4</sup>Postgraduate Student, Department of Ophthalmology, Navodaya medical College, Raichur, Karnataka 584103, India.

**Corresponding Author:** Anupama Raju Taklikar, Professor and Head, Department of Ophthalmology, Department of Ophthalmology, Navodaya medical College, Raichur, Karnataka 584103, India.

**E-mail:** [dranusree67@gmail.com](mailto:dranusree67@gmail.com)

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sectional study conducted in the department of Ophthalmology.

This research project was approved by the institutional ethics committee.

Personal information including the age and sex of the patient, duration of diabetes (recently diagnosed within 1 year), type of diabetic treatment (diet control only, oral medication or insulin injection), smoking status and presence of hypertension was collected.

**Inclusion criteria:** Patients with 18 years of age and above diagnosed with Type 2 DM, following the standard diagnostic criteria.

**Exclusion criteria:** Patients with mature cataracts and hazy media, those with hypertensive retinopathy, exposure to radiation and sickle cell disease were also excluded as they could mimic fundus features with diabetic retinopathy.

All the questions for eliciting history were administered to the patient in his/her own language. Best corrected Snellen's acuity was recorded and slit lamp examination was performed to document any abnormality in the anterior segment. Intraocular pressure was measured using an applanation tonometer before dilating the

pupils. There was, however, no contraindication for dilatation in any patient. Retinopathy was assessed after adequate mydriasis. Standard techniques and equipment were used for retinal evaluation by using a direct/indirect ophthalmoscope or a 90D lens on slit lamp and by fundus photography. A modified version of the Early Treatment Diabetic Retinopathy Study (ETDRS) grading system was used to grade retinopathy.<sup>4,5</sup> Fundus fluorescein angiography and OCT was done in indicated cases.

## Results

Out of 100 patients evaluated, 64 were males and 36 were females of which 12 males and 6 females were diagnosed as cases of diabetic retinopathy. As shown by Table 1; 18.75% of males and 16.66% of female patients who were diagnosed to have diabetic retinopathy were further graded as per ETDRS classification of diabetic retinopathy.

As shown in Table 2; 77.7% (14) of diabetic retinopathy patients showed mild grade of DR, 16.6% (3) showed moderate grade of DR, 5.5% (1) showed severe grade of DR and no very severe cases and no cases of maculopathy were noted during our study.

**Table 1:** Gender-wise classification of diabetic retinopathy

Total	100	C/O diabetic retinopathy	Percentage (%)
Males	64	12	18.75
Female	36	6	16.66

**Table 2:** Different grades of diabetic retinopathy

ETD	C/O diabetic retinopathy	Percentage (%)
Mild	14	77.7
Moderate	3	16.6
Severe	1	5.5
Very Severe	0	-

**Table 3:** Different age group patients affected from diabetic retinopathy

Age in years	BCVA	No. of patients	No. of patients with diabetic retinopathy
30-50	6/6-6/24	40	07
50-60	6/36-6/60	40	09
>60	<6/60	20	02

## Discussion

Reports from different parts of India have suggested a rising trend in the prevalence of diabetes.<sup>7</sup> Serial epidemiological studies conducted

in southern Indian city of Chennai showed a steady increase in prevalence of diabetes. Many studies have shown that poorly controlled, unbalanced diet and lack of regular exercise might contribute to this trend.<sup>1-5</sup> Diabetes being one of the leading

causes of blindness worldwide, early detection with regular examinations and management of the disease are better measures to reduce the blindness. Insufficient public awareness of diabetic retinopathy and lack of health checks might result in undiagnosed diabetes in the Indian population the percentage in 'newly diagnosed' patients were actually higher (6.89 percent) than other durations except over 10 years in a study conducted by optometrists. Significantly, 22.18% of patients detected with DR had a vision of 6/18 or better in the eye with worse vision in a study conducted by Salil S Gadgari et al.<sup>1</sup> 1.5% had retinopathy among 268 patients who were diabetic for less than 5 years in a study conducted by Karma Loday Bhutia et al.<sup>2</sup> Compared to other studies our shows higher incidence of diabetic retinopathy, i.e. 18% in newly diagnosed cases of diabetes mellitus.

The limitations of this study are that it is clinically based and the sample size is small. Although referral bias cannot be excluded, this is unlikely to affect our results significantly.

The strength of this study is that it is based on retinal photography and standard grading techniques and indeed one of the studies which include educating the public about the prevalence and prevention of diabetic retinopathy including its complications.

## Conclusion

Complications might be present before the diagnosis of diabetes. The alarmingly high prevalence of diabetic retinopathy and particularly sight-threatening retinopathy with a known duration or diabetes of up to one year suggests the importance of a regular eye examination for all diabetic patients as soon as they are diagnosed with diabetes. The

study also observed that the presence of DR, despite vision being near normal, strengthens a case for regular ocular examinations in diabetic patients. Our study also created awareness among the patients about DR who were evaluated during the course of the study. Prevention is better than cure our study highlights on regular eye checkups despite of normal vision.

**Support:** Nil

**Conflicts of interest:** Nil

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