

Original Research Article

## Prevalence of Diabetic Retinopathy and associated risk factors in Diabetics subjects visiting tertiary care centre

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**Abstract:** India is a diabetic capital of the world having largest numbers of diabetic patient across globe. Considering significant morbidity of DR and often neglected one, we have planned this study to detect the presence of diabetic retinopathy among persons with diabetes visiting the tertiary care centre for any indication. Standard techniques and equipment were used for clinical examination. Grading of the retinopathy and the presence of macular edema were noted. The prevalence of DR in the study population was estimated, and the Chi-square test was used to explore associations with gender, age duration of diabetes, insulin use, and other end-organ disease. Total 550 diabetic subjects were screened over one year period. Incidence of diabetic retinopathy was 20.8% among diabetics. Incidence was more in males, diabetes duration > 10 years, age > 50 years, increased HbA1c, those with history of stroke, coronary artery disease and nephropathy. Vision was not always impaired in our study even in the presence of clinically detectable DR; 22.18% with a visual acuity of 6/18 or better had DR. The study also demonstrated the presence of DR despite vision being near normal strengthens a case for regular comprehensive eye examinations for persons with diabetes. One of the most important aspects in the management of diabetic retinopathy is patient education. Inform patients that they play an integral role in their own eye care. Excellent glucose control is beneficial in any stage of diabetic retinopathy. It delays the onset and slows down the progression of the diabetic complications in the eye.**Keywords:** Diabetes, retinopathy, vision

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**INTRODUCTION:**

India is a diabetic capital of the world having largest numbers of diabetic patient across globe. 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 [1]. DM is a major medical problem throughout the world. DM causes an array of long-term systemic complications that have considerable impact on the patient as well as society, as the disease typically affects individuals in their most productive years [2]. An increasing prevalence of diabetes is occurring throughout the world [3]. In addition, this increase appears to be greater in developing countries. The etiology of this increase involves changes in diet, with

higher fat intake, sedentary lifestyle changes, and decreased physical activity [4, 5].

Patients with diabetes often develop ophthalmic complications, such as corneal abnormalities, glaucoma, iris neovascularization, cataracts, and neuropathies. The most common and potentially most blinding of these complications, however, is diabetic retinopathy, which is, in fact, the leading cause of new blindness in persons aged 25-74 years [6-8]. Almost two-third of all Type 2 and almost all Type 1 diabetics are expected to develop diabetic retinopathy (DR) over a period of time [9, 10]. Considering significant morbidity of DR and often neglected one, we have planned this study to detect the presence of DR among persons with diabetes visiting the tertiary care centre for any indication.

**SUBJECTS AND METHODS:**

Standard techniques and equipment were used for clinical examination; retinal evaluation was done using a direct/indirect ophthalmoscope or 90D lens on slit lamp or by fundus photography. Grading of the retinopathy and the presence of macular edema were noted. The prevalence of DR in the study population was estimated, and the Chi-square test was used to explore associations with gender, age duration of diabetes, insulin use, and other end-organ disease.

**RESULTS:**

Total 550 diabetic subjects were screened over one year period. Among these, 542 subjects had type 2 DM and 8 subjects had type 1 DM. Mean ( $\pm$  SD) age of patients was 48.9 $\pm$ 11.3 years among type 2 diabetics and 18.4 $\pm$ 8.4 years among type 1 diabetics. 56.2% subjects were male. Incidence of diabetic retinopathy was 20.8% among diabetics. All type 1 diabetic had retinopathy. Incidence was more in males, diabetes duration > 10 years, age > 50 years, increased HbA1c, those with history of stroke, coronary artery disease and nephropathy. Vision was not always impaired in our study even in the presence of clinically detectable DR; 22.18% with a visual acuity of 6/18 or better had DR.

**Table.1 Patient's Characteristics**

	Type 1 DM	Type 2 DM
Total Number of Subjects	8	542
Age (Years)	18.4 $\pm$ 8.4	48.9 $\pm$ 11.3
Gender (Female %)	50	48.9
BMI (Kg/M <sup>2</sup> )	20.6 $\pm$ 3.6	24.1 $\pm$ 3.1
Systolic BP (mmHg)	131.5 $\pm$ 21.4	128.3 $\pm$ 18.4
Diastolic BP (mmHg)	83.9 $\pm$ 12.9	80.1 $\pm$ 11

**Table.2 Incidence of DR in relation to duration of DM**

Duration of DM	Incidence of DR
First time detected	8.28%
<10 years duration	18.6%
>10 years duration	24.6%

**Table.3 Incidence of DR in relation to age of subjects**

Age (years)	Incidence
0-20	100%
21-30	4.3%
31-40	8.6%
41-50	12.8%
51-60	24.7%
>60	25.8%

**DISCUSSION:**

Diabetes is responsible for approximately 8000 eyes becoming blinded each year, meaning that diabetes is responsible for 12% of blindness [11]. In patients with type 1 diabetes, no clinically significant retinopathy can be seen in the first 5 years after the initial diagnosis of diabetes is made. After 10-15 years, 25-50% of patients show some signs of retinopathy. This prevalence increases to 75-95% after 15 years and approaches 100% after 30 years of diabetes. Proliferative diabetic retinopathy (PDR) is rare within the first decade of type I diabetes diagnosis but increases to 14-17% by 15 years, rising steadily thereafter.

In patients with type II diabetes, the incidence of diabetic retinopathy increases with the disease duration. Of patients with type 2 diabetes, 23% have nonproliferative diabetic retinopathy (NPDR) after 11-13 years, 41% have NPDR after 14-16 years, and 60% have NPDR after 16 years. In the initial stages of diabetic retinopathy, patients are generally asymptomatic; in the more advanced stages of the disease, however, patients may experience symptoms that include floaters, blurred vision, distortion, and progressive visual acuity loss. In India, the previous studies to calculate prevalence were by Raman *et al.*; [12] (18.1%), Rema *et al.*; [13] (17.6%), Namperumalsamy *et al.*; [14] (10.6%), Narendran *et al.*; [15] (26.2%) and Dandona *et al.*; [16] (22.58%).

An important message to emerge from this study was that vision is not always impaired even in the presence of clinically detectable DR; 22.18% with a visual acuity of 6/18 or better had DR, reinforcing the relevance of annual retinal or comprehensive eye examinations for all persons with diabetes.

#### CONCLUSION

The study also demonstrated the presence of DR despite vision being near normal strengthens a case for regular comprehensive eye examinations for persons with diabetes. One of the most important aspects in the management of diabetic retinopathy is patient education. Inform patients that they play an integral role in their own eye care. Excellent glucose control is beneficial in any stage of diabetic retinopathy. It delays the onset and slows down the progression of the diabetic complications in the eye.

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