

## Prevalence of Diabetic Retinopathy and Its Association with Various Risk Factors in Patients with Type 2 Diabetes Mellitus at Rural Area of Gujarat

Jigish Desai<sup>1</sup>, Sanjay Upadhyay<sup>2</sup>

### Abstract

*Aim:* Present study was done with an aim to approximate the prevalence of Diabetic Retinopathy (DR) and to discover its relations with various variables amid type 2 Diabetes Mellitus (DM) patients. *Material and Methods:* present cross-sectional research was performed in the Department of Ophthalmology for the period of one year. Overall 800 patients with type 2 DM present at outpatient Department of Ophthalmology were incorporated in the research. Visual acuity was assessed by Snellen chart. Qualitative analysis was compared with Chi square test and quantitative analysis was compared with student 't' test.  $p < 0.05$  was considered statistically significant. *Results:* Overall 800 patients with DM were included in the study, out of this 18.1% had DR, in which males were more exaggerated (54.4%) than females (45.8%). Among 145 patients with DR, 121 had NPDR, showed 50.3% mild, 36.7% moderate and 4.9% severe NPDR, while 8.1% patients had PDR. Thirty three per cent were established to have DR over 80 years of age, trailed by 22% in the age group of 70-79 years. *Conclusion:* Present study anticipated the prevalence of DR in a rural population with type 2 diabetic patients (18.1%).

**Keywords:** Cross-Sectional; Diabetes Mellitus; Prevalence; Retinopathy.

### Introduction

Type 2 DM, a worldwide epidemic, is a group of diseases associated to chronic hyperglycemia due to insulin resistance [1]. The frequency of T2DM has enlarged frighteningly with WHO forecasting the incidence of more than 200 million type 2 diabetes patients in the subsequent decade [2]. India has 31.7 million diabetic patients and the figure is predictable to enlarge up to 79.4 million by 2030. Diabetic retinopathy (DR) is a sight threatening, chronic microvascular that ultimately afflicts most patients with DM despite the accessibility of various modalities of treatment. Upto two percent of type-2 DM have retinopathy at given point in time of first diagnosis and more than 60% of them have several

scale of retinopathy by twenty years of diagnosis. The factors that influence the occurrence of DR including duration of diabetes, Types of treatment, Hyperglycemia, Hypertension Proteinuria, Serum Cholesterol and triglycerides, and cardiovascular disorders [3-8].

The probability of increasing DR enhances with age and males are more susceptible for it. The growth of DR lies on a multiplicity of factors, such as the period of diabetes, effectual glucose control, blood pressure and blood lipid levels [9]. Retinopathy frequently depart unobserved until vision loss take place, therefore premature recognition, appropriate management and suitable concern can defend or postponement the vision loss [10]. This highlights the necessitate for epidemiologic researches on diabetes induced complications with the diabetic patients. In spite of the consequences of difficulty and its increasing frequency in India, there are small number of exact approximation of the frequency of DR in India. Present study was done with an aim to estimate the prevalence of DR and to find its associations with age, gender and the effect of duration of diabetes on the severity of DR among type 2 DM patients.

**Author Affiliation:** <sup>1</sup>Assistant Professor, Department of Ophthalmology, Zydus Medical College, Dahod, Gujarat 389151, India. <sup>2</sup>Associate Professor, Department of Ophthalmology, Gujarat Adani Institute of Medical Science, Bhuj, Gujarat 370001, India.

**Corresponding Author:** Sanjay Upadhyay, Associate Professor, Department of Ophthalmology, Gujarat Adani Institute of Medical Science, Bhuj, Gujarat 370001, India.

**E-mail:** [researchguide86@gmail.com](mailto:researchguide86@gmail.com)

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## Material and Methods

The present study was done for the period of 1 year, in the department of Ophthalmology in the medical institute. Total of 800 patients were diagnosed with diabetic mellitus type 2 and all the included patients did attend the department of ophthalmology. Complete history with blood pressure measurement was acquired from every patient earlier to the research.

*Inclusion criteria:* Patients with age of 19 years and over and diagnosed with Type 2 DM

*Procedure for assessing DR:* Snellen chart was used for the evaluation of visual activity. The examiner completed the binocular indirect ophthalmoscopy and 90D assessment to identify the diabetic retinopathy in the diabetic patients. The classification followed for diabetic retinopathy was Proliferative and non proliferative diabetic retinopathy [11,12]. On the presence of diabetic macular edema, there was classification of the patients into mild, moderate and severe form.

*Statistical analysis:* Statistical analysis was done using Statistical Package for Social Sciences (SPSS/ version 15) software. Data was expressed as mean  $\pm$  SD or absolute values. Qualitative analysis was compared with Chi square test and quantitative analysis was compared with student 't' test.  $p < 0.05$  was considered statistically significant.

## Results

Table 1 represents the on the whole prevalence of DR. In our study, out of 800 patients with DM, 18.1% had DR, among which, more males were affected (54.4%) than females (45.8%). It was observed that out of 145 patients with DR, 121 had NPDR, which on further categorization, showed 50.3% with mild, 36.7% with moderate and 4.9% with severe NPDR, whereas 8.1% patients had PDR. The duration of diabetes was uppermost in 53 patients, of which, 31% were pretentious with retinopathy. Alternatively, 18% developed retinopathy encompass diabetes for 5-9 years. The probability of developing retinopathy increases with age. Thirty three per cent patients were found to be having DR above 80 years of age, followed by 22% in the age group of 70-79 years, 23% were between 60-69 years of age and 17% between the age group of 50-59 years. Only 4.1% of patients had retina examined at the primary turnout and not any had yearly retinal examination.

**Table 1:** Distribution of patients with diabetes mellitus and diabetic retinopathy (DR)

	Total	Percentage %	With DR	Percentage %
Male	425	53.1	66	45.5
Female	375	46.8	79	54.4
Total	800	100	145	18.1

## Discussion

The reason for irreparable vision loss in the diabetic working adults is the presence of diabetic retinopathy. Diabetic retinopathy is the major microvascular problem found in diabetic patients. The chief risk factors for increase in diabetic retinopathy are incidence of hypertension, duration of diabetes and presence of severe hyperglycemia [13,14]. In the present study the prevalence of diabetic retinopathy was found to be 18.1%, it was in accordance with the previous study done by Rema et al. (17.6%) and Raman et al (18.1%) [15,16]. There was less prevalence of PDR as compared to NPDR in our study. These findings were found to be similar as in the different study in India.

In gender Males were further pretentious than females as gender partiality issues and social obstructions to management changes admittance to screening and management are recognized to exist. As the duration of type 2 diabetes mellitus increases, there was found to be increase in number of diabetic retinopathy patients. In the patients less the 5 years of duration of diabetes mellitus, the prevalence of diabetes retinopathy was found to be 1.5% and it was 31% in the patients suffering from diabetes mellitus for more than 20 years. The present observation strengthened the fact that the duration of diabetes mellitus is just the forecaster to assess the severity of Diabetic Retinopathy [17,18].

The patients with age of more than 80 years had more prevalence of diabetic retinopathy as compared to the patients who were younger age in range of 30 - 39 years. From the present research we can reveal that maximum numbers of patients were of mild NPDR and next numbers were moderate and fewest numbers were of severe forms. From the present research it was found that mean age of the prevalence of Diabetic Retinopathy in the 34.6% were found to be 58 years [19].

## Conclusion

The prevalence of diabetic retinopathy in the hospital based type 2 diabetic population in the

rural areas were found to be 18.1% in the present study. In the present study diabetic retinopathy was observed in the diabetes patient with normal vision. This emphasizes more on the regular ocular examination of the diabetic patients. Present was also helpful in creating the awareness among the diabetic patients in relation to diabetic retinopathy.

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