

ORIGINAL RESEARCH

Prevalence Of Diabetic Retinopathy In Non- Insulin Dependent Diabetes Mellitus Patients

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ABSTRACT

Background: To assess prevalence of diabetic retinopathy in non- insulin dependent diabetes mellitus (NIDDM) patients.

Materials and Methods: One hundred thirty non- insulin dependent diabetes mellitus (NIDDM) patients of both genders were enrolled and the prevalence of DR was recorded. Retinopathy was classified as mild non-proliferative retinopathy, moderate non-proliferative retinopathy and severe retinopathy.

Results: Out of 130 patients, males were 70 (53.8%) and females were 60 (46.2%). Out of 70 males, 42 (60%) males and out of 60 females, 28 (46.6%) females had diabetic retinopathy. The difference was significant ($P < 0.05$). Out of 70 diabetic retinopathy patients, mild non-proliferative retinopathy was seen in 14 males and 8 females, moderate non-proliferative retinopathy was seen in 18 males and 12 females, severe non-proliferative retinopathy was seen in 10 males and 8 females. The difference was significant ($P < 0.05$). Duration of diabetes was <5 years was seen in 14, 5-10 years in 26 and >10 years in 30. In 45 patients with DR, family history was positive. DR was present in patients with BMI <24.9 in 13, 25-29.9 in 15 and >30 in 42. Hypertension was seen in 48. The difference was significant ($P < 0.05$).

Conclusion: Results showed that maximum cases of diabetic retinopathy were seen in patients with BMI >30 , hypertension and with 5-10 years of diabetes and with positive family history of diabetes.

Keywords: Diabetes, Diabetic retinopathy, hypertension.

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INTRODUCTION

India is home to approximately 77 million people with diabetes, and these numbers are predicted to increase to 125 million by 2045.¹ Approximately one in five adults are now estimated to have diabetes in India. Most are diagnosed with type 2 diabetes during their working age, with some diagnosed only after developing complications. The number of diabetic patients is expected to rise in the in the coming years due to rapid socio-demographic and economic transitions.²

Diabetic retinopathy is a microvascular complication of diabetes that can progress without symptoms to vision-threatening diabetic retinopathy (VTDR). If left untreated, VTDR can result in irreversible visual loss.³ It is being suggested that diabetic retinopathy (DR) is

becoming an important cause of visual impairment in India. India has a large burden of visual impairment, including blindness.⁴ It is estimated that of the population of about a billion 1–1.5% are blind. Therefore, periodic retinal screening is recommended for all people with diabetes to enable prompt identification and treatment of VTDR. It is a leading cause of blindness often affecting working-aged adults.⁵ It is characterized by signs of retinal ischemia (microaneurysms, hemorrhages, cottonwool spots, intraretinal microvascular abnormalities, venous caliber abnormalities, and neovascularization) and/or signs of increased retinal vascular permeability.⁶ This study was conducted to assess prevalence of diabetic retinopathy in non-insulin dependent diabetes mellitus (NIDDM) patients.

MATERIALS & METHODS

This study consisted of one hundred thirty non- insulin dependent diabetes mellitus (NIDDM) patients of both genders. All agreed to participate in the study with their written consent. Ethical approval for the study was also obtained.

Demographic data such as name, age, gender etc. was recorded. The diagnosis of DR was made with 90 diopter of Volk lens and slit lamp biomicroscope. Parameters such as duration of diabetes, family history, hypertension, BMI etc. were recorded. Retinopathy was classified as mild non-proliferative retinopathy, moderate non-proliferative retinopathy and severe retinopathy. The results were compiled and subjected to statistical analysis using chi- square test. SPSS version 16.0 was used for analysis. P value < 0.05 was set significant.

RESULTS

Table I Distribution of patients

Total- 130		
Gender	Male	Female
Number (%)	70 (53.8%)	60 (46.2%)

Out of 130 patients, males were 70 (53.8%) and females were 60 (46.2%) (Table I).

Table II Prevalence of diabetic retinopathy

Gender	DR	P value
Male (70)	42 (60%)	0.01
Female (60)	28 (46.6%)	

Out of 70 males, 42 (60%) males and out of 60 females, 28 (46.6%) females had diabetic retinopathy. The difference was significant (P< 0.05) (Table II).

Table III Type of diabetic retinopathy

Diabetic retinopathy	Male	Female	P value
Mild non-proliferative retinopathy	14	8	0.05
Moderate non-proliferative retinopathy	18	12	
Severe non-proliferative retinopathy	10	8	
Total	42	28	

Out of 70 diabetic retinopathy patients, mild non-proliferative retinopathy was seen in 14 males and 8 females, moderate non-proliferative retinopathy was seen in 18 males and 12 females, severe non-proliferative retinopathy was seen in 10 males and 8 females. The difference was significant ($P < 0.05$) (Table III).

Table IV Assessment of parameters

Parameters	Variables	Number	P value
Duration of diabetes	<5 years	14	0.05
	5-10 years	26	
	>10 years	30	
Family history	Yes	45	0.01
	No	25	
BMI	<24.9	13	0.02
	25-29.9	15	
	>30	42	
Hypertension	Yes	48	0.01
	No	22	

Duration of diabetes was <5 years was seen in 14, 5-10 years in 26 and >10 years in 30. In 45 patients with DR, family history was positive. DR was present in patients with BMI <24.9 in 13, 25-29.9 in 15 and >30 in 42. Hypertension was seen in 48. The difference was significant ($P < 0.05$) (Table IV).

DISCUSSION

Persistently high glucose level in the blood causes generalized vascular damage resulting in various macro and micro vascular complications.⁷ Diabetic Retinopathy (DR) is a long-term microvascular complication of diabetes on the eye.⁸ Without early detection and treatment, DR progress from its milder abnormalities to its advanced stages.⁹ Diabetic Retinopathy is complicated by macular edema, tractional retinal detachment and neovascular glaucoma which ultimately lead to a significant visual impairment.^{10,11} This study was conducted to assess prevalence of diabetic retinopathy in non-insulin dependent diabetes mellitus (NIDDM) patients.

Our results showed that out of 130 patients, males were 70 (53.8%) and females were 60 (46.2%). Raman et al¹² found that out of 42146 participants screened, 7910 (18.8%) had diabetes. Of these, 6133 (77.5%; 4350 with known diabetes and 1783 with undiagnosed diabetes) had gradable retinal images. 3411 (56%) participants were women and 2722 (44%) were men, and the median age was 56 years (IQR 49-65). The estimated national prevalence was 12.5% for diabetic retinopathy and 4.0% for VTDR, with no significant differences between urban and rural residence for diabetic retinopathy. Compared with individuals with undiagnosed diabetes, they observed a higher prevalence of diabetic retinopathy (15.5% vs 8.0% and VTDR (5.3% vs 2.4%) in individuals with known diabetes. The prevalence was significantly lower in low ETL-SDI states compared with high and middle ETL-SDI states for diabetic retinopathy.

Out of 70 males, 42 (60%) males and out of 60 females, 28 (46.6%) females had diabetic retinopathy. Alemu Mersha et al¹³ found that a total of 331 diabetic patients were studied. The median duration of diabetes was 5 years. The prevalence of diabetic retinopathy was 34.1%. Low family monthly income, longer duration of diabetes, poor glycemic control and being on insulin treatment alone were independently associated with diabetic retinopathy.

We observed that out of 70 diabetic retinopathy patients, mild non-proliferative retinopathy was seen in 14 males and 8 females, moderate non-proliferative retinopathy was seen in 18 males and 12 females, severe non-proliferative retinopathy was seen in 10 males and 8 females. Dandona et al¹⁴ reported that the duration since diagnosis of diabetes was 15 years in 6.7%. Diabetic retinopathy was present in 28 subjects, 1.78% of those >30 years old. Most of the diabetic retinopathy was of the mild (50%) or moderate (39.3%) non-proliferative type; one subject (3.6%) had proliferative retinopathy. Multiple logistic regression revealed that the odds of having diabetic retinopathy were significantly higher in those >50 years than in those 30–49 years old. Three subjects had visual impairment between 6/12 and 6/38 in either eye due to diabetic retinopathy, 0.19% of those >30 years old.

Duration of diabetes was <5 years was seen in 14, 5-10 years in 26 and >10 years in 30. In 45 patients with DR, family history was positive. DR was present in patients with BMI <24.9 in 13, 25-29.9 in 15 and >30 in 42. Hypertension was seen in 48. Namperumalsamy et al¹⁵ assessed the prevalence of diabetic retinopathy and the possible risk factors associated with DR. Among the 25 969 persons screened for diabetes mellitus (DM), 2802 (10.8%) were found to have DM. DR was detected in 298 (1.2%) of 25 969 subjects. The age-gender-adjusted prevalence of DR is 0.05% for rural and 1.03% for urban areas. The overall age-gender-cluster adjusted prevalence of DR was 0.74%. Diabetic retinopathy was present in 12.2% of the DM population.

CONCLUSION

Results showed that maximum cases of diabetic retinopathy were seen in patients with BMI >30, hypertension and with 5-10 years of diabetes and with positive family history of diabetes.

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