

The prevalence of Diabetic Retinopathy in a Tertiary Centre in Western Region, Nepal

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ABSTRACT

Background: Diabetes mellitus is a multisystem disease. It has multiple complications like retinopathy, neuropathy, nephropathy, diabetes ketoacidosis, and stroke. Diabetes retinopathy (DR) is one of the blinding complications of diabetes. This study was done to find out the prevalence of diabetic retinopathy among diabetic patients attending in the outpatient department (OPD) of internal medicine, Gandaki Medical College and Teaching Hospital (GMCTHRC), Pokhara, Nepal. **Materials and Methods:** A hospital based cross-sectional study was performed among the 200 diabetes mellitus patients attending in the medicine OPD from 15th December 2017 to 15th December 2018. They were referred to eye OPD of GMC. The detailed eye examination including fundus evaluation under mydriasis was done to all the patients. The diagnosis of DR was graded using the Early Treatment Diabetic Retinopathy Study classification (ETDRS). Patients having hypertension and other retinal diseases were excluded from the study. Data analysis was done using statistical package for social sciences (SPSS) version 11.20. **Results:** The mean age of the patients was 63.02 ± 11.8 years. In our study 60.5% of the patients were male and 39.5% were female. Diabetes retinopathy was seen in 29.5% patients, of which non proliferative diabetes retinopathy (NPDR) was present in 19.5%, proliferative diabetes retinopathy (PDR) in 9.5% and 0.5% had diabetes maculopathy. **Conclusion:** The prevalence of DR is quite significant in the people with diabetes. Early diagnosis and management of retinopathy will help to avoid blindness due to the diabetic retinopathy.

Key words: Awareness, Diabetic Retinopathy, Fundus, Prevalence, Tertiary Centre.

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INTRODUCTION

Diabetes Mellitus occurs throughout the world but more common in the more developed countries. In 2019, approximately 463 million adults (20-79 years) were living with diabetes; by 2045 this will rise to 700 million.¹ Average medical expenditure among people with diabetes are about 2.3 times higher.² Increase in the overall diabetes mellitus prevalence rates largely reflect as incidence in the risk factors.

Diabetes Mellitus is a multisystem disease. Therefore it has multiple complications like retinopathy, neuropathy, nephropathy, diabetes ketoacidosis, and stroke. Diabetes retinopathy is a common complication and responsible for visual impairment and blindness worldwide.³⁻⁵ According to WHO, it is estimated that DR accounts for 4.8% of the total number of cases of blindness worldwide.⁶

Diabetic retinopathy occurs due to damage of the microvasculature of the retina as a result of the prolonged exposure to the metabolic changes induced by diabetes. There are different classifications of diabetes retinopathy, but the most widely accepted is ETDRS classification. According to

this classification, there are three types of DR - NPDR, PDR and diabetes maculopathy. NPDR is associated with microaneurysms, superficial and deep retinal hemorrhages, hard exudates, and macular edema. PDR involves the growth of new blood vessels in the retina that may cause scarification of the retina and vitreous. Maculopathy involves oedema and exudates in macula. Different methods of diagnosing DR clinically include ophthalmoscopy, optical coherence tomography, retinal photography, and fluorescein angiography.^{7,8}

Different treatment modalities for DR are- laser, intravitreal avastin, steroids, and vitrectomy. PDR if timely treated can decrease the loss of vision up to 90%.⁹ Early diagnosis and prompt treatment helps to minimize diabetes-related visual impairment. Patients with diabetes require regular follow-up with physicians to optimize their glycemic, blood pressure and lipid control to prevent development and progression of DR and other diabetes-related complications.

Diabetes and DR is increasing day by day. Nepal is a developing country where knowledge and awareness of diabetes is very poor and not adequate studies have been done regarding its state. Gandaki Medical College (GMC) being a pioneer tertiary centre in Western Nepal, we performed this study to find out the prevalence of diabetic retinopathy.

METHODS

A hospital based cross sectional study was done from 15th December 2017 to 15th December 2018. A total of 200 patients attending the OPD of medicine of GMC diagnosed as diabetes mellitus were included in the study. They were then referred to the department of ophthalmology. Diagnosis of diabetes was done on the basis of either on use of hypoglycemic agents or according to the American Diabetic Association (ADA) which defines diabetes as having fasting blood sugar level of 126 mg/dl or higher recording. All diabetic patients having fasting blood sugar level of 126mg/dl or higher were included in our study. Ocular evaluation was conducted by a team of ophthalmologists and ophthalmic assistants. Visual acuity was taken by Snellen chart and refraction was done when needed. The anterior segment examination was done using slit lamp. Retina was examined after pupil dilatation with tropicamide eye drop installed three times at interval of ten minutes. Fundus was evaluated with 90 Dioptre and 20 Dioptre aspheric lens. The stages of DR were classified according to the ETDRS classification. All the data were entered and analyzed by SPSS version 11.20

RESULTS

A total of 200 patients were included in our study. In our

study, 60.5% (121) patients were male while 39.5% (79) were female. The mean age of the patients was 63.02±11.8 years. Details of the different age distribution of the patients are shown in table 1.

Table 1: Age distribution of the patients

Age interval in years	No. of patients (%)
40-49	31 (15.5)
50-59	40 (20)
60-69	70 (35)
70-79	36 (18)
80-89	20 (10)
>90	3 (1.5)
Total	200 (100)

Regarding duration of diabetes, 80.5% (161) had diabetes for less than 10 years, 12.5% (25) had diabetes for 11 to 20 years and 07% (14) had diabetes for 21 to 30 years. Details are shown in table 2.

Table 2: Duration of diabetes and retinopathy

Duration (Years)	No of cases (%)
<10 years	161 (80.5)
11-20 years	25 (12.5)
21-30 years	14 (7)
Total	200 (100)

In our study, diabetes retinopathy was seen in 29.5% (59) patients of which NPDR was seen in 19.5% (39), PDR in 9.5% (19) and maculopathy in 0.5% (1). Details are shown in table 3.

Table 3: Types of diabetes retinopathy

Condition	No. of patients (%)
No DR	141 (70.5)
NPDR	39 (19.5)
PDR	19 (9.5)
Maculopathy	1 (0.5)
Total	200 (100)

DISUSSION

Diabetic retinopathy is a medical condition which damages the retina of the eyes due to diabetes mellitus. It is a leading cause of blindness in the developed countries.^{10,11}

In our study, 60.5% (121) patients were male while 39.5% (79) were female. This is similar to other studies elsewhere.^{3,12-14} In our study, majority of the patients were in sixth decade while other studies showed more patients in fifth decade of life.^{13,14}

In our study, 80.5% (161) of the patients had diabetes for less than 10 years which is similar to study done by Shrestha R¹⁴ in Nepal, while other studies showed diabetes for more than 10 years.^{13,15}

We found 29% of the patients with DR, which was similar to study done by R Maskey et al.¹⁶ which showed DR in 27.7%. Meanwhile, a study done by Paudyal G et al.¹² showed diabetes retinopathy in 19.4%. Varying prevalence has been seen in different studies in Nepal. High prevalence, upto 78% was seen in a study by R Thapa et al.¹³, 47.3% in a study by Rizyal¹⁷ while a study done by Shrestha R¹⁴ showed prevalence of 20.3%. Studies done abroad also showed varying prevalence of DR, ranging from 15.4% to 33.9%.¹⁸⁻²⁰

In our study, NPDR was seen in 19.5%, PDR in 9.5% and maculopathy in 0.5%. Other studies done in Nepal also showed varying prevalence of NPDR ranging from 13.28% to 14.7%, PDR ranging from 7.3% to 6.9% and maculopathy in 4.6%.^{12, 14}

The higher prevalence of DR in our study may be due to late presentation of the diabetic patients to the hospital and lack of awareness of DR. The difference in the prevalence of DR and different stages of retinopathy in different studies from Nepal and from other parts of the world could have resulted due to the variation in diabetic patients attending these institutes. The prevalence of retinopathy could have been higher in the studies which included participants from the area with poor health facilities or the institutes where referral is more from primary and secondary institutes such as in our study.

CONCLUSION

The prevalence of DR is quite significant in the people with diabetes. Regular eye examination and follow up regularly with proper management will help to reduce the blindness due to retinopathy.

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