

Awareness and prevalence of diabetic retinopathy among diabetic patients attending Dailekh District Hospital, Karnali Province, Nepal

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ABSTRACT

Introduction: Diabetic retinopathy is the leading cause of blindness worldwide in the age group 20-64 years. Awareness plays crucial role in management and prevention of this serious complication. There is a need of assessment of the awareness level and prevalence of diabetic retinopathy among diabetic patients in Nepal, especially in rural community. This study was intended with an objective to find out the awareness status and prevalence of diabetes retinopathy.

Method: A cross-sectional study was carried among the patients visiting a district hospital. The district was chosen by purposeful sampling. A total of 236 required sample size was met by convenience sampling technique and asked to fill out the questionnaire prepared in Nepali to assess awareness of diabetic retinopathy. Detailed ophthalmologic consultations of the patients were done.

Result: Most of the patients' knowledge about DR inferred from treating physicians and other means of awareness from media and family members. About twenty-four percent of respondents had a good awareness of DR. Awareness was better in males which was statistically significant at p-value of <0.013. All the respondents pointed to lack of visual symptoms as the biggest factor for not getting an eye examination. Twenty-seven percent of respondents who returned with ophthalmic consultation had some form of DR.

Conclusion: Overall awareness of DR was poor in this study. No one had met diabetic educators at any point of treatment which should be emphasized for the management of diabetes mellitus. Also, the role of media is equally important to spread awareness of DR.

Keywords: Diabetes Mellitus (DM), Diabetic retinopathy (DR)

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INTRODUCTION

Diabetic retinopathy is one of the leading causes of blindness in Nepal and the leading cause of blindness for people aged 20-64 years worldwide.^{1,2} It is an ocular manifestation, which affects up to 80% of all patients who has DM for more than 20 years.³ However, research indicates that at least 90% of these new cases could be reduced if there were proper and vigilant treatment and monitoring of eyes.⁴ Uncontrolled blood glucose level, smoking, high blood pressure, impaired serum lipids are modifiable risk factors and age, ethnicity, genetic predisposition and duration of diabetes are non-modifiable risk factors.⁵ Since there are no early warning symptoms of DR, awareness of such potentially blinding complication helps detection of DR in early stage.

There are very few studies in Nepal about awareness diabetic retinopathy. In an urban study, Thapa R, et al., concluded that there is lack of awareness of DR and high proportion of cases are already at sight threatening stage of retinopathy at their first presentation.¹ In another study done in tertiary level hospital in Kathmandu 38% patients had DR and half of them were unaware of DR before referral.⁶ The situation is expected to be worse in rural settings where Patients need strong motivation to travel the whole day to meet ophthalmologists centered in urban areas, unless they are already symptomatic. In similar studies done in Malaysia and India educational level was found to be the most important factor in determining the level of awareness of diabetes complications.^{7,8} Being aware of diabetic eye complications and other risk factors for DR will help in better utilizing of preventive measures and minimize severe complications. So, the analysis of current level of awareness is necessary in order to formulate appropriate educating ways for diabetic population attending district hospital settings. Also, the detection of prevalence of different stages of DR will help to adapt appropriate treatment/referral and follow up plan.

METHOD

This was a hospital based cross-sectional study. We used convenience sampling technique and patients were enrolled consecutively until the sample size was met. The research concept was approved from Christian Medical College, Vellore and the study site approval was taken from the District Health Office, Dailekh.

The sample size was calculated to be 236 by using the appropriate formula for prevalence study.⁹

$$\text{Sample size} = z^2 pq / d^2$$

$$= 1.96^2 \cdot 0.19 \cdot 0.81 / 0.05^2$$

(p=0.19, q=0.81, z=1.96 at 95% Confidence interval & allowable error= 0.05)

p = prevalence of DR in Nepal is 19%.⁶ The q = (1 – p), Z = standard normal deviation usually set at 1.96 which correspond to the 95% confidence interval. d = absolute marginal error assumed at 5% i.e., 0.05.

Study duration was from 25th March to 15th May 18, 2018. All the diabetic patients attending the district hospital who gave written informed consent were included for the study until required sample size was met. Diabetic patients that were unable to answer the questions because of altered mental state were excluded from the study.

Face-to-face interview with semi-structured questionnaire was used as tool. The questionnaire was prepared after thorough literature search of similar studies in rural settings.^{7,8} Local translation of the questionnaire was done and pretested in 20 outpatients for validation. Direct ophthalmologic examination of all the patients was done by the investigator and were also sent to Regional Ophthalmic Centre in Nepalgunj for detailed ophthalmic examination. The findings of ophthalmological consultation were recorded and analyzed. Grades of diabetic retinopathy for analysis were based on the definition used by Early Treatment Diabetic Retinopathy Study (ETDRS).¹⁰ Patients who didn't return with ophthalmic consultation were only included in analysis of awareness of DR.

Data were analyzed with SPSS version 20. Since it was a descriptive study, awareness of DR was analyzed in terms of age, gender, and educational level. Since there are six question related to awareness of DR in the questionnaire (Q4.7-how did you get to know about DR? and Q4.11-biggest obstacle to not get ophthalmic screening examination do not directly relate to awareness of DR), person answering at least three question (as stated in table 2) correctly were considered to have good awareness about DR. Person with less than three correct answers were considered to have poor awareness of DR. Awareness of risk factors for DR other than diabetes was estimated and Prevalence of different stages of DR was calculated as per the objective of the study. Chi-square test were implied to test for the significance.

RESULT

There were total of 236 diabetic patients enrolled in the study and results were presented as descriptive analysis. Study population was described in terms of socio-demographic characteristics along with description on duration of diabetes mellitus, awareness about diabetic retinopathy, other risk factors for DR and proportion of diabetic retinopathy. The socio-demographic characteristics are detailed in table 1. In this study, the mean duration of diabetes was 4.9 years with standard deviation of 3.8 years and the mean systolic and diastolic blood pressure were found to be 128.4 mm of Hg and 82.7 mm of Hg respectively.

As information depicted in table 2, 69.5% knew diabetes can affect their eyes. However only 12% knew even diabetes with well controlled blood sugar can affect their eyes in the long run. Only 15.6% knew about the need of regular eye screening exam to detect DR at an early and treatable stage. Most of the patients' knowledge about DR came from treating physician and nobody among the respondents met a proper diabetic educator during diagnosis and ongoing

treatment of diabetes. 18.6% knew some form of treatment for DR and all respondent pointed out lack of symptoms as the biggest factor for not seeking eye examination earlier.

Figure 1 shows awareness about diabetic retinopathy in this study. Only 24% of respondents had good awareness on DR. Awareness was better in males which was statistically significant at p value of <0.013. Also, those who had education of secondary or above had much better awareness of DR than those with no formal education (p value <0.001). Only 12% of the enrolled patients knew about any other risk factor for DR and all of them pointed out hypertension as the common risk factor.

As per the information shown in table 3, the proportion of diabetic retinopathy in this study was 27.3 %. Only 150 patients returned in time from ophthalmic consultation and they were included in analysis of prevalence of DR. Of the patient who had some form of DR, 83% had NPDR and 17% of all DR were proliferative type and three of them had already undergone laser therapy before this study.

Table 1. Socio-demographic characteristics (n=236)

Characteristics	Number (Percent)	Characteristics	Number (Percent)
Age(years)		Occupation	
20-39	40(16.9)	Agriculture	22(9.3)
40-59	167(70.8)	Business	31(13.1)
≥60	29(12.3)	House wife	82(34.7)
Mean age = Mean ±SD	49 ±10.4	Services	72(30.5)
Sex		Others	29(12.3)
Male	128(54.2)	Ethnicity	
Female	108(45.8)	Dalit	48(20.4)
Education		Janajati	10(4.2)
Illiterate	35(14.8)	Brahmin/Chettri	178(75.4)
Literate	30(12.7)		
Secondary	38(16.1)		
Above secondary	133(56.4)		

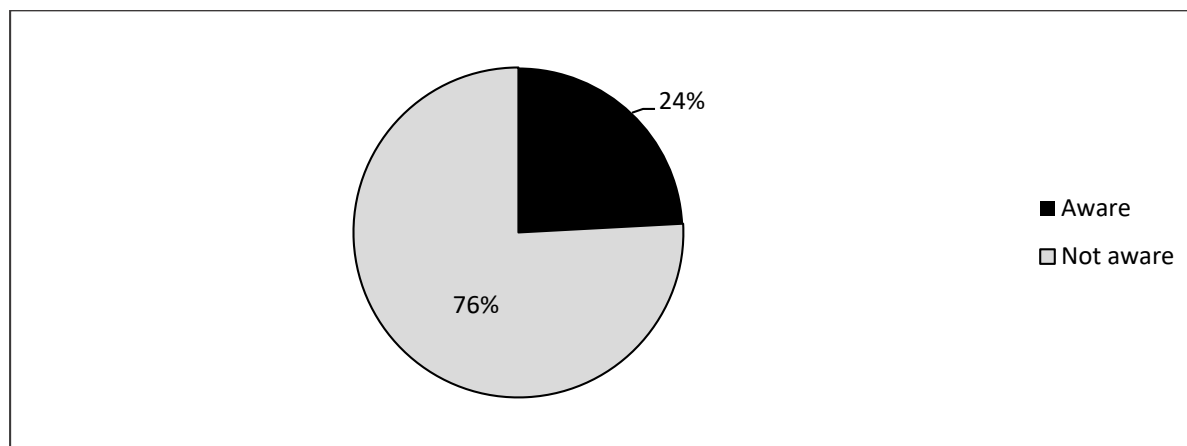


Figure 1. Awareness about diabetic retinopathy

Table 2. Knowledge about diabetic eye care

Characteristics	Number (%)
Do you know diabetes can affect your eyes? (n=236)	
Yes	164(69.5)
No	72(30.5)
Can individuals with well controlled diabetes develop eye complications? (n=236)	
Yes	28(12)
No	208(88)
Do you think there are other risk factors to develop DR? (n=236)	
Yes	28(12)
No	208(88)
If yes, what are the other risk factors? (n=28)	
Hypertension	28(100)
When do you think you should visit an Ophthalmologist? (n=236)	
When BS is well controlled	0(0)
When BS is poorly controlled	236(100)
How did you know about DR? (n=236)	
General Practitioner	94(39.8)
Media	55(23.3)
Family members	38(16.2)
Ophthalmologist	9(3.8)
Do not know	40(16.9)
How frequently you should get your eyes examined? (n=236)	
Once vision is affected	142(60.2)
Yearly	37(15.6)
Do not know	57(24.2)
Do you know treatment options for DR? (n=236)	
Yes	44(18.6)
No	192(81.4)
If yes, what are the options? (n=44)	
Good control of blood sugar	39(88.6)
LASER	5(11.4)
What do you think is the biggest barrier for not getting eye screening exam earlier? (n=236)	
No visual symptom	236(100)

BS=Blood Sugar

Table 3. Proportion of diabetic retinopathy

Characteristics	Number (%)	Characteristics	Number (%)
Proportion of Diabetic retinopathy (n=150)		Types of NPDR (n=34)	
Yes	41(27.3)	Mild	16(47)
No	109(72.7)	Moderate	8(23.5)
Types of Diabetic retinopathy(n=41)		Severe	10(29.5)
NPDR	34(83)	Types of PDR(n=7)	
PDR	7(17)	Mild	4(57)
		Moderate	2(28.6)
		HR PDR	1(14.4)

DISCUSSION

In this study 69.5% knew that diabetes can affect their eyes and only 12% knew even well controlled diabetes will affect their eyes in the long run. This is much lower in compare to a study done by Cetin EN, et al.¹¹ where 88.1% were aware that diabetes can affect their eyes and 39.6% thought diabetics with good glycemic control might suffer from DR. Overall only 24% of the respondents had good awareness of DR in this study which is quite poor. This can be explained by low literacy rate in the study group as higher than secondary educational

level was associated with better awareness of DR which was statistically significant. Similarly, more educated patients tend to have better awareness of DR and this is seen in yet another study done by Cetin EN, et al.¹¹ In other study done in a tertiary care center in Mangalore, India higher educational level was significantly associated with better awareness of DR.¹² There is no diabetic educator in district hospital setup and the role of diabetic educator to spread adequate awareness about diabetes and its complication cannot be underestimated.

The prevalence of DR in this study was 27.3% which is quite high regarding the mean duration of diabetes which was 4.9 years with SD of 3.8 years. Prevalence of DR was only 21.7% in a study done by Gadkari, et al. in India, published in Indian Journal of Ophthalmology.¹³ In another community-based study done in Kathmandu where 5400 people were screened, 9.9% had some forms of diabetic retinopathy.¹⁴ The high prevalence of DR in current study can be attributed to delayed diagnosis of diabetes in district setup and inadequate awareness of risk factors for DR including good glycemic control. However, the calculation of DR in this study was limited by a large number of patients who were lost to follow-up after they were sent for ophthalmic consultation.

CONCLUSION

Overall awareness of DR was poor in this study with a high prevalence of DR for the mean duration of diabetes. Primary physicians were crucial in the spread of awareness process and no one had met diabetic educators at any point of treatment which should be emphasized for the management of diabetes mellitus. Also, the role of media is equally important to spread awareness of DR.

Conflict of Interest

None

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