Diabetic Retinopathy Awareness among Diabetic Patients Attending COMS-TH

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ABSTRACT

Background

Diabetic retinopathy (DR) is one of the leading causes of blindness in Nepal.

Objective

The main objective of the study is to know the awareness of diabetic retinopathy among new cases of diabetes mellitus (DM) attending the college of medical science-teaching hospital, Bharatpur, Nepal.

Method

All the diabetic cases referred for ophthalmic consultation and also referred outpatient department cases from other departments to ophthalmic outpatient department was carried out. Detailed demographics of the subjects and their awareness of potential ocular problems from diabetes mellitus were noted.

Result

Total one hundred and thirty-one patients were enrolled during the study period from 15 November 2016 to 15 May 2017. Brahmin 39.69% and 19.08% Mongolian were the most predominant ethnical group. The predominant group of patients were housewives (41.22%) then followed by service (19.85%), business (13.74%), agriculture (12.21%), others (12.98%). Among 36.64% of the literate patients, 19.85% had passed school level, 9.92% had passed intermediate level, 88.55% were aware of Diabetic retinopathy. Among them majority 88.55% were referred by physician. Family history were present in 35.68% and fundus evaluation was done for the first time in almost half of diabetic cases (64.12%) and diabetic retinopathy was found in 32.06% of total cases in right eye and 30.53% of total cases in left eye.

Conclusion

Along with the awareness, routine dilated fundoscopy is mandatory for slight threating stage of retinopathy and to reduce the burden of blindness from diabetic retinopathy in Nepal.

KEY WORDS

Demographic, diabetic retinopathy, early treatment diabetic

INTRODUCTION

Diabetes is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action or both.[1] Nowadays more than 220 million people worldwide have diabetes.[2] Diabetic retinopathy (DR) is the major causes of visual impairment and blindness worldwide.[3-7] In the developing world, diabetes is now recognized as a major public health conditions due to changes in lifestyle.[8] Diabetic retinopathy is the fifth leading cause of global blindness and the most important cause of blindness among the working age individuals. The increased incidence of diabetes has led diabetic retinopathy to be an important cause of blindness in the developing world.[9]

Blindness from diabetic retinopathy is often preventable since progression is treatable if the disorder is detected early. Raising awareness would encourage people to seek regular eye examination for early detection. Patients usually present late in the course of the disease, mainly due to lack of awareness. Limited access and availability of retinal services in Nepal also add to the problem because of the limited numbers of eye hospitals and eye care providers.[10]

Several studies were conducted on the prevalence and risk factors for diabetic retinopathy, but very limited data exist regarding the awareness of diabetic eye problems.[11] This study was conducted to assess the awareness of potential diabetic ocular problems and the pattern of diabetic retinopathy among new diabetic patients attending outpatient department of college of medical science and teaching hospital. This is the first study conducted in this district.

METHODS

A non-interventional case series hospital based study was conducted from 15 November 2016 to 15 May 2017, among the inpatient diabetic cases referred for ophthalmic consultation and also referred outpatient department cases from other department to ophthalmic outpatient department. The patients' detailed demographics and awareness on diabetic retinopathy were recorded. Diabetic retinopathy was graded using the Early Treatment Diabetic Retinopathy Study Criteria. Informed consent was obtained from the patients before enrollment in the study.

A structured questionnaire was developed to assess the awareness of diabetic ocular problems. The questionnaires made on diabetic ocular problems focused on the effect of diabetes on visual acuity, awareness of diabetic retinopathy, and the need to visit an eye specialist. If aware of diabetic retinopathy, the source of awareness was also asked. Patients with a history of prior intervention for DR such as laser therapy and surgical intervention were excluded from the study.

Detailed demographics, education status, occupation, awareness of potential ocular problems from diabetes mellitus, source of awareness, family history of diabetes mellitus, frequency of retinal evaluation, duration of diabetes mellitus, and presence of hypertension and other significant systemic problems were noted. The presenting and best-corrected Snellen visual acuities were recorded. Any anterior segment abnormalities including neovascularization of the iris were noted. Detailed fundus evaluation was done after pupil dilation. Diabetic retinopathy characteristics, including clinically significant macular edema (CSME) and other diabetic macular edema (DME), were graded according to the Early Treatment Diabetic Retinopathy Study classification (ETDRS) (ETDRS Research Group, 1981). Other complications such as neovascular glaucoma and associated hypertensive retinopathy were also recorded.

The data were analyzed in SPSS version 11.5. Logistic regression models were used to estimate any potential risk factors affecting awareness of diabetic retinopathy. We selected variables for simultaneous inclusion in the logistic regression model if candidate variables significantly ($p < 0.05$) contributed to the model.

RESULTS

Total one hundred and thirty-one patients were enrolled during the study period. Age range from 35-85 years with a mean age of 60 years. Patients attending < 40 years were 9.16%, 40-50 years were 19.85%, 51-60 were 28.24%, between 60-70 years were 32.06% and >71 years were 10.69%. Males exceeded female by the ratio of 1.43. Brahmin and Mongolian were the most predominant ethnic groups, comprising 39.69% of Brahmin and 19.08% of mongolian respectively. Other ethnic group were Chhetri 9.92%, Newar 6.87% and other 24.43% About 54.96% of patients were from Narayanghat where our college of medical science and teaching hospital is located. Even outside the Narayanghat the 45.04% of diabetic patients had attended for check up. The predominant group of patients were housewives (41.22%) then followed by service (19.85%), business (13.74%), agriculture (12.21%), others (12.98%).

About 63.36% of the patients were illiterate and 36.64% were literate who were enrolled in the study. Among the literate patients 19.85% had passed school level, 9.92% had passed intermediate level, 3.82% had passed bachelor level and 3.05% had passed masters level. Among the total diabetic patients 35.88% has family history of diabetes and 116 patients that is 88.55% had been aware of diabetic retinopathy. Among them majority 93 patients (70.99%) were referred by physician for fundus examination.

Among 131 new diabetic patients in the study, 23.66% knew about diabetic eye disease from their own family members, 21.37% knew from radio, 9.92% from magazines and even 10.69% had no awareness of diabetic that could affect the eye and results in blindness.

Table 1. **Relationship between Awareness in Diabetes Retinopathy with different variables**

		Diabetes Awareness		P-value	OR	95% CI	
		Present n(%)	Absent n(%)			Lower	Upper
Narayanghat	Inside	63 (87.5)	9 (12.5)	0.677	0.792	0.265	2.37
	Outside	53 (89.8)	6 (10.2)				
Literate	Illiterate	73 (88)	10 (12)	0.778	0.849	0.272	2.648
	Literate	43 (89.6)	5 (10)				
Family History	Present	41 (87.2)	6 (12.8)	0.724	0.82	0.273	2.466
	Absent	75 (89.3)	9 (10.7)				
Fundus	First Time	69 (82.1)	15 (17.9)	0.02	0.821	0.743	0.908
	Flow up	47 (100)	-				
Hypertension	Present	62 (88.6)	8 (11.4)	0.993	1.005	0.342	2.952
	Absent	54 (88.5)	7 (11.5)				
Nephropathy	Present	10 (83.3)	2 (16.7)	0.552	0.613	0.121	3.11
	Absent	106 (89.1)	13 (10.9)				
Diabetes Retinopathy	Present	8 (100)	-	0.294	1.139	1.066	1.216
	Absent	108 (87.8)	15 (12.2)				

About 53.44% of patient had concomitant hypertension and 9.16% of patient had nephropathy along with new diabetic cases

Only 28.24% of patient had more than 10 years of duration of diabetic. About 44.27% of patients had less than five years of duration of diabetic and 27.48% had 5-10 years of duration of diabetic.

The best corrected visual acuity (BCVA) was 6/6 to 6/18 in 106 cases in right eye and 107 cases in left eye that is 80.92% and 81.685 respectively. Similarly 6/18 to 6/60 was 16 case (12.21%) in right eye and 15 case (11.45%) in left eye, 6/60 to 3/60 was 4 case (3.05%) in right eye and 3 case (2.29%) in left eye, 3/60 to CFCF in 4 case (3.05%) in right eye and 4 case (3.05%) in left eye, HM+PL+PR in 1 case (0.76%) in right eye and 1 case (0.76%) in left eye, none of the case has NPL vision in right eye and 1 case (0.76%) has NPL vision in left eye.

Fundus evaluation was done for the first time in almost half of diabetic cases (64.12%) and diabetic retinopathy was found in 32.06% of total cases in right eye and 30.53% of total cases in left eye. Among this 20.61% of cases had mild NPDR in right eye, 18.32% in left eye, 3.82% of cases had moderate NPDR in right eye and 5.34% in left eye, 3.05% of case had sever NPDR in right eye and 3.05% in left eye, 0.76% had very sever NPDR in right eye and 0.76% in left eye and only 2.29% had PDR in right eye and 1.53% had PDR in left eye and advanced diabetic eye disease 1.53% had in right eye and 1.53% in left eye.

The above table represents the comparision of patients who were aware of diabetes retinopathy with seven different variables i.e. place, literate, family history, fundus examination, hypertension, nephropathy and patients with diabetes retinopathy.

According to the table, 87.5% of patients were within Narayanghat and 89.8% were outside Narayanghat found to be aware. This was found statistically insignificant with odds of area in Narayanghat as compare to outside is 0.792 (with 95% CI 0.265 to 2.370). Likewise patients those who were literate were 89.6% aware and 88.0% of illiterate were aware which is insignificant with 0.778 with OR 0.849 (with 95% CI 0.272 to 2.648). A positive family history were aware in 87.2% of patients and 89.3% were aware who had no any family history of diabetes mellitus, which found to be statistically insignificant of 0.724 with OR 0.820 (with 95% CI 0.273 to 2.466).

Similarly patients suffering from hypertension and without hypertension were 88.6% and 88.5% aware respectively with OR 1.005 (with 95% CI 0.342 to 2.952) which was found to be insignificant with p-value of 0.993. Likewise patient with nephropathy was insignificant with 0.552 of OR 0.612 (with 95% CI 0.121 to 3.110) in which 83.3% of them were aware who were having nephropathy and 89.1% found to be aware who didn't have nephropathy.

Further 100% were aware of Diabetes Retinopathy who were suffering from diabetes retinopathy and 87.8% were aware who weren't suffered from diabetes retinopathy which was in significant with 0.294 with OR 1.139 (with 95% CI 1.066 to 1.216). In contrast to all fundus examination played a statistically significant role with 0.02 with OR of 0.821 (with 95% CI 0.743 to 0.908) in which 82.1% of patient were aware who came for first time and 100.0% of patient were aware who were under regular follow up in our series of study.

DISCUSSION

Among the one hundred and thirty one patients which were enrolled in the study the mean age of new diabetic patients were 60 years which was similar to other hospital based studies done in Nepal and also the study done in University of Korea, Seoul.[10-13] But unlike studies from other

developing countries where patients were of relatively younger age groups.[14,15] This may be due to late detection of DM and/or late presentation for eye examinations in our series.[14,15]

Males exceeded female by the ratio of 1.43, which is very similar to the study done by Thapa et al., Khanderkar et al,.[10,11,16] But the study done Shrestha et al., Shrestha et al. and Rema et al. reported a female predominance.[12,13,17] This could be increased level of awareness in males and easier access to the hospital because they are more mobile than female in Nepalese society. Among the 131 diabetic patients in our study, Brahmin accounting for 39.69% of most predominant ethnic group who presented in our hospital. Second predominant group includes the mongolion. As this is hospital based study done in Narayanghat, it will be difficult to comment without comparison group whether the diabetic mellitus is more prevalent in these ethnic group and there is no such study done in Narayanghat to compare it so far. But the study done by Shrestha et al. has similar result. Brahmin high representation maybe due to the higher proportion of literate, educated people in this ethnic group, leading to more awareness. The second higher group was Mongolian, which may be due to high population of Mongolian residing Narayanghat.

The occupational distribution of diabetic patients in our study was similar to another study from Nepal.[10,11] Housewives constituted the major working group of 41.22% of patients seen during the study period. This may be due to more diabetes among them because of physical inactivity and lack of exercise, lack of awareness regarding the healthy food habits, and the custom of excess feeding after delivery, all of which contribute to higher obesity rates, especially in urban areas.[18] Likewise, the second most common group was services 19.85% and followed by business of 13.74%. This could be again due to relative physical inactivity and gradually improving economic status which could lead to altered food habits. The low number of subjects from the agriculture group of 12.21% may be due to more physical activity, less access to tertiary medical care, and consumption of a diet containing less refined foods as compared to those residing in urban areas.[18] Some mixed professional were of 12.98%. Nearly two third of the patients were illiterate 63.36% and among the literate, 19.85% of patients had attended school level, 9.92% has attended intermediate level, 3.82% had attended bachelor level and 3.05% had done master level education. Among total percentage of literate rate (36.64%), half of the patients had passed school level. These data correlate well with the general literacy rate in Nepal.

Among the total diabetic patients, the majority was referred by physician 70.99% and 23.66% got the information from own family history, and 21.37% and 9.92% from radio and magazine. 10.69% has no any information about diabetic that effect the eye and result in blindness. As the study was carried out in medical college and teaching hospital two third of the patients were referred by physician. This reflex the high time physician and ophthalmologist can devote to discuss diabetic complications with patients in developing country with low doctor to patient ration like ours. Physician can be the major resource persons for their diabetic patient who can help by referring them for ophthalmic evaluation in a timely manner.[11]

Hypertension along with diabetic patient were 53.44%, this is higher than other reported studies. This may be due to an increasing trend of hypertension in recent time.[10-12] The very low rate of diabetic retinopathy (6.11%) is diabetic patients in contrast to other studies due to the very early referral by the physician. It may be due to duration of diabetes. 44.27% of patients had check up in less than 5 years of onset of diabetic, 27.48% between 5-10 years and 28.24% had more than 10 years of diabetic.[11]

The limitation of the study was most of the cases were referred from physician 70.99% and 23.66% were referred from the family members still 10.69% of patient has no awareness of diabetes that can affect the eye and results in blindness.

CONCLUSION

Housewives (41.22%), service holder (19.85%) were the predominant group in the study. 88.55% of the patients in the study were aware of diabetic retinopathy. 53.44% of the patient have hypertension and 9.16% have nephropathy along with diabetic retinopathy. 6.11% of patients had already given the history of diabetic retinopathy. only 3.05% of the patient has < 3/60 -CFCF vision in both eyes. In our study though the people were aware of diabetic retinopathy was more significant present (p value 0.02), the routine ocular examination in diabetic patient is mandatory to reduce the ocular morbidity and reduce the risk of blindness.

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