

Original Research Article

Association between sociodemographic variables and awareness of diabetic retinopathy among type 2 diabetic patients

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ABSTRACT

Background: Early detection of diabetic retinopathy (DR) is the most important factor in reducing the blinding complications due to diabetes. Study of the various socio-demographic factors affecting awareness of DR will help us to formulate effective screening programs for early detection. Objectives of the study were to find the sociodemographic determinants associated with awareness of DR and to evaluate the association of stage of DR with awareness about diabetic retinopathy.

Methods: A cross sectional study was conducted among 384 patients who had been diagnosed with diabetes mellitus in various medical camps and diabetic clinics at Thiruvananthapuram. Socio demographic variables and awareness were assessed using structured self-administered questionnaire. Dilated fundus evaluation was done and retinopathy classified. Data entered to excel sheet and analysis done using statistical software (SPSS version 20).

Results: Among the 384 patients, 44.9% were diagnosed to have diabetic retinopathy. Among the diagnosed 41.6% had mild non proliferative DR (NPDR), 33.0% had moderate NPDR, 11.45% had severe NPDR. 13.4% of subjects were diagnosed to have proliferative DR. 53.1% of the subjects with diabetic retinopathy had clinically significant macular edema. There was no statistically significant association between the stage of DR to awareness. Among the socio demographic variables, significant positive association with level of awareness was obtained for duration of diabetes (OR=10.96; p=0.004)

Conclusions: Duration of diabetes was significantly associated with level of awareness. There was no statistically significant association between the stage of diabetic retinopathy to awareness. This signifies the urgent need to intensify our diabetic retinopathy awareness programs.

Keywords: Diabetes, Diabetic retinopathy, Blindness

INTRODUCTION

World health organization has predicted that India will have the highest number of diabetics in the world by 2030 i.e., 80 million diabetic patients and hence diabetic retinopathy will fast become a major public health problem and a very important cause of visual morbidity.¹ However this morbidity is largely preventable and treatable. If managed with timely intervention, the quality of life can be preserved.² To achieve this we have to develop effective eye care programmes that should be able to attract and

examine all the potential persons with diabetes if vision impairment due to retinopathy is to not add to the already existing burden of blindness in India. This will require that persons with diabetes are aware of the sight-threatening potential of diabetes and the need for regular eye examinations.³ Kerala is a state with a high literacy rate and high health indices. In spite of this we find that a lot of patients reporting for the first time to the ophthalmologist with vitreous hemorrhage and proliferative diabetic retinopathy as they did not know that periodic checkup of eye was essential. Hence the purpose of our study was to

find the socio-demographic determinants associated with awareness about DR, stage of diabetic retinopathy at the time of diagnosis and to find its association with awareness.

METHODS

This was a community based cross sectional study conducted at various medical camps and diabetic clinics in Trivandrum from April 2017 to March 2018. All consecutive patients diagnosed with diabetes mellitus were included in the study. Patients who were already diagnosed to have diabetic retinopathy and were on treatment/follow up were excluded from the study. Institutional ethical committee clearance was obtained prior to the study. After obtaining informed written consent from the patients, basic demographic data regarding age, gender and education of the patients was recorded. Duration of diabetes, type of medication other medical history including presence of hypertension, hypercholesterolemia was noted. Patient’s visual acuity was recorded using the Snellen chart. They underwent a fundus examination using indirect ophthalmoscope or slit lamp biomicroscope with 90D lens after dilatation with tropicamide and phenylephrine eyedrop. Features identified were recorded and retinopathy classified based on international clinical DR disease severity scale as normal, mild, moderate, and severe NPDR, proliferative diabetic retinopathy (PDR), and clinically significant macular edema (CSME). Presence of retinopathy in one eye was considered as diabetic retinopathy and asymmetrical retinopathy if present, the stage of retinopathy was based on the affected eye with the more severe grade of retinopathy. Data entered in excel sheet. Categorical and quantitative variables were expressed as frequency (percentage) and mean ± SD respectively. Chi square statistics was carried to find association of awareness of diabetic retinopathy with socio-demographic variables. P<0.05 was considered threshold for statistical significance. Statistical analysis was performed using a statistical software package SPSS, version 20.0.

RESULTS

Demographic features of studied population

Age distribution

In the studied population 9.6% of subjects belonged to 50 or less than 50 years of age, 22.4% belonged to 51-60 years and 33.6% belonged to more than 60 years age group. There was no statistically significant difference in the awareness among the different age groups.

Gender

A total 54.7% of the studied group were females and 45.3% were males. Among the females 42.9% had poor awareness while 57.1% had moderate to good awareness of diabetic retinopathy. 41.4% had poor awareness among

males while 58.6% had moderate to good awareness. There was no statistically significant difference.

Educational status

There was no statistically difference between the different educational status groups. This result is quite alarming in a state with high literacy and hence greater need for wider coverage of screening camps.

Duration of diabetes

A total 48.7% was diabetic for less than 5 years, (49.2% had poor awareness and 50.8% had moderate to good awareness), 21.6% for 6-10 years (43.4 had poor awareness and 56.6% had moderate to good awareness) and 29.7% for more than 10 years (29.8% had poor awareness and 70.2% had moderate to the good awareness) p value=0.004. There was statistically significant of association of awareness with duration of the diabetes.

Stage of diabetic retinopathy at the time of diagnosis

A total 41.6% of subjects diagnosed to have diabetic retinopathy had mild NPDR, 33.0% had moderate NPDR, 11.45% had severe NPDR and 13.4% had PDR. 53.1% of the subjects with diabetic retinopathy had CSME. There was no statistically significant of association between the stage of DR to the awareness.

Table 1: Percentage distribution of the sample according to stage of diabetic retinopathy.

Stage	Count	Percent (%)
No DR	118	55.1
Mild NPDR	40	18.7
Moderate NPDR	32	15.0
Severe NPDR	11	5.1
Early PDR	6	2.8
HRPDR	7	3.3

DR-Diabetic retinopathy, NPDR-Non proliferative diabetic retinopathy, PDR-Proliferative diabetic retinopathy, HRPDR-High risk proliferative diabetic retinopathy.

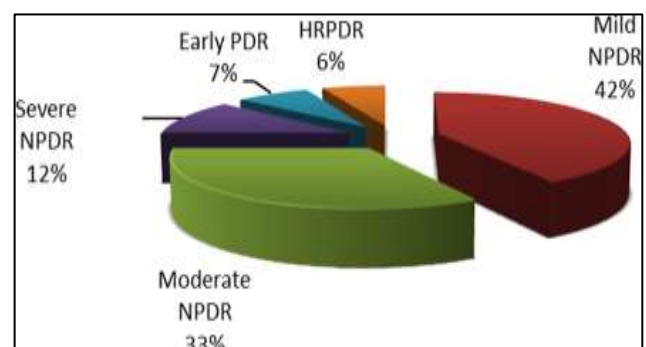


Figure 1: Percentage distribution of sample according to stage of diabetic retinopathy at the time of diagnosis.

Table 2: Association of level of awareness with stage of diabetic retinopathy.

Stage	Poor		Moderate/good		X ²	P value
	Count	Percent (%)	Count	Percent (%)		
No DR	44	37.3	74	62.7	7.27	0.201
Mild NPDR	15	37.5	25	62.5		
Moderate NPDR	7	21.9	25	78.1		
Severe NPDR	2	18.2	9	81.8		
Early PDR	0	0.0	6	100.0		
HRPDR	2	28.6	5	71.4		

Table 3: Association of level of awareness with socio demographic variables.

Variables	Poor		Moderate/good		X ²	P value
	Count	Percent (%)	Count	Percent (%)		
Age (year)						
≤50	49	39.8	74	60.2	1.89	0.389
51-60	51	39.5	78	60.5		
>60	62	47.0	70	53.0		
Sex						
Male	72	41.4	102	58.6	0.09	0.770
Female	90	42.9	120	57.1		
Educational status						
Primary	18	46.2	21	53.8	2.08	0.556
Secondary	95	43.6	123	56.4		
Hr. Secondary/graduate	41	36.9	70	63.1		
PG/professional	8	50.0	8	50.0		
Duration (year)						
≤5	92	49.2	95	50.8	10.96**	0.004
6-10	36	43.4	47	56.6		
>10	34	29.8	80	70.2		

DISCUSSION

Sequential surveys from India indicate that the prevalence of diabetes has risen steadily since the 1970s.⁴⁻⁷ Thus we will be seeing an increasing number of DR cases. In DR, early detection and treatment is of vital importance as it may prevent vision loss and blindness. Up to a fifth of newly diagnosed diabetics have some form of retinopathy. Therefore, screening will prove to be beneficial at any stage of the long latent phase of the disease and will also be helpful in avoiding blindness among 90% patients.⁸ But the lack of proper screening and treatment facilities mainly at primary and secondary care level, many of the DR patients become blind.⁹ This is further confounded by the fact that lack of awareness of DR hinders proper utilization of existing facilities.

During the one-year study period of a total of 384 diabetic patients screened, 214 patients had DR. 41.6% had mild NPDR, 33% had moderate NPDR and 11.45% had severe NPDR. and 13.5% had proliferative DR. Clinically significant macular edema (CSME) was found in 53.1%. Similarly, in a study by Dandona et al.¹⁰ most of the DR was of the mild (50%) or moderate (39.3%) non-proliferative type; one subject (3.6%) had proliferative retinopathy.¹⁰ The study was not able to find significant association between stage of DR and level of awareness.

This explains the fact that we are seeing patients with advanced stage of DR i.e., with tractional detachment and vitreous detachment in their first visit to the ophthalmologist. In many patient’s vision is affected only in later stages of DR and so come to the ophthalmologist only when they develop visual symptoms. In a study by Dubey et al, at the time of screening DR was present in 3.5% (8) of cases among those who were aware about DR and 13.5% (14) of the cases among those who were not aware about DR.¹¹ This difference in the two groups was statistically significant (p<0.001). There was no statistically significant difference in awareness among males and females in our study. In a study by Hussain et al although overall female population had shown better knowledge, in the diabetic group, men showed a significantly better knowledge (p<0.001).¹² In the study by Dubey et al significant association was demonstrated with male gender and literacy, higher socio-economic status and positive family history but no significant association was demonstrated with duration of diabetes.¹¹

In a study by Bakkar et al awareness of DR was not significantly associated with patient’s gender (p=0.479), age (p=0.78) and family history of DM (p=0.177).¹³ Remarkably, the level of awareness of DR was found to be significantly associated with patient’s educational level (p=0.003). Patients with a relatively higher educational

level (secondary education, graduates and post-graduates) were more aware of DR occurring as a consequence of diabetes.¹³ The present study revealed no statistically significant relation between level of education and awareness. This is against similar studies done by Saikumar and Dubey et al.^{15,11} The reason for low awareness in our study could be because our study was conducted mainly in medical camps in far reach areas with poor accessibility to ophthalmological services.

In a study conducted by Murugesan et al to identify factors that influence awareness found that higher education and professional or executive jobs were significantly associated with better awareness. Age, gender and income had no influence.¹⁴

In our study a positive association ($p=0.004$) is seen between duration of diabetes and level of awareness. The result is similar to studies done by Hussain and Saikumar et al.^{12,15} This could be due to due repeated contacts with the treating physician. In spite of rapid advancements in diagnostic and therapeutic interventions, visual morbidity due to DR is on the rise. This is to a large part due to underutilization of existing facilities due to lack of awareness of the blinding complications of diabetes even in a highly literate state like Kerala. This study highlights the urgent need to step up awareness programs which should aim for a wider reach in the community.

CONCLUSION

The following conclusions were drawn from this study: 44.1% of subjects with diabetes had DR. Among them, 41.6% had mild NPDR, 33.0% had moderate NPDR, 11.4% had severe NPDR and 13.5% had PDR. There was no statistically significant difference between the stage of DR to awareness. There was no statistically significant difference between age, gender and educational status to awareness of DR. Significant association is present between duration of diabetes mellitus and level of awareness.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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