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Original Article

Awareness of Diabetic Retinopathy in Rural Population in South Tamil Nadu

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Abstract

Introduction: Diabetes mellitus is a major non-communicable disease which has alarmingly increased in prevalence in the past two decades.

Aim: To assess the awareness and practice relating to diabetic retinopathy (DR) in diabetes individuals attending ophthalmology out-patient department (OPD) at a tertiary care hospital located in a rural area in south India.

Materials and Methods: A total of 200 diabetes patients attending OPD of Ophthalmology Department in GTMCH, Theni, from October 2015 to December 2015 were given the questionnaire and their awareness about DR vision and were assessed. The study also included data regarding their demographic details, literally levels awareness of rich factors, and management of DR. The results were statistically analyzed using Epi Info software downloaded from the customer data center website.

Results: In our study, 40 (20%) knew that ocular involvement in diabetes was related to duration of diabetes, 42 (21%) felt that lack of blood sugar control was a risk factor for the development of DR. Awareness regarding other risk factors - obesity (11.5%), hypertension (9.5%), smoking (4.5%), and high cholesterol (5.5%). About 77(38.5%) patients knew that DR was treatable and 27 (13.5%) knew regarding laser, 9 (4.5%) knew regarding surgery, 18 (9%) knew regarding food control of diabetes, and 23 (11.5%) knew about drugs and injections into the eye. It was also noted that in patients who had a history of hypertension, the knowledge of DR was high (26%).

Conclusion: Our study helps in identifying the lacunae of awareness in the present rural diabetic population and hence insists on more awareness camps to educate the patients regarding DR. Its risk factors management options and lifelong follow-up.

Key words: Awareness, Cataract, Diabetic retinopathy, Glaucoma, Hypertension

INTRODUCTION

Diabetes mellitus (DM) is a major non-communicable disease which has alarmingly increased in prevalence in the past two decades.[1] Although patients may be aware of DM, awareness of ocular complications due to long-standing DM is very minimal, mainly in rural population. Hence, the levels of awareness of diabetic retinopathy (DR)[1] in DM patients were evaluated in rural population.[2] Type II DM is a major non-communicable disease which is alarmingly increasing in the past two decades it is estimated that there will be 195% increase in persons with diabetes by 2024 and hence is a major public health concern both in developed and developing countries. The estimated increase of DM is approximately from 30 million in 2000 to 80 million in 2030 in developing countries.[3]

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MATERIALS AND METHODS

The patients attending out-patient department (OPD) of Ophthalmology Department in Government Theni Medical College Hospital, Theni, from October to December 2015 were given a questionnaire and their awareness about DR; vision loss and treatment were assessed. The study also included data regarding their demographic details, literary levels, and awareness of risk factors in the management of DR.

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A hospital based cross-relational study was conducted among 100 diabetic patients attending our ophthalmic OPD of Government TMC between October and December 2015 and an informed consent was obtained from all subjects. We prepared a questionnaire to assess the knowledge of DR, vision loss, treatment options available for DR. The questionnaire was prepared in the local language (Tamil).

Sample Size

About 200 diabetic patients attending OPD of GTMC referred from Andipatti, Usilampatti and nearby PHCs and district hospitals from October 2015 to December 2015 were assessed.

Data Collection

Basic data collected were name, age, sex, occupation, locality, literacy, socio-economic status, duration of DM, regularity of treatment, and control of DM. The target population was rural, diabetic people, and their awareness was assessed. The questionnaire was prepared in the local language as the target group was rural people. The junior residents were trained to administer the questionnaire and help the patients in filling it up. When the patients were illiterate the questionnaire was read, and their answer was recorded by junior residents.[4]

Assessing Knowledge of DR

1. Can eyes be damaged by DM?
2. What eye problems can individuals with DM have?
3. Knowledge of risk factors leading to DR
4. Knowledge of treatment options for DR
5. Options of treatment
6. Behavioral modifications due to attitude toward necessity of eye check-up for diabetics and frequency of follow-up
7. Does good control of diabetic status result in avoiding visit to an ophthalmologist?

The responses were grouped yes or no or not sure. The patients were then categorized into knowledge group for DR if the patient was aware of vision loss, risk factors and treatment options and the prime inclusion based on being answered with a yes for "can eyes be damaged by DM?"

After the questionnaire was answered, the patients were subjected to detailed ocular examination including vision, IOP, slit lamp examination, and dilated fundus examination.

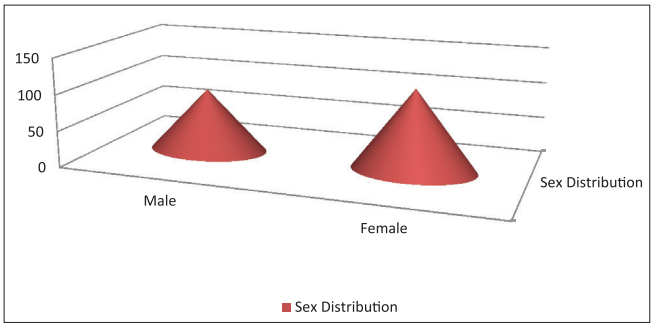

Figure 1: Sex distribution

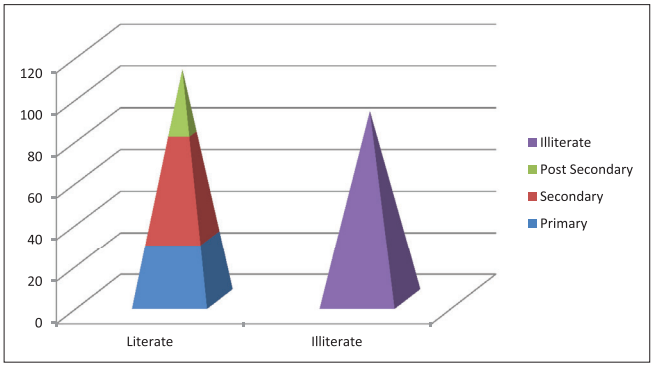

Figure 2: Literacy Levels in the study

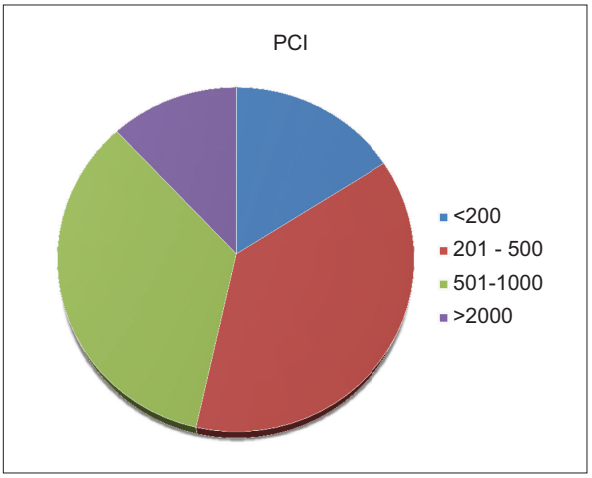

Figure 3: Socio-economic status

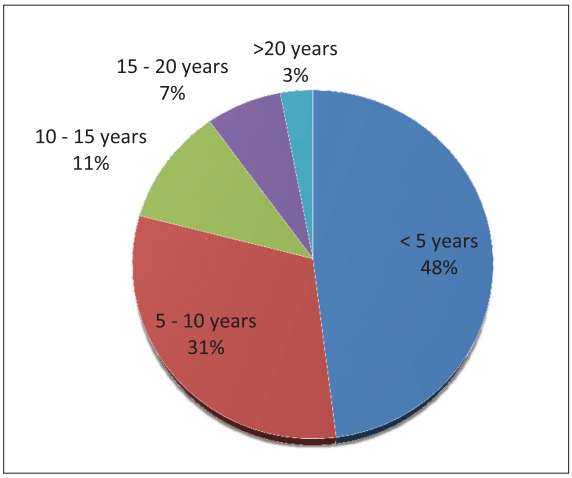

Figure 4: Duration of diabetes mellitus

Statistical Analysis

The results were statistically analyzed with the help of Epi Info (version 11.0) software downloaded from the customer data center website. Determinants of awareness of DR, eye problems with DR, Risk factors leading to DR, treatment for DR such as age, gender, literacy, SES, locality, and occupation were analyzed.

RESULTS

We received responses from 200 patients diagnosed with Type 2 diabetes, attending ophthalmology OPD at our hospital. It was observed that the age distribution of diabetics was predominantly from 40 to 70 years. It peaked at 60-70 years (34.5%), and there was mild female preponderance (56%) with female numbering 112 and 88 were men accounting to 44% (Figure 1). The mean age was 58.32 years.

About 110 were literates and 90 were illiterates accounting to 55% and 45%, respectively (Figure 2). Table 1 shows demographic and literacy profiles of all subjects. Diabetes of <5 years duration was seen in 96 (48%) individuals and of more than 20 years duration in 6 (3%) individuals with a statistically significant $P < 0.001$ (Figure 4). Comorbid conditions such as hypertension were noted in 52 (26%) of individuals. The family history of diabetes was noted in 37 (18.5%) (Figure 5).

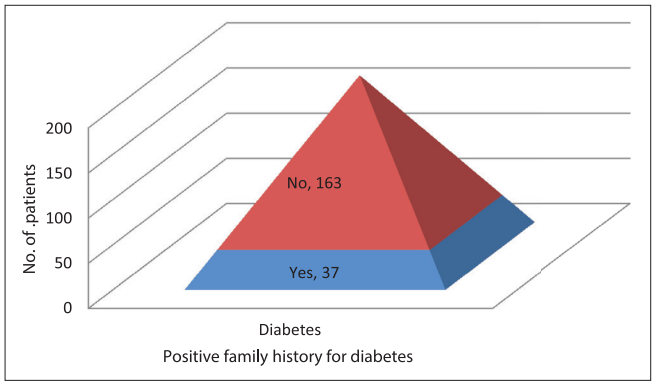

Figure 5: Family history of diabetes mellitus

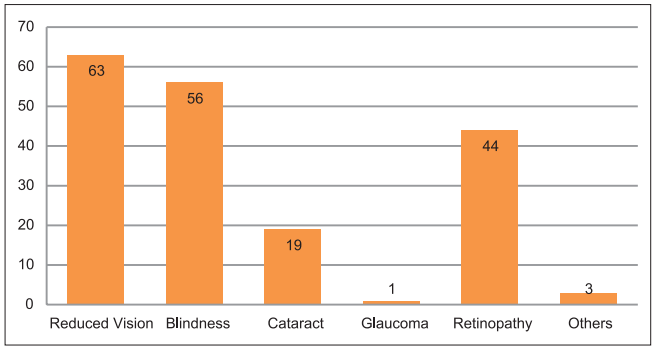

Figure 6: Awareness regarding the type of eye damage

Figure 6 shows awareness regarding type of eye damage. The results regarding the type of eye damage in Type 2 diabetes showed that 31.5% of patients knew that diabetes could cause reduced vision, 28% felt it could cause blindness, 19% knew that diabetics could develop cataracts, 1% knew that it would cause glaucoma, and 22% knew that it would cause retinopathy.

Questions were asked pertaining to knowledge of risk factors leading to DR and the results are shown in Table 2.

Table 1: Single table analysis

Factor	*n* (%)	*P* value	OR
Age			
Gender			
Male	88 (44)		
Female	112 (56)	0.0082>0.001	0.78
Education			
Literate	110 (55)		
Primary	29 (26.36)		
Secondary	50 (45.45)		
Post-secondary	31 (28.18)		
Illiterate	90 (45)	0.0228<0.01	
Comparison *P* value		<0.0001	
Comparison odds for literate versus illiterate			1.2
Duration of DM (years)			
<5	96 (48)		
5-10	62 (31)		
11-15	22 (11)		
16-20	14 (7)		
>20	6 (3)		
Comparison *P* value		<0.0001	
Comparison odds for less than and more than 10 years			3.76
Per capita income			
<200	32 (16)		
201-500	75 (37.5)		
501-1000	69 (34.5)		
>2000	24 (12)		
Comparison *P* value		0.08>0.01	
Comparison odds for less than and more than 500			1.15
Hypertension			
Present	52 (26)		
Absent	148 (74)		
Comparison *P* value		<0.001	0.35
Family H/o of DM			
Present	37 (18.5)		
Absent	163 (81.5)		0.22
Knowledge of risk factors			
Yes	144 (72)		
No	56 (28)		
Comparison *P* value		<0.001	2.57
Knowledge of treatment			
Yes	77 (38.5)		
No	123 (61.5)		
Comparison *P* value		0.0023<0.01	0.62

OR: Odds ratio, DM: Diabetes mellitus

40 (20%) knew that ocular involvement in diabetes was related to duration of diabetes, 42 (21%) felt that lack of blood sugar control was a risk factor for the development of DR.

Awareness regarding other risk factors was as follows-obesity (11.5%), hypertension (9.5%), smoking (4.5%), and high cholesterol (5.5%).

Nearly 77 (38.5%) patients knew that DR was treatable, and Table 3 shows details regarding knowledge of treatment options. 27 (13.5%) knew regarding laser, 9 (4.5%) knew regarding surgery, 18 (9%) (Figure 3) knew regarding good control of diabetes, and 23 (11.5%) knew about drugs and injections into the eye (Figure 9).

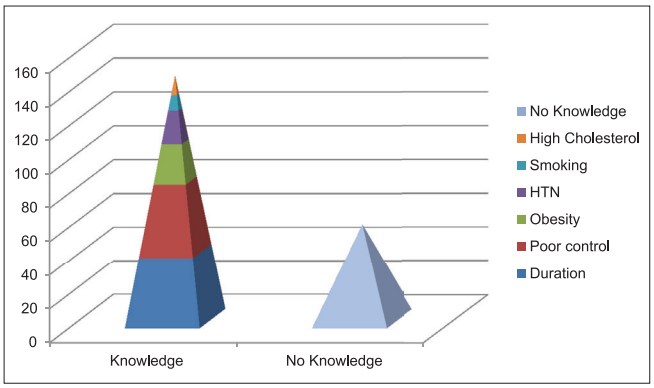

Figure 7: Awareness regarding the risk factors

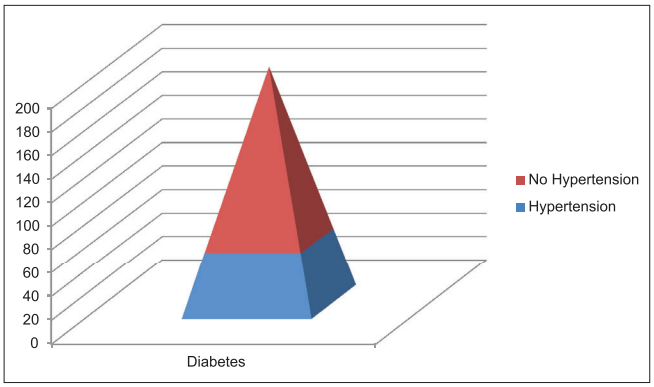

Figure 8: Hypertension and diabetes mellitus

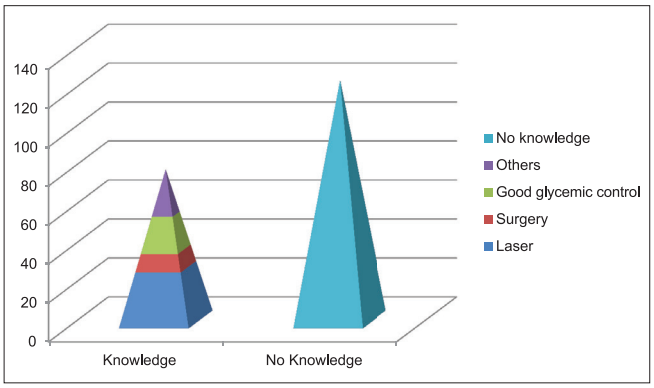

Figure 9: Treatment options for diabetic retinopathy

The predictor variables which could have an effect on knowledge of retinopathy is treatable were studied. The predictor variables which were important were found by working out the Odd's ratios (OR) of the predictors on the likelihood of knowledge of retinopathy was literacy status, socio-economic strata, duration of DM, knowledge of treatment (Figure 7). It was finally observed that the literates had a lesser risk of acquiring DR (1.2 times lesser than the illiterates) with a significant $P < 0.001$. The per capita income did not have a reasonable effect on the outcome of DR. The knowledge in those with a longer duration of DM posed an increased risk with an OR of 3.76 and a definite statistically significant value of < 0.01. 72% had knowledge of risk factors while 28% did not; the difference here was statistically significant.

It was also noted that in patients who had history of hypertension, the knowledge of DR was high (26% of population with a $P < 0.001$) (Figure 8).

DISCUSSION

Various studies have shown that occurrence and severity of DR are related to duration of DM.[5] Progression of DR and sight-threatening complications can be minimized if the diabetics are aware of ocular complications and come for regular ocular examination.

Dandona *et al.*[6] have done a study in urban general population in India and have found low level of awareness (28.2%). Our study was done in rural population DM to awareness.

Table 2: Knowledge of risk factors of DR

Risk Factors	No.	%
Duration of DM	40	20
Lack of Blood Sugar control	42	21
Obesity	23	11.5
Hypertension	19	9.5
Smoking	9	4.5
High Cholesterol	11	5.5

Table 3: Knowledge of Treatment Options

Treatment Options	No.	%
Laser	27	13.5
Surgery	9	4.5
Control of Blood sugar	18	9
Drugs and Injections	23	11.5

CONCLUSION

Our study helps in identifying the lacunae of awareness in the present rural diabetic population and hence insists on more awareness camps to educate the patients regarding DR its risk factors management options and lifelong follow-up.

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