

Original Research Article

KNOWLEDGE, ATTITUDES, AND BARRIERS REGARDING ANNUAL EYE SCREENING AMONG TYPE 2 DIABETIC PATIENTS AT A TERTIARY CARE HOSPITAL

Sashikala Deety¹, Sujana Inampudi¹, Krishna Chaitanya Alam², Sangeeta Das³

¹Associate Professor, Department of Ophthalmology, Malla Reddy Institute of Medical Sciences, Malla Reddy Vishwavidyapeeth (Deemed to be University), Suraram, Hyderabad, Telangana, India

²Professor, Department of General Medicine, Malla Reddy Institute of Medical Sciences, Malla Reddy Vishwavidyapeeth (Deemed to be University), Suraram, Hyderabad, Telangana, India

³Professor, Department of Ophthalmology, Malla Reddy Institute of Medical Sciences, Malla Reddy Vishwavidyapeeth (Deemed to be University), Suraram, Hyderabad, Telangana, India

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Corresponding Author:

Dr. Sashikala Deety,
Associate Professor, Department of Ophthalmology, Malla Reddy Institute of Medical Sciences, Malla Reddy Vishwavidyapeeth (Deemed to be University), Suraram, Hyderabad, Telangana, India.
Email: sashimoon@gmail.com

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ABSTRACT

Background: Level of literacy is increasing but awareness of micro-complications of diabetic retinopathy (DR) is still lacking even among well-educated people. Hence, research is required to find out awareness about screening of DR. therefore, study was carried out to study Knowledge, Attitudes, and Barriers Regarding Annual Eye Screening Among Type-2 Diabetic Patients.

Materials and Methods: Hospital-based, cross-sectional, study was carried out among 64 patients with type-2 diabetes mellitus. Demographic data, disease characteristics, individual's knowledge and understanding of DR screening and eye management, attitudes regarding screening and management of eye in diabetes, and barriers. Questions were based on five-point Likert scale. Sum of all questions was graded as good if the score was 60% or higher. Anything below this level was regarded as poor.

Results: Majority (42.2%) belonged to >60 years, were males (56.2%), from rural area (68.8%), illiterate (42.2%), daily wage workers (50%), diabetes-duration >10 years (18.8%), taking (54.7%) Oral hypoglycemic drugs treatment. Majority responded as do not know. Awareness about key facts was <30%. Only 28.1% were aware about that diabetes can lead to blindness and importance of control of blood sugar. Only 14.1% were aware that examination of retina on a regular basis is essential. Attitude of 50% was like I don't know. 57.8% never visited an ophthalmologist for screening in last one year. Only 25% underwent regular screening procedure. 17.2% underwent laser treatment and 14.1% were operated for DR. Education of patient as well as duration of diabetes were significantly associated with poor knowledge.

Conclusion: Awareness level was very low. Don't know attitude was seen in half cases. Practices related to screening were not adequate. Only 25% underwent regular screening. Low education and diabetes duration were significantly associated with poor knowledge.

Keywords: Knowledge, barriers, screening, diabetes.

INTRODUCTION

Diabetic retinopathy (DR) can be due to and most of the times is related to uncontrolled blood glucose levels over prolonged periods of time. This is commonly seen in cases with both the types of

diabetes like type 1 as well as type 2. It can even be seen in those with gestational diabetes mellitus. In DR there is ischemia of the retina. The permeability of the vessels is also increased. As stated earlier, uncontrolled blood glucose levels over prolonged periods of time which can actually damage the small

blood vessels present in the retina. This damage can lead to bleeding, swelling of the retina or even exudates. If the condition prevails, then there is chance of starvation of the oxygen to the tissues. The blood vessels become abnormal. The growth of these vessels become abnormal. There can be leakage of the blood in this area.^[1,2] Diabetic retinopathy is one of the complications of the diabetes, other several serious complication are neuropathy, nephropathy, cardiomyopathy etc.^[3]

Among all the diabetic complications one of the most common is DR. In addition to this, other eye diseases like diabetic macular edema, detachment of the retina, neovascular glaucoma etc can develop.^[4,5] There are no clinical features for the person with DR during the early phases of the disease. As the disease goes ahead, some symptoms can appear. For example, sudden change in the vision, blurring of the vision, floaters of the eye, spots in front of the eyes, pain in the eye and double vision etc.^[1] It has been estimated that around 103 million people all over the world as of 2020 were having diabetes mellitus. It has also been estimated this number may increase by 2045 to 160 million.^[4] If the DR is not treated in time, the person can develop loss of vision. It not only affects the persons but also their family is also affected. It places avoidable or preventable burden on the community and at the same time on the health care services.^[5]

The devastating effects of DR are preventable. It is possible through regular screening. It is quite possible that if a person undergoes regular screening, then the early changes of DR can be identified. The appropriate intervention done at this stage can modify the course of disease. But the obstacle comes in two ways. One is as mentioned above the DR will not have symptoms in the early stages. When there are no symptoms, generally the patients do not seek the health care services. Second, even if the symptoms develop, some persons tend to ignore them. It may be due to lack of awareness of severity of the disease. The level of literacy is increasing but the awareness of micro-complications of a major disease like DR in diabetes is still lacking even among the well-educated people. Hence, research is required to find out the level of awareness about screening of DR. With this background present study was carried out to study Knowledge, Attitudes, and Barriers Regarding Annual Eye Screening Among Type 2 Diabetic Patients attending the out-patient department of Ophthalmology at a tertiary care hospital.

MATERIALS AND METHODS

Study Design: A hospital-based, cross-sectional, observational study.

Study population: The Outpatient Department patients at Ophthalmology of Malla Reddy Institute of Medical Sciences, Hyderabad, Telangana.

Setting: Outpatient Department (OPD) of Ophthalmology, Malla Reddy Institute of Medical Sciences, Hyderabad, Telangana.

Duration: 3 months

Inclusion Criteria:

- Patients of either gender aged more than 18 years attending the OPD.
- Patients who provide written informed consent.
- Patients with type-2 diabetes mellitus and known cases of type-2 diabetes mellitus

Exclusion Criteria:

- Patients with severe comorbidities
- Not willing to give informed consent

Sample size: A total of 64 cases were included in the present study

Ethical considerations: The protocol was submitted to the Scientific Committee. After approval from the Committee, the protocol was submitted to the Institutional Ethics Committee. After approval from IEC, MRIMS, data collection was started. Written Informed consent was taken from all the participants.

Data Collection Tools: Data was collected using a structured questionnaire:

Data Collection Procedure: The Investigator approached the patient, explained the study in the local language (Telugu/Urdu/Hindi), and provided a Participant Information Sheet (PIS). Written informed consent was obtained. The questionnaire was administered via a face-to-face interview.

A questionnaire prepared from the review of literature was used to collect data. The questionnaire contained the participant's demographic data, the disease characteristics, the individual's knowledge and understanding of DR screening and eye management, questions about individuals' attitudes regarding the screening and management of the eye in diabetes, and the last part related to the barriers. The questions were based on a five-point Likert scale. The sum of all questions were graded as good if the score was 60% or higher. Anything below this level was regarded as poor KAP.

Statistical Analysis: The data was entered in the SPSS statistical software. the data was expressed in terms of proportions for categorical variables and mean/median for continuous variables. P value < 0.05 was considered as statistically significant.

RESULTS

Table 1: Demographic Characteristics of the Study Population (N = 64)

Variable	Category	Frequency	Percentage
Age	≤ 40 years	6	9.4
	41-50 years	12	18.8
	51-60 years	19	29.7

	> 60 years	27	42.2
Gender	Male	36	56.2
	Female	28	43.8
Residence	Rural	44	68.8
	Urban	20	31.2
Education Level	Illiterate	27	42.2
	Primary	15	23.4
	Secondary	14	21.9
	Inter	6	9.4
	Degree/Diploma	2	3.1
Occupation	Daily wage worker	32	50.0
	Semi-skilled worker	10	15.6
	Housewife	9	14.1
	Skilled worker	8	12.5
	Business	5	7.8
Duration of DM	Less than 1 year	18	28.1
	1 to 5 years	19	29.7
	5 to 10 years	15	23.4
	More than 10 years	12	18.8
Treatment of DM	Diet and lifestyle	18	28.1
	Oral hypoglycemic drugs (OHG)	35	54.7
	OHG + Insulin	11	17.2

Majority (42.2%) belonged to the age group of 60 years and above. Males (56.2%) were slightly more than females. 68.8% of the cases were from rural area. 42.2% were not literate. Half of the participants

were daily wage workers. 18.8% of the cases had diabetes duration of more than 10 years. 54.7% were taking Oral hypoglycemic drugs (OHG) treatment. [Table 1]

Table 2: Knowledge Regarding Diabetic Retinopathy (N = 64)

Knowledge Statement	Yes n (%)	No n (%)	Don't Know n (%)
A person with diabetes can lose eyesight due to complications.	18 (28.1%)	19 (29.7%)	27 (42.2%)
Control of blood sugar helps avoid/delay eye complications.	18 (28.1%)	22 (34.4%)	24 (37.5%)
Early eye changes in diabetes can occur without defective vision.	16 (25.0%)	21 (32.8%)	27 (42.2%)
Retina exam using eye drops & special equipment is essential for early detection.	9 (14.1%)	27 (42.2%)	28 (43.8%)
Once vision is extremely damaged in diabetes, it is often late to restore.	14 (21.9%)	14 (21.9%)	36 (56.2%)
Laser treatment delays serious damage due to diabetic retinopathy.	14 (21.9%)	16 (25.0%)	34 (53.1%)
Even after eye treatment for DR, one must control diabetes to prevent deterioration.	14 (21.9%)	13 (20.3%)	37 (57.8%)

As seen from this table, majority responded as do not know. It shows a severe lack of awareness. The awareness about the key facts was overall less than 30%. Only 28.1% of the cases were aware about the fact that diabetes can lead to loss of vision. Same

proportion of cases were aware about the importance of control of the blood sugar. Only 14.1% were aware that examination of the retina on a regular basis is essential. [Table 2]

Table 3: Attitudes & Practices Toward Annual Eye Screening (N = 64)

Statement / Practice	Yes n (%)	No n (%)	Don't Know n (%)
Damage to eye in diabetes is not important till it affects eyesight.	7 (10.9%)	25 (39.1%)	32 (50.0%)
Frequent eye checkups by an expert for DR is a waste of time.	11 (17.2%)	23 (35.9%)	30 (46.9%)
My physician is responsible for taking care of my diabetes & eye complications.	10 (15.6%)	23 (35.9%)	31 (48.4%)
Diabetic patients should focus on kidney and heart complications over eyes.	10 (15.6%)	28 (43.8%)	26 (40.6%)
Treatment of diabetic retinopathy is not benefiting patients.	12 (18.8%)	23 (35.9%)	29 (45.3%)
Visited an eye specialist for diabetes check-up in the last year.	9 (14.1%)	37 (57.8%)	18 (28.1%)
I visit my eye specialist for DR screening every year.	16 (25.0%)	31 (48.4%)	17 (26.6%)
I have been treated for diabetic retinopathy by laser.	11 (17.2%)	31 (48.4%)	22 (34.4%)
I was operated for diabetic retinopathy in the past.	9 (14.1%)	36 (56.2%)	19 (29.7%)

From above table it can be concluded that there was a lot of variability regarding the attitude of the patients. The attitude of about half of the cases was like I do not know kind of thing for the major important themes of the attitude. 57.8% never tried to

visit an ophthalmologist for screening in the last one year of the interview. Only one fourth of the cases underwent regular screening procedure. 17.2% of the cases underwent the laser treatment and 14.1% were operated for DR. [Table 3]

Table 4: Factors Associated with Poor Knowledge

Variable	Category	Poor Knowledge (n=52)	Good Knowledge (n=12)	P-value
Age	≤ 40 years	5	1	0.362
	41-50 years	11	1	
	51-60 years	13	6	
	> 60 years	23	4	

Gender	Male	28	8	0.527
	Female	24	4	
Residence	Rural	38	6	0.168
	Urban	14	6	
Education Level	Illiterate	24	3	0.012*
	Primary	14	1	
	Secondary	10	4	
	Inter	4	2	
	Degree/Diploma	0	2	
Occupation	Daily wage worker	27	5	0.810
	Semi-skilled worker	7	3	
	Skilled worker	6	2	
	Housewife	8	1	
	Business	4	1	
Duration of DM	Less than 1 year	17	1	0.013*
	1 to 5 years	16	3	
	5 to 10 years	8	7	
	More than 10 years	11	1	
Treatment of DM	Diet and lifestyle	17	1	0.205
	OHG	26	9	
	OHG + Insulin	9	2	

Factors like age, sex, residence, occupation and type of treatment taken for diabetes were not found out to be statistically significantly associated with the poor knowledge related to DR. The education of the patient as well as the duration of diabetes were found to be statistically significantly associated with the poor knowledge. [Table 4]

DISCUSSION

Majority (42.2%) belonged to the age group of 60 years and above. Males (56.2%) were slightly more than females. 68.8% of the cases were from rural area. 42.2% were not literate. Half of the participants were daily wage workers. 18.8% of the cases had diabetes duration of more than 10 years. 54.7% were taking Oral hypoglycemic drugs (OHG) treatment. Majority responded as do not know. It shows a severe lack of awareness. The awareness about the key facts was overall less than 30%. Only 28.1% of the cases were aware about the fact that diabetes can lead to loss of vision. Same proportion of cases were aware about the importance of control of the blood sugar. Only 14.1% were aware that examination of the retina on a regular basis is essential. There was a lot of variability regarding the attitude of the patients. The attitude of about half of the cases was like I do not know kind of thing for the major important themes of the attitude. 57.8% never tried to visit an ophthalmologist for screening in the last one year of the interview. Only one fourth of the cases underwent regular screening procedure. 17.2% of the cases underwent the laser treatment and 14.1% were operated for DR. Factors like age, sex, residence, occupation and type of treatment taken for diabetes were not found out to be statistically significantly associated with the poor knowledge related to DR. The education of the patient as well as the duration of diabetes were found to be statistically significantly associated with the poor knowledge.

Pardhan S et al,^[6] recruited 400 cases with DR in Chennai. Mean age was 58.5 years. STDR was seen in 21.7% of the cases. 78.3% had NSTDR. The mean

rank of KAP was 183.4 in those with NSTDR and it was 233.1 in those with STDR and this difference was found out to be statistically significant ($p < 0.05$). they concluded that poor KAP was there in those with NSTDR.

Marouzi P et al,^[7] in their systematic review and meta-analysis included 29 KAP studies which had 14830 cases. They found that the overall good knowledge from all these studies was 43.1%, that of good attitude was 49.6% and that of good practice was 40%. The proportion of those with good KAP was higher with higher income levels compared to those with the lower income levels. The positive attitude was found out to be statistically significantly associated with good practices but good knowledge was not found out to be statistically significantly associated with good attitude.

Hussain R et al,^[8] carried out a survey in a town from South India among 6211 people. Females were slightly more than males. Mean age was 55.6 years. 55.6% had good knowledge and 52.8% had good attitude. The prevalence of diabetes was 25.4% and among them the prevalence of good knowledge was 40.7% and that of good attitude was 53.8%. it was observed that about 9.6% underwent screening of eye.

Srinivasan NK et al,^[9] carried out a hospital-based, cross-sectional KAP study among 288 cases. The prevalence of good knowledge was 42% which was related to diabetes. But the good knowledge related to DR was only 4.5%. 61.1% of the cases never underwent screening which was supposed to be carried out at periodic levels.

Alqahtani TF et al,^[10] in their cross-sectional study of KAP among adults used validated KAP-36 questionnaire and it was done among 1391 cases of diabetes. The prevalence of good knowledge was found out to be 52.9% regarding DR screening. 80.8% of the cases had positive attitude related to the examination of the eyes so that DR can be detected at an early stage. 71.9% of the cases revealed good practices. As seen in the present study, this study also identified education as an important risk factor in

addition to type of diabetes, duration of the diabetes, treatment type and the level of the knowledge. Alhejji AE et al,^[11] carried out cross sectional study at primary health centres. They included 63 such centres. There were 18 questions to be asked during the interview. Total 209 were interviewed among which 149 completed the study participation. Mean knowledge score was 2.6 out of total score of four. Abu-Amara TB et al,^[12] in their cross-sectional study included all doctors but did not include the ophthalmologists to assess the KAP using eight questions. They were able to include 355 doctors. Good knowledge prevalence was found out to be 54.3%, that of good attitude was 31.3% and that of excellent practice was noted out to be 40.8%. The author felt that due to their busy schedule of the hospital, lack of training related to the care of the eyes could be reasons for low level of KAP among doctors other than those of the ophthalmologists. Al-Alawi A et al,^[13] carried out a descriptive type of study in which they used the questionnaire which had questions of type close ended. Each question was given five options basis on the five-point scale. They were able to add 45 cases of diabetes from the hospital with a mean age of 49 years. Males were more than those of the females. 64% of the cases had excellent knowledge related to the eye care. Only 13% were found out to be having a positive attitude towards the regular eye checkups. Sen A et al,^[14] conducted a KAP study which was carried out in a single centre. They were able to include 170 cases with STDR. Mean age was 54 years. 30.6% of the cases told they were informed about the detrimental effects of diabetes on the eye by the consulting physicians and were referred. 46.15% of the cases received education regarding changes in the retina as a result of diabetes. Good knowledge about the diabetes was seen in 50% of the cases.

CONCLUSION

The awareness level about diabetic retinopathy was very low. Don't know attitude was seen in half of the cases. Practices related to screening were not adequate. Only 25% underwent regular screening. Low level of education and diabetes duration were significantly associated with poor knowledge.

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