



Ophthalmology

TO STUDY THE AWARENESS OF DIABETES AND DIABETIC RETINOPATHY IN TYPE 2 DIABETIC PATIENTS - A HOSPITAL BASED STUDY

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ABSTRACT

Introduction: Diabetic retinopathy is becoming an increasingly important cause of visual impairment in India. Many diabetic patients who come to our centre have undetected, advanced diabetic retinopathy. If diabetic retinopathy had been Detected earlier in these patients, irreversible visual impairment could have been prevented.

Aim: To assess the level of awareness of diabetic retinopathy in type 2 diabetic patients coming to the eye clinic at a tertiary care centre.

Materials and Methods: This was a hospital-based, cross-sectional study, conducted in the Department of Ophthalmology at Smt.Kashibai Navale Medical College, Pune , India, over a two month period from Feb 2014 to April 2014. Three hundred and ten diabetic patients, who fulfilled the eligibility criteria, were included in the study. Patients with type 1 diabetes were excluded from the study. Data were analysed using Chi-square test and binary logistic regression, as appropriate.

Results: Out of the 310 patients that were included in the study, 56.77% had a good knowledge about diabetes and only 40.96% were aware of the treatment for diabetes. Retinopathy as a complication of diabetes was surprisingly known to only 40.32% patients and only 18.70% were aware about the treatment of diabetic retinopathy. Only 13.54% patients had the awareness about the regular follow up in presence of diabetic retinopathy and the main reason for not getting regular eye checkup was the lack of knowledge (59.67%) followed by other causes like lack of access to eye hospital (32.25%) and lack of family support for regular follow up (25.48%).

Conclusion: Good knowledge about the disease was significantly associated with positive attitude and good practice patterns. Knowledge about diabetic retinopathy was poor among the patients in our study. Lack of awareness concerning the need for screening for retinopathy was a major barrier to regular screening. There is an urgent need to educate diabetic patients about this potentially blinding complication of diabetes.

KEYWORDS : awareness, diabetic, retinopathy, diabetes, knowledge.

INTRODUCTION

There are about 280 million diabetic patients worldwide which is estimated to double by 2025. It has been predicted that more than 30% of the global number of people with diabetes in 2025 will be in the Asia Pacific region[1]. Worldwide, the prevalence of diabetic retinopathy (DR) is increasing at an alarming rate. World Health Organisation (WHO) has predicted that in India, the number of adults with diabetes will be the highest in the world: from 19 million in 1995 to 80 million in 2030[2]. It is estimated globally that about 15 000 to 39 000 people lose their sight because of diabetes and about 14.6% aged 40 years and above, developed diabetic retinopathy after a 5-year duration of diabetes[3]. Retinopathy is the most common eye disease in diabetes and is caused by changes in the blood vessels of the retina. It is increasingly becoming a major cause of blindness throughout the world in the age group of 20-60 years[4,5].

MATERIAL AND METHODS

This was a hospital-based, cross-sectional study, which included diabetic patients coming to out patient department of Ophthalmology in our hospital, a tertiary eye care centre in Maharashtra. The study was conducted from Feb 2014 to April 2014. Children (age less than 18 years), patients who did not speak or understand English, Marathi or Hindi, mentally challenged patients who were unable to give informed consent or respond meaningfully to the questions administered, patients with hazy media in both eyes precluding adequate visualisation of the fundus for grading of diabetic retinopathy, and patients with retinal vein occlusion or ocular ischemic syndrome in one or both eyes were excluded from the study. Diabetic patients, who met the eligibility criteria of the study, were enrolled after obtaining informed consent. The study was started after obtaining the approval of the Institutional Ethical Board. Data was collected using a clinical research form. The socioeconomic and educational status of each patient was graded using Modified B.G. Prasad classification.[6] The presence and level of diabetic retinopathy were assessed by dilated fundus examination using slit lamp biomicroscopy. Diabetic retinopathy was classified according to the Modified Airlie House Classification (Early Treatment Diabetic Retinopathy Study) [7].

The 18-point questionnaire (appendix 1) was formulated by the investigators after conducting a thorough literature search. To minimise bias due to 'leading' questions, most of the questions were constructed as open- ended questions. The questionnaire was reviewed

for adequacy, appropriateness and relevance of content by five subject matter experts. It was then translated to Marathi and Hindi. To ensure uniformity of administration, the questionnaire was administered in all cases By one of the two investigators; both investigators were trained to administer the questionnaire in a standard manner. This questionnaire (in English, Marathi or Hindi) was verbally administered to the patient to assess his or her awareness regarding diabetes and diabetic retinopathy.

The answers to the questions were scored. The total score achieved by the patient was calculated. On the basis of the number of correct responses, each patient in the study was categorised as having 'good' or 'poor' knowledge.

The study was approved by the Ethics Committee of the institute.

STATISTICAL ANALYSIS

Data was analysed using SPSS, Version 22.0. Chi-square/Fisher- exact test was done to check the association for categorical variables. Duration of diabetes, gender, educational status, socioeconomic status and presence of diabetic retinopathy were identified as potential confounders. Information regarding these potential confounders was meticulously documented using the clinical research form. Potential confounders were addressed by using multiple logistic regression analysis.

Results

Three hundred and ten patients who fulfilled the eligibility criteria were recruited into the study. The demographic characteristics and retinopathy status of the study population are given in [Table 1 to 5]

Table 1. Gender

	Number	Percentage
Male	176	56.77%
Female	134	43.23%

Table 2. Age

	Number	Percentage
31-40	67	21.59%
41-50	90	29.03%
51-60	97	31.29%
>60	56	18.06%

	Number	Percentage
Maharashtra	215	69.35%
Other states	95	30.65%

	Number	Percentage
Upper class	13	4.19%
Upper middle class	61	19.67%
Middle class	98	31.61%
Lower middle class	87	28.06%
Lower class	51	16.45%

	Number	Percentage
No retinopathy	182	58.7%
NPDR	63	20.13%
PDR	59	19.03%
Diabetic maculopathy	6	1.94%

Out of the 310 patients that were included in the study, only 66.12% had a good knowledge about diabetes (table 6) and only 40.96% were aware of the treatment for diabetes (table 7). Only 20.32% of the patients were aware of the HbA1c blood test and its significance (table 8). Retinopathy as a complication of diabetes was surprisingly known to 40.32% patients (table 9) and only 18.70% were aware about the treatment of diabetic retinopathy. Only 13.54% patients had the awareness about the regular follow up in presence of diabetic retinopathy and the main reason for not getting regular eye checkup was the lack of knowledge (59.67%) followed by other causes like lack of access to eye hospital (32.25%) and lack of family support for regular follow up (25.48%).

	Number	Percentage
Good	205	56.77%
Poor	105	43.23%

	Number	Percentage
Good	127	40.96%
Poor	183	59.67%

	Number	Percentage
Good	63	20.32%
Poor	247	79.67%

	Good	Poor
Heart	170 (54.83%)	140 (45.16%)
Kidney	60 (19.35%)	250 (80.64%)
Eye	125 (40.32%)	185 (59.67%)
Nervous system	47 (15.16%)	263 (84.83%)

	Number	Percentage
Good	58	18.7%
Poor	252	81.29%

	Number	Percentage
Good	42	13.54%
Poor	268	86.45%

Factors	Number	Percentage
Lack of access to health centre	100	32.25%
Lack of time for checkup	159	51.29%
Regular checking of blood sugar at home is sufficient	130	41.93%
Poor family support	79	25.48%

Did not know that follow up is necessary	185	59.67%
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Discussion

Diabetes has emerged as a major public health problem in India. It is estimated that there were 40 million persons with diabetes in India in 2007 and this number is predicted to rise to almost 70 million by 2025. The impact of rapid urbanisation, industrialisation and lifestyle changes has led to an increasing trend in prevalence of diabetes and its associated complications such as neuropathy, nephropathy, vascular diseases (cardiac, cerebral and peripheral) and retinopathy.[8]

Diabetic retinopathy is an important cause of avoidable blindness in India. Treatment interventions at early stages of diabetic retinopathy can reduce burden of blindness due to diabetic retinopathy. With the available cost-effective methods of early screening, appropriate strategies/models need to be developed. Such models need to have a well-developed mode for screening, diagnosis and referral at each hierarchical level beginning from primary health centres to specialised institutes for eye care. The National Program for Control of Blindness of India recommends opportunistic screening for identification of diabetic retinopathy. Every opportunity of contact with high-risk cases for diabetes and/or diabetic retinopathy should be utilised for screening, diagnosis and referral. Due to lack of proper screening and treatment facilities mainly at primary and secondary care level, many of the undiagnosed and uncontrolled diabetic patients become blind. The major risk factors for developing Diabetic Retinopathy are duration of diabetes [9,10] and severity of hyperglycemia. [10,11] Over the last 20 years, it has emerged as a common cause of ocular morbidity and blindness in India, moving up from number 17 (1986-1989 WHO-NPCB Survey, Government of India) to number 6 (2001–2002 NPCB national survey).[12] in the list of causes of blindness. Half of the people with diabetes are unaware that they have the disease and a third of diabetics never undergo eye examination. 11 About one-fifth of known diabetics are projected to have diabetic retinopathy.[13] It is estimated that in a population of 1 million, there are 30,000–50,000 cases of diabetes, of which 5000–10,000 have Diabetic Retinopathy and around 200–1000 of these patients require laser photocoagulation.

Among the 310 patients in our study, 125 (40.32%) were aware that eyes could be affected by diabetes. Babu N et al., and Dandona R et al., have also reported poor awareness of diabetic retinopathy (7% and 27% respectively) among the subjects in their studies done in South India [14,15]. However, in the study done in South India by Mahesh G et al., 36.31% felt that they were well educated about retinopathy, while 30.9% of the patients in the study done in North India by Koshy J et al., knew that diabetes could lead to retinal disease [16,17]. In our study, only 58(18.70%) had good knowledge of treatment for retinopathy. Das T et al., also reported poor knowledge of treatment of retinopathy among the patients in their study conducted in Eastern India [18].

Out of the 310 patients in our study, only 42 (13.54%) patients were aware of importance of regular follow up in diabetic retinopathy. The most common barrier identified was the fact that the patients did not know that they should go for a periodic eye check-up (185 patients, 59.67%). Most diabetic patients seem to know that regular follow up is necessary for their systemic disease; however, the majority do not know that they need to have a periodic eye check up to look for ocular complications of diabetes. The facts that diabetic retinopathy is a silently blinding disease, and 'good vision' is not an indicator of the status of the retina in a diabetic patient needs to be emphasised to the patient. It is the duty of the ophthalmologists to educate diabetic patients in their clinics about these basic facts. The general practitioners and physicians too have an important role in counselling the patients and refer them for regular eye check up.

CONCLUSION

Visual impairment and blindness due to diabetic retinopathy are almost entirely preventable with early detection and timely treatment. Awareness and knowledge about diabetic retinopathy were very poor among the patients in our study. Lack of knowledge concerning the need for screening for diabetic retinopathy was found to be a major barrier to compliance. Good knowledge about diabetes was significantly associated with positive attitude towards diabetes and good practice patterns regarding retinopathy. Therefore, there is an urgent need to evolve strategies to educate diabetic patients about this

potentially blinding complication of diabetes.

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Nil.

Conflicts of interest

None.

Appendix 1

QUESTIONNAIRE RELATED TO DIABETES, DIABETIC EYE DISEASE AND APPROPRIATE EYE CARE SEEKING BEHAVIOUR

1. What is diabetes? ... Knows/ Does not know
2. Can diabetes be cured completely?.... Yes/No/Does not know
3. Is diabetes a hereditary disease? ... Yes/No/Does not know
4. Are you aware that diabetes can affect the eye? Yes/ No/ Does not know
5. When should a person with diabetes undergo first eye checkup? As soon as possible/ when vision affected/ does not know
6. How good do you think your blood sugar control is? Good / Not good/ Does not know
7. Have you heard about HbA1c blood test? ... Yes/ No.
8. What are the normal blood sugar levels?..... Knows / Does not know
9. Can individuals with controlled diabetes have eye problems? Yes/ No/ Does not know
10. Does a diabetic patient need to have eye checkup when his/her blood sugar level is well-controlled? Yes/ No/ Does not know
11. Does a diabetic patient need to have eye checkup when his/her blood sugar level is poorly-controlled? Yes/No/ Does not know
12. Which of the following complication/s may arise if diabetes is poorly controlled?
 - Coronary artery disease Yes /No/ Does not know
 - Stroke Yes/No/ Does not know
 - Peripheral vascular disease Yes/ No/ Does not know
 - Neuropathy Yes/ No/ Does not know
 - Eye Disease Yes/ No/ Does not know
 - Nephropathy Yes/ No/ Does not know
13. How did you come to know about this/these complication/s?
 - Doctor/nurse/ophthalmologist/optometrist
 - Family member/friends/relatives with diabetes
 - Television/radio/newspaper/internet
14. How frequently should a person with diabetes undergo an eye checkup?
 - Every 6 months
 - Yearly
 - Only when vision affected
 - Does not know
15. Do you know what treatments are available for diabetic retinopathy?
 - Good control of diabetes alone is adequate
 - Laser treatments
 - Surgery
 - Does not know
16. What are the reasons that make you undergo eye checkup for diabetes?
 - Doctor's referral
 - Self-awareness
 - Eye complaints
17. What do you think was the biggest barrier for not getting eye screening earlier?
 - Lack of knowledge on diabetic eye disease
 - Lack of access to eye care
 - Cost issue
 - Time limitations
 - Fear of discovering something bad
18. Can individuals with diabetic retinopathy have good vision? ... Yes/No

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