

Original research article

A Questionnaire-Based Survey was Used to Examine Type 2 Diabetics' Knowledge of Diabetic Retinopathy

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Abstract

Aim: The aim of the present study was to assess the awareness of diabetic retinopathy among Type 2 diabetes mellitus patients in Bihar region.

Methods: This was a descriptive, cross sectional, non-randomized, questionnaire based study conducted in the Department of Ophthalmology, Patna Medical College and Hospital, Patna, Bihar, India, for 12 months. A knowledge attitude practice questionnaire was prepared and pretested in a sample group of representative population. The response was analyzed as to whether the questions were understood or not. Social workers were trained in administering questionnaire. Diabetic patients were given questionnaires at primary health centre and filled in the presence of social workers.

Results: Out of the 100 patients, 59(59%) had no knowledge of diabetic retinopathy compared to 41 (41%) who had knowledge. This was statistically significant with p value <0.001. Patients in the upper socioeconomic group had more knowledge about diabetic retinopathy (62.5%) which was statistically significant with a p value of 0.001. There was no significant association between duration of diabetes and knowledge of diabetic retinopathy. About 82.93 % of individuals in knowledge group had right attitude which was significantly higher than non knowledge group (54.24%) with a p value <0.001. Regarding source of information, 44% of patients in knowledge group got information about diabetic retinopathy from physicians, 13% from eye specialists, 11% from reading books, 8% from various media and 24% from other sources like family and friends. About 38.46% in knowledge group had practice of visiting ophthalmologist for eye check-up which was significantly higher than non knowledge group with a p value <0.001.

Conclusion: we concluded that the Increasing knowledge about diabetic retinopathy through awareness campaigns can improve attitude & practice. Early detection & timely intervention can help in preventing sight threatening complications.

Keywords: Attitude, Diabetic retinopathy, Knowledge, Practice, Primary health centre

Introduction

Diabetes mellitus (DM) is a metabolic disease characterized by alteration in carbohydrate, lipid and protein metabolism, where the body cannot regulate the amount of glucose in the blood.¹ Based on various studies from different countries, the global prevalence of DM was reported to be 8% in 2011 and is expected to rise to 10% by 2030.² The prevalence of DM is reported

to be higher in Jordan than in other countries, with the reported prevalence being 17.1% in 2008 and this rate is expected to double in the next 10 years.³ DM has caused 5 million deaths in 2015.⁴ The prevalence of DM is increasing worldwide. It is estimated that by 2030 there would be rise in people with DM to nearly 552 million.⁵ It is predicted that in developing countries, there will be a humongous rise in DM patients, as the majority of their patient population is aged between 45 and 64 years.⁶ Diabetic retinopathy (DR) is defined as damage to the microvascular system in the retina due to prolonged hyperglycemia. It is estimated that DM affects 8.8%⁴ of the world's population, almost one third of them have some degree of DR at any given time.⁷ DR occurs both in type 1 and type 2 DM. Previous epidemiologic studies have shown that nearly all type 1 DM and 75% of type 2 DM develops DR after 15 years of diabetes.⁸ In India, with a huge burden of type 2 DM, DR is an important cause of visual disability. The prevalence of DR among type 2 DM in India ranges between 9.6% and 33.9%.⁹ Visual disability caused by DM, is a significant public health problem, and is largely preventable and treatable. If managed in a timely fashion, quality of life can be preserved.¹⁰ Diabetic retinopathy (DR) is one of the major and common ocular complications of DM affecting more than one third of diabetes patients and reported as the 4th cause of blindness, it causes damage to the walls of small blood vessels & changing the structure and function of the retina, its prevalence increases in middle age patients (more than 40), duration of DM more than 5 years and low control of blood sugar.¹¹ DR may lead to vision impairment and loss.^{8,10,11} DR develops among 34.6% of diabetic patients.¹² Among DM patients, there are several risk factors for DR have been reported including long duration of DM, uncontrolled DM, older age, presence of additive systematic diseases such as hypertension, dyslipidemia, and obesity.¹³ The prevalence of DR varies among various regions in the world. Awareness about DR among DM patients is an important factor for early diagnosis and the treatment of the disease to avoid further complications such as visual impairment. Several studies reported low to average screening pattern where 31-53% of patients performed an annual eye examination. The objective of the study was to assess the awareness of diabetic retinopathy among Type 2 diabetes mellitus patients in Bihar region.

Material and Methods

This was a descriptive, cross sectional, non-randomized, questionnaire based study conducted in the Department of Ophthalmology, Patna Medical College and Hospital, Patna, Bihar, India, for 12 months, after taking the approval of the protocol review committee and institutional ethics committee. A detailed search in literature was done to create the knowledge attitude and practice questionnaire which was prepared in English and the local language. Questionnaire was tested in a sample group of representative population. The response was analysed as to whether the questions were understood or not. Social workers were trained in administering the questionnaire. They were given the questionnaire and filled in presence of the social workers after obtaining informed consent. Diabetic patients of age less than 18 years, mentally challenged patients who were not able to give informed consent and patients who were not able to understand and respond to the questions administered were excluded from the study.

Methodology

Questionnaire consisted of three parts, first part contained the patient profile which included name, gender, occupation, socioeconomic status, educational status and their consent for the study. Second part included details of diabetes mellitus like duration, family history of diabetes and any eye complaints if present. Third part of the questionnaire contained the following questions.

- Do you know that diabetes can affect many organs in the body?
- Do you know whether diabetes can affect vision?
- Do you know whether there is any relation between duration of diabetes mellitus and visual problems?
- Do you feel eye check-ups are necessary in diabetes?
- Do you know the frequency of eye check up needed; if yes how frequently is it needed?
- Do you know about the complications of diabetic eye disease?
- Have you ever done an eye check up to know whether diabetes has affected your eye?

Knowledge group included participants who responded “yes” to above questions 1,2,3,4 and those who responded “no” to these questions were grouped under non knowledge group. Attitude was assessed by question number 5 and 6. Practice was assessed by question number 7.

Determinants of knowledge on diabetes and diabetic retinopathy such as age, gender, language, literacy and socioeconomic status were analysed between the groups using univariate analysis. The association of knowledge of diabetic retinopathy with attitude and practices was evaluated between the groups using univariate analysis (chi square test). A two tailed P value <0.05 was considered statistically significant.

Results

The demographic characteristics of the 100 patients recruited into the study are given in Table 1. Out of the 100 patients, 59(59%) had no knowledge of diabetic retinopathy compared to 41 (41%) who had knowledge. This was statistically significant with p value <0.001.

Table 1: Demographic characteristics of the study population

Age	Number	Percentage
Below 30	9	9
30-40	24	24
40-50	33	33
50-60	21	21
Above 60	13	13
Gender		
Male	28	27
Female	72	73
Educational status		
Uneducated	24	24
class 1-12	62	62
college level	24	24
Socio economic status		
Lower	55	55
Middle	29	29
Upper	16	16

Table 2: Association of age and knowledge of diabetic retinopathy (DR)

	Knowledge of DR			P-value
	Knowledge group	Non knowledge group	Total	
Below 30	7	4	11	0.001
30-40	7	15	22	
40-50	16	18	34	
50-60	10	11	21	
Above 60	5	7	12	
Total	41	59	100	

Knowledge was more in age group less than 30 years (63.64%) and least in 40 to 50 age group (47.06%) which was statistically significant with p value <0.001 (Table 2). Knowledge was more among females than males which was not significant statistically. Knowledge was found to be high among participants with higher educational status than in those who had college level education (61.54%) which was statistically significant with p value <0.001 (Table 3).

Table 3: Association of educational status and knowledge of DR

Educational status	Knowledge of DR			P-value
	Knowledge group	Non knowledge group	Total	
No education	8	15	23	0.001
Class 1-12	28	36	64	
College	8	5	13	
Total	41	59	100	

Patients in the upper socioeconomic group had more knowledge about diabetic retinopathy (62.5%) which was statistically significant with a p value of 0.001 (Table 4).

Table 4: Association of socio economic status and knowledge of DR

Income Level (monthly income in rupees)	Knowledge of DR		Total	P-Value
	Knowledge group	Non knowledge group		
Lower (200-500)	18	36	54	0.0001
Middle (501-2000)	13	17	30	
Upper (>2000)	10	6	16	
Total	41	59	100	

There was no significant association between duration of diabetes and knowledge of diabetic retinopathy. About 82.93 % of individuals in knowledge group had right attitude which was significantly higher than non knowledge group (54.24%) with a p value <0.001. (Table 5).

Table 5: Association of knowledge of DR with attitude towards DR.

Attitude	Knowledge of DR			P-Value
	Knowledge group	Non knowledge group	Total	
Yes	34	32	66	0.0001
No	7	27	34	
Total	41	59	100	

Regarding source of information, 44% of patients in knowledge group got information about diabetic retinopathy from physicians, 13% from eye specialists, 11% from reading books, 8% from various media and 24% from other sources like family and friends (table 6)

Table 6: Source of information about diabetic retinopathy

Physicians	44%
Eye Specialists	13%
Reading Books	11%
Various Media	8%
Family and Friends	24%

Table 7: Association of knowledge of DR with practice regarding DR

Practice	Knowledge of DR		Total	P value
	Knowledgeable	Non knowledgeable		
Yes	5	8	13	0.0001
No	36	51	87	
Total	41	59	100	

About 38.46% in knowledge group had practice of visiting ophthalmologist for eye check-up which was significantly higher than non knowledge group with a p value <0.001 (Table 7).

Discussion

It is important to note that the study comprised patients reporting to an eye department. Awareness levels of such patients, particularly from the point of view of ocular complications, should reasonably be expected to be higher than those in the general population. Diabetic retinopathy is an upcoming cause of visual impairment and prevalence of diabetic retinopathy is more in developing countries. Even though health education statistics and literacy rate in Bihar is superior than national average and close to that of developed countries, diabetes related ocular complications are on the rise. The facilities in primary health centres which are provided

free of cost are not utilized properly and this is reflected in the results of our study.

In this study more than half of the respondents (59%) had no knowledge of diabetic retinopathy. Knowledge was present in 41%. Results were similar to study by Rani et al in which knowledge about diabetic retinopathy was noted as 37.1% and Dandonna et al who reported it as 27%.^{14,15} In a population-based awareness study in a sub urban area by Hussain R et al, among diabetic patients only 40.7% had knowledge about diabetic retinopathy.¹⁶

In this study, knowledge was significantly more in those with higher education and among upper socioeconomic group. Literacy and its influence on knowledge about diabetes was studied in other studies also.^{17,18} All these studies support the fact that providing education can increase awareness and knowledge about diabetic retinopathy. Dandona et al, also reported increased awareness among subjects older than 30 years or more and those with any level of education and among those belonging to upper and middle socio-economic strata in their study in urban population in India.¹⁵ Al Zarea in Saudi Arabia reported that knowledge regarding ocular complications in diabetes was 75.62% which was an urban study.¹⁹

About 82.93 % of individuals in knowledge group had right attitude which was significantly higher than non knowledge group (54.24%) with a p value <0.001. In the study by Rani et al attitude among knowledge group about diabetic retinopathy was 93.3% and this was 53.8% in the study by Hussain et al.^{14,16} Rani et al, noted that 36.5% with knowledge about diabetic retinopathy thought that there was no need to consult an ophthalmologist if their blood sugar was under control and this was 38.49% in Saudi Arabia study.^{14,19}

In this study, 38.46% in knowledge group had practice of going for eye check-up which was statistically significant. Ovenseri-Ogbomo et al, also reported that knowledge of diabetic retinopathy was significantly related to practice of undertaking eye examinations.²⁰ Mwangi et

al, reported that 50% of the participants in their study went for eye check-up.²¹ Hussain et al, reported that practice was present in 57.6%.¹⁶ In the study by Al Zarea practice was reported to be 95% which was an urban study.¹⁹ Mahesh G et al and Srinivasan N K et al, also found a statistically significant association between awareness of diabetic retinopathy and good practice patterns regarding retinopathy in their studies.^{22,23}

In primary health centres, physicians can play a major role in creating awareness and imparting knowledge about diabetic retinopathy. Data from our study also reflects this. Regarding source of information, 44% of patients in knowledge group got information about diabetic retinopathy from physicians, 13% from eye specialists, 11% from reading books, 8% from various media and 24% from other sources like family and friends. Srinivasan NK et al, also reported that doctors (both physicians and ophthalmologists) constituted the most important source of information in 71.4 % in knowledge group in their study.²³ About 66.4 % obtained their knowledge from general practitioners and nurses in the study by Ovenseri-Ogbomo et al.²⁰

Knowledge about diabetes and diabetic retinopathy help patients in developing good practice patterns which can prevent sight threatening complications. Strategies to educate diabetic patients about this potentially blinding disease should be evolved. Health education measures should be implemented at primary, secondary and tertiary levels.

At the primary level, this can be done through regular awareness campaigns, posters, pamphlets, diabetic retinopathy screening camps and through community- based education strategies. Hospital based patient education can be done by involving general practitioners, physicians and endocrinologists in addition to ophthalmologists. Data about source of information in our study also correlates with this.

Conclusion

The present study concluded that the Increasing knowledge about diabetic retinopathy through awareness campaigns can improve attitude & practice. Early detection & timely intervention can help in preventing sight threatening complications

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