KNOWLEDGE AND PRACTICE OF THE DIABETIC EYE DISEASES AMONGST PERSONS WITH DIABETES- A CROSS-SECTIONAL SURVEY

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ABSTRACT

BACKGROUND

India is home to second most populous country with diabetes. As more and more people with diabetes are leading normal life with the help of drugs, the burden of diabetic retinopathy is increasing. The awareness about the problem is not keeping pace with the burden of the disease.

MATERIALS AND METHODS

A cross-sectional survey was conducted in a teaching hospital of West Bengal wherein diabetics attending the lifestyle and diabetic clinics were asked about the different aspects of diabetic retinopathy.

RESULTS

There were 307 females (58.4%). The mean (SD) age of the respondent was 53.7 (11.5) years. 30% of the participants said that at least one of their first-degree relative (either parent or sibling) is a known diabetic. The median duration of the diabetes of the respondents was 4 years. 79% of the participants were on any oral hypoglycaemic agent. 285 (54.2%) participants knew that diabetes can affect eye. 134 (25.6%) individuals have belief that diabetes can affect eye even if the blood sugar is under control. 82 (15.6%) were not feeling the need to visit an eye doctor even if they are diabetic. 270 (51.3%) did not know whether it is essential to visit an eye specialist for periodic checkups if a person has diabetes. Sex and occupation was not significantly associated with awareness about the eye diseases. More educated participants had better knowledge about diabetic retinopathy.

CONCLUSION

Though, the awareness about the diabetic retinopathy is average, the actual practice of visiting an eye specialist for regular eye checkups is very low in diabetic patients attending a teaching hospital of West Bengal.

KEYWORDS

Diabetes, Diabetic Retinopathy, Awareness, Prevalence.

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BACKGROUND

Diabetes Mellitus (DM) is a global epidemic. The International Diabetes Foundation has estimated that globally there were 382 million people living with diabetes in 2013, which is likely to increase by 155% to 592 million by 2035.[1] This suggests that by 2035, 1 out of every 10 individuals living in the world will be having diabetes. India Diabetes Study conducted by the Indian Council of Medical Research (ICMR) during 2008-2011 has estimated that in India 62.4 million people have diabetes and 77.2 million have prediabetes.[2]

Diabetes affect nearly all organs of the body. Eyes are commonly involved in longstanding diabetes. Retina is most commonly involved part of eye in person with chronic diabetes. Diabetic Retinopathy (DR) is a debilitating disease and hampers sight if not diagnosed and treated early. In India, today DR is the sixth commonest cause of blindness.[3]

Past studies have shown various risk factors for diabetic retinopathy. The Wisconsin Epidemiological Study has proved that the most significant risk factor for DR is the duration of diabetes.[4] Studies have shown that risk of developing DR is 6.5 times more in people with more than

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15 years duration of diabetes compared to newly-diagnosed diabetes.[5,6] As the age of onset of diabetes is falling in India, more and more people are living with diabetes in the country. Therefore, people who develop diabetes early in their life (before 40 years of age) have double the risk of developing DR and Sight Threatening Diabetic Retinopathy (STDR).[7] In the recent years, in India, more and more younger population is being diagnosed with diabetes. If a person is diagnosed to have diabetes at the time of diagnosis of DM, 1 in 20 would already have developed DR. One study has shown that 14.6% aged 40 years and above developed DR after a 5-year duration of diabetes.[8]

DR cannot be prevented, but blindness from DR can be prevented by timely intervention and hence needs diligent screening for DR. Diabetic retinopathy being a silent condition, the need for regular screening cannot be overstated. In India, for optimum utilisation of the limited resources available in the government hospitals for management of DR and the huge burden of patients to be taken care of, it is essential to make the persons with diabetes aware of this preventable cause of blindness and need for at least yearly examination of the fundus with a direct ophthalmoscope, which can be done at the secondary level of healthcare. We need to increase the demand of regular eye checkups of the persons with diabetes. This can only happen if the awareness level of the diabetics is increased.

The awareness about the diabetes affecting eye is miserably low in India. Dandona et al has observed a low level (28.8%) of awareness about DR among an urban general population in south India.[9] Rani PK et al in a study conducted on rural population in south India found that 37.15% had knowledge of DR, but this was assessed after conducting awareness meetings.[10] Another study conducted in general population in a suburban town of South India found that 55.6% had good knowledge of DR.[11] We assume that the awareness about the diabetic eye disease is very low among persons with diabetes in Eastern India. The study was aimed at assessing the level of awareness about diabetic eye disease among diabetic patients undergoing treatment for DM in a suburban tertiary care government hospital in the state of West Bengal located in eastern part of the country.

MATERIALS AND METHODS

A cross-sectional study was conducted amongst diabetic patients attending the lifestyle and diabetic clinics of a teaching hospital located in municipality town of Kalyani in West Bengal. Taking the prevalence of correct knowledge about the diabetic retinopathy amongst persons with diabetes to be 40% and absolute error to be 5% and nonresponse rate to be 20%, the total sample size calculated was 450. The data collection period was from November 2016 to January 2017. Patients attending either of the clinics on the clinic day (Tuesdays) were enrolled for the study. The study was approved by the Institutional Ethics Committee and informed consent was taken from all participants included in the study.

A detailed search of literature on guidelines for conducting a Knowledge, Attitude and Practice (KAP) study was carried out and KAP questionnaires on DR in published papers were collected. Based on the exhaustive literature search, a KAP questionnaire was prepared in English with local language, Bengali translations for the respective questions, to suit the target population. Interns, posted in the Department of Ophthalmology, during their rotational internship training before completion of M.B.B.S. course were trained in administering the KAP questionnaire. They interviewed the participants after taking informed consent. They noted the response in the interview schedule only. High quality of data collection was assured by the principal investigator by sitting randomly with internees during the interview process. Special care was taken to acquaint each intern with the questions and to assess their reliability in data collection by re-interviewing 10% of the participants by the principal investigator. The KAP questionnaire was pretested in a sample group and the responses were analysed as to whether the questions were understood or not and necessary modifications were incorporated where needed.

The questions that evaluated knowledge included-

- Can diabetes affect eye?
- Can individuals with controlled diabetes have eye problem?
- Do you know that visiting an eye doctor is a must if you have DM?
- What should be the frequency of visit to an eye doctor for a DM patient?

Attitude or practice regarding DR was assessed by asking the participants these questions-

- Has your doctor ever advised you to visit an eye doctor?
- Have you ever visited an eye doctor after you were diagnosed as DM?
- If yes, when was the last visit?
- Do you know what treatment is available for DR?

The responses to all questions were acquired in the following format- Yes, no and don't know/not sure. The data collected were entered in MS Excel 2010. The data were analysed by SPSS version 22.0. Chi-square test was used to compare the proportions. Two-tailed significance test with p value of 0.05 or less was considered to be statistically significant.

RESULTS

In total, 526 persons with diabetes mellitus enrolled in the diabetic and lifestyle clinics of the teaching hospital who attended the clinics during the data collection period and who gave informed consent to participate in the study were enrolled for the study. There were 307 females (58.4%). The mean (SD) age of the respondent was 53.7 (11.5) years. The minimum and maximum age was 14 and 100 years, respectively. 252 (48%) of the respondents lived in urban or

semiurban areas. 13% of the respondents were illiterate. 47% of the respondents were literate, but less than primary pass. As majority of the respondents were females, the main occupation of the respondents found out was homemaker. Amongst the male respondents, equal numbers were self-employed, skilled workers and not working. The median monthly family income was Rs. 4000. The range of income of the households was from Rs. 1000 to Rs. 70,000 per month. 30% of the participants said that at least one of their first-degree relative (either parent or sibling) is a known diabetic. In 3% of respondents, both parents were diabetic (Table 1). The median duration of the diabetes of the respondents was 4 years. The mean duration of diabetes was 5 years 9 months. The range of the duration of the diabetes was from 1 month to 30 years. 79% of the participants were on any oral hypoglycaemic agent as advised in the diabetic clinic (Table 2). 483 (91.8%) of the respondents said that they feel some problem in their eye. 285 (54.2%) participants knew that diabetes can affect eye. 78 (14.8%) of the diabetic were sure that diabetes does not affect eye. Rest were either not knowing or not sure about the effect of diabetes on eyes. 134 (25.6%) individuals have belief that diabetes can affect eye even if the blood sugar is under control. 77 (14.6%) said that eyes are spared if the blood sugar level is under control. 315 (59.8%) were not sure or did not know the effect on eyes due to controlled blood glucose. 174 (33.1%) respondents said that it is essential to visit an eye specialist if a person has diabetes because they were aware that the diabetes can cause some problem in eyes. 82 (15.6%) were not feeling the need to visit an eye doctor even if they are diabetic. 270 (51.3%) did not know whether it is essential to visit an eye specialist for periodic checkups if a person has diabetes. Out of 174 diabetics who said that it is essential to visit an eye doctor, 32 (18.4%) said that the visit should be yearly. 37 (21.2%) mentioned that a diabetic should visit an eye doctor monthly for eye checkup. 33 (19%) diabetics felt the need of half-yearly visit to an eye specialist. 72 (41.4%) respondents with diabetes though knew that it is important to visit an eye specialist regularly for periodic eye checkups, they did not know the frequency of visit to an eye doctor. Out of 526 diabetics interviewed, only 278 (52.9%) have said in affirmation that their doctor has told them to get their eye examined by an eye specialist regularly as they have high chances of getting eye diseases when compared to a normal person. 261 (49.8%) respondents had ever visited an eye doctor after they were diagnosed as diabetic. Out of 261 who had ever visited an eye specialist for eye checkup, 85 (32.6%) visited in last month. 64 (24.5%) visited in last 6 months. 35 (13.4%) visited in last year and rest had last seen the eye doctor more than a year ago. 503 (95.6%) participants were not aware of the treatment of diabetic retinopathy. Sex and occupation was not significantly associated with awareness about the eye diseases (p value >0.05, Table 3). Education level of the participants was significantly associated with the knowledge about diabetic retinopathy (Table 4).

Family Member who is or was a Known Diabetic	Frequency	Percentage
Father	26	4.9
Mother	37	7
Sibling	82	15.6
Both parents	18	3.4
None/don't know	363	69.1
Total	**526**	**100**

Table 1. Family History of Diabetes

Treatment of Diabetes	Frequency	Percentage
Lifestyle modification	13	2.5
Oral hypoglycaemic	417	79.3
Insulin	18	3.4
Oral hypoglycaemic and insulin	39	7.4
None	39	7.4
Total	**526**	**100**

Table 2. Current Treatment of Diabetes

Sex	Correct Knowledge about DR	No Knowledge about DR	Chi-Square Statistic (p value)
Male	124	95	0.64 (0.4237)
Female	163	144	

Table 3. Knowledge About Diabetic Retinopathy Amongst Different Genders

Education Level	Correct Knowledge about DR	No Knowledge about DR	Chi-Square Statistic (p value)
Illiterate	59	87	44.27 (<0.0001)
Literate	35	51	
Primary	91	66	
Secondary	45	21	
Higher secondary	26	5	
Graduate	27	9	
Postgraduate	4	0	

Table 4. Knowledge About Diabetic Retinopathy and Education Level of Participants (n=526)

DISCUSSION

Diabetic retinopathy is a microangiopathy. DR can be of two types. Almost, all insulin-dependent diabetes mellitus patients will develop nonproliferative diabetic retinopathy alter in their life. Most persons with type 2 diabetes will also develop this type of DR. The other variant is proliferative diabetic retinopathy. Most diabetics will experience mild-to-moderate vision problem. The incidence of slight threatening diabetic retinopathy can be decreased if diabetics are aware of the condition and if they visit an eye specialist regularly for eye checkups.[12] This cross-sectional survey shows that awareness about various eye diseases due to diabetes mellitus is moderately high in person affected with diabetes. But, this awareness is not translating into actual practice as the actual visit to eye specialist is low in the study

population. Due to shortage of time in busy OPDs, physicians and dialectologists do not always tell the patient to visit an eye specialist. This is more true in a public run health center or hospital. Since, in the initial years of diabetes diagnosis, there is no problem in the eye, patient tend to defer visit to an eye specialist. In the present study, 54% of the diabetics knew that diabetes can cause some problem in the eye. In a study conducted in Nigeria, investigators found out that 84.3% of the patients were generally aware of diabetic retinopathy with their main source of information being hospital staff and fellow patients.[13] According to Martha et al, the knowledge about diabetic eye disease in diabetics was 83% and fifty percent of all the respondents went for eye checkups.[14] In the present study, 54% of the diabetics were aware about any eye disease caused by diabetes and about a half had ever visited a doctor for eye checkup. Ebru N Cetil et al found out that 39.8% of diabetics thought that good glycaemic control might cause diabetic retinopathy.[15] This figure is 26% in our study. The diabetics attending the diabetic and lifestyle clinics of the hospital had a poor knowledge about the schedule of eye examinations by an ophthalmologist.

We can conclude that the awareness about the diabetic retinopathy and other diseases affecting eye in the diabetes is moderate in the diabetics attending the diabetic clinic of teaching hospital of West Bengal. There is a need of generation of awareness about various eye disorders particularly diabetic retinopathy in masses. The healthcare professionals should emphasise the importance of regular eye checkup by a trained ophthalmologist to all diabetics seen by them. Facility should be made easily accessible to treat diabetic retinopathy. Since, diabetic eye disease can present much before the actual diagnosis of diabetes is made, it is very important to make people aware about the various eye disorders associated with diabetes mellitus.

One way to increase awareness about the diabetic retinopathy is getting message printed in the laboratory requisition forms of the hospitals. The request form for blood sugar level estimation may have following lines printed in local language, 'If fasting and postprandial blood glucose level is more than 126 and 200 mg/dL, get your eyes checked to prevent blindness.'

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