A study of the awareness of diabetic eye disease among diabetics

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Abstract

Purpose: To assess the awareness of diabetic eye disease amongst patients visiting a tertiary care hospital with Diabetes mellitus.
Methods: A cross section of patients presenting to a tertiary care hospital with a diagnosis of diabetes mellitus , in a specified time interval ,were interviewed on the basis of a questionnaire regarding their awareness of eye disease due to diabetes and their actual attitude and practice.
Results: 423 patients were included in the study. Their responses were analyzed as per the questionnaire, on percentage basis.
Conclusion: The study concluded that despite a reasonably good awareness regarding diabetes mellitus and ocular involvement, there was poor attitude and practice of utilization of available resources for screening and treatment of diabetic eye disease.

Introduction

Diabetes mellitus (DM) affects large number of people in a wide range of ethnic groups and at all social and economic levels worldwide.[1] At present there are nearly 110million people suffering from this disease and this is expected to rise to over 300 million in the next quarter of the century.[2] Diabetes mellitus is a lifelong condition and is associated with complications including nephropathy, neuropathy and retinopathy. Till date it remains one of the leading causes of adult blindness in developed countries due to retinopathy, cataract or glaucoma. However with industrialization and modernization of societies due to rapid socioeconomic development in developing nations, the prevalence of risk factors for non-communicable diseases including DM is on the rise.[3,4]

In India there is estimated to be a 195% increase in the number of diabetics from 19 million to 57 million people between 1995 and 2025.[2] Around 10-12% of the urban and 4-6% of the Indian rural population have diabetes. This makes India the country with the largest number of diabetics in the world.[5] If one considers that approximately one-fifth to one third of all persons with diabetes will have retinopathy, there may be approximately 11-20 million persons with diabetic retinopathy(DR) by 2025 in India, including 5.7 million with severe retinopathy who would require either laser or surgical intervention to preserve vision.[6-8] Such an increase would drastically elevate to 9-12 million blind population which constitutes approximately a quarter of the world's blind population, already present in our nation. This group, which would otherwise burden the existing load of visually impaired populace, therefore needs to be targeted.

It has been shown by various studies that early detection and treatment of diabetic eye disease can salvage vision to a considerable extent.[9] Hence eye care programs should be able to attract and examine all the potential 57 million persons with diabetes, if associated ocular conditions are to be detected early.[10] Such an enormous target would be easier to achieve if persons with DM themselves are aware of the sight threatening potential of the disease and the importance and necessity for regular eye examinations. Appropriate eye health education may encourage people at risk to seek timely and appropriate care. This would require developing educational materials that are regionally and culturally appropriate and also, an understanding of the current knowledge, attitude and practices in the community.

The aim of our study was to determine the awareness of Diabetic eye disease among diabetic patients visiting a tertiary care center. Diabetic eye disease included diabetic retinopathy as well as cataract and refractive errors.

Materials and Methods

The patients with diabetes mellitus visiting the Departments of Ophthalmology and Medicine in a tertiary care University Hospital in South India, who consented to participate in the study were included.

The subjects chosen were either self-reported diabetics or patients recorded to have high blood sugars and receiving or had been advised treatment in the form of diabetic diet or oral or injectable anti- diabetic therapy.

After they consented to participate in the study, they were interviewed as per a structured questionnaire regarding their awareness of the ocular complications of DM and its management. The technique of interview was adopted so as to overcome the barriers of language and literacy.

After the interview they were individually explained regarding diabetic eye disease including its management and the role of regular eye examination in its control with the help of charts depicting fundus photographs of normal and diseased eyes.

The participants who agreed to get evaluated after the above interview, underwent an anterior segment and retinal evaluation for features of any retinopathy and the data was recorded.

Results

A total of 423 patients agreed to participate in the study.

264 patients (62.4%) were in the 31-60 year age group. 269 patients (64%) were males. 323 patients (76.3%) had received minimum education of secondary schooling or above, with only 18 (4.25%) being illiterate.

Table 1

Duration of Diabetes mellitus	<6 months	>6 months -2 years	>2-10 years	>10years
No.	58	56	203	106
%	13.71	13.23	47.94	24.97
Mode of treatment	Insulin	Oral hypoglycemic agents	Diabetic diet	Others (alternative medicine)
No.	114	280	25	4
%	26.95	66.19	5.91	0.94
Diabetes was being managed by	Physician	Diabetologist	General Practitioner	Others
No.	372	6	38	7
%	87.94	1.41	8.98	1.65
Follow up with the treating doctor for Diabetes	<6 months	>6months-1 year	>1 year	Irregular
No.	353	37	6	7
%	83.45	8.74	1.41	6.38
Self-awareness of Status of Diabetic control	Known Normal	Known High	Unknown	
No.	214	141	68	
%	50.59	33.33	16.07	
Awareness of EYE involvement in Diabetes mellitus	Possible	Not possible	Don't know	
No.	301	31	91	
%	71.17	7.32	21.51	
Source of information for Diabetic eye disease	Physician	Ophthalmologist	Friends	Media
No.	194	49	10	57
%	62.58	15.8	3.22	18.38
Dilated Retinal evaluation	Done	Not done	Not sure	
No.	198	206	19	
%	46.8	49.17	4.49	
Ophthalmology review for Diabetes	< 1 year	>1-2 years	> 2 years	Never
No.	143	41	52	186
%	33.88	9.71	12.32	44.07
Ocular complications may cause blindness	Yes	No	Don't know	

No.	216	42	164	
%	51.18	9.95	38.86	
Retinopathy stage in those willing to get examined (Total : 246 patients)	Non Proliferative Diabetic Retinopathy	Proliferative diabetic retinopathy	No Diabetic retinopathy	
No.	61	26	159	
%	24.79	10.56	64.63	

Discussion

The results of our study indicated that over 60% of the diabetics who were interviewed, were in the productive age group of 31-60 years.

Almost three fourths of the patients were educated and were having a regular review with their treating doctor with respect to the control of blood sugars.

During the interview, most claimed to know about ocular involvement as a complication of diabetes and a majority quoted medical sources of information with regard to this subject. However, nearly half of these patients had never been examined after a dilation by an ophthalmologist after the onset of diabetes. Almost 40% were unaware of the potential of diabetic eye disease to cause blindness.

A pilot study on the awareness of diabetic retinopathy by P. Namperumalsamy et al in a south Indian population showed that though 80% respondents felt yearly eye exams were essential for diabetic patients, only 43.5% had ever visited an ophthalmologist. The study concluded that considerable effort is required to improve the awareness of diabetic retinopathy and to translate this improved awareness to actual utilization of services.[10]

Dandona et al in their study on the awareness of eye diseases in an urban south Indian population also reported a poor knowledge amongst their study population with only 27% regarding diabetic retinopathy as being a sight threatening disease.[7]

The reason for this could probably be attributed to the absence of visual acuity disturbance in most of these patients. It must be emphasized that diabetic retinopathy can persist and progress despite the absence of marked decrease in visual acuity.[11] Hence greater emphasis must be laid on the spread of awareness of facts regarding diabetic eye disease to prevent such discrepancies in the knowledge attitude and actual practice by the patients.

Such discrepancies if seen in settings where reasonably high educational standards and proximity to a tertiary care health network is available, the scenario in a set up with poor facilities and education can be estimated to be much worse. Thus it would be appropriate if more intense educational programs including lectures, seminar, exhibitions, public awareness campaigns, and print and television media are used for spreading awareness.

The importance of educating the population at risk cannot be neglected. One of the causes for non-adherence to the diabetes vision care guidelines as per the Diabetic retinopathy awareness program by Schoenfeld ER et al in New York, USA was the lack of practical knowledge about diabetes and lack of diabetes education.[12]

In our study there were some subjects who claimed that despite having visited an ophthalmologist after the onset of Diabetes, they had not undergone a dilated fundus evaluation. Instead only a refractive correction was done. This needs attention and needs to be rectified.

In the rural and under privileged areas, till such time when the literacy and standards of living improve, he above methods may be tried, but are unlikely to have much impact. Therefore in such a scenario, a more proactive intervention by the health care professionals is needed.

Though it would be ideal to have an "Ophthalmologist based" screening service, owing to a lack of human resources and the vast populace needing coverage, the excellent existing network of primary health care network in our country may be utilized. Thus an "Ophthalmologist led" system of community based screening by primary care physicians and health workers could be more effective.

The development of Tele ophthalmological screening would aid in the faster and more accurate dispersion of these services. Advances in the field of digital fundus photography, retinal nerve fiber analysis and easy availability of high speed internet can to a reasonable extent aid in the screening and diagnosis of retinopathy without physical examination of the patient by the ophthalmologist. This would help in sorting out the cases requiring further intervention including fundus fluorescein angiograms, lasers and retinal surgery.[13]

But one time screening of patients is not sufficient, as regular ophthalmological follow-up has to be motivated amongst diabetics. This can largely be imparted only by health education.

Diabetic retinopathy awareness program showed a better adherence to the prescribed eye care guidelines by patients visiting an ophthalmologist compared to those visiting an optometrist or non-ophthalmologist.[12]

Though having medical professionals impart education may improve its quality, it may not be an optimal utilization of these services in a situation where medical services are scarce. Instead, the wider range of

paramedical personnel may be utilized for this purpose, by providing them with materials that are culturally, linguistically and regionally appropriate.[10]

Conclusion

Our study revealed that despite a good educational status and accessibility to health care services, the lack of practical knowledge regarding the consequences of Diabetic eye disease was a major hurdle to its control. The regular visit to the treating physician should also serve as the point of imparting of knowledge regarding other consequences of diabetes including eye disease. This should be backed up by easy accessibility of resources to screen, diagnose and treat such patients.

References

1. 1. WHO (World Health Organization) 1994. Prevention of Diabetes Mellitus WHO Technical report series no. 844, WHO, Geneva.
2. King H, Aubert RE, Herman WH. Global burden of Diabetes, 1995-2025: Prevalence, numerical estimates and projections. *Diabetes Care* 1998;21:1414-31.
3. Hennekens GH, Buring JE. *Epidemiology in Medicine*,1987; Little Brown, Boston MA.
4. Zimmet P. Diabetes epidemiology as trigger to diabetes research. *Diabetologica* 1999;44:499-518.
5. Sarah W. Global prevalence of Diabetes. *Diabetes Care* 2004;27:1047-53.
6. Narendran V, John RK, Raghuram A, Ravindran RD, Nirmalan PK, Thulsiraj RD. Diabetic retinopathy among self-reported diabetics in southern India: A population based assessment. *British Journal of Ophthalmology* 2002;86:1014-18.
7. Dandona L, Dandona R, Naduvilath TJ, Mc Carthy CA, Rao GN. Population based assessment of diabetic retinopathy in an urban population in South India. *British Journal of Ophthalmology* 1999;83:937-40.
8. Runa M, Ponnaiya M, Mohan V. Prevalence of retinopathy in non-insulin dependent diabetes mellitus at a diabetes center in southern India. *Diabetes Res. Clin. Pract.* 1996;34:29-36.
9. Backlund LB, Algvere PV, Rosenquist U. New blindness in Diabetes reduced by more than one-third in a Stockholm county. *Diabetic medicine* 1997;14:732-40.
10. Namperumalsamy P, Kim R, Kaliaperumal K, Sekar A, Karthika A, Nirmalan P. Pilot study on awareness of diabetic retinopathy among nonmedical persons in South India. *Indian Journal of Ophthalmology* 2004;52:247-51.
11. Perspectives in disease prevention and health promotion guidelines for diabetic eye disease control. Kentucky: MMWR 36(7);93-4:1987.
12. Schoenfeld ER, Greene JM, Wu SY, Leske MC. Patterns of adherence to diabetes vision care guidelines: baseline findings from the Diabetic Retinopathy Awareness Program. *Ophthalmology* 2001;108:563-71.
13. Screening for Diabetic retinopathy in rural areas: the potential for telemedicine. Cummings DM et al. *Journal of Rural health.*2001,17(1):25-31.