

ORIGINAL RESEARCH

Awareness of eye complications and prevalence of retinopathy in the first visit to eye clinic among type 2 diabetic patients

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ABSTRACT

Background: The study was conducted to assess the Awareness of eye complications and prevalence of retinopathy in the first visit to eye clinic among type 2 diabetic patients. **Material and methods:** This study comprised of 100 subjects. Basic demographic information about the patients' age, gender, race, degree of education, and employment was recorded after the patients gave their informed written consent. The type, duration, medication, blood glucose stability, and most recent HbA1c were all taken from the patient's medical records. Any other medical history, such as the existence of hypertension, hypercholesterolemia, or ischemic heart disease, was also recorded. A 3-month period with HbA1c readings less than 6.5% was considered good blood sugar control. The participants were then required to complete an 11-point survey before to their initial eye exam at the eye clinic. Specific questions about awareness and knowledge of diabetic sequelae, including retinopathy, eye screening, and proper care-seeking behavior for eyes were included in the questionnaire. After a thorough review of the literature for prior reports of knowledge and awareness of diabetic retinopathy for a study population, guidelines for the creation of the questionnaire were found. Each patient had their visual acuity measured using a Snellen chart following the completion of the questionnaire. In the eye clinic, each patient had a thorough fundus examination from the attending ophthalmologist utilizing a slitlamp biomicroscope. Everybody had their fundus photographed, and the presence or absence of diabetic retinopathy was noted. Statistical analysis was conducted using SPSS software. **Results:** In this study, there were 56 males and 44 females. 15 and 11 illiterate people were aware as well as unaware about the complications of diabetic retinopathy. 22 and 10 people of primary level education were aware as well as unaware about the complications of diabetic retinopathy. 26 and 5 people of secondary level education were aware as well as unaware about the complications of diabetic retinopathy. 11 and 0 people of tertiary level education were aware as well as unaware about the complications of diabetic retinopathy. Diabetic retinopathy was present in 11 subjects and was absent in 89 subjects. The prevalence of the condition was 11%. **Conclusion:** 74% of the population was aware about the complications of diabetic retinopathy and the prevalence of diabetic retinopathy in this study was 11%

Keywords: diabetes, retinopathy, education, awareness

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INTRODUCTION

Diabetes mellitus (DM) is a major cause of avoidable blindness in both the developing and the developed countries. Patients with diabetic retinopathy (DR) are 25 times more likely to become blind than non-diabetics.¹ Good glycemic control arrests the development and progression of DR and decreases the visual loss. Technological advances have improved the diagnostic accuracy of screening methods and access of the diabetic patients to the specialist care. In the last three decades, the treatment strategies have been revised to include, besides laser

photocoagulation, early surgical interventions and pharmacotherapies.

Majority of the patients have non-insulin-dependent diabetes mellitus (NIDDM) or type 2 diabetes. The prevalence of insulin-dependent diabetes mellitus (IDDM) or type 1 diabetes is 10-15% of the diabetic population. Prevalence of DR in Wisconsin Epidemiological Study of Diabetic Retinopathy (WESDR) was 50.1%¹ and 54.2% in the diabetes control and complications trial (DCCT) in IDDM² and 35-39% in United Kingdom Prospective Diabetes Study (UKPDS)³ in NIDDM. In two studies from

South India, the prevalence rates of DR in NIDDM patients were 34.1% and 37%.^{4,5} India has 31.7 million diabetic subjects at present as per the World Health Organization (WHO) estimates.^{6,7} This study was conducted to assess the Awareness of eye complications and prevalence of retinopathy in the first visit to eye clinic among type 2 diabetic patients.

MATERIAL AND METHODS

This study comprised of 100 subjects. Basic demographic information about the patients' age, gender, race, degree of education, and employment was recorded after the patients gave their informed written consent. The type, duration, medication, blood glucose stability, and most recent HbA1c were all taken from the patient's medical records. Any other medical history, such as the existence of hypertension, hypercholesterolemia, or ischemic heart disease, was also recorded. A 3-month period with HbA1c readings less than 6.5% was considered good blood sugar

control. The participants were then required to complete an 11-point survey before to their initial eye exam at the eye clinic. Specific questions about awareness and knowledge of diabetic sequelae, including retinopathy, eye screening, and proper care-seeking behavior for eyes were included in the questionnaire. After a thorough review of the literature for prior reports of knowledge and awareness of diabetic retinopathy for a study population, guidelines for the creation of the questionnaire were found. Each patient had their visual acuity measured using a Snellen chart following the completion of the questionnaire. In the eye clinic, each patient had a thorough fundus examination from the attending ophthalmologist utilizing a slitlamp biomicroscope. Everybody had their fundus photographed, and the presence or absence of diabetic retinopathy was noted. Statistical analysis was conducted using SPSS software.

RESULTS

Table 1: Gender-wise distribution of subject.

Gender	Number of subjects	Percentage
Males	56	56%
Females	44	44%
Total	100	100%

In this study of 100 subjects, there were 56 males and 44 females.

Table 2: Association between educational level and awareness of diabetic eye complications.

Educational level	Awareness of diabetic retinopathy	
	Aware	Unaware
Illiterate	15	11
Primary	22	10
Secondary	26	5
Tertiary	11	00

15 and 11 illiterate people were aware as well as unaware about the complications of diabetic retinopathy. 22 and 10 people of primary level education were aware as well as unaware about the complications of diabetic retinopathy. 26 and 5 people of secondary level education were aware as well as unaware about the complications of diabetic retinopathy. 11 and 0 people of tertiary level education were aware as well as unaware about the complications of diabetic retinopathy.

Table 3: Prevalence of retinopathy

Prevalence	Number of subjects	Percentage
Absence	89	89%
Presence	11	11%
Total	100	100%

Diabetic retinopathy was present in 11 subjects and was absent in 89 subjects. The prevalence of the condition was 11%.

DISCUSSION

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.⁷ In Malaysia, diabetes is a growing concern. Results of the two National Health and Morbidity Surveys (NMHS) showed a dramatic increase in the prevalence from 8.3% in 1996 to

14.9% in 2006 for Malaysian adults aged 30 years and above-an increase of 80% over a period of just 10 years.⁸ The complications associated with diabetes are appalling. 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.

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.^{9,10} In Malaysia, diabetic eye disease is the commonest cause of visual loss in the adult working age group.^{11,12}

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In this study, there were 56 males and 44 females. 15 and 11 illiterate people were aware as well as unaware about the complications of diabetic retinopathy. 22 and 10 people of primary level education were aware as well as unaware about the complications of diabetic retinopathy. 26 and 5 people of secondary level education were aware as well as unaware about the complications of diabetic retinopathy. 11 and 0 people of tertiary level education were aware as well as unaware about the complications of diabetic retinopathy. Diabetic retinopathy was present in 11 subjects and was absent in 89 subjects. The prevalence of the condition was 11%.

Donovan RJ et al (1978)¹³ In a prospective study lasting 14 months an attempt was made to measure the visual acuity and examine the fundi, after mydriasis, of all patients attending the diabetic clinic of a district general hospital. Of 704 patients, 160 (22.7%) had some evidence of retinopathy, and 52 (7.4%) of these were already attending an ophthalmologist. A further 18 (2.6%) were known to have retinopathy and were being followed up in the diabetic clinic. Ninety (12.8%) new patients with diabetic retinopathy were discovered. Most had minimal changes, but 30 (4.3%) were considered to have changes severe enough to be referred to an ophthalmologist. Twenty-two (2.1%) underwent, or were awaiting, photocoagulation, and half of these had had no visual symptoms when first seen. Although some of these patients were already being treated or observed for retinopathy, it is encouraging that relatively few new patients needing treatment for retinopathy were discovered. If retinopathy could be detected early enough physicians might be able to deal with it and so ease pressure on ophthalmological services.

Tajunisah I et al (2011)¹⁴ assessed the awareness of eye complications and the prevalence of retinopathy, in the first visit to eye clinic, among type 2 diabetic patients attending a tertiary medical centre in Kuala Lumpur, Malaysia. An investigator-administered questionnaire was given to 137 patients with diabetes undergoing first time eye screening in the eye clinic. This was followed by a detailed fundus examination by a senior ophthalmologist to assess for presence of retinopathy. Almost 86% of respondents were aware of diabetic eye complications, especially in patients who had achieved tertiary educational level (96.3%). The majority of the patients (78.8%) were referred by their physicians and only 20.4% came on their own

initiative. Many of the patients (43.8%) did not know how frequent they should go for an eye check-up and 72.3% did not know what treatments were available. Lack of understanding on diabetic eye diseases (68.6%) was the main barrier for most patients for not coming for eye screening earlier. Despite a high level of awareness, only 21.9% had recorded HbA1c level of <6.5% while 31.4% were under the erroneous assumption of having a good blood sugar control. A total of 29.2% had diabetic retinopathy in their first visit eye testing. In the present study, 29.2% of type 2 diabetic patients had retinopathy in their first time eye testing. Although the awareness of diabetic eye complications was high among first time eye screening patients, the appropriate eye care-seeking behavior was comparatively less and should be rectified to prevent the rise of this sight threatening eye disease.

CONCLUSION

74% of the population was aware about the complications of diabetic retinopathy and the prevalence of diabetic retinopathy in this study was 11%

REFERENCES

1. National society to prevent blindness. New York: National society to prevent blindness; 1980. pp. 1-46.
2. Williams R, Airey M, Baxter H. Epidemiology of diabetic retinopathy and macular edema: A systematic review. *Eye*. 2004;18:963-83.
3. Malone JJ, Morrison AD, Pavan PR, Cuthbertson DD. Diabetic Control and Complications Trial: Prevalence and significance of retinopathy in subjects with type 1 diabetes of less than 5 years duration screened for the diabetes control and complications trial. *Diabetes Care*. 200;124:522-6.
4. Kohner EM, Aldington SJ, Stratton IM. United Kingdom Prospective Diabetes Study, 30: Diabetic retinopathy at diagnosis of non-insulin-dependent diabetes mellitus and associated risk factors. *Arch Ophthalmol*. 1998;116:297-303.
5. Rema M, Ponnaiya M, Mohan V. Prevalence of retinopathy in non insulin dependent diabetes mellitus at a diabetes centre in Southern India. *Diabetes Res Clin Pract*. 1996;34:29-36.
6. Sharma RA. Diabetic eye disease in southern India. *Community Eye Health*. 1996;9:56-8.
7. Wild S, Roglic G, Green A. Global prevalence of diabetes, estimates for the year 2000 and projections for 2030. *Diabetes Care*. 2004;27:1047-53.
8. Cockram CS. The epidemiology of diabetes mellitus in the Asia-Pacific region. *Hong Kong Med J*. 2000;6(1):43-52.
9. The Second National Health and Morbidity Survey 2007. Diabetes mellitus among adults aged 30 years and above. Institute of Public Health (IPH) 2008. Ministry of Health, Malaysia.
10. Thylefors B, Negrel AD, Pararajasegaram R, Dadzie KY. Global data on blindness. *Bull World Health Organ*. 1995;73(1):115-121.
11. Global initiative for the elimination of avoidable blindness. An informal consultation. World Health Organization, Geneva, 1997. WHO/PBL/97.61.

12. Report of Health Technology Assessment Unit, Medical Development Division, Ministry of Health Malaysia MOH/P/PAK/51.02 (TR)
13. Donovan RJ. Prevalence of retinopathy in a diabetic clinic. *Br Med J.* 1978 Jun 3;1(6125):1441-2.
14. Tajunisah I, Wong P, Tan L, Rokiah P, Reddy S. Awareness of eye complications and prevalence of retinopathy in the first visit to eye clinic among type 2 diabetic patients. *Int J Ophthalmol.* 2011;4(5):519-24.