Original Article
DOI: https://doi.org/10.70749/ijbr.v3i2.2290

INDUS JOURNAL OF BIOSCIENCE RESEARCH
https://ijbr.com.pk
ISSN: 2960-2793/ 2960-2807

Awareness of Diabetic Retinopathy among Diabetic Patients

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ARTICLE INFO

Keywords: Diabetic Retinopathy, Awareness, Education, Vision.

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Declaration
Authors' Contribution
All authors equally contributed to the study and approved the final manuscript

Conflict of Interest: No conflict of interest.

Funding: No funding received by the authors.

Article History
Received: 05-12-2024 Revised: 09-02-2025
Accepted: 16-02-2025 Published: 28-02-2025

ABSTRACT

Objective: To determine awareness of diabetic retinopathy among diabetic patients at the Aga Khan University Hospital, Karachi. **Methods:** After the ethical approval from the institutional review board, this cross-sectional study was conducted at Department of Ophthalmology, Aga Khan University Hospital, Karachi, from 18th June 2020 to 17th December 2020. Through non-probability consecutive sampling, 345 patients aged 18 – 65 yrs., of either gender, presenting to the diabetic clinic with Diabetes were selected. **Results:** The study included 345 diabetic patients, with a mean age of 55.61 ± 13.39 years. The majority of participants (87%) were between 41-65 years of age, while 13% were aged 18-40 years. The gender distribution was relatively balanced, with 48% male (n=166) and 52% female (n=179). The mean duration of diabetes among the participants was 10.33 ± 7.13 years, with 59% (n=204) having lived with the disease for 10 years or less, and 41% (n=141) for more than 10 years. The overall frequency of awareness of diabetic retinopathy (DR) among diabetic patients was 50.43% (n=174). **Conclusion:** Awareness and knowledge about DR were unsatisfactory; however, literacy played an indispensable role.

INTRODUCTION

The condition of Diabetic Retinopathy ranks as the world's biggest preventable eye disease while affecting three in every ten diabetes sufferers.[1] The condition originates from continual high blood sugar levels that affect retinal blood vessels. Many individuals do not understand the risks or symptoms of DR or the available treatment options so they receive delayed diagnoses which cause permanent vision problems.[2] The worldwide incidence of DR exists at 27% for diabetic patients while severe eye-related DR impacts about 10% of these diabetic individuals. Successful reduction of blindness risk to 95% depends on two essential factors: routine eye screen tests and prompt medical treatment.[3] Current research shows that DR awareness remains very low within diabetic populations who reside in low- and middle-income countries due to limited healthcare access levels and literacy patterns.[4] Research conducted in India revealed that diabetic patients displayed minimal knowledge about both DR and its associated complications because only 37% had this understanding.[21] The data showed that Ethiopian diabetic patients had minimal awareness about DR at 30.4% despite many patients believing vision loss is inherent to diabetes.[5] Developed countries demonstrate higher patient awareness rates (up to 60-70% and beyond) because they conduct comprehensive healthcare educational programs. The length of diabetes treatment combined with reading skills and financial resources and medical service accessibility determine how well people understand DR symptoms.[6] Patients from marginalized backgrounds with type 2 diabetes experience low information levels because of insufficient communication about educational materials. New research shows that when healthcare providers educate their patients about eye health patients become more likely to schedule regular screenings by 200%.[7] The present study aims to determine awareness of diabetic retinopathy among diabetic patients at the Aga Khan University Hospital, Karachi.

METHODOLOGY

After the ethical approval from the institutional review board, this cross-sectional study was conducted at Department of Ophthalmology, Aga Khan University Hospital, Karachi, from 18th June 2020 to 17th December 2020. Through non-probability consecutive sampling, 345 patients aged 18 – 65 yrs., of either gender, presenting to the diabetic clinic with Diabetes were selected. Physical disabilities such as hearing problems or speech difficulties

and any mental retardation were excluded. An informed consent was obtained from all the participants. A modified structured questionnaire was used to record patients' awareness about diabetic retinopathy. The verification and clarification of structured questionnaire used in the study was done by conducting a pilot study. Basic demographic data regarding age, gender, educational level, duration of disease were recorded. The participants were then asked to respond to a questionnaire. The questions were designed to record the awareness and knowledge of ocular and systemic complications of diabetes, diabetic retinopathy, the treatment availability, methods of treatment, unwanted disease effects and measures which were used to prevent is consequences. The answers of some questions are in 'yes', 'no' and 'don't know' format while others had options whereby the patients were asked to choose their best response. Data was analysed using IBM SPSS Statistics (version 20, SPSS Inc., an IBM company, Armonk, NY). Means with SD were computed to describe continuous data such as age, duration of diabetes. Frequencies and proportions were calculated to describe categorical data such as gender, educational level, Chi square test was used to assess the effect of level of education on awareness. In this age, sex and duration of disease are effect modifiers/confounding factors and results were stratified to observe effects of effect modifiers/confounding factors on outcome. $P<0.05$ was considered as significant.

RESULTS

The study included 345 diabetic patients, with a mean age of 55.61 ± 13.39 years. The majority of participants (87%) were between 41-65 years of age, while 13% were aged 18-40 years. The gender distribution was relatively balanced, with 48% male (n=166) and 52% female (n=179). The mean duration of diabetes among the participants was 10.33 ± 7.13 years, with 59% (n=204) having lived with the disease for 10 years or less, and 41% (n=141) for more than 10 years. Regarding educational attainment, 44% of participants had achieved graduate or postgraduate education, followed by 26% with secondary education, 11% with middle school education, and 8.1% with primary education. A smaller proportion of participants (8.4%) reported having no formal education, and only 3% had an undergraduate degree.

The overall frequency of awareness of diabetic retinopathy (DR) among diabetic patients was 50.43% (n=174). Stratification of awareness by age revealed that among participants aged 16-40 years, 22 were aware of DR, while 23 were not. Among those aged 41-65 years, 152 were aware, and 148 were not, yielding a p-value of 0.824, indicating no statistically significant difference. Gender stratification showed similar awareness levels, with 84 males and 90 females being aware of DR, while 82 males and 89 females were unaware (p=0.952). Awareness was also analyzed by disease duration, where 106 participants with a disease duration of 10 years or less were aware, compared to 98 who were not, while 70 participants with a disease duration of more than 10 years were aware, compared to 73 who were not (p=0.581). Educational stratification revealed no significant difference in awareness across education levels (p=0.975). Among those with graduate or postgraduate education, 75 were aware, and 76 were not, while among participants with no education, 15 were aware, and 14 were not.

Table 1

Demographic and awareness variables

Variables	Mean and Frequency (n=345)
Age (in years)	55.61 ± 13.39
18-40	45 (13%)
41-65	300 (87%)
Gender	
Male	166 (48%)
Female	179 (52%)
Disease Duration (years)	10.33 ± 7.13
≤10	204 (59%)
>10	141 (41%)
Education	
No education	29 (8.4%)
Primary	28 (8.1%)
Secondary	90 (26%)
Middle	37 (11%)
Undergraduate	10 (3%)
Graduate & Postgraduate	151 (44%)
Frequency of awareness of diabetic retinopathy among diabetic patients	174 (50.43%)

Table 2

Stratification of age, gender, disease duration and education with awareness of Diabetic retinopathy

Age (years)	Awareness		p-value
	Yes	No	
16-40	22	23	0.824
41-65	152	148	
Gender			
Male	84	82	0.952
Female	90	89	
Disease duration (months)			
≤10	106	98	0.581
>10	70	73	
Education			
No education	15	14	
Primary	14	14	
Secondary	47	43	0.975
Middle	17	20	
Undergraduate	06	04	
Postgraduate	75	76	

DISCUSSION

Despite high literacy levels and various health programs targeting diabetes, the prevalence of diabetes and its complications continues to rise. Over 77% of patients who live with diabetes for more than 20 years are affected by retinopathy[1]. In the United States, an estimated 10.2 million adults aged 40 and older with diabetes have a prevalence rate of 40.3% for developing diabetic retinopathy[2]. According to reports, the prevalence of diabetic retinopathy in Saudi Arabia varies by region, with rates of 31% in Riyadh, 36.8% in Madinah, 36.1% in Taif, and 30% in Al-Hassa1. Only 57% of participants in a 2007 Oman study measuring public awareness were able to identify the classic symptoms of diabetes, and only 55% were aware of its complications[3]. Additionally, only 44%, 43%, 42%, and 31% of participants in a 2012 cross-sectional study conducted in Riyadh identified blindness, stroke, diabetic neuropathy, and gangrene, respectively, as complications of diabetes, indicating a lack of awareness of these conditions.

50.43% of the diabetic patients in our study knew what diabetic retinopathy was. According to a prior Saudi

Arabian study, 82.6% of patients knew that diabetes could have an impact on their eyes[5]. Similarly, 88.2% of participants in a Jordanian study6 and 98.3% of participants in another Jordanian study[7] were aware of this, but only 50.4% were specifically familiar with retinopathy. Only 42% of participants in South Africa knew that diabetes could result in diabetic retinopathy8, despite 66.1% being aware of the visual risks the disease poses. In our study, 44.9% of patients said that their primary source of information was their doctor, followed by family members (21.6%) and the media (17.9%). The majority of participants knew very little about diabetic retinopathy treatment; 23.9% said they had good control, 19.2% said they had laser treatment, 10.4% said they had surgery, and 46.5% said they did not know. A Jordanian study[6] found that general practitioners (47.3%) were the primary source of information, whereas a similar Saudi Arabian study[5] found that doctors (37%) were the primary source. Globally, studies from Oman (93%)[9], Jordan (88%)[9,] and Turkey (88%)[10] reported high levels of awareness about diabetes affecting the eyes, as did studies in Switzerland (96%)[11] and Malaysia (86%)[12]. In contrast, a study from rural Tamil Nadu in India showed lower awareness (74%)6. In India, Ram PK et al.[13] found that only 37.1% of the rural population was aware of diabetic retinopathy, while a 1998 study in Australia found that only 37% of patients knew diabetes affected vision[14]. In the United States, a study conducted in 2002 found that 65% of patients were aware of the vascular complications of diabetes[15]. In Malaysia, awareness of diabetic ocular complications was reported at 86.1% in 2011[16]. Studies in Nepal and other regions[17,18] also revealed significant gaps in awareness about diabetic retinopathy.

Studies have suggested that while literacy levels and work status may influence knowledge about diabetes, they do not always correlate with awareness of diabetic retinopathy. For instance, gender was not significantly associated with awareness in our study, although previous studies from India[21] and others[19,20] have suggested that women tend to have better knowledge of diabetes, but not specifically of diabetic retinopathy. Factors such as age and diabetes duration were not associated with awareness in our study, though other studies have found that individuals over 30 years old and those with longer disease durations have better knowledge of retinopathy[23,24]. Additionally, literacy was strongly linked to attitudes and practices in diabetes management, but knowledge did not always translate into correct attitudes or practices[27,28,29].

CONCLUSION

In conclusion, the study highlights that awareness and knowledge of diabetic retinopathy remain unsatisfactory. However, literacy plays a key role in improving awareness. There is a pressing need to enhance public awareness of diabetic eye diseases to reduce the burden of visual impairment caused by diabetes. Distribution of educational materials, such as pamphlets, posters, and television displays focused on the complications of diabetes and retinopathy, can significantly improve awareness among patients visiting healthcare facilities.

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