

# Awareness of Diabetic Retinopathy among Diabetic Patients in King Abdulaziz University Hospital, Jeddah, Saudi Arabia.

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## ABSTRACT

**Background:** Diabetic retinopathy is a serious complication of DM, it occurs due to poor control of DM and lack of knowledge on the complications of DM. Among many approaches, strong awareness of retinopathy by diabetic patients could help in the early detection, management and prevention of this complication. Aim: this study was conducted to assess the awareness of diabetic retinopathy among diabetics in Saudi Arabia. **Methods:** A hospital-based, cross sectional study was conducted using a pre-tested questionnaire. All diabetic patients seen at the diabetes clinic in King Abdulaziz University Hospital were recruited. Questionnaire was distributed on all participants. The questionnaire contained questions to determine awareness of retinopathy and its risk factors. Data obtained was analyzed using the statistical package for social sciences (SPSS) 16.0. **Results:** A total of 357 diabetic patients were involved with a mean age of 50 years. 61% of patients were aware of DR. Only 38% were aware that annual retinal examinations are required and 70% were not aware what the treatment for DR is. And only 50% of all the respondents went for eye checkups. **Conclusion:** Although a large proportion of diabetics in Saudi Arabia are aware that diabetes can affect their eyes, there is however little or no knowledge of its risk factors and prevention. There is therefore a need for increasing this awareness in order to decrease the number of cases of blindness resulting from DR in Saudi Arabia.

**Keywords:** Diabetic Retinopathy, Awareness, Diabetes, Screening, Saudi Arabia.

## INTRODUCTION

Diabetes mellitus (DM) is a major public health concern worldwide. The Kingdom of Saudi (KSA) ranks seventh in the global burden of diabetes mellitus (DM), at which it has reached an epidemic stage with an estimated prevalence of 23.7% for age groups 20-79 years.<sup>[1-3]</sup> The principal risk factor for the development and progression of DM complications is the duration of diabetes. Therefore, diabetes complications associated with longer duration of the disease will become a major challenge facing the healthcare.

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One of the most serious potential complications of DM is diabetic retinopathy (DR), which is a sight-threatening complication resulting from a damage to the small blood vessels and neurons of the retina secondary to high blood sugar. It occurs in approximately 77% of diabetics within 10 years of diabetes onset,<sup>[4]</sup> and almost in 100% of diabetics

after 30 years of diabetes.<sup>[5]</sup> Therefore, the longer a person has diabetes, the higher his or her chances of developing diabetic retinopathy.

A recent population based study in the Southern region of KSA has found that the prevalence of DR among the diabetic population is 36.4%, which is nearly the same as the global documented estimated prevalence of 34.6% in individuals with diabetes.<sup>[6]</sup>

Another study in Taif,<sup>[7]</sup> in the Western region of KSA reported that 36.1% of all diabetics have some form of DR; while another hospital-based study in Al-Madinah region reported a similar prevalence of 34.5%.<sup>[8]</sup> Despite these intimidating statistics, research indicates that at least 90% of DR cases could be reduced if there were proper and vigilant monitoring and awareness of DM and its complications.<sup>[9]</sup> Proper awareness by diabetics for detection and monitoring of DM may contribute to reduce prevalence of diabetic complications, including DR.<sup>[10]</sup> One study revealed that diabetics who were unaware about diabetes complications had a fourfold increased risk of major diabetes-related complications compared to those who were aware.<sup>[11]</sup>

Many studies have indicated that the incidence of visual impairment from diabetic retinopathy is significantly reduced by early detection and

treatment of retinopathy.<sup>[12, 13]</sup> Early treatment can only be used if retinopathy is detected early through regular eye examinations. Therefore, for already identified diabetics, there should be adequate information provided about the complications of the disease including retinopathy. Diabetic patients should also be aware of the importance of regular eye examinations to detect early retinopathy, which is most often symptomless. Even with the control of retinopathy risk factors such as high blood pressure, high serum cholesterol, poor diabetic control, smoking, obesity, and renal disease, regular ocular examination is highly recommended.<sup>[14,15]</sup>

Despite the potential risk of DM complications in general and the grave burden imposed by DR in particular, it does not appear from the literature available that any study on the awareness of diabetic retinopathy among diabetics in Saudi Arabia has been conducted. In this study, a number of aspects were explored, such as diabetics' lack of awareness of DR as a possible risk factor for developing complications of diabetes, and issues such as the importance of adherence to DR screening guidelines.

**MATERIALS AND METHODS**

A hospital-based, cross sectional study was conducted using a pre-tested interviewer-administered questionnaire. All consenting adult diabetic patients seen at the diabetes clinic in King Abdulaziz University Hospital, over a two-month period were recruited for the study. This covered the period from 12 March to 11 May 2015. A questionnaire was distributed on all participated diabetic patients. In order to maintain confidentiality, data were collected anonymously with the approval of the Research, Ethical Committee of the College of Medicine, in King Abdulaziz University.

The questionnaire was verbally translated to the Arabic language so as to ensure that patients fully understood each question. The questionnaire contained information on patient personal data, educational background, duration and family history and medical history of diabetes mellitus. The second part of the questionnaire contained questions to determine awareness of retinopathy and its risk factors, source of information on this awareness, history of retinopathy screening and information on retinopathy treatment and prevention. Data obtained was analyzed using frequencies, T test, chi-square test, and bivariate correlation. Statistical software used for data analysis was the statistical package for the social sciences (SPSS) for windows version 16.0.

**RESULTS**

The study achieved a high response rate of 97.2% due to the high number of patients and supportive collaboration with the healthcare staff in the diabetes

clinic, in King Abdulaziz University Hospital. A total of 357 diabetic patients were involved. The age range was 20 to 80 years with a mean age of 50 years. 193 were males while 164 were females. 218 (61%) of patients were aware of DR. Type 1 (insulin dependent) diabetic patients were significantly more aware of DR than type 2 (non-insulin dependent) diabetic patients (63.8% versus 36.2% respectively). Diabetics' understanding of preventive measures was as follows: following a diabetic diet 193 (54%), using diabetic medication 221 (61.9%), maintaining good glycemic control 115 (32.2%) and maintaining good blood pressure control 80 (22.4%). There was no significant difference in awareness between diabetics receiving treatment in the private sector versus those receiving treatment in the public sector. Of the known diabetics, 136 (38%) were aware that annual retinal examinations are required and 250 (70%) were not aware what the treatment for DR is. Patients' education level ranged from no formal education to a postgraduate degree. Awareness of retinopathy as a complication of diabetes amongst students and professional workers and traders was higher [Table 1]. 67 (18.7%) patients had diabetic retinopathy, and 11 (3 %) patients had previous laser treatment. There was significantly greater awareness among patients with younger age (P > 0.001). The average duration of diabetes amongst the patients was 15 years. Although 218 (61%) patients were aware of diabetic retinopathy and 82 (22.9%) patients know it could lead to blindness, only 179 (50%) of all the respondents went for eye checkups and only 71 (19.8%) of patients have compliant on annual eye examination. The sources of information on diabetic retinopathy as depicted in [Table 2]. There was not found any significant correlation between awareness of retinopathy and gender.

**Table 1: Awareness of diabetic retinopathy by occupation.**

Occupation	Yes	No	Not sure	Total
Trader	40	7	10	57
Professional	70	0	8	78
Retired	63	25	19	107
Unemployed	17	6	37	83
Student	28	4	7	32
<b>Total</b>				<b>357</b>

**Table 2: Source of information for 218 patients aware of retinopathy.**

Information source	Frequency	Percent
Hospital	82	37.6
Fellow patient	51	23.5
Self-conviction	28	12.8
Family/friends	16	7.3
Mass media	30	13.8
Others	11	5
<b>Total</b>	<b>218</b>	<b>100.0</b>

**DISCUSSION**

It is well known that awareness is a vitally important step in the creation of a successful program to battle against any disease in the community. This is especially true of the growing problem of Diabetic Retinopathy. Many studies have revealed that Diabetic Retinopathy, despite its status as one of the greatest causes of blindness in both developed and developing countries, is virtually unknown to a large majority of the population. But in our study the general retinopathy awareness rate amongst the patients was quite high (61%). This is similar to findings in Myanmar where retinopathy awareness rate amongst diabetic outpatients were 86%<sup>[16]</sup> and in Nigeria was 84.3%.<sup>[17]</sup>

Although there is general awareness of diabetic retinopathy amongst a majority of diabetic patients. There is however a high proportion of DR in patients with diabetes in Saudi Arabia, in Jazan (36.4%) of diabetics have DR, this is relatively close to the global estimate of 34.6% (95% CI: 34.5 - 34.8).<sup>[6]</sup> It is also close to other studied areas in Taif, Saudi Arabia (36.1%),<sup>[7]</sup> and a hospital based study in Al-Madinah, Saudi Arabia (34.5%).<sup>[8]</sup> This may seem to be due to the higher proportion of diabetics with poorly controlled diabetes in Saudi Arabia, and hence the higher likelihood of complications like DR. This higher proportion of diabetics with poorly controlled diabetes may be attributed to lack of awareness and limited eye health care facilities.

Information given to diabetic patients should not just be on the nature of ocular complications of diabetes, but also on the risk factors for these complications and how to prevent them. Proper education was clearly not provided among the patients in our study. It is thought that improper education of patients by healthcare staff to be a major contributing factor of having a high percent of diabetic patients with retinopathy, as a result of their carelessness of regular checkups and unawareness of proper monitoring of risk factors. In our study, most of the patients attributed their source of information on diabetic retinopathy to the hospital environment (hospital staff or fellow patients). Other sources such as the mass media or the Internet did not seem to play any significant roles. Since patients tend to trust and rely on any information given by their healthcare staff, hospital staff is the best position to influence patient actions. They should actively provide information to patients, especially in regard to preventive measures and screening for retinopathy. This was demonstrated in Australia<sup>[18]</sup> where information given by diabetes nurse educators during patient home visits positively predicted the possibility of having an eye screening examination of the patients. The effect was that 77% of 11,247 diabetics underwent eye screening within two years. Although the very limited literature exists on the knowledge and awareness of diabetic retinopathy amongst people with diabetes, the results found

suggest that awareness of the patient will help enormously in decreasing the progression of a disease in the community. Thus; Aggressive and comprehensive awareness is needed to educate diabetic patients with diabetic retinopathy.

## CONCLUSION

Since a successful program to combat any disease in the community relies on the awareness of the community on that disease. Diabetic patients must be aware of diabetic retinopathy and its effect on vision so that they can actively engage in health seeking behavior, such as coming in for annual checkups and treatment. In addition, general knowledge on the diabetic retinopathy and on what can be done to combat it will help enormously in decreasing the number of cases of blindness resulting from DR in Saudi Arabia.

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