# Assessment of awareness of diabetic retinopathy among diabetics: A Clinical Survey

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## ABSTRACT

**Aim:** *To assess the awareness of diabetic retinopathy in individuals with type 2 diabetes mellitus during their first visit to an ophthalmologist in a medical college hospital in Bagalkot, North Karnataka.*

**Methods**: *A questionnaire regarding the awareness and knowledge about diabetic retinopathy was given to 150 patients with type 2 diabetes undergoing first time eye examination. This was followed by a detailed ocular examination with complete fundus examination by an ophthalmologist to look for the presence of diabetic retinopathy.*

**Results:** *Of the 150, 80 males and 70 female patients only 68 (45.3%) [57.5% males and 31.4% females] had awareness about diabetic retinopathy and of them only 38 (25.3%) [26.2% males and 24.2% females] had knowledge regarding the risk factors for diabetic retinopathy, the importance of regular ophthalmic examination and available treatment options. Of the 150, 36 (24%) patients had diabetic retinopathy.*

**Conclusion:** *The data obtained from the study clearly suggests that there is an immediate necessity for health education in the study population to increase the awareness and knowledge about diabetic retinopathy. An increased awareness in the community about diabetic retinopathy will lead to an increase in the understanding of the disease process and the importance of regular eye examination for the early detection and treatment of diabetic retinopathy. This will thereby increase the case detection and thus lower the burden of sight threatening complications of diabetic retinopathy.*

**Key Words:** *Awareness, Diabetic retinopathy*

| Access this article online | |
|---|---|
| **Quick Response Code**: | **Website:** www.innovativepublication.com |
| | **DOI:** 10.5958/2395-1451.2015.00024.4 |

## INTRODUCTION

Diabetes and diabetes related blindness are reaching alarming proportions in the developing countries. The World Health Organisation (WHO) has predicted that the number of individuals with diabetes will increase from 19 million in 1995 to 80 million in 2030 in India, which will account for the highest in the world.[1] According to the WHO-NPCB surveys ,over the last 20 years diabetes has emerged as a common cause of ocular morbidity and blindness in India, becoming number 6 (2001-02 survey report) from 17 (1986-89 survey report) among the list of causes for blindness in India.[2] About one fifth of individuals with diabetes are projected to have diabetic retinopathy[3] and it is estimated that one third of the diabetic population never undergo an ocular examination.[4]

The occurrence of diabetic retinopathy cannot be prevented but the complications causing severe visual impairment can be reduced by early detection and timely treatment. According to the Early Treatment Diabetic Retinopathy Study (ETDRS)[5] and Diabetic Retinopathy Study (DRS)[6] timely intervention by LASER photocoagulation can reduce the visual loss by 90%. There is a requirement of a high level of awareness about diabetic retinopathy in the community to provide education to the diabetic patients about the risk factors for diabetic retinopathy and also regarding its sight threatening complications. Thus a main challenge to the health care providers in India is to spread awareness and knowledge about diabetic retinopathy and thus reduce the social burden of the disease.

The purpose of our study is to assess the awareness and knowledge about diabetic retinopathy in individuals with type 2 diabetes undergoing ocular examination for the first time in a medical college hospital in Bagalkot district, Karnataka.

## MATERIALS AND METHODS

One hundred and fifty individuals with type 2 diabetes visiting an ophthalmologist for the first time in the outpatient department of HSK hospital, S. Nijalingappa Medical College, Bagalkot from June 2015 to August 2015 participated in the study.

Informed consent was obtained, following which basic demographic data and details regarding the duration of diabetes and treatment history were recorded.

They were then asked to respond to a 7-point questionnaire(Table1) which consisted of questions relating to the awareness and knowledge about diabetic

retinopathy. The questionnaire was prepared after a thorough literature search on previous studies on awareness and knowledge of diabetic retinopathy.[7,8] The questionnaire was administered by an interviewer well versed in English and Kannada languages.

Every patient underwent a complete ocular examination including visual acuity, anterior segment and fundus examination using slit-lamp biomocroscope by an attending Ophthalmologist. Diabetic retinopathy changes, if any were noted.

Diabetic retinopathy was graded according to the ETDRS guidelines.[9]

Non Proliferative Diabetic Retinopathy(NPDR):

- Mild (one or more microaneurysm)
- Moderate (microaneurysm, dot and blot haemorrhage, cotton wool spot, venous beading, arteriolar narrowing, intraretinal micro vascular abnormalities[IRMA])
- Severe (all of the moderate stage plus any one of the following: blot haemorrhage in 4 quadrants, venous beading in 2 quadrants, IRMA in 1 quadrant)

Proliferative Diabetic Retinopathy

- Early (NVD or NVE)
- High Risk (NVD >1/4 disc diameter or NVD <1/4 disc diameter plus vitreous haemorrhage or NVE >1/2 disc diameter plus vitreous haemorrhage)

Macular Edema

- Early (retinal thickening/ hard exudates within 1 disc diameter from fovea)
- Clinically Significant Macular Edema(CSME): retinal thickening or edema less than 500 microns from fovea, hard exudates less than 500 microns from fovea with retinal thickening or retinal thickening greater than 1500 microns with any part of it lying within 1500 microns from fovea.

**Maculopathy**: exudative or ischemic

## RESULTS

One hundred and fifty diabetic patients who were undergoing eye examination for the first time were included in the study. The study group comprised of 80 males and 70 females. Patients were aged between 40 and 83 years with the mean age being 61.5 years. All individuals were diagnosed with type 2 diabetes mellitus.

Of the 150, 68 (45.3%) were aware of Diabetic Retinopathy compared to 82(54.6%) who were not. Of which 46 (57.5%) were men and 22(31.4%) were women showing men were more aware than women. Among the 68 who were aware of diabetic retinopathy, 6 (8.8%) of them had signs of diabetic retinopathy.

68% of the respondents were of the opinion that retinopathy will not occur if diabetes is controlled whilst 32% thought that they can develop retinopathy changes even with controlled diabetes.

Majority of the participants (115=76.6%) were under the impression that they should visit an ophthalmologist only when their blood sugar was poorly controlled. Another 23.3%(35) thought they should get their eye examined even when their blood sugar was well under control.

Of the 68 who were aware of diabetic retinopathy, 85.2%(58) said that their source of information was their general practitioners, nurses while another 8.8%(6) obtained information from mass media such as television, radio, newspaper, magazines. 6% (4) of them claimed to have gotten information from family members, friends or relatives who suffered from diabetes.(Table 2)

129 (86%) of them came for their first eye examination after their physicians advice and only 14% of them came on their own.

43.3% (65) patients did not have knowledge regarding the frequency of regular follow ups whilst 38%(57) of them thought they should visit an ophthalmologist only when they have problems with vision. 12%(18) of respondents thought they should visit an ophthalmologist annually while 6.7%(10) thought they should get their eyes examined every 6 months.(Table 3)

Out of the 150 patients 112(74.7%) patients had no knowledge regarding the treatment options available for diabetic retinopathy. 16.7% (25) of the respondents were of the opinion that achieving good control of diabetes is the cure while 5.3% (8) of them knew LASER could treat diabetic retinopathy. 3.3%(5) of them were under the impression that only surgery was the treatment available for diabetic retinopathy.(Table 4)

35 (23.3%) patients had signs of diabetic retinopathy during their first visit to the ophthalmologist. Majority of the retinopathy changes detected were NPDR followed by PDR.(Table 5)

**Table 1: Questionnaire related to awareness and knowledge about diabetic retinopathy**

1. Do you know diabetes can affect your eyes?

Yes/ No.

2. Do you think individuals with controlled diabetes can develop eye complications?

Yes/ No.

3. When do you think you should visit an ophthalmologist?

When blood sugar level is well controlled

When blood sugar levels are poorly controlled.

4. How did you get to know about diabetic retinopathy?
Doctor / nurse / ophthalmologist
Television/ newspaper/radio
Family members/ friends/ relatives with diabetes
5. How frequently do you think you should get your eyes examined?
Don't know
Yearly
Every 6 months
Only when vision is affected
6. Do you know what treatment is available for diabetic retinopathy?
Good control of diabetes
LASER
Surgery
Do not know.
7. What is the reason for your visit to the ophthalmologist to undergo screening for diabetic retinopathy?
Doctor's referral
Self-awareness

**Table 2: Source of information among the 68 individuals aware of diabetic retinopathy**

| Source of information | Number | Percentage (%) |
|---|---|---|
| Health care professionals | 58 | 85.2% |
| Mass media | 6 | 6% |
| Family and friends | 4 | 4% |

**Table 3: Knowledge about frequency of eye examination**

| | Number | Percentage (%) |
|---|---|---|
| Do not know | 65 | 43.3 |
| Only when vision is affected | 57 | 38 |
| Once in a year | 18 | 12 |
| Every 6 months | 10 | 6.7 |

**Table 4: Knowledge about treatment options available for diabetic retinopathy**

| | Number | Percentage (%) |
|---|---|---|
| Do not know | 112 | 74.7 |
| Control of diabetes | 25 | 16.7 |
| LASER | 8 | 5.3 |
| Surgery | 5 | 3.3 |

**Table 5: Distribution of the types of diabetic retinopathy**

| Types of diabetic retinopathy | Number | Percentage (%) |
|---|---|---|
| Absent | 115 | 76.6 |
| Non-proliferative retinopathy | 23 | 15.3 |
| Proliferative retinopathy | 10 | 6.6 |
| Maculopathy | 2 | 1.3 |

## DISCUSSION

In the present study 45.3% of the respondents were aware that diabetes can affect eyes. This is higher compared to two other studies, one study done among the urban population of Hyderabad[10] to know the awareness of Diabetic Retinopathy which showed 27% individuals were aware of diabetic retinopathy and the other study also conducted in India showed the awareness to be 37.1%.[7] But very much low compared to 84% as assessed in a population in Kerala.[8]

More than half the interviewees in the study were of the opinion that individuals with controlled diabetes will not develop diabetic retinopathy and also 76.6% thought they should visit an ophthalmologist only when their blood sugar was poorly controlled. While 23.3% were aware that they should get their eyes examined in spite of good blood sugar control which was very much lower compared to a study conducted in south India which showed 50.8% of the patients knew the importance of regular eye examination.[8]

86% of the individuals came to the ophthalmologist after a doctor's referral whilst only 14% came on their own accord, which emphasizes the important role played by the primary care physicians in increasing the awareness of diabetic retinopathy. This fact is also upheld by another study conducted in Ireland which revealed that physicians' advice was a significant factor

among diabetic patients to visit an ophthalmologist to receive screening for diabetic retinopathy.[11]

In our study 43.3% respondents had no knowledge regarding the frequency and importance of regular eye check-ups for diabetic retinopathy which is very much lower compared to an earlier study conducted in India in which 90% individuals were aware of the importance of the regular follow ups with an ophthalmologist.

Among the 68 individuals who were aware of diabetic retinopathy majority of them got their information from the treating physicians and the nurses which was followed by mass media as the source of information. Another study conducted in the UK also concluded that information about diabetic retinopathy gotten from the treating physicians, nurses was the main source of information which was most used and preferred by the diabetic patients.[12] These studies suggest that information regarding diabetic retinopathy can be propagated by health education by trained health care professionals and health campaigns promoted in mass media.

According to our study only 38 of the 68 (55%) who were aware of diabetic retinopathy had proper understanding about the disease.

Hence it is extremely crucial to spread knowledge regarding diabetic retinopathy through television, newspaper, posters in all hospitals and other health centres as it will motivate and encourage the diabetic patients to undergo a timely eye examination and thus engage individuals in a health seeking behaviour. The increased awareness and knowledge will lead to a better understanding of the disease process and also the importance of regular eye examination for the early detection and treatment and thereby reducing the sight threatening complications of diabetic retinopathy.

Finally we can reduce the prevalence of diabetic retinopathy by developing an integrated health and social care pathway, further education and better communication between all the relevant parties.

**CONFLICT OF INTEREST**: None declared

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