

# **AWARENESS ON DIABETIC RETINOPATHY AMONG PATIENTS WITH DIABETES MELLITUS**

## **MASTER OF OPTOMETRY**

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### **ABSTRACT**

#### **Aim:**

To assess the lack of awareness and knowledge of Diabetic Retinopathy among Diabetes Mellitus. Also to know the importance of eye examination annually and to know the barriers for eye screening among patients with Diabetes Mellitus.

## **Materials and Methods:**

Design - Cross sectional study. 139 subjects participated in the study, 63 (45%) were males and 76 (55%) were females, mean age was 56.7 years  $\pm$  9.49. A convenient non – probability sampling was done to select subjects for the study. A validated questionnaire were administered to assess the knowledge and lack of awareness of Diabetic Retinopathy among patients with Diabetes Mellitus.

## **Results:**

A total of 139 subjects participated in the study. 82% of the study participant were on oral medication for treatment of Diabetes Mellitus and 15.8% of participant were on insulin and 2.2% were without any kind of treatment of Diabetes Mellitus. 76.3% are aware on regular treatment methods for Diabetes Mellitus, 18% are not aware on treatment methods, There were no treatment methods followed in 5.8% of the subjects. Awareness of annually eye examination is found in 58.3% and 41.7% were unaware. Awareness on Diabetes Mellitus that can lead to blindness was found in 18% of the study participants and not known was found in 55.4%. Majority of treatment for Diabetic Retinopathy had poor knowledge about DR 90.6%. Around 89.2% of participants had lack of awareness was the biggest barrier for an eye screening.

## **Conclusion:**

There is need for more awareness of Diabetic Retinopathy that leads to blindness in patients with Diabetes Mellitus which can directly reduce the barrier of lack of awareness for annually eye screening

## **INTRODUCTION**

Diabetes Mellitus (DM) is a syndrome of chronic hyperglycemia due to relative insulin deficiency, resistance or both and has been termed as an enormous worldwide public health problem. In India there are 69.2 million people with Diabetes Mellitus at present and it is estimated to increase to 122.5 million by 2040.<sup>1</sup>

Diabetes Mellitus is usually irreversible and patients can lead a reasonably normal lifestyle. Its late complications results in reduced life expectancy and major health costs.<sup>2</sup>

It causes damage to different organs and body tissues that are heart, nerves, kidneys, eye problems, and blood vessels.<sup>3</sup>

DM has emerged as a common cause of ocular morbidity and blindness, becoming number 6 (2001–2002 survey report) from 17 (1986–1989 survey report) among the list of causes for blindness in India as per the WHO-NPCB surveys.<sup>4</sup>

Diabetic Retinopathy (DR) is the leading cause of preventable blindness worldwide. The general global incidence of DR is 34.6% and it accounts for 4.8% of blindness in the world.<sup>1</sup>

DR, one of the most important complications of DM, is the leading cause of blindness and visual impairment. Consistent from various studies they suggest that, after 15 years of Diabetes, mostly will become blind 2% of people and about 10% will have severe visual handicap. DR is difficult to diagnose in its early stages as it is asymptomatic, and hence, screening is the only way to identify such patients to prevent them from blindness. According to guidelines for Diabetic eye care in India, in case of Diabetic Mellitus patients with no apparent Diabetic Retinopathy or Mild Non-Proliferative Diabetic Retinopathy, repeat eye examination is recommended after 1 year, and patients with Moderate Non-Proliferative Diabetic Retinopathy is diagnosed and repeat eye examination is recommended within 6–12 months.<sup>4</sup>

The major risk factors of DR are the duration of diabetes mellitus, severity of hyperglycemia, glycemic control, hypertension, hyperlipidemia, renal failure anemia, age, puberty and pregnancy.<sup>5</sup>

People with poor glycemic control have a higher risk for DR. A recent study 2017 from Australia proposed that diabetes with poor indications of glycemic control had three to four times more chances of DR as compared to those with better control.<sup>3</sup>

Patient's awareness to DR will be the key to further improvements in DR management and prevention. Patients should be informed that they want to play an integral role in their glycemic control and eye care.<sup>5</sup> there is a need to provide knowledge about the Diabetic Mellitus affecting the eye with irreversible changes leading to blindness and major problem is DR because now-a-days many of them fail to take their medicines and later has eye symptoms. Most of adults fail to take medicine on their day to day life period.

Awareness about DR and other Diabetes-related ocular complications ranged between 16.1% and 71.3% among various community-based Indian studies. Among the patients with DM, awareness about DR ranged between 17.01% and 93.2% and knowledge about eye-related complications in Diabetes ranged between 37.1% and 55.6% among the Indian population. The findings suggest that there is a considerable amount of disparity among various locations in the country regarding awareness about DR and Diabetic ocular complications.<sup>6</sup>

The reported prevalence of DR from various studies done in India ranges from 7.3% to 25%.<sup>7</sup> The outcome it is to know the awareness of diabetes complications, especially diabetic retinopathy, and also barriers preventing eye screening among diabetic patients in a tertiary care hospital. So this brought us to assess the lack of awareness and knowledge of Diabetic Retinopathy among Diabetes Mellitus. Also to know the importance of eye examination annually and to know the barriers for eye screening among Diabetes Mellitus.

## **MATERIALS AND METHODS**

### **Study design and sampling methods:**

A cross – sectional study conducted at tertiary health care center over a period of 6 months. 139 subjects participated in the study, 63 were males and 76 were females, mean age was 56.7 ± 9.49 years.

A convenient non – probability sampling was done to select subjects for the study. A validated questionnaire were administered to assess the lack of awareness and knowledge of Diabetic Retinopathy (DR) among patients with Diabetes Mellitus by the Institutional Research and Ethics Committee of Sri Ramachandra Institution of Higher Education and Research, Porur, Chennai.

Individuals with confirmed diagnosis of Diabetic Mellitus and both males and females are included. Individuals with other systemic ailments such as Hypertension, Thyroid, and Rheumatoid arthritis are excluded.

The DR awareness questionnaire consisted 22 questions. Questionnaires are design and content validated is been done with one (1) external and seven (7) internal of Ophthalmologist. Questionnaire consider patient demographics such as name, age, sex, occupation and level of education, Duration of Diabetes Mellitus.

### **The validated questionnaire are as follows:**

- Is your blood sugar under control?
- What kind of treatment you are taking to control Diabetes Mellitus?
- Are you following the treatment methods?
- Do you check your eyes annually?
- Do you think it is important for a diabetic to check their eyes annually?
- Do you believe that diabetes can affect your eyes/vision?
- Do you believe that controlling blood sugar level helps to preserve your vision?
- Do you believe that Diabetes can lead to blindness?
- Have you heard of Diabetic Retinopathy?
- If you answered yes to the previous question, how did you become familiar with diabetic retinopathy?
- Do you have diabetic retinopathy?
- If Yes, Duration of Diabetic retinopathy?
- Treatment for Diabetic retinopathy?

- On a scale of 1-10 in this scale 1 consider as least knowledge between Diabetes Mellitus and Diabetic Retinopathy and 10 consider has highest knowledge between Diabetes Mellitus and Diabetic Retinopathy.

### **Mode of study:**

It is self – administrated questionnaire. The questions are handed over to the participants. Time consists of 5 – 10 minutes and informed consent will be given to patients.

### **Statistical Analysis:**

Descriptive statistics such as mean, median and standard deviations for quantity variable were calculated (Quantitative study). MS Excel and statistical package for the social sciences (SPSS) 16.0 version were used to carry out the analysis for the study.

### **Sample size calculation:**

#### **Formula:**

$$N = \frac{Z^2 (P \times q)}{d^2}$$

Z = for 95 % confidence Z value is 1.96

P = estimated prevalence

d = desired precision i.e., (0.05 for +/- 5 %)

$$d = \frac{15 \times 58}{100}$$

$$d = 8.7$$

$$n = \frac{1.96 \times 1.96 \times 58 \times 42}{(8.7)^2}$$

$$= 123.6 \sim 124$$

$$\text{Drop out} = 124 \times 10/100$$

$$= 12.4$$

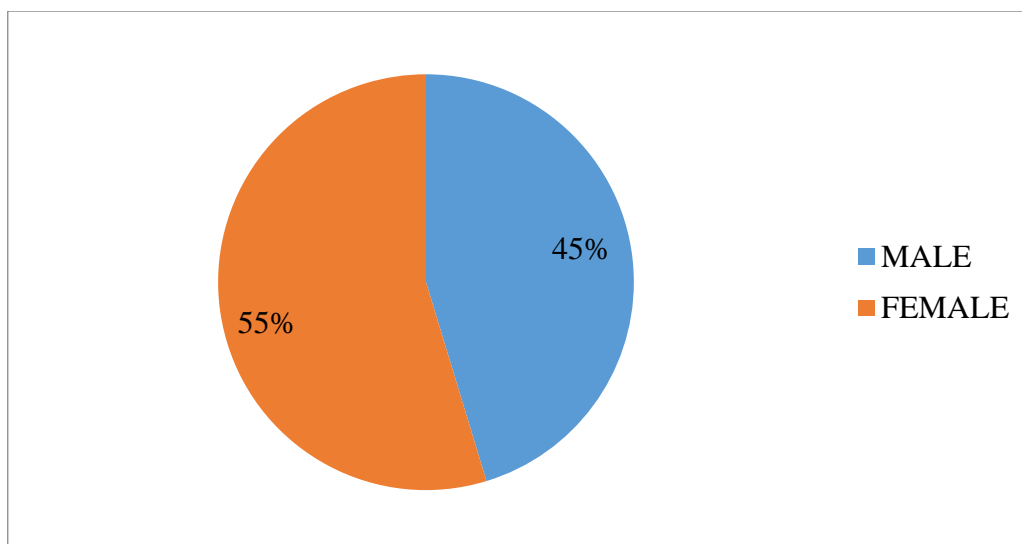
$$\text{Total required sample size} = 124 + 12.4 = 136.$$

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## **RESULTS**

A total of 139 participate in the study, 63 (45%) were males and 76 (55%) were females. The duration of DM amongst the patients were 8.5 years.

*Figure 4.1: Source of information about Male and Female*



*Table 4a. Assessing the awareness about Diabetes Retinopathy among patients with Diabetes Mellitus*

Characteristics	N = 139	Percentage %
Is your blood sugar under control?		
Yes	103	74.1 %
No	36	25.9 %
What kind of treatment you are taking to control DM?		
Insulin	22	15.8 %
Medication	114	82 %
None	3	2.2 %
Are you following the treatment methods?		
Regular	106	76.3 %
Irregular	25	18 %
Not at all	8	5.8 %
Do you check your eyes annually?		
Yes	81	58.3 %



No	58	41.7 %
Do you think it is important for a diabetic to check their eyes annually?		
Yes	46	33.1 %
No	72	51.8 %
Not sure	21	15.1 %
Do you believe that diabetes can affect your eyes/vision?		
Yes	32	23 %
No	79	56.8 %
Not sure	28	20.1 %
Do you believe that controlling blood sugar level helps to preserve your vision?		
Yes	26	18.7 %
No	80	57.6 %
Not sure	33	23.7 %
Do you believe that Diabetes can lead to blindness?		
Yes	25	18 %
No	77	55.4 %
Not sure	37	26.6 %
Have you heard of Diabetic Retinopathy?		
Yes	15	10.8 %
No	99	71.2 %
Not sure	25	18 %
Treatment for DR?		
Control blood sugar level	8	5.8 %
Laser	4	2.9 %
Surgery	1	0.7 %

None	126	90.6 %
What do you think was the biggest barrier for not getting eye screening?		
Lack of awareness about retinopathy	124	89.2 %
Lack of access to eye care	7	5 %
Cost	5	3.6 %
Insurance	1	0.7 %
Fear of discovery	2	1.4 %

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Table 4a shows results of assessing awareness for DR among diabetes mellitus are 103 (74.1 %) participate have control blood sugar , 36 (25.9 %) participate doesn't have control blood sugar lack of awareness and knowledge about DM. 114 (82%) of the study participant aware on oral medication for treatment of Diabetes Mellitus and 22 (15.8%) of participant aware on insulin and 3 (2.2%) were without any kind of treatment. 106 (76.3%) are aware on regular treatment methods for Diabetes Mellitus, 25 (18%) are not aware on treatment methods, There were no treatment methods followed in 8 (5.8%) of the subjects. Awareness of annually eye

examination is found in 81 (58.3%) and 58 (41.7%) are unaware. Results of assessing Diabetes patients awareness about Diabetic Retinopathy are 46 (33.1 %) study participant aware for Diabetes patients to check the eyes annually , 72 (51.8 %) were not aware to check the eyes annually , 21 (15.1 %) were has lack of awareness and knowledge in eye examination annually. Majority of patients doesn't know that diabetes could affect their eyes 79 (56.8 %), 32 (23 %) were aware that diabetes could affect their eyes, 28 (20.1 %) were has lack of knowledge about Diabetes Mellitus. 80 (57.6 %) study population unaware about controlling blood sugar level will help their vision, controlling blood sugar levels will help their vision 26 (18.7 %). Awareness on Diabetes that can lead to blindness was found in 25 (18%) and not known was found in 77 (55.4%). Mostly 99 (71.2 %) study participants has lack of awareness and knowledge about Diabetic Retinopathy, 15 (10.8 %) were claimed to be familiar with diabetic retinopathy. Those 22 patients who claimed knowledge of diabetic retinopathy various methods of how they became familiar with DR were Doctor (15.8%) and other 117 patients were not answered, lack of awareness and knowledge about diabetic retinopathy among patients with diabetes mellitus (84.1%). When asked do you have Diabetic Retinopathy 10 (7.1%) study population are aware of DR. 130 (93.6 %) study population unaware about Diabetic retinopathy among patients with diabetes mellitus. Duration of DR average is 6 months (7.1%). 8 (5.8%) study participant were aware of Control blood sugar level, 4 (2.9%) were aware of Laser, 1 (0.7 %) were aware of Surgery, 126 (90.6%) study participant has lack of awareness and poor knowledge about treatment for DR. When asked about barriers preventing the diabetes patients from eye screening the results; 124 (89.2%) Lack of awareness about retinopathy, 7 (5%) Lack of access to eye care, 5 (3.6%) cost, 1 (0.7%) Insurance, 2 (1.4%) fear of discovery.

*Figure 4.2 assessing the rate of knowledge about Diabetes Mellitus and Diabetic Retinopathy*

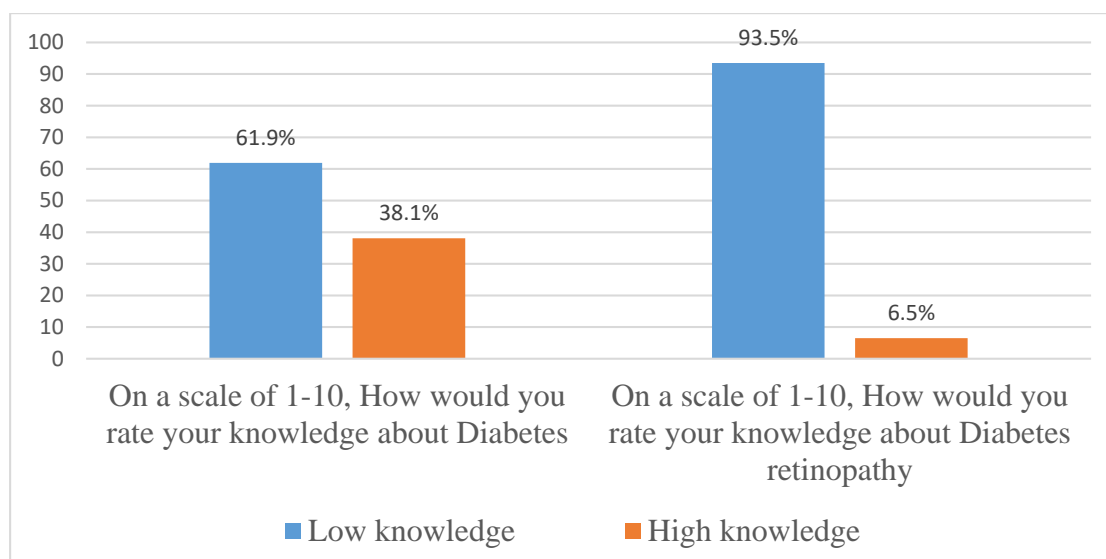


Figure 4.2 shows assessing the rate of knowledge about diabetes mellitus and diabetic retinopathy. On a scale of 1 – 10, how would you rate your knowledge about Diabetes 86 (61.9%) study population has less knowledge about DM , the scale rating was 1 is least value, 53 (38.1%) study participant has knowledge about DM , the scale rating was 10 is highest value. On a scale of 1 – 10, how would you rate your knowledge about Diabetic retinopathy 130 (93.5%) study population has lack of knowledge about DR ,9 (6.5%) study participant were has knowledge about DR. This study shows that Diabetes Mellitus patients has lack of awareness and knowledge about Diabetic Retinopathy.

## **CONCLUSION**

There is need for more awareness of Diabetic Retinopathy that leads to blindness in patients with Diabetes Mellitus which can directly reduce the barrier of lack of awareness for annually eye screening.

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