

A Cross-Sectional Study of Type 2 Diabetes Mellitus Patients' Diabetic Retinopathy Knowledge, Attitudes and Practices

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Abstract:

➤ Aim

To assess people with diabetes mellitus understanding, perspectives, and behaviors around diabetic retinopathy

➤ Methodology

A cross-sectional study of patients with type 2 diabetes who visited our hospital between January and March of 2024. A systematic questionnaire was used to gather data. For a sample size of 320, simple random sampling is employed.

➤ Results

Overall, 320 individuals with diabetes mellitus agreed to take part in the study. Of those patients, 52.3% were male and 47.7% female. The majority of study participants 42% had good knowledge, 55% had good practice and only 30% has got positive attitude towards diabetic retinopathy.

➤ Conclusions

Not many people have good knowledge, practice and attitude towards diabetic retinopathy. Lack of knowledge, proper diabetic control, non-adherence to periodic fundus examinations leads to inadequate information on diabetic retinopathy and its management.

Keywords: Awareness, Knowledge, Diabetic Retinopathy, Education Level, Diabetes Mellitus).

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I. INTRODUCTION

In India, diabetic retinopathy is a major contributing factor to visual impairment. Irreversible vision impairment might have been avoided if diabetic retinopathy had been identified in diabetic patients sooner. [5]. The occurrence of diabetes mellitus in India has been documented to range from 10.2% to 36% across different population-based studies¹.

In India, the prevalence of DR is rising quickly. According to a recent research of diabetic people 40 years of age and older, the national prevalence of diabetic retinopathy in all its forms was 12.5%, with sight-threatening diabetic retinopathy accounting for 4% of cases [2]. A higher risk and faster advancement of diabetic retinopathy are significantly associated with a number of characteristics, such as age, the duration of diabetes, South

Asian or Black ethnic background, inadequate blood sugar control, and high blood pressure and cholesterol levels [3]. India, with its large diabetic population, accounts for a substantial burden of DR. Puducherry, a union territory in southern India, reports a high prevalence of T2DM, making DR a pressing public health concern [4].

Diabetic retinopathy (DR) care is greatly impacted by knowledge, attitude, and practice (KAP) around diabetes [5]. Lack of knowledge about how diabetes can impact the eyes, the advantages of routine diabetes and DR screenings, not taking medications as prescribed, and avoiding screening due to reasons like limited access to healthcare, other coexisting health conditions or financial limitations are all examples of inadequate KAP [6].

Visual impairment can be avoided with early detection and treatment of DR. However, for prompt intervention, T2DM patients must be aware of and comprehend DR. Research has indicated that patients' knowledge, attitudes, and practices (KAP) about DR are not ideal, which can result in poor results and delayed diagnosis [7]. This study intends to close the gap by assessing patients' attitudes, practice habits, and understanding of diabetic retinopathy in a tertiary care system in Puducherry.

II. METHODOLOGY

The study was approved by the institutional ethics committee and complied with ethical guidelines. A tertiary care hospital in Puducherry served as the site of our cross-sectional investigation. Patients with Type II Diabetes Mellitus (DM) who visited the hospital's outpatient department (OPD) were the focus of the three-month study, which ran from January to March 2024. The sample size comprised 320 participants, selected through convenient sampling based on the study's selection criteria.

Patients with Type II DM who had been diagnosed for more than a year, were at least eighteen years old, male or female, and willing to take part in the study were the inclusion criteria. On the other hand, patients with pre-existing diabetic retinopathy and those who were deaf and dumb were excluded from the study to ensure accurate and focused results.

Data were collected using a structured questionnaire through direct interviews conducted by the principle investigator. The questionnaire was designed to evaluate the participants' knowledge about diabetic retinopathy, their attitudes towards it, and their practice habits regarding preventive measures. After clearly explaining about purpose of this study to the participants, informed consent was obtained from all of them.

➤ Statistical Analysis:

The mean and standard deviation for continuous variables, such as age and the length of diabetes, are among the descriptive statistics. Knowledge, attitudes, and practices are examples of categorical variables that are represented by frequencies and percentages.

III. RESULTS

A. Regarding Age and duration of DM (Table 1 & Figure 1) & Source of information about Diabetic retinopathy (Figure 2)

The Present study included 320 participants, 52.3% male (168) and 47.7% female (152). The mean age was found to be 22.44 ± 4.4 years. The average duration of diabetes among participants was 7.52 years. The most common source of information regarding diabetic retinopathy was Physicians (56.0%) followed by family members (26.0%), social media (10.0%), mass media for 6%, and education for only 2%.

Table 1: Based on Age and Duration of DM (n = 320)

| Characteristics | Mean | Standard Deviation |
|-----------------|------------|--------------------|
| Age | 49.1 years | 0.9 |
| Duration of DM | 7.52 years | 3.21 |

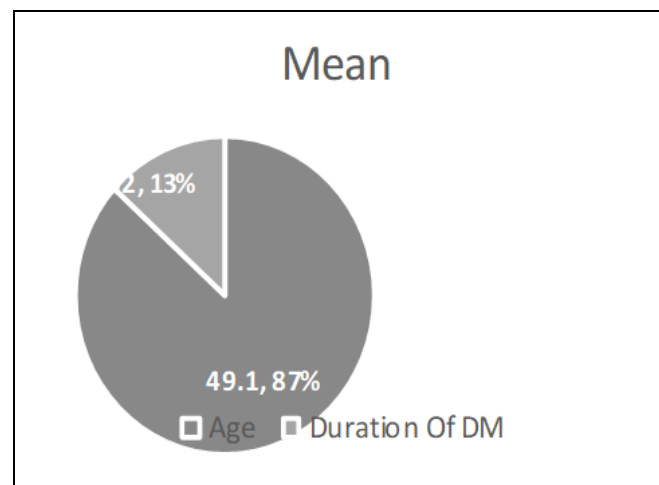


Fig 1: Based On Age and Duration of DM (n=320)

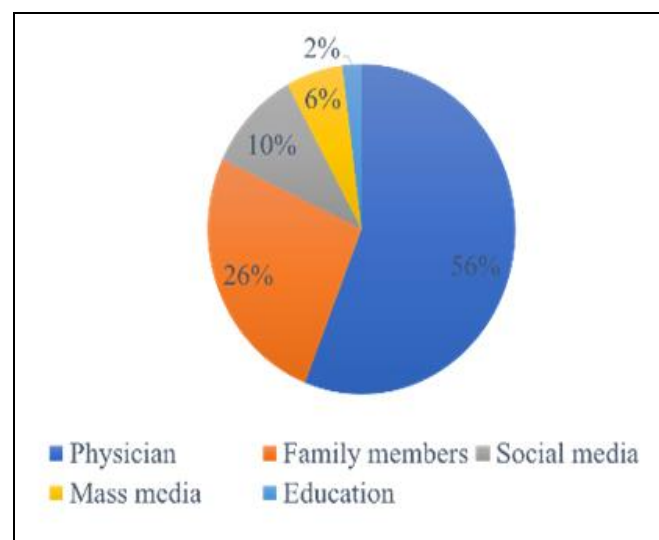


Fig 2: Source of Information among Study Participants

B. Regarding the Knowledge of Diabetic Retinopathy (Table 2)

Regarding participants' knowledge about diabetic retinopathy (DR) and its relationship to diabetes mellitus (DM), 40.3% (129 participants) believed that diabetes could lead to blindness, 43.1% (138 participants) knew there was a connection between retinopathy and DM, 48.8% (156 participants) acknowledged that controlling diabetes can prevent complications, and 42.2% (135 participants) knew that retinopathy is treatable. The result showed a lack of awareness among the majority regarding one of the severe complications of diabetes. It highlighted a gap in understanding the connection between diabetes and eye complications.

Table 2: Distribution of Knowledge Section of the Questionnaire from the Participants

| Knowledge questions | Yes | No |
|---|-------------|-------------|
| Do you believe that blindness could result from diabetes mellitus | 129 (40.3%) | 191 (59.7%) |
| Do you believe that retinopathy and diabetes mellitus are related | 138 (43.1%) | 182 (56.9%) |
| Do you know that control of diabetes can prevent complications | 156 (48.8%) | 164 (51.2%) |
| Do you believe that retinopathy can be treated | 135 (42.2%) | 185 (57.8%) |

C. Regarding the Practice of Diabetic Retinopathy (Table 3):

Regarding the participants' practices related to diabetic retinopathy care, 54.1% (173 participants) had their eyes checked by a doctor in the past year, 52.8% (169 participants) were informed about their eye condition, 59.4% (190 participants) exercised regularly, and 60.0% (192 participants) followed a diet plan. The result suggested that communication about eye health is lacking for nearly half the participants and most of the participants were compliant with diet recommendations for diabetes control.

Table 3: Distribution of Practice Section of the Questionnaire from the Participants

| Practice Questions | Yes | No |
|---|-------------|-------------|
| Have your eyes been checked by a doctor last year | 173 (54.1%) | 147 (45.9%) |
| Have you been informed about your eye condition? | 169 (52.8%) | 151 (47.2%) |
| Do you exercise regularly | 190 (59.4%) | 130 (40.6%) |
| Following a diet plan for DM control | 192 (60.0%) | 128 (40.0%) |

D. Regarding the Attitude toward Diabetic Retinopathy (Table 4):

Regarding the participants' attitudes towards diabetes-related eye problems, 38.4% (123 participants) believed that eye problems could start at the time of diabetes diagnosis, 72.8% (233 participants) disagreed with the statement, showing that a majority recognize the need for early screening, 30.6% (98 participants) agreed that even without eye problems, an annual eye check is necessary, and 68.8% (220 participants) disagreed with this statement, understanding that sugar control is important even during eye treatment. The result indicates a lack of understanding that diabetic complications, including retinopathy, can occur early on.

Table 4: Distribution of Attitude Section of the Questionnaire from the Participants

| Attitude questions | Yes | No |
|---|-------------|-------------|
| Is it possible for someone with diabetes to have ocular issues concurrently with their diabetes diagnosis | 123 (38.4%) | 197 (61.6%) |
| Newly detected Diabetics need not be screened for retinopathy | 87 (27.2%) | 233 (72.8%) |
| If you do not have eye problems do you think that you need to see an eye doctor once a year | 98 (30.6%) | 222 (69.4%) |
| If I'm receiving eye treatment, I don't have to worry about limiting my intake of sugar and sweets | 100 (31.2%) | 220 (68.8%) |

E. Knowledge, Attitude, and Practice regarding Diabetic Retinopathy (Table 5):

Our study showed that 42.2% (135 participants) had good knowledge, 27.2% (87 participants) had fair knowledge, and 30.6% (98 participants) had poor knowledge. This shows that less than half of the participants were well-informed about diabetic retinopathy. Most of the participants 55.0% (176 participants) had good practices related to managing DR, 33.1% (106 participants) had fair practices, and 11.9% (38 participants) had poor practices. This suggests that most participants engage in relatively good practices, though a significant portion still lacks appropriate management behaviors. Only 30% (96 participants) had a positive attitude towards diabetic retinopathy, while 70% (224 participants) had a negative attitude. This indicates that a majority of participants are not optimistic or proactive in addressing eye-related complications associated with diabetes.

Table 5: KAP Regarding Diabetic Retinopathy (n = 320)

| Parameters | Good | Fair | Poor |
|------------|-------------|-------------|------------|
| Knowledge | 135 (42.2%) | 87 (27.2%) | 98 (30.6%) |
| Practice | 176 (55.0%) | 106 (33.1%) | 38 (11.9%) |
| Attitude | Positive | | Negative |
| | 96 (30%) | | 224 (70%) |

IV. DISCUSSION

Diabetic retinopathy (DR) represents a prevalent and serious complication associated with Type 2 Diabetes Mellitus (T2DM), which can result in vision impairment if not addressed appropriately. Damage to the retina's blood vessels results from persistently elevated blood sugar levels. Even though it is common, the understanding of DR among individuals with T2DM is still limited, which impacts timely diagnosis and treatment. Diabetes mellitus and diabetic retinopathy are increasingly significant challenges that affect both developing and developed nations, and regrettably, their occurrences continue to escalate. This study involved 320 individuals with diabetes and sought to assess their understanding of diabetic retinopathy, as well as their attitudes and behavioral practices within a tertiary care setting.

Table 6: Distribution of Knowledge, Practice, Attitude Section of the Questionnaire from the Participants

| Knowledge questions | Yes | No |
|---|-------------|-------------|
| Do you believe that blindness could result from diabetes mellitus? | 129 (40.3%) | 191 (59.7%) |
| Do you believe that retinopathy and diabetes mellitus are related? | 138 (43.1%) | 182 (56.9%) |
| Do you know that control of diabetes can prevent complications? | 156 (48.8%) | 164 (51.2%) |
| Do you believe that retinopathy can be treated? | 135 (42.2%) | 185 (57.8%) |
| Practice questions | | |
| Have your eyes been checked by a doctor last year | 173 (54.1%) | 147 (45.9%) |
| Have you been informed about your eye condition? | 169 (52.8%) | 151 (47.2%) |
| Do you exercise regularly | 190 (59.4%) | 130 (40.6%) |
| Following a diet plan for DM control | 192 (60.0%) | 128 (40.0%) |
| Attitude questions | | |
| Is it possible for someone with diabetes to have ocular issues concurrently with their diabetes diagnosis | 123 (38.4%) | 197 (61.6%) |
| Newly detected Diabetics need not be screened for retinopathy | 87 (27.2%) | 233 (72.8%) |
| If you do not have eye problems do you think that you need to see an eye doctor once a year | 98 (30.6%) | 222 (69.4%) |

The participants in this study were 47.7% female (152) and 52.3% male (168) with an average age of 49.1 years. Participants' average duration of diabetes was 7.52 years, suggesting they had lived with the condition for a considerable period. Alqahtani TF et al[9] study reported that among the participants, 859 (61.8%) were female and 40.6% were between 18 and 30 years of age group. The most common source of information regarding diabetic retinopathy was Physicians (56.0%) followed by family members (26.0%) and social media (10.0%). The outcome emphasizes how important healthcare professionals are to patient education.

Regarding the knowledge of diabetic retinopathy, 40.3% (129 participants) believed that diabetes could lead to blindness, 48.8% (156 participants) acknowledged that with the findings of the current investigation. When compared to this, the knowledge levels revealed by Faith LC et al.[12] and Al-Eryani SA et al.[13] were much lower, at 33% and 32.2%, respectively.

In reference to the practice of diabetic retinopathy, 52.8% (169 participants) were told about their eye condition, and 54.1% (173 participants) had their eyes examined by a physician in the previous 12 months. The majority of the study participants 55.0% (176 participants) had good practices related to managing DR, 33.1% (106 participants) had fair practices, and 11.9% (38 participants) had poor practices. Rana V et al[14] study showed 66.0% of good practice regarding DR which coincides with the present study findings. However, only 39.6% of participants in the research by Assem AS et al.[11] reported engaging in good practice.

Regarding the study population's attitude toward diabetic retinopathy, only 30.6% (98 participants) agreed that an annual eye examination is required even in the absence of visual problems, while 38.4% (123 participants) thought that eye problems might begin at the time of diabetes diagnosis. Only 30% (96 participants) had a positive attitude towards diabetic retinopathy, while 70% (224 participants) had a negative attitude in our study.

Thirunavukkarasu A et al[15] study observed that 35.9% had a positive attitude about DR.

V. CONCLUSION

Preventing and controlling diabetic retinopathy, a potentially devastating illness, is greatly influenced by the knowledge, attitudes, and actions of people with type 2 diabetes mellitus. The vast majority of participants demonstrated outstanding knowledge, positive attitudes, and good behaviors. Improved patient education, regular eye examinations, and fostering positive attitudes toward prevention can significantly reduce the incidence of diabetic retinopathy-related vision loss. In order to improve the long-term health of people with Type 2 diabetes, healthcare practitioners must put patient awareness first and make early identification and treatment more accessible.

- Conflict of interest: None

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