

## Study on KAP of ocular complications due to diabetes among type II diabetics visiting a tertiary teaching hospital

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### Abstract:

**Introduction:** Diabetes mellitus is a major public health problem worldwide. Diabetic patients are at risk of developing blindness from diabetic retinopathy. While occurrence of diabetic retinopathy cannot be prevented, its complications can be minimized. This requires awareness of the sight-threatening potential of diabetes and the need for regular eye examinations.

**Aim:** To study the knowledge of ocular complications of diabetes, among type II diabetics visiting a tertiary level hospital.

**Settings and Design:** This was a prospective study in a tertiary care teaching hospital.

**Methods and Material:** This was a questionnaire based study on 350 type II diabetics. All patients were interviewed by the same investigator.

**Statistical analysis used:** The data was analysed using chi square test.

**Results:** With increase in the duration of illness, the awareness about diabetic retinopathy is more. Even though the awareness of the disease increased with increasing duration of the disease, 51.4% of the diabetics did not know how diabetes can affect the eye, 49.7% of diabetics did not know if diabetic retinopathy can be treated and 67.4% had not heard of any treatment modality for diabetic retinopathy. This shows that lack of knowledge about the disease was significant.

**Conclusions:** Prevention of non-communicable disease through increased awareness needs to be the thrust of the effort in resource poor contexts, where the treatment can be prohibitively costly. These measures would help to bring about more awareness and understanding about the disease among the patients and therefore prevent sight-threatening complications by timely intervention and management.

**Key Words:** Diabetic retinopathy, KAP, Retinopathy screening, Awareness

### Introduction:

Diabetes mellitus is a major public health problem worldwide. According to WHO, there will be an alarming increase in type II diabetes mellitus over the next two decades. In developing nations, the estimated increase in patients with diabetes mellitus is approximately 150%, from 30 million in 2000, to 80 million in 2030<sup>1</sup>. Microvascular complications in diabetes such as diabetic retinopathy are related to the duration of the disease.

While occurrence of diabetic retinopathy cannot be prevented, early detection and management of the disease can minimize its sight-threatening complications. Current treatment modalities are effective in preventing 98% of vision loss, if treatment is provided at the appropriate time<sup>2</sup>. However issues related to utilisation of services remain a major challenge. A study from South India reported that only one-fourth of persons identified with moderate to severe retinopathy in a screening program returned for follow-up examinations to the hospital<sup>3</sup>. Eye care programmes should be able to attract all persons with diabetes if vision impairment due to retinopathy is not to add to the already existing

burden of blindness in India. This will require that persons with diabetes are aware of the sight-threatening potential of diabetes and the need for regular eye examinations.

The present study is undertaken to assess awareness level of diabetes and its ocular complications among type II diabetic patients and its association with their attitude and practice.

### Material & methods:

This was a prospective questionnaire based study. The patients for the study were randomly recruited from both the outpatient clinics and the general medical and general surgical inpatient wards. The study was conducted on 350 type II diabetics. An informed consent was obtained and the patients were interviewed in the language most comfortable to them. Confidentiality of the patient was maintained. Our hospital ethics committee approved the study. All questionnaires were administered and collected by the same person. The data was entered using an excel sheet and analysed using SPSS software (version 16).

The questionnaire had two parts. The first part contained the general details of the patient. The next part contained

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fifteen questions based on knowledge, attitude and practices of diabetics and its eye complications.

**Results:**

Out of the 350 patients who were interviewed, 182 were males and 168 were females. The average age was 58.27 years and a median of 59 years (range 33- 89 yrs.). Forty seven percent of the patients were housewives, 18% were retired people and 9% were businessmen.

Table 1 shows the distribution according to the duration of diabetes. Among the respondents, 42.6% had someone in their family who had diabetes while 56.9% did not have family members with diabetes. When the respondents were asked about how they came to know they had diabetes, 40.3% said by certain signs and symptoms, while 58.6% of people knew they had diabetes after doing some blood tests.

On being asked how diabetes affects the eye, 51.4% of patients did not know how, 30.9% knew that diabetes leads to retinal disease. This data is represented in Table 2. About 86% of people interviewed felt that decreased vision was the symptom seen in diabetic retinopathy. When asked whether Diabetic Retinopathy can be treated, only 50.3% answered as yes, 92% of respondents knew that there is an advantage of early detection of diabetic retinopathy.

On being asked whether patients diagnosed with diabetic retinopathy needed more visits to the doctor, 91.4% replied that it was required. On being asked whether well-controlled diabetics can have diabetic retinopathy, 34.9% replied as yes. Knowledge of the various treatment options are given in Table 3. Figures 1 & 2 show, the responses obtained from various questions on knowledge, attitude and practice about diabetic retinopathy.

**Table 1 : Distribution according to the duration of diabetes**

| Duration of diabetes (Years) | No. | %    |
|------------------------------|-----|------|
| NEWLY DIAGNOSED              | 21  | 6    |
| <1 YEAR TO 5 YEARS           | 132 | 37.7 |
| 6 TO 10 YEARS                | 97  | 27.7 |
| 11 TO 15 YEARS               | 53  | 15.1 |
| 16 TO 20 YEARS               | 32  | 9.1  |
| 21 TO 25 YEARS               | 9   | 2.6  |
| 26 TO 30 YEARS               | 3   | 0.9  |
| MORE THAN 30 YEARS           | 3   | 0.9  |
| TOTAL                        | 350 | 100  |

**Table 2: Varied patient responses to how diabetes affects the eye**

| How Diabetes affects the eye | No. | %    |
|------------------------------|-----|------|
| Cataract                     | 56  | 16   |
| Retinal Disease              | 108 | 30.9 |
| Glaucoma                     | 6   | 1.7  |
| Don't Know                   | 180 | 51.4 |
| Total                        | 350 | 100  |

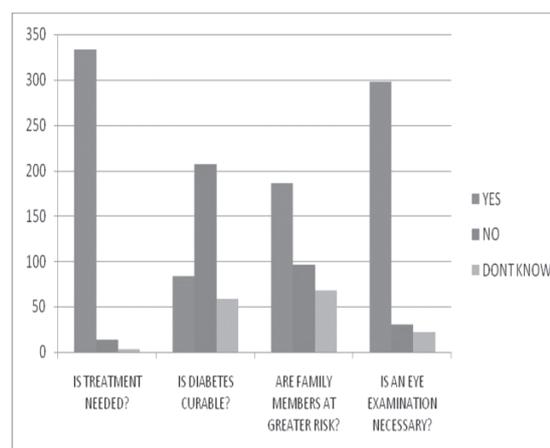
**Table 3: Knowledge of various treatment options**

| TREATMENT OPTIONS KNOWN | No. | %    |
|-------------------------|-----|------|
| Drops                   | 15  | 13.2 |
| Laser                   | 27  | 23.7 |
| Surgery                 | 27  | 23.7 |
| Lens                    | 40  | 35.1 |
| Medicines               | 4   | 3.5  |
| Spectacles              | 1   | 0.8  |
| Total                   | 114 | 100  |

**Table 4: Comparing the knowledge of the effect of diabetes on the eyes based on the duration of the disease**

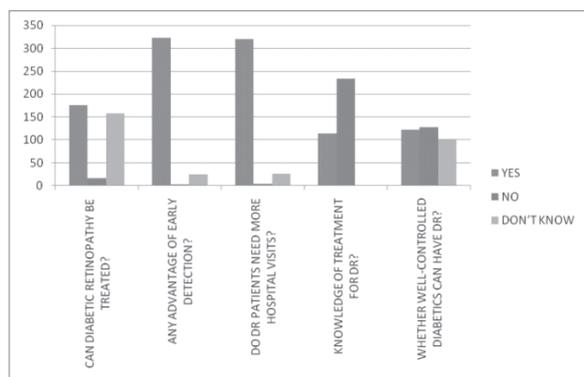
| Duration of disease | Number of respondents with awareness of how diabetes affects the eye / total respondents | %     |
|---------------------|--|-------|
| Just Diagnosed      | 1/21   | 4.8%  |
| <1 yr – 5yrs        | 37/132   | 28.0% |
| 6 - 10 yrs          | 32/97  | 33.0% |
| 11 - 15 yrs         | 16/53  | 30.2% |
| 16 - 20 yrs         | 12/32  | 37.5% |
| 21 - 25 yrs         | 6/9  | 66.7% |
| 26 - 30 yrs         | 2/3  | 66.7% |
| >30 yrs             | 2/3  | 66.7% |

**Figure: 1**



| Questions                           | Yes | No  | Dont know |
|-------------------------------------|-----|-----|-----------|
| Is treatment needed?                | 333 | 14  | 3         |
| Is diabetes curable?                | 84  | 207 | 59        |
| Are family members at greater risk? | 186 | 96  | 68        |
| Is an eye examination necessary?    | 298 | 30  | 22        |

Figure: 2



| Questions                                       | Yes | No | Don't know |
|---|-----|----|------------|
| Can diabetic retinopathy be treated?            | 176 | 16 | 158        |
| Any advantage of early detection?               | 322 | 3  | 25         |
| Do dr* patients need more hospital visits?      | 320 | 4  | 26         |
| Knowledge of treatment for dr*?                 | 114 | 23 | 2          |
| Whether well-controlled diabetics can have dr*? | 122 | 12 | 100        |

\*Diabetic Retinopathy

### Discussion:

India has a large burden of visual impairment, including blindness. To deal with such a large burden of blindness, the priorities have to be based on population-based data. With the current health standards the life span of diabetic patients are also increasing. The complications of diabetes are directly related to the duration of the disease, thereby the morbidity due to diabetic eye disease will reach enormous levels. It is also very well known that early diagnosis and treatment of diabetic retinopathy can prevent severe visual loss in a majority of patients. Therefore early detection and continued follow up is the key to prevent blindness due to diabetic retinopathy.

Diabetic retinopathy is symptomless in its early stages. A trend of increasing awareness with increasing retinopathy severity was reported in previous studies demonstrating that a lack of utilization of ophthalmic services is largely due to the disease being asymptomatic<sup>4</sup>. Individuals with type II diabetes are recommended to have a dilated eye examination at the time of diagnosis and annually thereafter. The awareness and adherence to this periodic eye check up is poor even in highly literate and educated populations in developed countries like Japan and USA. So the scenario in developing countries like India where the literacy level is much lower is expected to be worse. These factors high-

light the need for population based diabetic retinopathy awareness and prevalence detection studies in developing countries. These studies will help in proper planning and allocation of funds in a useful manner for prevention of diabetic retinopathy complications<sup>5</sup>.

Screening is the only way to identify these patients and prevent them from going blind. Screening of all patients with diabetes will only be successful if there is a good awareness of diabetic retinopathy amongst patients. Therefore, the success of this screening is only possible if the awareness of the problems associated with diabetes improves. To assess awareness many more studies need to be done in various places so that we can develop a pan India picture of the problem. Public knowledge about diabetes is not commensurate with the magnitude of the problem in India. The Chennai Urban Rural Epidemiology Study (CURES) revealed that 25% of people in Chennai had not heard about a condition called diabetes<sup>6</sup>, despite a growing diabetic population, extensive diabetes research and being endowed with numerous diabetologists and diabetic centres. The situation in other parts of India, where such facilities are not available, is likely to be much worse.

Table 1 showed the duration of diabetes among the respondents. This varied from newly diagnosed diabetics to those who had the disease for more than 30 years. The duration of the disease has a role to play in the awareness of retinopathy. With increase in the duration of illness, the awareness about diabetic retinopathy and its complications is more (Table 4). The P value being 0.037, this is statistically significant.

Having just heard about a disease is awareness but having understood a disease is knowledge. Even though the awareness of the disease seemed to increase with increasing duration of the disease, 51.4% of the diabetics had no idea how diabetes can affect the eye, 49.7% of diabetics don't know if diabetic retinopathy can be treated and 67.4% have not heard of any treatment for diabetic retinopathy. This shows that lack of knowledge of the disease was significant.

More than half of the patients who were interviewed did not have family members who are diabetics. Nearly 5% of patients did not know that they needed treatment for diabetes. Among the respondents, 46.9% of people did not know that people who have diabetics in their family are at greater risk of getting the disease and 14.9% of diabetics did not know that they need eye check ups. This definitely shows that there is a lack of basic awareness and knowledge about

diabetes among diabetics and there is a need for awareness programs and education about the disease. This data definitely points to a lacunae in our health care system.

It is important to know about the awareness levels about a condition in a population, as knowledge is a critical component in behaviour change<sup>7</sup>. Once awareness is created, people are more likely to participate in prevention and control activities<sup>8</sup>. Awareness of systemic disease related eye problems play an important role in encouraging people to seek timely eye care and can therefore help in reducing the burden of visual impairment.

The Chengamanad Diabetic Retinopathy Awareness Study (CDRAS), tried to determine the level of awareness of diabetic population regarding the blinding complications of diabetic retinopathy. This was a population based epidemiological study in the Chengamanad Panchayat in Ernakulam District in Kerala, India. This study showed that out of 1096 diabetics, 698 (63.7%) felt they were not educated about the complications of diabetic retinopathy, 674 patients (61.5%) felt they were not told about eye related problems by their treating physicians. Generally, people having diseases are well informed about their disease because of the human tendency to acquire knowledge of the disease he is suffering from. Only 479 patients (43.7%) were aware that frequent eye check ups are necessary and 674 patients (61.5%) were not aware that the duration of the disease had anything to do with diabetic retinopathy<sup>9</sup>.

In a study conducted by Rajani Kadri, awareness of diabetic retinopathy was found in 182/653 (27.9%) patients. Awareness of treatment for diabetic retinopathy was seen in 59/653 (9%) patients only<sup>10</sup>. In our study, only 114/350 (32.6%) of patients knew of the various treatment modalities for diabetic retinopathy and out of these 114 only 27 patients (7.7%) had heard or knew anything about laser treatment for diabetic retinopathy. This showed that there is a great need for health education to increase the level of awareness and knowledge of systemic disease related eye problems.

Awareness creation in a community is one of the first steps in any programme aimed at reducing blindness due to diabetic retinopathy<sup>11</sup>. The impact of such programmes needs to be evaluated. The impact of literacy on increased awareness of eye diseases was a known fact in earlier studies<sup>12</sup>. Namperumalsamy P and co-workers<sup>13</sup>, in a study done in India, a developing country, found 29% of subjects unaware of diabetic retinopathy. In our study, 242/350 (69.1%) of diabetics were unaware of diabetic retinopathy. However, a study done in Singapore<sup>14</sup>, a developed country, showed an

awareness rate of 70 – 80%. This state of decreased awareness of diabetic retinopathy in developing countries demands for many more health programmes for educating the public. Identifying and treating high-risk persons before severe vision loss can help to reduce blindness associated with diabetic retinopathy<sup>15</sup>.

Currently, even diabetics, leave alone the general population<sup>16</sup>, are not made aware of the ocular complications of diabetes and the need for regular yearly eye examination. General physicians play a very important role in advising diabetics, as they are the first ones to treat them<sup>17,18</sup>.

The Prevention Awareness Counselling and Evaluation (PACE) Diabetes Project conducted at various locations of Chennai concluded that through direct public education and mass media campaigns, awareness about diabetes and its complications can be improved even in a whole city. If similar efforts are implemented state wise and nationally, prevention and control of non-communicable diseases, specifically diabetes is an achievable goal in India. It is encouraging that, in the PACE project, significantly higher number of people in Chennai (6% increase in awareness) as a whole are aware of diabetes, its risk factors, its complications. This would hopefully make people more receptive to future efforts to encourage healthy behaviour changes, as well as to increase both the demand for, and the supply of preventable health services<sup>7</sup>. These results echo other findings that comprehensive programmes utilizing mass media as well as community activities can have a large impact<sup>19</sup>.

Limited data are available on the efficacy of large-scale awareness interventions for non-communicable diseases in developing countries, in part because they have only been attempted in the last decade. It is now clear that prevention of non-communicable disease through increased awareness needs to be the thrust of the effort in resource poor contexts, where the treatment can be prohibitively costly<sup>20</sup>.

Most patients commonly respond with denial, fear and anger after knowing that they have diabetes. As diabetes requires daily attention and care, these people would benefit from more self-reliance and self help. Social support from personal and professional networks as well as continuity of health visits is critical to the consistent and proper management of diabetes.

Education messages about diabetic eye disease must include ways to prevent diabetes and its complications, explanation of the symptoms of diabetes, logic of getting an

nual eye check ups and the consequences of not treating diabetes.

Our study had a few limitations. Firstly, with a limited sample of patients visiting the institution, the results should be extrapolated with caution. Patients are also disinterested in answering lengthy questionnaires.

Future research should evaluate different components of such programs separately to see what types and channels of education are the most efficacious and cost effective. These measures would help to better allocate resources in future awareness and behaviour change methods.

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### Conclusion:

In conclusion our study shows that there is a lack of basic awareness and knowledge about diabetes among diabetics and that there is a need for awareness programs and education about the disease especially among diabetic patients. It is clear that prevention of non-communicable disease through increased awareness needs to be the thrust of the effort in resource poor contexts, where the treatment can be prohibitively costly.

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