

## Original Research Article

# Knowledge, attitude, and practices regarding eye complications and care- a cross-sectional study in Indian diabetic persons

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## ABSTRACT

**Background:** With an ever-increasing number of diabetic patients, eye complications particularly diabetic retinopathy has become one of the leading causes of blindness globally. The authors present levels of knowledge, attitude, and practices (KAP) among type-2 diabetes mellitus patients regarding eye complications and their care in Jammu city of UT of Jammu and Kashmir, India.

**Methods:** This cross-sectional study was conducted in the months of September and October 2024 among T2DM patients attending eye OPD in a tertiary care teaching hospital in Jammu city. A pre-tested and validated questionnaire was used to collect the data on socio-demographic profile, knowledge, attitude, and practices about diabetic eye complications.

**Results:** Of the 270 participants, 52% were males. The majority of the participants had good levels of knowledge with a higher proportion of female respondents knowing that eye treatment is more effective if blood sugar and lipid profile is in the normal range ( $p < 0.05$ ). Attitudes were found to be better among female respondents with more than 2/3<sup>rd</sup> of them asserting that annual eye check was indicated despite vision being good ( $p < 0.05$ ). Practices among the participants were found to be not up to the desired levels.

**Conclusions:** Results have revealed good levels of knowledge and attitude among participants while practice levels were less than desired and need to be improved.

**Keywords:** Attitude, Eye complications, Knowledge, Practices

## INTRODUCTION

Diabetes mellitus is a major public health problem in our country with 77 million people aged 18 years and above being known diabetics and 25 million as prediabetics. 50% of diabetic patients are not aware of their condition which can lead to various health complications.<sup>1</sup> Patients with uncontrolled diabetes are at a greater risk of developing diabetic eye complications, diabetic nephropathy, neuropathy, and cardiomyopathy.<sup>2</sup> Among the diabetic eye complications, diabetic retinopathy is the most common but other complications like diabetic

macular edema, neovascular glaucoma, and retinal detachment can occur.<sup>2,3</sup>

In the initial stages of diabetic retinopathy, there may not be any symptoms or pain but sudden vision changes, blurred vision, eye floaters, double vision, and eye pain occur as the disease shows progression.<sup>4</sup> As per estimates, diabetic retinopathy cases are likely to reach 160 million by 2045.<sup>3,5</sup> Blindness caused by untreated diabetic retinopathy is not only a personal loss to the individual but also increases the economic burden of health care services for the family.<sup>6</sup> So, it is pertinent to screen all

diabetic patients for diabetic retinopathy and, if needed, put them on treatment without delay to avoid loss of vision.<sup>7</sup> The diabetic patients need to regulate their blood pressure, serum cholesterol, and blood glucose levels in tandem with regular eye check-ups to reduce the risk of diabetic complications. Patients diagnosed as T2DM (type 2 diabetes mellitus) must be screened at the time of diagnosis, and if evidence of retinopathy is there, the patient should be screened once a year or more regularly if required.<sup>8</sup> Diabetic patients, if having any changes of vision, pain, redness in the eye, or blurring in the eye must consult an ophthalmologist.

It is desirable to have baseline information regarding knowledge, attitude and practice about eye complications and in case of diabetic patients to put an effective health promotion model in place. It was in this context that the present study was conducted to assess the knowledge, attitude and practice (KAP) about eye complications in diabetic patients in a tertiary care teaching hospital in Jammu. Authors wanted to identify the gaps in awareness and practices which may be rectified so as to improve future health outcomes. Although a few studies have been conducted in this context in India, but literature review revealed that no such study has been conducted in this part of the country.

## METHODS

The present cross-sectional study was conducted in a tertiary care teaching hospital in Jammu city of UT of J and K, India in the months of September and October 2024. The study included T2DM patients visiting in eye-OPD of the hospital from both genders. The inclusion criterion was patients with type 2 diabetes mellitus aged 18 years and above who were willing to give written informed consent. Participants who were below the age of 18 years and those T2DM patients who had already

developed eye complications were excluded from the purview of the study.

The sample size calculation was based on a 95% CI with a 30% frequency percentage and an acceptable margin of 20%. To compensate for the loss due to non-response, the sample size increased by 15%, and thus a total of 270 respondents were interviewed. The patients were interviewed using a consecutive sampling technique.

The questionnaire was developed by authors by going through review of literature on the KAP studies about eye-complications conducted earlier. The questionnaire developed was pilot tested among 40 diabetic patients who were not included in the final study. The feedback obtained from the pilot study was duly incorporated in the final version of the questionnaire which had four sections: the participant's sociodemographic data, knowledge about the eye complications, the attitude regarding the management of eye complications, and the last part related to practices regarding the prevention of eye complications. The data thus collected was entered into an Excel spreadsheet. Descriptive analysis was performed based on frequencies and percentages calculated for categorical variables. A chi-square test was used to assess the associations between knowledge, attitude, practices, and gender of the respondents. A p value <0.05 was considered to be statistically significant.

## RESULTS

Table 1 shows that the males in the study population comprised 52% of total respondents and about one-third of the respondents were in 41-50-year age group. More than half of the respondents belonged to urban areas and were graduates as per literacy status. About 25% of respondents had duration of diabetes >10 years and 72.6% had family history of diabetes mellitus.

**Table 1: Sociodemographic characteristics of the study population (n=270).**

Patient characteristics		Number	Percentage
Gender	Male	140	51.9
	Female	130	48.1
Age (years)	18-30	12	4.4
	31-40	25	9.3
	41-50	82	30.3
	51-60	67	24.8
	>60	84	31.1
Place of residence	Urban	156	57.8
	Rural	114	42.2
Education level	Below high school	22	8.1
	High school	35	13
	College degree/graduate	152	56.2
	Higher degree/post-graduate	61	22.6
Duration of diabetes (in years)	<1	52	19.3
	1-5	57	19.3
	>5-10	63	23.3
	>10	68	25.2
Family history of diabetes mellitus	Yes	196	72.6
	No	74	27.4

**Table 2: Knowledge of participants regarding eye complication (n=270).**

Title	Male (n=140)		Female (n=130)		P value
	Yes	No	Yes	No	
Can diabetes as disease damage eyesight	100	40	85	45	0.28
In diabetes, retina is the main part of the eye that gets damaged	122	18	107	23	0.26
Special equipment is used by eye surgeon to ascertain effect of diabetes	95	45	88	42	0.97
Damage due to diabetes in eye can be prevented by timely treatment	133	07	109	21	0.00
Eye treatment is more effective if blood sugar and lipid profile are near normal	82	58	102	28	0.00
In a diabetic patient, one eye is affected first followed by the other eye	48	92	60	70	0.04
Diabetic children are also prone to eye complications	38	102	28	102	0.28
Diabetic retinopathy if treated successfully with laser does not need laser treatment again	132	08	80	50	<0.00
Low vision aids help in daily work in diabetic vision damage	55	85	37	93	0.06

**Table 3: Attitudes of participants regarding eye complication (n=270).**

Title	Male (n=140)		Female (n=130)		P value
	Yes	No	Yes	No	
I do not need annual eye checkup as my vision is good	32	108	92	38	<0.00
Eye doctor only has to inform about eye complications due to diabetes	72	68	102	28	0.00
I need not worry about my blood sugar and lipid profile as I am already on eye treatment	48	92	92	38	<0.00
Diabetic patients should not waste time and money in eye check as mostly eyes of diabetics are normal	122	18	95	35	0.00
Diabetic patients should avoid laser treatment since it is very painful	40	100	30	100	0.3

**Table 4: Practices of participants regarding prevention of eye complications (n=270).**

Title	Male (n=140)		Female (n=130)		P value
	Yes	No	Yes	No	
I attend eye OPD on regular basis as per advise of my physician	45	95	25	105	0.01
I am monitoring my blood-sugar levels and lipid profile despite under treatment for eye complications	66	74	50	80	0.15
I was counselled about prevention and treatment for eye complications by eye OPD staff	15	125	08	122	0.18
I am using low vision devices to combat less vision because of diabetes	10	130	10	120	0.86

The majority of the respondents knew that diabetes can damage eyesight, and the retina is primarily affected. About two-thirds of male and female respondents knew about the use of special equipment to ascertain the effects of diabetes, and this was found to be statistically significant ( $p<0.05$ ). A higher proportion of female respondents were aware that eye treatment is more effective if blood-sugar and lipid-profile are in the normal range than male respondents and this was statistically significant (Table 2).

As compared to 22.8% male respondents, 70.7% of female respondents reported that annual check-ups for eye were not needed since their vision was good and this difference was found to be statistically significant ( $p<0.05$ ). A higher proportion of male patients than female patients reported that laser treatment should be avoided since it is painful but it was found to be statistically not significant ( $p>0.05$ ) (Table 3).

Table 4 shows that around one-third of male respondents were attending eye OPD regularly in comparison to only one-fifth of the female respondents and this difference was found to be statistically significant ( $p<0.05$ ).

## DISCUSSION

In chronic diseases, early signs are usually ignored by the majority of patients and as the disease progresses into advanced stages, the patients run from pillar to post. This human behaviour needs modification to avoid life-threatening complications of diseases like diabetes. In the current cross-sectional study, the authors assessed the level of KAP regarding eye complications in diabetic patients in Jammu City of UT of Jammu and Kashmir, India. About two-thirds of male and female respondents knew that diabetes can damage eyesight and eye surgeons use special equipment to ascertain the effects of diabetes on eyes. Khandekar et al reported 72.9% excellent grade

of knowledge about diagnosis but only 18% had excellent grade of knowledge about eye care.<sup>9</sup> Excellent levels of knowledge to the tune of 98% and 96% were observed in Japan and Australia respectively and it was attributed to high literacy rates and proactive counselling.<sup>10,11</sup> Alqahtani et al noted that 52.9% of the respondents had a good level of knowledge of eye disease in diabetes and its management.<sup>12</sup> In contrast, Vonor et al and Makhdom et al reported overall knowledge of diabetic eye diseases at 35.8% and 33% respectively.<sup>13,14</sup> Some authors have reported higher knowledge levels among old age participants and those with a family history of diabetes mellitus.<sup>14,15</sup> On a similar note, Al Rashed et al reported high awareness levels of 88.6% regarding eye problems in his study among diabetic patients.<sup>16</sup> However, an earlier study conducted in south India reported that only 10% of diabetic patients had knowledge about laser treatment.<sup>17</sup> This difference in awareness levels is likely to be due to different characteristics of the participants and variance in sample sizes. The low to good levels of awareness in our study indicates need for periodic health campaigns in the public to generate better levels of knowledge about diabetes and its complications.

The results have revealed that attitude of male respondents was better than female respondents especially on parameters like not to worry about blood sugar levels and lipid profile if already on eye treatment and no need for annual eye checkup since my vision is good. The results are in agreement to the UK study where Asian population was found to have a less positive attitude toward eye care compared to Caucasians.<sup>18</sup> Khandekar et al reported a positive attitude toward periodic eye check-ups in 18% and eye care in 30% outlining a long way to go for effective change in health behaviour.<sup>9</sup> Makhdom et al also noted good attitudes towards eye care practices for diabetics.<sup>14</sup> Alqahtani et al similarly reported a positive attitude towards eye examination in 80.8% for early detection of diabetes retinopathy and 79% of the respondents underwent regular fundus examination.<sup>12</sup> The author also reported that patients residing in areas with a preponderance of educational and health services have higher positive attitudes regarding diabetic eye complications. Diabetic patients on insulin treatment have more interactions with health staff due to hypoglycaemic or hyperglycaemic episodes which may be the reason for the high rate of positive attitude among them. In contrast, Hatim et al outlined only 12% very positive attitude among the respondents.<sup>19</sup> Good attitude and perceptions about diabetic eye complications among the respondents in the current study can partially be explained because of higher prevalence of diabetes in India and also a fear among the respondents about worsening of eye complications as the disease progresses. Higher rates of having a family history of diabetes among the respondents is another likely reason for good attitudes and perceptions.

The practices to keep eye complications in abeyance were found to be better among male respondents than the female respondents but they were not up to the desired levels. Khandekar et al found that the eye check-up and

accepting treatment was of excellent grade in 52% and 79.2% of the Omani respondents. Alqahtani et al in his findings noted that 71.9% had good practices and the author further reported that older patients with diabetes and those having a longer duration of the disease had a better practice of diabetic retinopathy screening. Srinivasan et al found that 54.9% had good practices with respect to diabetes.<sup>20</sup> However, Hatim et al reported a lower rate (28%) regarding practices about diabetic eye complications.<sup>19</sup> Kreft et al also reported that the majority of individuals newly discovered as diabetic cases did not achieve the standards of diabetic retinopathy screening as advised currently.<sup>21</sup> High literacy rates and urban residence are among the factors responsible for good practices regarding eye care in the current study. These findings are congruent to those reported by Alqahtani et al Pradhan et al reported that a significantly greater percentage of the patients in non-sight threatening diabetic retinopathy were unaware that diabetes could affect eyes, didn't know about possible treatment for diabetic retinopathy and checked their blood sugar less frequently than once a month.<sup>12,22</sup>

## CONCLUSION

Research has conclusively proved that periodic eye examinations followed by timely interventions delay the progression of disease as well as complications. Improving education and awareness about diabetes and its complications in both population and diabetes patients is key for optimal management besides keeping a check on disease progression. These strategies would improve patient's quality of life besides significant cost savings.

To the author's best knowledge, this is the first study in Jammu region, UT of J and K, India to assess the knowledge, attitude and practices regarding eye complications in diabetic patients. The cross-sectional nature of study and small sample size are the limitations of the present study due to which results lack generalizations.

A reasonably good level of knowledge and attitudes were reported by the respondents in the present study, though the practices were not desirable. When patients are not aware of the importance of early detection, best of interventions from health care institutions for diabetic eye care are unlikely to yield favourable results. Coordination of health authorities with the media would go a long way to raise awareness levels about eye complications in the population at large in general and diabetic patients in particular. For a better understanding of patients' perspectives on diabetic eye complications, interactive interviews or FGDs with them in clinics would be highly fruitful.

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