

# Prospective Non-randomized Case Study of Visual Outcome after Cataract Surgery in Diabetes Mellitus

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## Abstract

**Introduction:** Cataract is the most common cause of ocular morbidity in the Indian population, among which a major portion of people are having diabetes mellitus.

**Aim:** This study aims to assess the visual outcome after cataract surgery in those who are having diabetes mellitus.

**Materials and Methods:** A prospective study was conducted from July 2017 to September 2017 among 150 patients who were presented to the Ophthalmology Outpatient Department in Government Theni Medical College, Theni, and who were admitted and operated in ophthalmology inpatient ward. We used the data based on clinical evaluation as well as from various ophthalmologic equipments and from our central laboratory.

**Results:** Out of 150 patients studied, 42 were diabetic and among which 3 were having diabetic retinopathy, and their post-operative visual outcome was highly satisfactory.

**Conclusion:** Our study shows that the public are unaware of the ocular complications that may occur in type 2 diabetes mellitus as a result of which they present to the ophthalmology OPD too late even in the presence of marked loss of vision. Hence, the urgent need for public education about diabetes and its ocular complications are advised.

**Key words:** Cataract, Diabetic retinopathy, Visual acuity

## INTRODUCTION

Cataract remains the single largest cause of blindness among the Indian as well as among the global population. There is an estimated figure of 17.6 million (39%) people who are blind due to curable cataract.<sup>[1]</sup> Among the causes of acquired cataract, type 2 diabetes mellitus carries a major share being the 5<sup>th</sup> most common cause of legal blindness.

According to the WHO, there is an estimated 65% increase in diabetics by 2025 to 380 million which further imply a proportionate increase in number of cataract patients having diabetes mellitus.<sup>[2]</sup> Cataract occurs at an early age

and 2–5 times more frequently in patients with diabetes mellitus. Thus, the visual loss has a significant impact on the working population.<sup>[3]</sup>

The metabolic abnormalities taking place during the course of progression of type 2 diabetes mellitus provide a better ground for cataract to develop too early in relatively younger individuals.<sup>[5]</sup>

The osmotic over hydration of lens occurs due to the accumulation of sorbitol when glucose is metabolized by NADPH + dependent aldose reductase which further leads to the development of mature diabetic cataract.<sup>[4]</sup> These kinds of cataracts are mainly characterized by cortical or posterior subcapsular opacities [Figures 1 and 2].

## MATERIALS AND METHODS

A prospective study was conducted in Government Theni Medical College, Theni, from July 2017 to September 2017 among 150 patients who were presented to our ophthalmology

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outpatient department were admitted and operated for cataract after blood sugar control by administering parenteral insulin with the help of diabetologist.

The data were collected from clinical examination, slit lamp examination, and from our central laboratory for blood sugar values. After the diagnosis of cataract was made by thorough clinical examination, the patient was sent to slit lamp examination room and further to central laboratory. Then, they were duly operated and post-operative visual status assessed. The data obtained were analyzed statistically by simple proportions.

### RESULTS AND DISCUSSION

Of 150 cataract patients studied, there were 59 male patients and 91 female patients. Among these, 42 were diabetic which includes 17 male and 25 females. Of 42 diabetic cases, 15 patients (35.7%) were belonging to the age group of 61–70 years and 14 patients were belonging to 51–60 years of age group. Of these 42, 3 patients had diabetic retinopathy.

Among the diabetic patients, visual acuity by the time they presented to the ophthalmology outpatient department was recorded. Results showed that 18 patients who carry a major share among the diabetics were having a visual acuity range of CFCF to PL+ which also includes the three patients with diabetic retinopathy. Other 17 patients were having a visual acuity range of 6/60–1/60 and only one patient was in a better vision range of 6/18–6/36.

After diabetic control, every patient was operated and post-operative visual acuity was recorded. Of 42 patients who had undergone surgery, 31 patients were having a visual outcome of 6/9–6/18, and 7 patients were having a visual acuity range of 6/24–6/36. Only four patients had a post-operative visual acuity range in between 6/60 and 1/60, and among these, three patients had diabetic retinopathy for whom the prognosis was explained preoperatively [Tables 1-4].

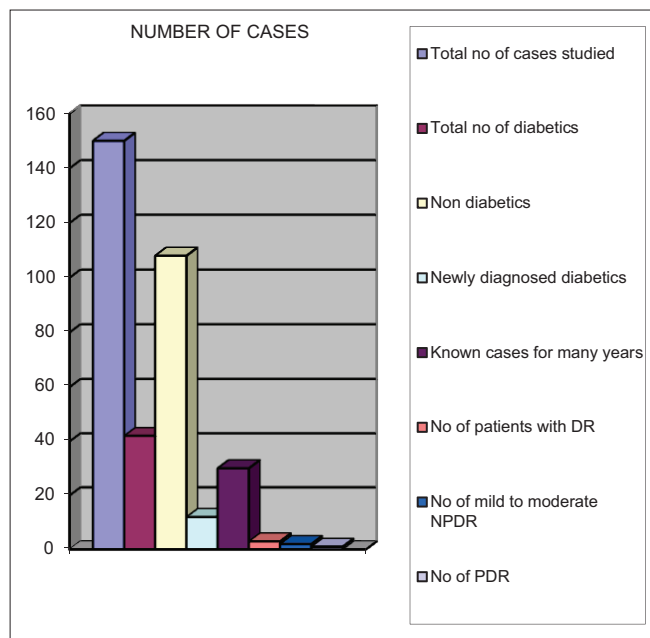
### CONCLUSION

Our study shows that there is an increased prevalence of cataract among diabetic patients. The post-operative visual outcome was highly satisfactory for every patient except for those who were having diabetic retinopathy.

**Table 1: Number of cases**

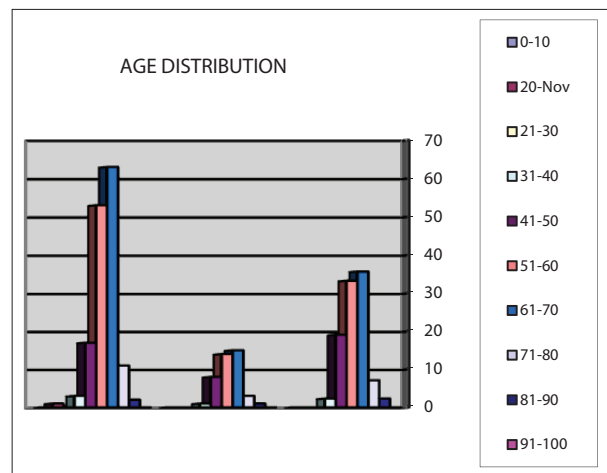
Overall data analysis	No of patients
Total number of cases studied	150
Total number of diabetics	42
Non-diabetics	108
Newly diagnosed diabetics	12
Known cases for many years	30
Number of patients with DR	3
Number of mild to moderate NPDR	2
Number of PDR	1

NPDR: Non-proliferative diabetic retinopathy, PDR: Proliferative diabetic retinopathy, DR: Diabetic retinopathy



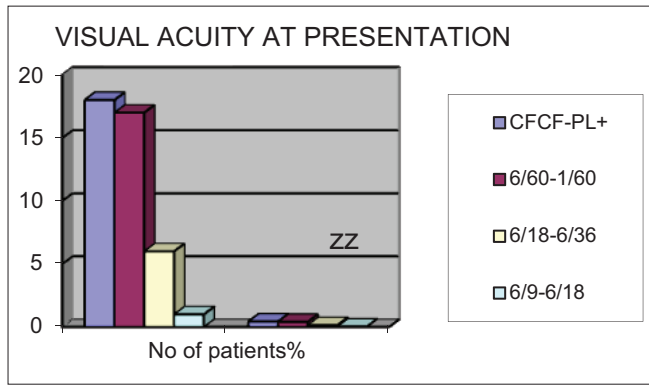
**Table 2: Age distribution**

Age group (year)	Number of patients	Number of diabetics	Percentage
0–10	0	0	0
20–Nov	1	0	0
21–30	0	0	0
31–40	3	1	2.3
41–50	17	8	19.1
51–60	53	14	33.3
61–70	63	15	35.7
71–80	11	3	7.1
81–90	2	1	2.3
91–100	0	0	0



**Table 3: Visual acuity at the time of presentation among diabetics**

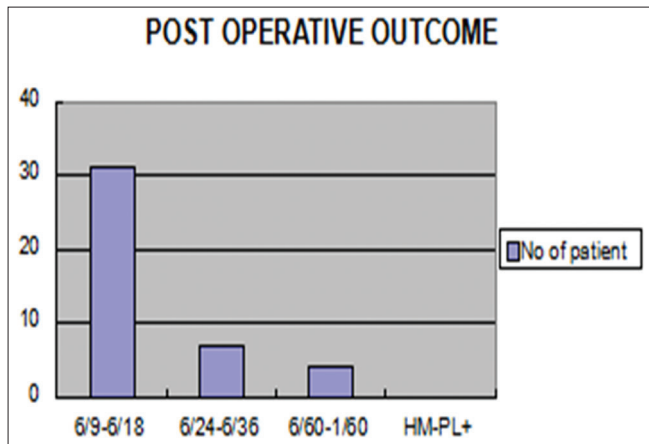
Range	Number of patients (%)
CFCF-PL+	18 (42.8)
6/60–1/60	17 (40.4)
6/18–6/36	6 (14.2)
6/9–6/18	1 (2.3)



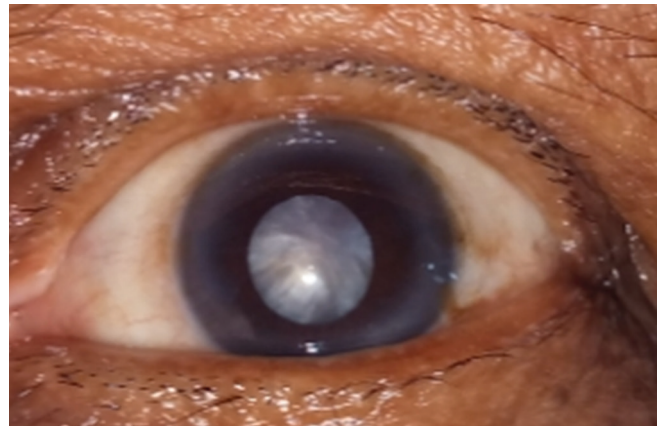
**Table 4: Post-operative visual outcome**

Range	Number of patients
6/9–6/18	31
6/24–6/36	7
6/60–1/60	4 (3 are with DR)
HM-PL+	0

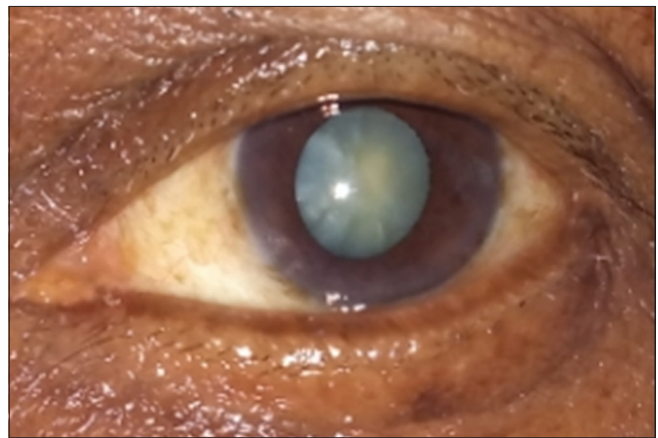
DR: Diabetic retinopathy



The visual acuity by the time they presented to the OPD showed that there is a very poor awareness among the public about the ocular complications that may occur in type 2 diabetes mellitus, as a result of which they are not at all bothered about the gradual loss of vision they are undergoing and they are presenting to the OPD only whenever one or both of the eyes become nearly blind.



**Figure 1: Mature diabetic cataract**



**Figure 2: Hypermature diabetic cataract**

Hence, the public can be educated about the ocular complications that may occur in type 2 diabetes mellitus and the necessity of keeping their blood sugar values under control. The village health nurses and health inspectors can give orientation classes to every area and conduct medical camps for them to screen those patients with diabetic cataract and diabetic retinopathy, who might be unaware of their blood sugar status.

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