



## ORIGINAL RESEARCH PAPER

## Ophthalmology

### EFFECT OF CATARACT SURGERY ON QUALITY OF LIFE IN PATIENTS WITH PRE-SENILE CATRACT

**KEY WORDS:** pre-senile cataract, quality of life

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#### ABSTRACT

Cataract attributes to almost 80% of blindness in India<sup>1</sup>. Cataract is the opacification of the crystalline lens, mainly occurring due to age related degenerative changes of the lens. Pre-senile cataract is the onset of cataract before 50 years of age.<sup>2</sup> Vision impairment due to cataract can affect vision related day to day activities and thus affect the quality of life in these patients. Treatment of cataract, which is surgical removal of the cataractous lens is thus crucial. Here, we present a one year prospective study done in our institution on patients presenting with pre-senile cataract and the impact on their quality of life before and after surgery.

#### INTRODUCTION:

Cataract is one of the major causes of preventable blindness in the developing countries like India. It accounts for approximately 48% of the total blindness in the world, and about 51% in the South East Asian Region, including India. It is also the second major cause for visual impairment after refractive error.<sup>3</sup>

Presenile cataract is defined as the onset of cataract occurring before the age of 50 years.<sup>2</sup> The patients between 25-50 years of age comprises the major working population of the country. Vision related problems due to cataract, among young patients reduces the overall productivity and adds on to the existing financial burden in developing countries like India. Many risk factors have been associated with pre-senile cataract like alcohol, tobacco use, prolonged steroid use, ocular trauma, diabetes, consanguinity, chemotherapy, chemical exposure etc.

Cataract leads to gradually decreasing vision, double vision, halos, glare and increased sensitivity to light in some. Impaired visual function not only hampers patient's ability to perform daily activities, but also productivity, thus influencing the patient's quality of life. If not treated, it can therefore, affect quality of life, and contribute to the economic burden of the country.

Quality of life (QOL) is defined as 'an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns'.<sup>4</sup> Surgical management is the only treatment for any form of cataract till date. Quality of life can be an important indicator for successful management of cataract. Vision related QOL (VRQOL) takes into account the difficulties faced with vision-related tasks and its consequences on emotional and social well-being.

#### Aim Of The Study:

To assess the quality of life in patients with pre-senile cataract before and after cataract surgery.

#### MATERIALS AND METHODS:

A prospective one year study was conducted in our hospital. Ethical clearance was obtained before conducting the study.

**Inclusion Criteria:** Patients in the age group of 25-50 years with cataract.

**Exclusion Criteria:** Patients having congenital cataract, patients with decreased vision due to other associated ocular diseases (like corneal opacity, uveitis, diabetic retinopathy

etc.) patients who are physically disabled due to other diseases, intellectually disabled patients and patients not giving consent.

#### Methodology:

Complete detailed history for each patient was taken regarding duration of decreased vision, any risk factor like the use of alcohol, tobacco, history of ocular trauma, steroid and chemical use, any systemic disorders etc.

All the patients were examined by slit lamp examination on the day before surgery. Cataract grading was done as per the Lens opacification classification system III (LOCS).<sup>5</sup>

Vision for distance was recorded as per Snellens chart.

IOP was measured by non-contact tonometer.

Fundus examination was done by indirect ophthalmoscopy and 90D lens.

USG B-scan was done in patients whose fundus could not be examined due to hazy media.

Auto-keratometry and A-scan done for IOL power calculation

All the patients underwent Manual small incision cataract surgery.

Routine investigations like RBS, BP, ECG was done.

A questionnaire was provided to the participants based on the National Eye Institute - Visual function Questionnaire 25 (NEI-VFQ 25), which consisted of 25 questions each grouped in 12 subscales. The recommended scoring system for the NEI VFQ-25 generates 12 subscale scores and an overall composite score. The 12 subscales for the NEI VFQ-25 included general health, general vision, ocular pain/discomfort, near activities, distance activities, social functioning, mental health, role difficulties, dependency, driving, color vision, and peripheral vision. For a subscale score, questions under that subscale are first recorded on a 0 to 100 scale and then their average is calculated. The overall composite score is calculated by averaging 11 of the 12 subscale scores (excluding the general health).<sup>6</sup> For each patient, the questionnaire was filled before the day of surgery and 1 month after the surgery.

After the surgery, each patient was examined on the first post-operative day under slit lamp, and visual acuity and IOP were recorded.

All the patients were followed up after 1 week and then again after 1 month. At 1 month, along with slit lamp examination, refraction for best corrected visual acuity (BCVA) was done.

#### RESULTS:

The study included a total of 72 cases, of which 47 were males and 25 were females.

#### Table 1: Gender Distribution

Gender	Number	Percentage (%)
Males	47	65.2
Females	25	48.6
Total	72	100

Most common age group affected were 45- 50 years. Mean age in our study was 44.5 years.

**Table 2: Age Wise Distribution**

Age (years)	Number	Percentage (%)
45-50	40	55.5
40-45	24	33.3
35-40	5	6.9
30-35	2	2.7
<30	1	1.3
Total	72	100

Majority of the patients were from rural areas which was 76% of total patients.

**Table 3: Distribution Based On Locality**

Area	Number of patients (n=72)	Percentage (%)
Rural	55	76.3
Semi- urban	10	13.8
Urban	7	9.7
Total	72	100

Majority (23 patients) of the patients worked as skilled workers (like driver, tailor, mechanic) followed by farmers (17 patients).

**Table 4: Distribution Based On Occupation**

Occupation	Number of patients (n=72)	Percentage (%)
Farmer	17	23.6
Housewife	15	20.8
Mechanic	12	16.6
Labour	13	18.05
Driver	6	8.3
Tailor	5	6.9
Others	4	5.5
Total	72	100

The most common type of cataract was total cataract and the least common was posterior polar cataract in our study.

**Table 5: Distribution Based On Type Of Cataract**

Type of cataract	Number	Percentage
Total/Mature cataract	25	34.7
Posterior Subcapsular Cataract (PSC) +Nuclear Sclerosis	20	27.7
Nuclear Sclerosis	11	15.2
PSC	11	15.2
Posterior Polar Cataract	5	6.9
Total	72	100

In majority of the patients, there was no associated risk factor. Some of the risk factors that was associated with pre- senile cataract in our study were smoking, alcohol use, ocular trauma and diabetes.

**Table 6: Distribution Based On Associated Risk Factor**

Risk factor	Number	Percentage
Absent	39	54.16
Diabetes	5	6.9
Smoking	11	15.2
Alcohol	10	13.8
Ocular trauma	7	9.7

The pre-operative and post-operative visual acuity of the patients were assessed to see the improvement in vision post-surgery. Most patients had a visual acuity of less than 1/60 prior to surgery. Post-operatively, majority (53 in number) of the patients had a good visual outcome between 6/6 to 6/12.

**Table 7: Distribution Based On Pre- & Post-operative**

## Visual Acuity Of Patients

Visual acuity	Pre-operative	Post-operative
6/6-6/12	-	53
6/18-6/24	10	17
<6/36	-	2
6/36-6/60	28	-
5/60-1/60	9	-
<1/60	25	-

In our study, majority of the patients, i. e 47.2% had bilateral cataract.

**Table 8: Distribution Based On Affected Eye Of Patients**

Quality of life	Pre-operative	After 1 month
General health	50	82.1
General vision	45.8	72.6
Ocular pain/ discomfort	63.3	72.6
Near vision	64.7	60.2
Far vision	56.7	84.5
Peripheral vision	53.8	78.7
Colour vision	64.6	88.6
Driving	68.6	70.5
Social life	69.1	78.6
Mental health	63.3	72.4
Activity limitation	66.5	74.5
Vision & dependency	70.2	75.6
Composite score	50.7	82.7

Assessment of quality of life was done based on the NEI-VFQ 25 on the day before surgery and post-operatively after 1 month. The mean composite QOL score improved significantly from 50.7 to 82.7. The pre-operative score was lowest for general health and general vision. Post-operatively, highest score was for colour vision, followed by far vision and general health.

**Table 9: Mean Pre- & Post-operative (After 1 month) Score Of Patients**

Laterality of eye	Number	Percentage
Right eye	15	20.8
Left eye	10	13.8
Both eyes	47	65.2

## DISCUSSION:

Pre-senile cataract is increasingly becoming a common occurrence leading to cataract surgery at an earlier age. Manual small incision cataract surgery is a widely performed surgery, and it especially caters to those patients who cannot afford the high cost of phacoemulsification. Pre-senile cataract affects the young working population group and the visual impairment due to cataract can hamper the daily activities as well as the lifestyle of these patients. Surgical management of cataract can improve the vision in these patients.

Sudaresan et al, Geetha et al, Dhanya et al, in their study of pre-senile cataract found the mean age of the patients to be 42.65 years,<sup>7</sup> 43.47 years,<sup>8</sup> 46.7 years<sup>9</sup> respectively, which is similar to our study with a mean age of 44.5 years. Female preponderance of cataract have been shown in several studies<sup>7,8,10</sup> which is in contrast to our study with a male preponderance, which is probably due to negligence and lack of awareness towards visual health, as majority of the patients are from rural areas.

PSC has been found to be the most common type of cataract among pre-senile cataract patients.<sup>10,11</sup> Sudaresan et al, found that nuclear cataract combined with posterior sub-capsular cataract was the most common type of cataract, in their study, while mature cataract was the second most common cataract.<sup>7</sup> In our study, total/mature cataract was the most common type of pre-senile cataract, which is probably due to late visit to the hospital.

In a study, the final visual acuity after surgery in pre-senile

cataract, ranged from 6/6 to 6/12 in 119 out of 120 patient (99.2%), except for 1 case with primary posterior capsular opacification.<sup>10</sup> In our study, most patients had a visual acuity of less than 1/60 prior to surgery. Post-operatively, majority, which is 53 of the patients had a good visual outcome between 6/6 to 6/12. 17 patients had an uncorrected visual acuity (UCVA) between 6/18 and 6/24. Of the 17 patients, 12 patients had a best corrected visual acuity (BCVA) following refraction at 1 month of 6/6 and 5 patients had a BCVA of 6/9. Only 2 of the patients had an UCVA of 6/36, of which one patient had primary posterior capsular opacity and had a BCVA of 6/12. The other patient had mature cataract and, post-surgery fundus evaluation revealed macular scar.

As majority of the patients, in our study worked as farmers or skilled workers (driver, mechanic, tailor), cataract caused a significant visual impairment, thus hampering their job as well as their daily life. Assessment of quality of life was done based on the NEI-VFQ 25 on the day before surgery and post-operatively after 1 month. The mean composite QOL score improved significantly from 50.7 to 82.7. The pre-operative score was lowest for general health and general vision. Post-operatively, highest score was for colour vision, followed by far vision and general health. In our study, post-operatively lowest score was for near vision and driving sub-scales, which is probably due to accommodation related problems after lens removal and IOL related glare respectively.

Alias et al. in their study observed a statistically significant improvement in the NEI VFQ-25 questionnaire scores, with a mean score of  $62.58 \pm 7.23$  before surgery and  $81.06 \pm 8.47$  one month after surgery. The VRQOL subscale scores were lowest for general health subscale before surgery, with a mean score of  $44.74 \pm 13.50$  which increased above 60 after surgery<sup>13</sup>

Kien et al, in their study, observed that VRQOL subscale scores before surgery was highest for colour vision (mean=94.23) and vision specific social functioning (mean=86.34) and lowest for general health (mean=30.97), general vision (mean=39.43), vision specific role difficulties (mean=42.46) and peripheral vision (mean=45.34).<sup>14</sup>

In another study, before surgery, the mean composite VRQOL score was  $62.58 \pm 7.23$ , which improved to  $81.06 \pm 8.47$  after surgery. VRQOL subscale scores before surgery were lowest for general health with a score of  $44.74 \pm 13.50$  and highest for colour vision ( $78.95 \pm 11.26$ ).<sup>15</sup>

Ngoune et al showed an increase in mean QOL score from 42.3% pre-operatively to 71.84% on 14<sup>th</sup> day and 84.38% at 1 month post-surgery.<sup>16</sup>

The NEI VFQ-25 questionnaire measures difficulty with visual tasks as well as the influence of visual impairment on social functioning, mental health, vision specific activity limitations and dependency. Thus, it can be used to assess the impact of cataract surgery on patients' daily life and well-being.

## CONCLUSION:

In a large number of pre-senile cataract cases, the etiology remains idiopathic. In this study, it has been seen that cataract surgery can significantly improve the VRQOL among pre-senile cataract patients. Such pre- and post-operative comparisons can be used to reflect upon the impact of the surgical procedure on patient's functioning, especially the young working population as they significantly contribute towards the economy of the country. Routine screening of all the high risk patients is necessary, and also awareness needs to be created among the young patients about the risk factors.

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