

## Original Research Article

## A Study on Current Visual Status among Subjects of Post Cataract Surgery (IOL) in Selected Urban Field Practice Area -Chidambaram, South India

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**Abstract:** Cataract is a highly treatable condition due to advances in cataract surgery, procedures and intraocular lens design. Currently 90% of the cataract surgeries are performed with intraocular lens (IOL). The aim of cataract surgery to improve visual function which also improves overall quality of life. The objectives were to find out the current visual outcome among subjects of post cataract surgery (IOL) over a period of 3 to 10 years and correlate visual outcome with selected variables. A community based descriptive cross-sectional study was conducted in selected urban field practice area of Rajah Muthaiah Medical College and Hospital from December 2015 to August 2016. Totally 120 subjects underwent cataract surgery were included in the study. The socio-demographic data and details regarding the surgery were collected using a pretested proforma and visual acuity was measured by Snellen's chart. The visual acuity has been classified namely good, borderline and poor. The majority of the subjects were in the age group of 46-60 years (65%). 87 were females (72.5%) and 49 were illiterate (40.8%). Among these subjects 83 were homemakers (69.2%), 96 (80%) underwent surgery in institution (picked up through camp). 10.8% had complications immediately after surgery, 50% study subjects had a history of chronic diseases, such as DM, HT or both. Visual acuity measured as good vision (6/6-6/18) 54.2%, borderline vision (<6/18-6/60) 33.3% and poor vision (<6/60-unable to appreciate hand movements) 12.5%. 12.5% of the post cataract surgery (IOL) subjects had poor vision. 30% of the subjects those who had cataract surgery (IOL) surgery more than 5 years ago has poor vision.

**Keywords:** cataract surgery, visual acuity, visual outcome.

### INTRODUCTION

Cataract has been consistently documented to the most common cause of blindness in developing countries. Cataract is clouding of the lens of the eye which impedes the passage of light. Although most cases of cataract are related to the ageing process, occasionally children can be born with the condition [1]. Visual acuity (VA) has defined sharpness of vision, measured as maximum distance a person can see a certain object, divided by the maximum distance at which a person with normal sight can see the same object [2]. According to the World Health Organization (WHO), blindness is defined as visual acuity less than 20 degrees in the better eye with best possible corrections [3].

Cataract is the leading cause of blindness worldwide, accounting with for nearly half of all cases of blindness. Of the estimate 50 million blind in the world, nearly one fifth live in India alone. Annual incidence of 4 million cataracts over 12 million cataract blind people has been reported in India [4]. Cataract is

highly treatable condition due to advances in cataract surgery, procedures and intra ocular lens (IOL) design. Currently 90% of the cataract surgeries performed with IOL. The aim of cataract surgery is to improve visual function which will also improve overall quality of life [5].

The study was carried out with an objective to find out the current visual outcome among subjects of post cataract surgery (IOL) over a period of 3 to 10 years and correlate visual outcome with selected variables (age, sex, place of surgery, duration after surgery and chronic diseases)

### METHODS AND MATERIALS

The study was carried out in selected urban field practice area of a Rajah muthaiah medical college in Chidambaram, Tamilnadu, South India. The urban field practice area is located at a distance of 3 kilometres from the college. Urban health centre under administrative and technical control of the department of community medicine, with availability of medical

officers, paramedical workers, lab technician and medico-social workers. Besides, interns are attached to these health centres on a rotating basis for internship training in community medicine. Service area spread over five areas of Chidambaram municipality namely Sengattan area (5 streets), Mantakarai (5 streets), Old bhuvanagiri road (5 streets), Omakulam (5 streets) and Sengattan area (5 streets) with a total of 23 streets covering 12,525 population.

#### **Study design**

- A community-based descriptive cross-sectional study design was used.
- Sample size calculated after a pilot study

#### **Pilot study**

A pilot study was carried out over a period of one month in selected urban field practice area of Sengattan area, 309 population was surveyed from 100 households, 20 persons underwent IOL surgery during to period the 3 to 10 years. The percentage of cataract surgery (IOL) has been 6.4%. The sample size was determined using PASS software, with the percentage of IOL as 6.4% (based on pilot study), 95% confidence interval and with the absolute precision as 10%, the required sample size has been calculated as 113. Pilot study subjects are included in the statistical analysis.

#### **Sampling technique**

Out of the five fields practice area under urban health centre Anandheeshwaran kovil area was selected randomly. Among 5 streets in this area data collection was started from the left house of the first street and the consecutive houses were surveyed till the last house on the right side was reached and then moved to the second street. The survey was continued till 120 study subjects were obtained. The survey ended at the 776<sup>th</sup> household.

#### **Selection of study subjects:**

The study population (patients who underwent IOL surgery over a period of 3 to 10 years) comprised of 120 patients. The study population was homogenous in nature with respect to living conditions and health facilities.

#### **Inclusion criteria**

The persons underwent cataract (IOL) surgery over a period of 3 to 10 years and above 40 years.

#### **Exclusion criteria**

Not willing to participate.

#### **Study stools**

Pretested proforma, Snellen's visual acuity chart, Torch light, Sphygmomanometer and weighing machine.

#### **Study period**

The study was carried out for a period of 9 months from December 2015 to August 2016.

#### **DATA COLLECTION**

A door to door enumeration of all residents in the selected areas of urban Chidambaram was first undertaken and all eligible people (who underwent IOL surgery over period of 3 to 10 years) were selected for the study. A pretested proforma was used to collect data of the household particular which included number of individual's age and sex. The latter part of the questionnaire aimed at collecting information regarding socio-demographic variables, particulars of surgery (place of surgery, year of surgery), surgery related parameters (complications, chronic disease) and history of systemic chronic diseases (DM, HT or both) from the study subjects. Examination of the eligible eyes was carried out in both eyes separately. Vision is measured as visual acuity by Snellen's chart. Visual acuity was normally tested at 6 meters or 20 feet distance from the chart. If the visual acuity could not be measured by Snellen's chart following tests were done sequentially: counting fingers, hand movements and perception of light.

#### **Data entry and statistical analysis**

The entry of visual acuity was made separately for both eyes. For analysis, the visual acuity was categorised as good vision (6/6-6/18), borderline vision (<6/18-6/60) and poor vision (<6/60- no perception of light). Statistical analysis was done using descriptive statistics and Pearson chi-square test using SPSS Version 12.

#### **Ethical issues**

Ethical clearance from the ethics committee was obtained before conducting the study. In addition informed consent was taken from each study participant.

#### **RESULTS**

Among the 120 subjects, (Table 1 shows) 87 were females (72.5%). The maximum subjects (65%) were in the age group of 46-60 years and 49 were illiterate (40.8%). 80% of the subjects undergone surgery under an institution picked up through camp.

Out of (Table 2 shows) total subjects 54.2% of the subjects had good vision, while 33.3% and 12.5% of subjects had borderline and poor vision respectively. Total 179 eyes operated, 53.63% showed good vision, while 35.19% and 11.18% showed borderline and poor vision respectively.

13.8% of the (Table 3 shows) female subjects had poor vision compared to male subjects (9.1%), 23.8% of the subjects in the age group of > 60 years had poor vision compared to 6.4% in the age group of 46-60 years. An association is seen between advancing age and poor visual acuity, as age increases visual acuity gets decreased.

The (Table 3 shows) 14.5% of the subjects who were picked up through camp had poor vision compared to 7.7% of subjects who underwent in hospitals on their own (Table 3 shows). 30% of the subjects who had their surgery 5-10 years prior to this study showed poor vision compared to 3.75% who had their surgery < 5 years, As the duration of time after

surgery increases , the corresponding subjects showed considerable decrease in visual acuity.

Poor vision (Table 3 shows) marginally increased among those who reported with chronic disease (15%). There is a statistically significant association between visual outcome and selected chronic diseases.

**Table-1: Distribution of study subjects by age, sex, place of surgery and duration after surgery**

Variables	Frequency	Percentage
<b>Age</b>		
46-60 years	78	65.00
>60 years	42	35.00
<b>Sex</b>		
Female	87	72.50
Male	33	27.50
<b>Duration after surgery</b>		
3-5 years	80	66.70
5-10 years	40	33.30
<b>Place of surgery</b>		
Institution (picked up camp)	96	80.00
Private hospital	13	10.80
Government hospital	06	05.00
Medical college	05	04.20

**Table-2: Current visual acuity (first eye) of study subjects using Snellen’s chart**

Examination	Frequency	Percentage
Good vision (6/6-6/18)	65	54.20
Borderline vision (<6/18-6/60)	40	33.30
Poor vision (<6/60-unable to appreciate hand movements)	15	12.50
Total	120	100.0

**Table-3: Association between visual outcome and age, sex, duration after surgery, place of surgery & chronic diseases**

Variables	Visual outcome						X <sup>2</sup>	P value
	Good		Borderline		Poor			
	No	%	No	%	No	%		
<b>Age</b>								
46-60 years	50	64.10	23	29.50	05	06.40	11.662	0.003
>60 years	15	35.70	17	40.50	10	23.80		
<b>Sex</b>							0.521	0.771
Female	46	52.90	29	33.30	12	13.80		
Male	19	57.60	11	33.30	03	09.10		
<b>Duration after surgery</b>							25.300	0.000
3-5 years	50	62.50	27	33.75	03	03.75		
5-10 years	15	37.50	13	32.50	12	30.00		
<b>Place of surgery</b>							2.292	0.318
Institution (picked up camp)	52	54.20	30	31.30	14	14.50		
Private hospital*	05	34.50	07	53.80	01	07.70		
Government hospital*	05	83.30	01	16.70	00	00.00		
Medical college*	03	60.00	02	40.00	00	00.00		
<b>Chronic diseases</b>							9.946	0.007
Present	24	40.00	27	45.00	09	15.00		
Absent	41	68.30	13	21.70	06	10.00		

\*Private hospital, Government hospital and Medical college have been combined for statistical analysis.

## DISCUSSION

The study subjects comprised of 120 patients. 78 subjects out of 120 (65%) belonged to the age group of 46-60 years. 33 subjects (27.5%) were males and 87 (72.5%) were females. The present study came with the findings that increase in duration of time after surgery resulted in considerable decrease in visual acuity.

In this study it was observed that 96.25% of study subjects, who had their surgery 3-5 years prior to this study showed good and borderline outcomes. Similar findings were reported from a study by Leon B Ellwein Ph D *et al.* in a clinical trial of cataract surgery at the Aravind Hospital in India, four years after surgery <25% presented with visual acuity worse than 6/18: and with best corrected vision, <5% had worse than 6/18 [6]. In the present study, among the study subjects who underwent IOL surgery during 3-10 years period, 12.5% showed poor vision. Similar findings were reported from a Nirmalan PK *et al.* study done in a Tamilnadu and Kshitiz Kumar *et al.* study done in an Indian setting measured poor visual outcome 11.8% and 13.7% respectively [7, 8].

In the present study it is seen that 14.6% subjects who were picked up through camp had poor visual outcome compared to 7.6% subjects who went to hospitals on their own. Similar findings reported from a Rupali D Maheshgauri *et al* evaluation of visual outcome 4.4% of subjects who were picked up through camp had poor visual outcome compared to 0.6% subjects who went to hospitals on their own [9].

In the present study only 23.8% subjects in the age group >60 years reported poor visual outcome compared to 6.4% in the age group of 46-60 years. Aarthi *et al.* and Bhavishya Gurudasani *et al.* in India reported similar findings in their study that 23% and 18% respectively of the subjects belonging to the age above 50 years showed poor visual outcome (<6/60) [10, 11]. The present study supports the many subjects undergoing cataract extraction at an advanced age will achieve good results, older age does reduce the outcome and is expected. The reason may be that have co-existing eye disease, age related disorders such as macular degeneration and decreasing immunity.

In the present study although female participants were more in number (i.e 87 out of 120) it was noted that 13.8% of females had poor visual outcome compared to 9.1% of the male subjects. A similar observation made in the study done by Mats Lundstrom *et al.*, 62.3% females had poor outcome compared to 56.9% males [12]. RA Bourne *et al.* did a study on outcomes of cataract surgery in Bangladesh (2003) reported that females had poor visual outcome (females 30.3% Vs males 26.5%) [13]. The poor outcome is due to exposed to cheap cooking fuels after surgery and it is usually seen that females are reluctant

for follow up visits. The females are usually dependent on others for visiting health care settings.

In the present study, poor visual outcome marginally increased among those who report chronic disease (15%) compared to (10%) those did not reported having diabetes mellitus and hypertension. A study done by T Q Pham *et al.* in Australia which aimed to assess mid-to long term visual outcome in a hospital based subjects reported overall reasons for poor outcome included corneal opacities, age related macular degeneration and systemic pathologies-history of diabetes mellitus and hypertension [14].

## CONCLUSION

The study conducted in urban Chidambaram to measure the visual outcome after cataract surgery (IOL) 12.5% of the subjects had poor vision. 30% of the subjects those who had IOL surgery more than 5 years ago has poor vision. As the duration of time after surgery increases, the corresponding subjects showed a considerable decrease in vision. It is noted from the study that female subjects have poor outcome compared to males. It is also seen from the present study that subjects picked up through camps have poor visual outcomes.

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