ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 05 | May - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

QUALITY OF LIFE IN PATIENTS UNDERGOING CATARACT EXTRACTION WITH PHACOEMULSIFICATION

Ophthalmology

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ABSTRACT

Objective: To study the subjective quality of life in patients undergoing cataract surgery. **Methods:** This prospective cohort study was conducted in a tertiary hospital in Punjab over a period of one year. A total of 300 patients above 40 years with cataract underwent Phacoemulsification with posterior chamber intraocular lens implantation. Patients were interviewed with The National Eye Institute Visual Function Questionnaire (NEI VFQ-25), a day before the surgery. Patients were followed up and refractive error correction was given at 6 weeks postoperatively. Patients were then re-interviewed with the NEI VFQ-25 questionnaire 10 weeks after the surgery. The mean preoperative and postoperative vision related quality of life (VRQoL) scores were calculated. **Results:** The mean age group of the study was 56.33 ± 8.67 SD. Out of 300 patients 181(60.33%) were males and 119(39.66%) were females .The mean vision- related quality of life (VRQoL) score calculated preoperatively was 58.53±19.43 and the mean VRQoL score calculated 10 weeks postoperatively was 91.09±8.95 which was statistically significant with a p value of <0.001. There was significant improvement seen in visual acuity as well as all the subscales of the questionnaire. **Interpretation:** Cataract surgery is an effective method in improving visual acuity and the vision- related quality of life of the patients. We must not solely rely on visual acuity and should consider patient's subjective quality of life while deciding on cataract surgery.

KEYWORDS

Quality of life, Cataract, NEI VFQ-25 Questionnaire, VRQoL scores

INTRODUCTION

Cataract is the most common cause of preventable blindness worldwide. It can be defined in many forms. Firstly, it can be described as opacification of the crystalline lens. Secondly, it can be defined in terms of clinically detected visual impairment. Thirdly, as a clouding of the crystalline lens that affects a patient's ability to perform his routine tasks.[1]Sight is an important sense necessary to perform daily activities. Visual impairment has a detrimental effect on the quality of life of a patient.[2]Cataract cause a decrease in vision and affect the quality of performance of daily activities of the patients. Therefore improvements after cataract surgery should also be measured in terms of patient's performances in daily activities and its effect on various aspects of life. Cataract surgery is the most common surgery undertaken in the health care system.[3]

The assessment of a patient's post-surgical visual outcome and its impact on daily activities has recently gained awareness. Various questionnaires like visual function tests (VF-14) and the National Eye Institute Visual Functioning Questionnaire (NEI VFQ) are being used to assess the vision- related quality of life of a patient. [4,5]

The term visual function is used to depict how the eye is performing in an individual and the term functional vision is used to characterize the performance of an individual in vision-related activities.[6]World Health Organization (WHO) defines Quality of Life 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.".[7]

Cataract extraction with intraocular lens implantation is an effective method for the treatment of cataract-related visual impairment.[3] With the surge in the number of cataract surgeries, it is important to ensure the quality of service provided and it is necessary to bring out the evidence of changes in the vision-related quality of life with cataract surgery. Therefore this study was undertaken to assess the impact of cataract surgery on the quality of life of patients and aims to quantify such effects of cataract surgery on a patient's life.

MATERIALS AND METHODS

The present study was a carried out in a tertiary care hospital in Punjab over a period of one year after taking permission from the Ethics Committee adhered to the Helsinki Declaration. Patients above 40 years of age with unilateral or bilateral age-related cataracts whose none of the eyes is operated on and who were willing to be interviewed were included in the study. The sampling technique used was consecutive.

Patients having a history of ocular surgery, deafness or impaired communication, physically disabled, additional ocular pathologies such as glaucoma, macular pathologies, and those developing complications during or after cataract surgery were excluded from the study. Informed consent was taken from the patients and the participation was completely voluntary. The National Eye Institute Visual Function Questionnaire (NEI VFQ-25) with the appendix for additional questions was used in this study. The questionnaire was translated to Punjabi dialect and then retranslated into English. The questionnaire was adapted according to the culture prevalent in the region. Patients were interviewed with the questionnaire after taking history and detailed clinical examination while ensuring that true information was documented as provided by the patient. Demographic details and baseline visual acuity of the patient were also recorded. The various responses included in the questionnaire are numerical values, all of the time–none of the time, definitely true–definitely false, none–very severe, excellent–completely blind and no difficulty at all–stopped doing this because of your eyesight. The 'stopped doing this for other reasons or not interested in doing this' response was treated as missing data. Items within each subscale were converted to a subscale score ranging from 0 to 100 as directed by the developers of the questionnaire and the overall composite score is calculated by averaging the 11 vision-targeted subscale scores. The more the value of composite score the better is the vision-related quality of life. Patient then underwent Phacoemulsification with intraocular lens implantation under peribulbar anesthesia. The surgery was performed by the same senior surgeon. Patients were then followed up for uneventful cataract surgery outcomes and were given the appropriate refractive correction six weeks postoperatively. The patients were interviewed with the questionnaire at 10 weeks postoperatively.

Statistical Analysis

The data were entered in Microsoft Excel sheet and statistical analysis was done using Statistical Package for Social Science (SPSS) software version 28.0. The quantitative variables were compared using the Paired t test. A p value of less than 0.05 was considered to be statistically significant.

RESULT

The present study consisted of 300 patients out of which 181 were males and 119 were females. The mean age in the present study was 56.33 ± 8.67 .It was observed that 116 patients had unilateral cataracts and 184 had bilateral cataracts. 24.33% of the patients were daily wagers and 31.33% were housewives. (Table 1)

The vision- related quality of life (VRQoL) score was calculated by

averaging the 11 vision-targeted subscale scores as instructed by the developers of the questionnaire. The mean was taken of all the subscale items in the questionnaire excluding general health. The mean VRQoL score calculated preoperatively was 58.53±19.43 and the mean VRQoL score calculated postoperatively was 91.09±8.95. The improvement in each of the subscale and overall VRQoL scores was statistically significant with p value of 0.000.

Table 1: Demographic Data And Distribution Of VRQoL Score

Demographic details	No.	%age	Preoperative VRQoL score Mean±SD	Postoperative VRQoL score Mean±SD
Gender				
Male	181	60.33%	61.67±19.12	91.23±9.10
Female	119	39.66%	53.68±19.04	90.84±8.55
Age (in yrs)				
41-50	99	33%	57.87±19.94	91.53±9.42
51.60	116	38.67%	57.82±19.57	91.13±8.15
61-70	71	23.67%	61.03±19.22	90.76±9.03
71-80	14	4.67%	55.79±23.91	89.01±10.47
Residence				
Rural	159	53.00%	59.50±20.24	91.54±8.78
Urban	141	47.00%	57.62±18.75	90.66±8.98
Occupation				
Farmer	29	9.67%	67.43±19.23	89.72±11.06
Businessman	36	12.00%	59.77±19.10	91.85±8.97
Government jobs	7	2.33%	69.65±20.30	95.97±5.96
Private jobs	46	15.33%	59.52±16.29	92.16±8.38
Daily wagers/ labourers	73	24.33%	54.44±18.86	89.23±8.76
Housewives	94	31.33%	55.04±19.19	91.43±8.49
Unemployed	4	1.33%	47.37±20.62	86.08±8.54
Retired	11	3.67%	80.07±18.13	95.44±8.01
Education				
Illiterate	122	41.00%	53.68±19.10	90.59±8.07
Primary	85	28.00%	59.14±15.99	90.37±9.33
Middle	35	12.00%	57.92±23.09	90.49±10.12
Secondary	42	14.00%	65.48±19.04	92.29±9.65
Higher Secondary	7	2.00%	73.66±18.48	97.82±2.98
Graduate	8	2.67%	78.24±18.41	96.06±5.91
Postgraduate	1	0.33%	77.9167	100.0000
Laterality of Cataract				
Unilateral	116	38.66%	66.01± 17.86	96.50 ±9.10
Bilateral	184	61.33%	53.84 ±19.10	86.63±9.15

SD; Standard Deviation, VRQoL score; Vision related quality of life score

The individual subscale scores were also compared before and after the surgery and are shown in the Table 2.

Table 2: Subscale Scores And VRQoL Score Before And After The Cataract Surgery

Subscale category	No.	Preoperative score Mean±SD	Postoperative score Mean±SD	P Value
General Health	300	65.24±21.49	74.26±16.17	0.000
General vision	300	34.04±17.79	79.91±16.62	0.000
Ocular pain	300	79.56±23.66	91.86±12.10	0.000
Near activities	300	54.96±22.68	89.59±11.43	0.000
Distant activities	300	54.79±24.34	88.72±12.60	0.000
Social functioning	300	63.87±27.04	92.29±12.22	0.000
Mental Health	300	58.13±33.56	94.60±9.82	0.000
Role difficulties	300	54.68±33.44	92.85±12.28	0.000
Dependency	300	60.43±36.12	95.98±8.7	0.000
Driving	134	45.60±30.94	87.94±15.94	0.000
Color vision	300	77.75±29.25	97.17±11.02	0.000
Peripheral vision	300	55.67±30.96	90.08±14.71	0.000
VRQoLScore	300	58.53±19.43	91.09±8.95	0.000

SD; Standard Deviation, VRQoL score: vision- related quality of life score

The preoperative best-corrected visual acuity (BCVA) on Snellen's chart was 6/6-6/18 in 4.33%, less than 6/18 to 6/60 in 52%, less than 6/60 to 3/60 in 21%, and less than 3/60 to PL+ in 22.67% of patients. The study showed that after cataract surgery 89.67% of the participants had BCVA on Snellen's chart between 6/6-6/18, 10.00% had the visual acuity of less than 6/18 to 6/60 and, 1 patient had a visual acuity of 3/60.(Figure 1)

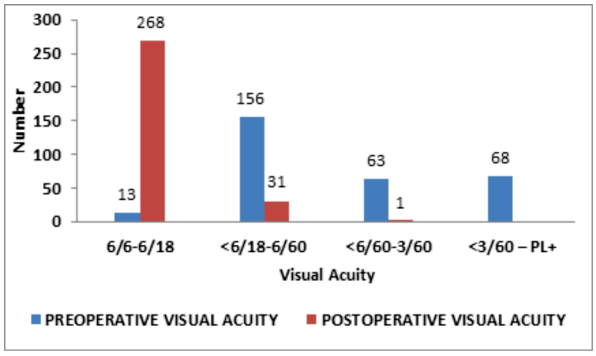

Figure 1: Visual Acuity Of Patients Before And After The Cataract Surgery.

The mean VRQol score was similar in the preoperative visual acuity group in <6/60-3/60 and in <3/60 to PL+. The postoperative subscale scores were higher in visual acuity group of 6/6-6/18 than of <6/18-6/60 group. (Table 3)

Table 3: Distribution Of Preoperative And Postoperative Vrqol Score According To Visual Acuity

Visual acuity	Preoperative VRQoL score Mean(SD)	Postoperative VRQoL score Mean(SD)
6/6-6/18	64.00±17.74	92.15±7.80
> 6/18-6/60	62.45±20.16	82.39±11.94
<6/60-3/60	52.67±16.65	---
<3/60-PL+	53.26±18.15	---

SD; Standard Deviation, PL+; Perception of light

DISCUSSION

In India, an estimated 20 lakh new cases of cataracts are being added to the burden every year.[8]Cataract surgery has evolved from patients requiring long hospital stays and long duration of rehabilitation to now being a daycare surgery showing speedy recovery. With the increasing burden of cataracts and a corresponding surge in the number of surgeries, it is important to assess the outcome of the surgery not only in terms of Snellen's gain in visual acuity but also as a subjective improvement in their vision-related quality of life. For a thorough assessment of cataracts and their implications, one must enquire about the individual's visual function, their visual demands, and their quality of life

The WHO defines blindness as the presenting visual acuity worse than 3/60 in the better eye.[9]The majority of the study population belonged to the severe visual impairment and blindness group and still presented late for surgery. The reasons included were that the nature of their job/daily activities did not require fine visual acuity, as a result of good vision in the other eye, dependence on others to commute, cost of a hospital visit, cost of surgery, anxiety from surgery, COVID 19 and the nationwide lockdown. A similar improvement in the postoperative visual acuity was seen in another study.[10]

A study by Friedman et al discussed that the functional status was not clearly depicted in VF-14 questionnaire.[11] Therefore the questionnaire used in the study was adapted to include the activities appropriate to the culture and the region. The present study showed statistically significant improvement in the vision related quality of life scores and all the subscales of the questionnaire. This illustrates the level of visual disability cataract patients endure and is an important ground for intervention. Several other studies have demonstrated significant improvement in vision-related quality of life after cataract surgery.[5,12,13,14]

On follow-up at week 10 postoperatively patients were interviewed with the same questionnaire used preoperatively. On further inquiry it was observed that many patients didn't use any spectacles but were satisfied with the surgery. Such patients were mostly involved in

activities that did not require fine visual acuity. Patients were encouraged to use spectacles for better visual gain. Many studies had utilized a similar follow up period.[5,10]However other studies suggested that major effects of cataract surgery on quality of life are evident after the follow up period of 6 months.[14,15]

The improvement in general health scores exhibits the fact that a good vision has a positive impact on the overall health of the patient. The recovery in physical and therefore functional capabilities of the patients improved their satisfaction from cataract surgery. Some patients after having cataract surgery still complained that they have to be very careful while walking on uneven surfaces. This is because of poor visual acuity in other eye and lack of good binocular vision. Another reason could be that the older patients had reduced capacity as result of other co-morbidities leading to poor mobility. Many patients complained of injuries and falls because of poor vision. A study by Harwood RH et al showed that the second eye cataract surgery can be beneficial in improving the overall visual acuity and the binocular vision thus can be helpful in preventing falls.[16]

As the patients were not able to carry out their desired activities, most of them complained of getting annoyed very often. The significant improvement in the mental health subscale shows the impact of cataract on the mental health of the patients. A study by Mylona I et al showed positive impact of cataract surgery on depression experienced by patients.[17] The thorough assessment of mental health was beyond the scope of the study. The engagement in social activities and driving capabilities of the patients were also improved after the cataract surgery. As a result of a decline in dependence on others, the personal and professional life of the patients also improved.

Cataract surgery can not only improve the visual acuity but has other effects including an increase in contrast sensitivity, reduction in glare, improves color vision, improves person's ability to do tasks independently, improves ability to work in dim light, better judgement of stereopsis, binocular vision and peripheral vision. This study could not objectively assess all of the above-said effects. Thus consideration of all these aspects can help in better assessment of the effect of cataract surgery on a patient's vision related quality of life. This study didn't take into account the effect of second eye cataract surgery on quality of life of the patients. The study also lacked in quantifying the expectation and satisfaction of the patients

CONCLUSION

Cataract surgery has been evolving to make the procedure more convenient for patients. In the present study, statistically significant improvement was seen in all the subscales namely general health, general vision, ocular pain, near activities, distant activities, social functionality, dependency, mental health, color vision, peripheral vision, and driving. Thus cataract surgery is an effective intervention that leads to not only an enhancement in visual acuity but also improves the subjective quality of life of the patients. The information provided in this paper can help clinicians in deciding when to advise cataract extraction to the patient.

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