ORIGINAL RESEARCH PAPER

Ophthalmology

KEY WORDS: Quality of life (QOL), cataract surgery, national eye institute visual function questionnaire NEI-VFQ.

QUALITY OF LIFE IN CATARACT PATIENTS

Dr. Gursatinder Singh Retired Professor and Head, Dept. of Ophthalmology, GMC and Rajindra Hospital Patiala

Dr. Shipra Gupta* SR, Room No. 31, Dept. of Ophthalmology, ANIIMS Port Blair. *Corresponding Author

ABSTRACT

Background: Visual function is important for an optimal orientation in functional and social life and has an effect on physical and emotional well-being.[1] Therefore, loss of vision leads to restrictions in all areas of health-related quality of life (QOL).[2]

Aims and Objectives: The study was done to evaluate the quality of life in cataract patients with respect to Vision related QOL on the basis of NEI-VFQ-25 questionnaire preoperatively and postoperatively and change in quality of life following surgery.

Material and Methods: It is a cross sectional study in which 100 patients of senile cataract, coming for visit as out-patients to the Department of Ophthalmology, Govt. Medical College and Rajindra Hospital, Patiala were recruited after informed consent. Patients were selected based on the inclusion and exclusion criteria. Assessment of QOL was done via using NEI-VFQ-25.

Results: There was statistically significant improvement in almost all the domains derived from the NEI-VFQ25 giving their p value <.001. Ocular pain was one such domain that did not change significantly with its p value being .083.

Conclusion: In conclusion this study has provided valuable information about the change in vision related QOL after cataract surgery. There is a statistically significant improvement in the QOL of all the patients enrolled in our study after the cataract surgery. Therefore NEI-VFQ is considered very useful and reliable psycho diagnostic inventory and we suggest the use of this instrument in future studies on QOL of visually impaired patients.

INTRODUCTION:

Visual function is important for an optimal orientation in functional and social life and has an effect on physical and emotional well-being.[1] Therefore, loss of vision leads to restrictions in all areas of health-related quality of life (QOL).[2] Recently the construct of QOL has gained increasing importance in medical[3] and psychosomatic research. In ophthalmology QOL was first studied in patients with cataract,[4-8] possibly due to the frequency of cataract operations. **Quality of life (QOL)** is the general well being of individuals and societies. QOL has a wide range of contexts, including the fields of international development, healthcare, politics and employment. Blindness is both a cause and an outcome of poverty. The top causes of blindness is cataract - responsible for 47.0% of total blindness in the world.[9] Assessing the overall effect of the cataract on visual function is almost certainly a more appropriate way to determine visual disability than is acuity testing alone. Patients should be asked whether their vision (at near, at distance, under different lighting conditions) is adequate to perform relevant activities of daily living (ADLs) and any hobbies. While no one test can comprehensively assess the effects of a cataract, questionnaires for measuring functional vision may be useful.[10] The Rasch analysis and reengineering of the instruments resulted in a 27-item version of NEI VFQ-39 and an 18-item version of NEI VFQ-25. Both revised versions seemed to be valid measures according to the Rasch analysis. Hence it was concluded that to use a patient questionnaire in clinical or research work use a questionnaire that is constructed or revised by Rasch analysis as NEI-VFQ.[11] Not many studies have been conducted to assess change in quality of life of patients undergoing cataract surgery.[12]

MATERIAL AND METHODS:

The present study was conducted in the Department of Ophthalmology, Government Medical College, Patiala. In this cross sectional study, 100 patients of senile cataract, coming for visit as out-patients to the Department of Ophthalmology, Govt. Medical College and Rajindra Hospital, Patiala were recruited. Patients were selected based on the following criteria:

Inclusion Criteria

1. Diagnosed cases of unilateral or bilateral senile cataracts.
2. Patients (of either sex) being above 18 years of age.
3. Should have sufficient cognitive function to provide informed consent.
4. Patients willing for study.

Exclusion criteria

1. Subluxated lens.
2. Lens induced glaucoma.
3. Senile cataract with pseudoexfoliation syndrome.
4. Co-existing ocular pathology.
5. Significant diabetic retinopathy or age related macular degeneration.
6. Previous ocular surgery.
7. H/o or presence of uveitis or any other ocular infection or inflammation.
8. Patients with clinically significant renal disease or severe physical disabilities.
9. Patients with glaucoma.
10. Patient's refusal to participate in study.

All patients fulfilling the above criteria to be eligible for enrolment in the study were provided with detailed information about the study. After understanding the objectives of the study and its procedure, patients who voluntarily gave a written informed consent were finally recruited. These patients were then admitted one day prior to surgery and subjected to an interview that involved quality of life assessment by a questionnaire NEI-VFQ-25 respectively. Further Complete eye examination including Snellen's visual acuity testing, slit lamp examination for anterior segment, fundus examination via direct and indirect ophthalmoscopy was done. The patient were then operated and discharged on post-operated day one. Similar interview to assess quality of life by a questionnaire NEI-VFQ was administered after 3 months postoperatively.

In the NEI VFQ-25 questionnaire, all items are scored on a scale of 1- 5 or 1- 6, which have to be recoded to a 0- 100 scale so that the lowest and highest possible scores are set at 0 and

100 points respectively. This method of scoring as per the NEI VFQ-25 version 2000 was implemented to calculate the scores of each item. Once the item scores were recoded, the mean of all items in each sub-scale/ domain was calculated using the formula:

$$\text{Mean} = \frac{\text{(Score for each item with a non-missing answer)}}{\text{Total number of items with non-missing answers}}$$

The data entry was done in MS excel 2007 and it was analyzed using SPSS version 20.

RESULTS:

A Total of 100 patients participated in the study and the result of various domains of NEI-VFQ-25 was obtained and following assessment was made.

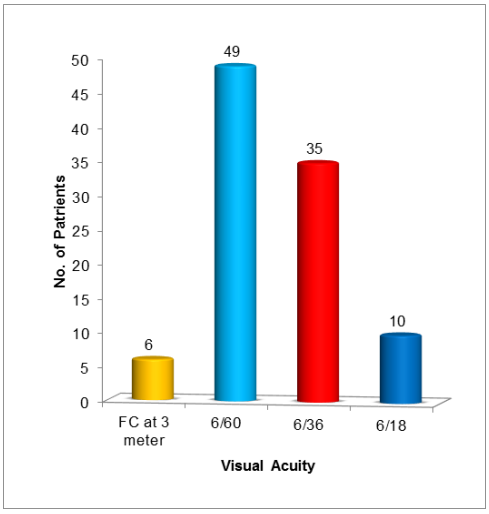
- There was statistically significant improvement in almost all the domains derived from the NEI-VFQ25 giving their p value <.001.
- Major domains involving General health, General vision, Mental health, Dependency, Color vision and Driving showed a significant improvement in preoperative mean values being 33.50±14.311, 42.40±12.482, 38.062±14.599, 36.1953±16.88, 51.25±21.134 and 47.47±19.81 increasing to post operative values as 83.750 ± 13.47, 88.000± 9.847, 85.81±12.86, 83.5833±14.33, 86.7500±13.034 and 80.89±14.70. Higher mean value of the domains derived from NEI-VFQ 25 indicates better QOL.
- The mean of Social functioning and peripheral vision of subjects was 82.37 and 78.25 pre-operatively which increased to 87.50 and 88.50 post-operatively.
- Ocular pain was one such domain that did not change significantly with its p value being .083. Its pre and postoperative mean values changed from 89.250±13.04 to 87.1250±12.23 respectively, as ocular pain was not a major issue of concern in patients of cataract pre or post operatively at the time of our follow up at 3 months.

Table-1 Comparison By Wilcoxon Signed Rank Test

Test Statistics(c)		
	Z	**Asymp. Sig. (2-tailed)**
General health POST - General health PRE	-8.890(a)	<.001**
General vision POST - General vision PRE	-8.855(a)	<.001**
Ocular pain POST – Ocular pain PRE	-1.735(b)	.083
Near activities POST – Near activities PRE	-6.349(a)	<.001**
Distance activities POST – Distance activities PRE	-6.682(a)	<.001**
Social functioning POST – Social functioning PRE	-6.315(a)	<.001**
Mental health POST – Mental health PRE	-8.695(a)	<.001**
Dependency and Role difficulties POST – Dependency and role difficulties PRE	-8.629(a)	<.001**
Colour vision POST - Colour vision PRE	-7.849(a)	<.001**
Driving Pre- Driving Post	-8.348	<.001**
Peripheral vision POST - Peripheral vision PRE	-4.853(a)	<.001**
a Based on negative ranks.		
b Based on positive ranks.		
c Wilcoxon Signed Ranks Test		

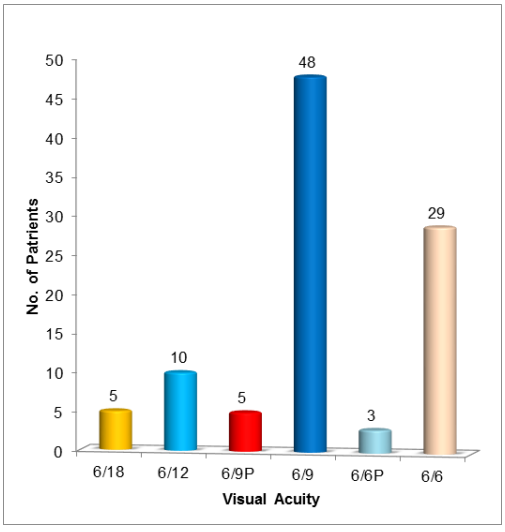
- Significant difference was seen pre and post operatively in General health, General vision, Near activities, Distance activities, Social functioning, Mental health, Dependency, Driving, Colour vision, Peripheral vision. There was no significant difference in the Ocular pain pre and post operatively.

Graph-1 Distribution Of Study Subjects According To Bcva Pre-operatively



Graph 1 shows that 49% subjects had 6/60 VA, 35% had 6/36 VA, 10% had 6/18 and 6% had FC at 3 meter VA pre-operatively.

Graph-2 Distribution Of Study Subjects According To BCVA Post-operatively



The above graph shows that 5% subjects had 6/18 VA, 10% had 6/12 VA, 5% had 6/9P VA, 48% had 6/9 VA, 3% had 6/6P and 29% had 6/6 VA post-operatively.

The Best-corrected visual acuity (BCVA) was improved significantly showing improvement in near activities and distant activities pre and post operatively as 62.33 and 57.58 to 87.16 and 86.75 respectively. These were other two domains of the NEI-VFQ-25 as given in table 1.

DISCUSSION

The National Eye Institute 25-item Visual Function Questionnaire (NEI-VFQ-25) has been demonstrated to be reliable and valid as a measure of vision-specific health-related quality of life.[10] In a study conducted by Lundstrom and Pesudovs[11] (2011) numerous questionnaires for patients self assessed activity were evaluated. This review describes instruments for measuring the vision-related activity limitation for cataract surgery outcomes. These involved Activity of daily vision scale, Visual Function-14, Houston

vision assessment test, Catquest, National Eye Visual Function Questionnaire (NEI-VFQ). The result of the NEI-VFQ was that the Rasch analysis and reengineering of the instruments resulted in a 27-item version of NEI VFQ-39 and an 18-item version of NEI VFQ-25. Both revised versions seemed to be valid measures according to the Rasch analysis.

In this study, we used the NEI-VFQ-25 to assess vision-related quality of life for patients who underwent cataract surgery. One questionnaire, the NEI VFQ-25 was administered in an interviewer-based method one day before the operation and three months after the operation which was similar to a study conducted by Martin et al[13] (2013).

Due to the possible difficulties associated with self-completion of the questionnaire and in achieving high response rates, an interviewer-based method was preferred over self-administered method. To avoid any inter-individual bias in recording the patient responses, the same interviewer recorded every patient's responses on the NEI-VFQ 25 questionnaire given pre and post operatively. Every patient was interviewed face to face, which was another step to avoid the problems associated with recording patient responses in telephonic interviews.

In our study the subscale mean score preoperatively for General health was 33.50±14.31, which changed significantly to 83.75±13.47 postoperatively. The preoperative mean value for General vision, near activities, Distance activities were 42.50±12.48, 62.33±82.99, and 57.58±76.16, which changed significantly to 88.00±9.84, 87.16±11.50, and 86.75±11.24 respectively. Significant change was also noticed in the Mental health, Dependency, Driving and Color vision domains with their mean value increasing from 38.06±14.59, 36.19±16.88, 47.47±19.81 and 51.25±21.13 preoperatively to 85.81±12.86, 83.58±14.33, 80.89±14.70 and 86.75±13.03 postoperatively.

Among all the domains Ocular pain did not show any statistically significant difference with its mean value changing from 89.25±13.05 preoperatively to 87.12±12.23 postoperatively in our study which was in accordance with the study conducted by Franke et al[14] (2002) in a German sample. In their study regarding the NEI-VFQ, Ocular pain was not correlated with visual acuity of the patient's pre and post operatively.

In a study conducted by To et al[15] (2014) association of our study with this study was both the studies are strengthened by the adjustment for other factors which are well known confounders of vision-related quality of life in an ageing population, such as medication usage, co-morbidities including other ocular conditions and wearing glasses. The lack of a suitable comparison group that had cataract, but did not have surgery was a limitation of our study as well. However the "before and after" design using the same person as their own control accounted for other inter-individual differences that can confound studies using separate control groups.

We conclude that NEI-VFQ 25 is a very useful and reliable psycho diagnostic inventory, assessing vision specific QOL.

CONCLUSION

In conclusion this study has provided valuable information about the change in vision related QOL after cataract surgery. There is a statistically significant improvement in the QOL of all the patients enrolled in our study after the cataract surgery. Due to the benefits that cataract surgery has for vision related QOL, it should be ensured that the older population has access to regular eye examination and timely treatment to cataract is paramount. NEI-VFQ is considered very useful and reliable psycho diagnostic inventory and we suggest the use of this instrument in future studies on QOL of visually impaired patients.

REFERENCES

1. Scott IU, Schein OD, West S, Bandeen-Roche K, Enger C, Folstein MF. Functional status and quality of life measurement among ophthalmic patients. Arch Ophthalmol. 1994;112(3):329-35.
2. Bullinger M. Quality of life - definition, conceptualization and implications: a methodologist's view. Theor Surg. 1991;6:143–48.
3. Spilker B. Quality of life and pharmacoeconomics in clinical trials. Philadelphia: Lippincott-Raven, 1996;7:425–26.
4. Applegate WB, Miller ST, Elam JT, Freeman JM, Wood TO, Gettlefinger TC. Impact of cataract surgery with lens implantation on vision and physical function in elderly patients. J Am Med Assoc 1987;257:1064-6.
5. Brenner MH, Curbow B, Javitt JC, Legro MW, Sommer A. Vision change and quality of life in the elderly – response to cataract surgery and treatment of other chronic conditions. Arch Ophthalmol 1993;111:680-5.
6. Desai P, Reidy A, Minassian DC, Vafidis G, Bolger J. Gains from cataract surgery: Visual function and quality of life. Br J Ophthalmol 1996;80:868-73.
7. Javitt JC, Steinberg EP, Sharkey P, Schein OD, Tielsch JM. Cataract surgery in one eye or both. Ophthalmology 1995;102:1583-93.
8. Mangione C, Phillips RS, Lawrence MG, Seddon JM, Orav EJ, Goldman L. Improved visual function and attenuation of declines in health-related quality of life after cataract extraction. Arch Ophthal 1994;112:1419-25.
9. Shah SP, Gilbert CE, Razavi H, Turner EL, Lindfield RJ. Preoperative visual acuity among cataract surgery patients and countries' state of development: a global study. Bull World Health Organ. 2011;89(10):749-56.
10. Mangione CM, Lee PP, Gutierrez PR, Spritzer K, Berry S, Hays RD. Development of the 25-item National Eye Institute Visual Function Questionnaire. Arch Ophthalmol. 2001;119(7):1050-58.
11. Lundström M and Pesudovs K. Questionnaires for measuring cataract surgery outcomes. J Cataract Refract Surg. 2011;37(5):945-59.
12. Gutierrez P, Wilson MR, Johnson C, Gordon M, Cioffi GA, Ritch R et al. Influence of glaucomatous visual field loss on healthrelated quality of life. Arch Ophthalmol. 1997;115(6):777-84.
13. Martin P. The Effect of Cataract Surgery on Depression and Vision-Related Quality of Life in an Elderly Population. University of Maine - Main 2013;1-101.
14. Franke GH, Esser J, Reimer J, Maehner N. Vision-targeted quality of life under different degrees of visual impairment. Revista Portuguesa de Psicossomática 2002;4(1):40-9.
15. To KG, Meuleners LB, Fraser ML, et al. The impact of cataract surgery on vision-related quality of life for bilateral cataract patients in Ho Chi Minh City, Vietnam: a prospective study. Health and Quality of Life Outcomes. 2014;12:16.