



Quality-of-Life and Visual Function after Manual Small Incision Cataract Surgery in South Western Nigeria

Qualité de vie et fonction visuelle après une chirurgie par petite incision manuelle de la cataracte au Sud Ouest du Nigeria

O. Olawoye^{*†}, A. Ashaye[†], C. Bekibele[†], A. J. Ajuwon[‡]

ABSTRACT

BACKGROUND: Outcome studies after cataract surgery should focus on functional status and quality of life instead of visual acuity measurement alone.

OBJECTIVE: To assess patients' quality of life (QoL) and overall visual function (VF) after manual small incision cataract surgery (SICS) with intraocular lens (IOL) implantation.

METHODS: A prospective hospital based study which evaluated the preoperative and postoperative visual function and vision related QoL among patients presenting with first eye cataract at an eye hospital in South Western Nigeria using the VF-14 questionnaire and the vision related QoL questionnaire.

RESULTS: One hundred and eighty two patients were enrolled for the study with a mean age of 66.5 ± 10.46 . The mean preoperative visual function (VF) score was 40.17 ± 33.59 (range 0 to 82.14) and postoperatively it was 88.79 ± 20.15 (range 0 to 100) p value <0.001 . Prior to surgery, 50 (27.6%) patients had visual function score $\leq 75\%$ however after surgery 161 (88.2%) patients had a visual function score of over 75%. (p value <0.001). Using the vision related QoL questionnaire, the highest impact of visual recovery after cataract surgery was improvement with mobility in almost 80% of the patients.

CONCLUSION: This study has demonstrated improvement in vision related quality of life and visual function, resulting in rapid recovery of the patient's functional independence and health status following manual SICS. Small incision cataract surgery should therefore be offered to more patients in the African sub-region. **WAJM 2012; 31(2): 114–119.**

Keywords: Cataract surgery, Quality of life, Visual Function, Nigeria.

RÉSUMÉ

CONTEXTE: Les études sur les effets de la chirurgie de la cataracte devraient se concentrer sur le statut fonctionnel et la qualité de vie plus tôt que sur la mesure isolée de l'acuité visuelle.

OBJECTIF: Evaluer la qualité de vie (Qv) et la fonction visuelle globale (FV) après chirurgie par petite incision manuelle (CPIM) avec implantation de lentilles intra oculaires (LIO).

METHODES: Une étude prospective au niveau hospitalier a évalué la fonction visuelle et la qualité de vie (QV) liée à la vision en pré et post opératoire chez des patients présentant une cataracte dans un hôpital pour la vision au sud ouest du Nigeria en utilisant le questionnaire VF-14 et le questionnaire sur la QV liée à la vision.

RESULTATS: Cent quatre vingt deux patients ont été inclus dans l'étude avec un âge moyen de $66.5 \text{ ans} \pm 10.46$. Le score moyen de la fonction visuelle pré opératoire était de 40.17 ± 33.59 (extrêmes : 0 ; 82.14) et en post opératoire elle était de $88.79 \text{ ans} \pm 20.15$ (extrêmes : 0 ; 100) p value <0.001 . Avant la chirurgie, 50 (27.6%) patients avait un score de FV $\leq 75\%$ toutefois après la chirurgie 161 (88.2%) patients avaient un score supérieur à 75%. (p value <0.001). Sur la base du questionnaire Qv relatif à la vision, le plus grand impact de la récupération de la vision était l'amélioration de la mobilité dans presque 80% des patients.

CONCLUSION: Cette étude a démontré une amélioration de la qualité de vie relative à la vision et à la fonction visuelle entraînant une récupération rapide de l'indépendance fonctionnelle et de l'état de santé après la CPIM. La chirurgie de la cataracte par petite incision devrait donc être offerte à plus de patients en Afrique. **WAJM 2012; 31(2): 114–119.**

Mots clés: Chirurgie de la Cataracte, Qualité de vie, Fonction visuelle, Nigeria.

[†]Departments of Ophthalmology, [‡]Health Education. University College Hospital. Ibadan, Nigeria.

*Correspondence: O. Olawoye, Department of Ophthalmology, University College Hospital Ibadan Nigeria. E-mail: solaolawoye@yahoo.com. Telephone no: +2348023890063.

Abbreviations: IOL, Intraocular lens; QoL, Quality of Life; SICS, Small incision cataract surgery; VF, Visual function.

INTRODUCTION

It is common knowledge that modern cataract surgery is effective in improving vision and it is safe with low ...¹ Visual function and quality of life estimations after cataract surgery are better outcome measures than visual acuity measurement alone.² Therefore, outcome studies on cataract surgery should focus on functional status and quality of life.³

A patient’s recognition of improvement in visual function (VF) is a good indicator of the effectiveness of any cataract surgical intervention.⁴ Accordingly; tools^{3, 5, 6} have been developed to evaluate visual acuity and other domains of visual functions after cataract surgical intervention. These tools are well validated and correlate well with the patient’s visual complaint and satisfaction in terms of visual function after cataract surgery.¹⁰ In contrast, Snellen acuity testing alone does not assess the functional difficulties experienced by patients with cataract and have been documented to be poorly correlated with patients’ reported trouble and satisfaction with vision postoperatively.¹¹

Quality-of-Life (QoL) assessment and visual function assessment have gained acceptance in many fields of health care and Ophthalmology is in the fore front when it comes to such assessments. However, no study in Nigeria has evaluated vision related quality of life and visual function after manual small incision cataract surgery (SICS) to the best of our knowledge.

This study determined the vision related quality of life and visual function after manual SICS in South Western Nigeria.

METHODOLOGY

The study was carried out at St Mary’s Catholic Eye Hospital (SMEH) Ago Iwoye, Ogun State Nigeria between May and October 2007. The hospital is a 36 bed mission hospital dedicated to eye care services only. The study protocol was approved by the Ethical Review Board of the University College Hospital and University of Ibadan.

The study is a qualitative descrip-

tive study with an analytical component. Consecutive patients with visually disabling simple cataract, aged 40 years or older coming for the first eye surgery were included. Excluded from the study were patients with other ocular comorbidities such as complicated cataracts. Consent forms were signed by all patients.

Preoperatively, a structured questionnaire was used in collecting socio-demographic data from the enrolled patients. Data collected included the age, sex, medical history and the presenting visual acuity including pinhole visual acuity in both eyes.

The preoperative visual function assessment was done using the VF-14 questionnaire.² Questions 1, 7 and 10 were modified to meet the socio-cultural setting where the study was conducted.

Question 1 was replaced with ‘picking stones from rice or beans. Question 7 was replaced with doing fine handiwork like cutting nails, or carpentry while Question 10 was replaced with taking part in trading or gardening (Table 1). Other questions were however retained. Options used were adapted from a practical visual function assessment tool that has been used amongst Africans in Malawi.¹³ The English version of the VF-14 was translated into Yoruba, the indigenous language of the study population and then back-translated into English.

The modified tool was validated by pre-testing it on twenty patients who were awaiting cataract surgery at the University College Hospital Ibadan. The responses allowed were “yes” (when a patient had difficulty performing that activity), “no” (when a patient did not

Table 1: Modified Visual Function-14 Questionnaire, Responses and Scoring System

Questions	Expected Responses	Scoring System for each question	Overall Scoring system
1. Picking rice or beans	0- Cannot do activity at all	Each score was multiplied by 25 to give a maximum total score of 100% per question	Scores were added up to give a maximum total score of 1,400. This was divided by 14.
2. Reading a newspaper or a book such as the Bible or Quran or identification of money.	1- Great deal difficulty		
3. Reading a large print book or numbers on a telephone or identification of instructions on eyedrop bottles.	2- Moderate difficulty	amount of difficulty	Maximum overall score was 100% per patient.
4. Recognizing people when they are close to you.	3- Little		
5. Seeing steps, stairs, or curbs	4- No difficulty		
6. Seeing traffic signs, street signs, store signs.			
7. Doing fine handwork like carpentry and cutting of nails.			
8. Writing checks or filling out forms or being able to thumbprint in appropriate columns on consent forms.			
9. Playing games such as card games.			
10. Taking part in gardening or trading.			
11. Cooking or eating i.e seeing the food eaten.			
12. Watching television.			
13. Driving during day or visiting friends during the day for patients who don’t drive			
14. Driving at night or visiting friends in the late evening for patients who don’t drive.			

have difficulty performing that activity). For activity that had a response of “no” the score was 4. In activity for which the response was “yes”, respondents were asked how much difficulty they currently had with the activity - “a little difficulty” had a score of 3, “moderate difficulty” had a score of 2, “great difficulty” had a score of 1 and “unable to do it” had a score of zero (Table 1). An item was not included in the scoring if the patient does not do that activity for reasons unrelated to their vision. Each scored item was then multiplied by 25 to give a highest score of 100 (able to perform all applicable activities without any difficulty) and a lowest score of zero (unable to do the applicable activity because of poor vision).

The quality of life questionnaire used in this study was originally developed for a large scale clinical trial of cataract surgery in India.^{14, 15} and had also been used in several studies in Nepal,¹⁶ and China.¹⁷ This questionnaire was validated by pre-testing it on twenty patients who were awaiting cataract surgery at the University College Hospital Ibadan. Briefly described, the questionnaire assessed 3 subscales of activity – self care which includes unassisted bathing, unassisted toileting, unassisted eating, and unassisted dressing. The second subscale deals with mobility of patients including walking to visit neighbors, walking to shops, attending social functions and doing household chores. The third subscale dealt with mental health of the patient which included meeting friends / distant relatives, feeling of being a burden, feeling of dejection and loss of confidence. All these questions were assessed on a 3 point scale (Appendix A).

The patients whose postoperative quality of life got worse with respect to the subscale were scored 1. The patients whose postoperative quality of life stayed the same with respect to the subscale either because the patient had no problem before surgery with respect to that activity or surgery did not make any impact in the patient’s ability to perform the activity were scored 2, while patients whose postoperative quality of life with respect to the activity improved

APPENDIX A

Vision Related Postoperative Quality-of-Life (QoL)	
Self care	
Unassisted Bathing	1 = got worse 2=stayed the same 3=got better
Unassisted Toileting	1 = got worse 2=stayed the same 3=got better
Unassisted Eating	1 = got worse 2=stayed the same 3=got better
Unassisted Dressing	1 = got worse 2=stayed the same 3=got better
Mobility	
Walking to visit neighbours	1 = got worse 2=stayed the same 3=got better
Doing household chores	1 = got worse 2=stayed the same 3=got better
Attending social functions	1 = got worse 2=stayed the same 3=got better
Walking to shops or market	1 = got worse 2=stayed the same 3=got better
Mental Health	
Meeting friends/distant relations	1= got worse 2=stayed the same 3=got better
Feeling of being a burden	1= got worse 2=stayed the same 3=got better
Feeling of dejection	1= got worse 2=stayed the same 3=got better
Loss of confidence	1= got worse 2=stayed the same 3=got better

after surgery were scored 3. Improvement was defined as getting better in at least two factor analysis under each subscale. The questionnaires were administered by the principal investigator.

All surgeries were performed by a single surgeon of a senior consultant ophthalmologist status who had performed over 500 manual small incision cataract surgeries. All the eyes included had IOL implantation. Preoperative biometry was performed on all eyes included in the study. The postoperative evaluation was done 8 weeks post surgery using the same tool as was done preoperatively to assess for vision-dependent activities using the VF-14 and the quality of life questionnaire. Postoperative refraction was done for the patients at 8 weeks postoperatively.

Data was analyzed on SPSS (Statistical Package for Social Sciences) version 11. The total visual function and quality of life scores were calculated as an equally weighted average of the number of subscales. Associations between visual function scores and visual acuity were examined. A p value < 0.05 was considered significant.

RESULTS

A total of 182 patients who met the inclusion criteria were enrolled for the study. However 170 patients were available for review at 8 weeks postoperatively. (attrition rate of 6.6%).

The ages of the patients ranged from 40 to 100 years with a mean of 66.5± 10.46. There were 98 males (53.8%). Majority of the patients were traders (48.4%) with no formal education. Table 2 shows the

Table 2: Demographic Characteristics of the 182 Patients.

Demographic Characteristics	N (%)
Age (years) on Admission	
40 – 49	10 (5.5)
50 – 59	24 (13.2)
60 – 69	76 (41.8)
70 – 79	57 (31.3)
>80	15 (8.2)
Total	182(100.0)
Sex	
Male	98 (53.8)
Female	84(46.2)
Total	182(100.0)
Occupation	
Farmer	12 (6.6)
Artisan/Labourer	28 (15.4)
Trader	88 (48.4)
Driver	6(3.3)
Professional	28 (15.4)
Others	20 (11.0)
Total	182(100.0)
Educational status	
No formal education	88 (48.4)
Primary education	31 (17.0)
Secondary education	28 (15.4)
Tertiary education	35 (19.2)
Total	182(100.0)

socio-demographic characteristics of the patients.

The proportion of patients with good postoperative visual outcome after refraction at eight weeks was 78.3% while 7.1% had poor outcome. At eight weeks, 157 patients (92.3%) were refracted out of 170 patients. Thirteen patients did not show up for their refraction appointment. Table 3 show the preoperative, and 8 weeks postoperative visual acuity in the operated eyes.

When the preoperative as well as postoperative presenting visual acuity of patients using the better eye was reviewed to determine gains of surgery, it was observed that cataract surgery reduced the proportion of patients in the blind category from 23% to 1.8% while patients with good vision in the better

eye increased from 28.2% to 83.4% postoperatively.

There was a very significant difference between the mean preoperative VF score of 40.17 ± 33.59 (range 0 to 82.14) and the postoperative score of 88.79 ± 20.15 (range 0 to 100, $p < 0.01$). Prior to surgery, 27.6% of patients had VF score of 75% and above, however after surgery 88.2% had a VF score of over 75%. The difference was also highly significant ($p < 0.01$) (Fig. 1). Table 4 presents the VF subscale scores and quality of life scores according to the visual acuity at 8 weeks postoperatively. The gains of surgery by visual function outcomes are shown in Figure 1.

Using the QoL questionnaire, the highest impact of visual recovery after cataract surgery was improvement with

mobility in almost 80% of the patients. Mental health got better in 70% while self-care improved in 42% of the patients. The vision related QoL scores with reference to self-care, mobility and mental health is shown in figure 2. The mean score with respect to self-care was 9.74 ± 2.03 , while that of mobility was 10.96 ± 1.79 and the mean score for mental health was 10.78 ± 1.84 out of a maximum of 12 scores.

DISCUSSION

This study which evaluated both objective and subjective gains of cataract surgery gives opportunity for making comments on the overall satisfaction with vision in cataract surgical patients. The goal of cataract surgery is to improve visual function and this was demonstrated by the significant improvement in the visual function, quality of life and visual acuity of the patients in this study at eight weeks postoperatively. It is clearly evident from the study that patients undergoing SICS have an early visual rehabilitation as 78.3% of patients obtained $\leq 6/18$ at 8 weeks post-operation.

The distribution of the patients by age showed that majority (73.4%) were between the ages of 50 and 79 while 19.4% were more than 79 years. This pattern of distribution is in conformity with what is seen in cataract patients in many eye clinics in Africa^{12,17,18} and Asia.^{19,20} There were more males than females in this study. Several studies have found a male preponderance among cataract patients presenting to eye clinics in Africa due in most cases to issues related to gender bias.^{17,18} This may also be due to economic factor as males have more access to the fund in the family than their female counterpart.

The study observed that most patients had borderline presenting vision (uncorrected) at 8 weeks post-operatively. The most important reason for this is uncorrected refractive error as seen by the remarkable improvement in the visual acuity after refraction. Although all the patients had biometry done, many of them did not get the IOL-power during surgery. This was due to the non-availability of the appropriate IOLs during the surgery. Moreover, the high cost of spectacles often delays its acquisition postoperatively in Africa.

Table 3: Preoperative and 8 weeks Postoperative Visual Acuity Aided and Unaided in the Operated Eye

Visual Acuity	Preoperative		8 Weeks Post-operation	
	Unaided N(%)	Aided N (%)	Unaided N(%)	Post-refraction N (%)
6/6–6/18	2(1.1)	2(1.1)	57(33.5)	123(78.3)
<6/18–6/60	10(5.5)	12(6.6)	86(50.6)	22(14.0)
<6/60–3/60	43(23.6)	42(23.1)	18(10.6)	12(7.7)
<3/60–LP	127(69.7)	126(69.2)	9(5.3)	0(0)
Total	182(100.0)	182(100.0)	170(100.0)	157(100.0)

Table 4: Correlation of Visual Function Scores, Quality-of-Life and Visual Acuity at 8 weeks Post-operation (Unaided)

	6/6–6/18 (Normal vision) (%)	<6/18–6/60 (Borderline Vision) (%)	<6/18–6/60 (Severe Visual Loss) (%)
1) Visual Function Score			
0.00–25.00	0	0	7(4.1)
25.01–50.00	0	0	0
50.01–75.00	0	2(1.1)	11(6.5)
75.01–100.00	57(33.5)	84(49.5)	9(5.3)
Total	57(33.5)	86(50.6)	27(15.9)
Pearson correlation (r) = 0.50 p value = < 0.01			
2) Quality-of-Life Subscales			
Got better	43(25.3)	66(38.8)	9(5.3)
Stayed same	14(8.2)	20(11.8)	17(10.0)
Got worse	0(0)	0(0)	1(0.6)
Total	57(33.5)	86(50.6)	27(15.9)
Mean QOL score = 2.61 +/- 0.37.			

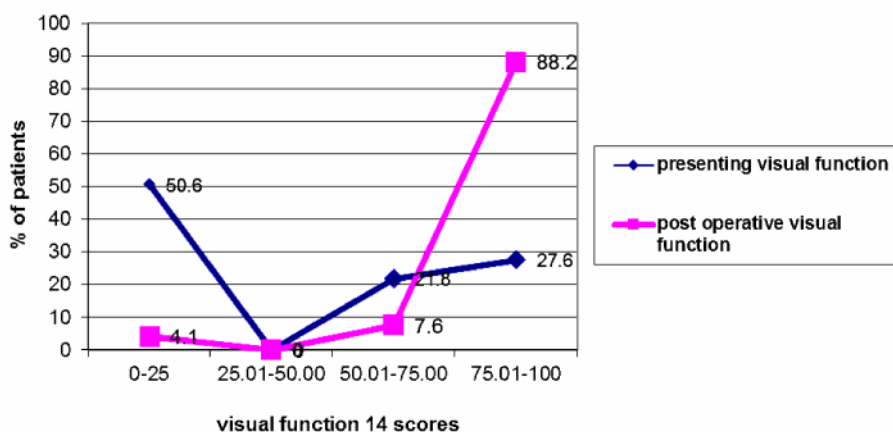


Fig 1: Gains of Surgery using Visual Function Outcome



Fig 2: Gains of Surgery by Quality of Life Visual Outcomes

This emphasizes the need not only for adequate biometry measurements preoperatively but also ensuring that the appropriate IOLs for individual patients are available at surgery.

At eight weeks postoperatively, 78.3% of our patients had a visual acuity of 6/18 and better. Although this is suboptimal compared to the 90% target recommended by W.H.O after cataract surgery, it is still indicative of a good outcome at 8 weeks following SICS. The result also compares favorably with reports from Kenya¹⁸ where a range of 77.1%–89.4% for a good outcome was reported. Nwosu and colleagues²⁰ in Nigeria found that 75.4% of their patients had good outcome at their last visit which was an average of 3.5 months following extracapsular cataract extraction and posterior chamber intraocular lens. Agbeja²¹ in a study done at Ibadan found that 61% of their patients had good outcome postoperatively.

It has been noted that uveitis tends to last longer postoperatively in Africans because of the heavily pigmented irises. Therefore a longer postoperative period would have allowed for better optimal results. The less than optimal outcome values reported by many studies from Africa suggest the need for continuous monitoring and quality control of cataract surgery to ensure improvement in outcome.

The visual function assessment score in this study was relatively high and this may be because patients with complicated cataracts, and traumatic cataracts were excluded from the study. In this study, improvement in vision related quality of life functions and VF occurred within two months of cataract extraction. This shows that the reduction in functional ability attributed to a decline in vision in patients with cataract can be reversed by surgery. Ocular co-morbidity was also found to be a predictor of overall

patient satisfaction in a similar study done by Chet et al in Sydney²³ though this was not assessed in this study. The results show that the change in visual acuity, visual function and quality of life scores are significant predictors of satisfaction with cataract surgery.

A limitation of the study however, is the relatively short postoperative follow up period. Further studies are needed to address the long term quality of life and visual function assessments in patients after cataract surgery.

Conclusion

This study demonstrates improvement in vision related quality of life and visual function, resulting in rapid recovery of the patient’s functional independence and health status. It is evident from the study that patients undergoing SICS have an early visual rehabilitation as 78.3% of patients obtained $\leq 6/18$ at 8 weeks post-operation. We therefore recommend SICS in African settings.

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