Rate of second eye cataract surgery (SECS) amongst patients attending University College Hospital, Ibadan, Nigeria

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ABSTRACT

Objective: To determine the rate of Second Eye Cataract Surgery (SECS) amongst patients attending University College Hospital (UCH), Ibadan and the average time interval between first and second eye surgery.
Methods: This was a hospital-based, descriptive cross-sectional study carried out at the outpatient clinic of the Department of Ophthalmology, University College Hospital (UCH), Ibadan. A total of 427 patients diagnosed with bilateral operable age-related cataract, and had undergone cataract surgery in at least one eye two years prior to commencement of study, were studied using a study designed questionnaire to ascertain the proportion of patients that have had second eye cataract surgery done and the average interval between the first and second eye surgeries. Data was analyzed using IBM Statistical Product and Service Solutions (IBM-SPSS) version 25 and summary statistics are presented using frequency tables, means and rates.
Results: Out of the 427 patients studied, only 124 (29%) underwent Second Eye Cataract Surgery (SECS) within two years of the First Eye Cataract Surgery (FECS) at an average interval of 12 ±7.4 months. Type of surgery being Manual Small Incision Cataract Surger**y** (MSICS) for FECS was the only statistically significant variable associated with shorter interval between the FECS and SECS (p = 0.001).
Conclusions: The SECS rate in UCH, Ibadan is still low with a prolonged interval between surgeries.

Key words: Cataract, First Eye Cataract Surgery (FECS), Second Eye Cataract Surgery (SECS), Manual Small Incision Cataract Surgery (MSICS)

INTRODUCTION

Cataract has remained a major cause of blindness worldwide accounting for about 51% of blindness, affecting almost 20 million people[1], with the developing countries accounting for 75% of this blindness[2]. There is an increasing prevalence of cataract blindness in developing countries, which has been attributed to inadequate human resource, poor cataract management, poor disease awareness, poverty, lack of basic infrastructure and dedicated cataract surgery programs.

Although cataracts are frequently bilateral, cataract surgery is usually performed on one eye at a time[3], mainly due to fear of devastating complications such as endophthalmitis[4]. First eye cataract surgery results in significant improvement in visual acuity and contrast sensitivity[3,5,6]. However, cataract patients still report vision-related problems while waiting for Second Eye Cataract Surgery (SECS), as a result of differences in vision between the operated and un-operated eyes[3,5,7,8]. These problems are largely corrected by SECS[3,9].

In the last few decades, western countries have witnessed an increase in the uptake of second eye cataract surgery and consequently cataract surgery rates. Data from an audit of cataract surgeries performed in the UK between the period of November 2001 to July 2006 indicated that 41.5% were SECS[10] while a rate of 41% was obtained between November 2006 and July 2010 with a median interval between surgery of 3.7 months[11]1073 patients had ISBCS and 248,341 DSCS from 73 centres. A higher proportion of ISBCS patients were unable to lie flat (11.3% vs. 1.8%; p < 0.001). Although there are limited data on rates of second eye cataract surgery in other parts of the world, available data suggests lower rates. Malik *et al*[12] in India, found that only 20% of the patients who had undergone cataract surgery in one eye reported back for the second eye cataract surgery within one year. They further noted that patients who were yet to have SECS had more attitudinal barriers, as well as barriers related to service delivery, cost and affordability. Also, Katibeh *et al*[13] in Iran found a second eye cataract surgery rate of 28.1% within a four-year period (2006 -

2009) while Fasina *et al*[14] in Nigeria reported that the rate of bilateral non simultaneous surgery was 0.9% within a three-year period (2012 -2014). This extremely low rate of SECS implies that only few patients achieve their optimum visual potential. This study therefore aims to determine the current trend in SECS rate and the average interval between FECS and SECS.

MATERIALS AND METHODS

This was a hospital-based, descriptive cross-sectional study which was carried out at the outpatient clinic of the Department of Ophthalmology, University College Hospital, Ibadan (UCH). Patients aged 50 years and above, attending the eye clinic of University College Hospital Ibadan were selected based on the following criteria:

Inclusion criteria

- All consecutive patients with bilateral age-related cataract, with best corrected visual acuity worse than or equal to 6/18 in both eyes at diagnosis and had undergone first eye surgery not more than 2 years prior to recruitment.

Exclusion criteria

- Patients who had visual impairment from other ocular co-morbidities such as glaucoma, diabetic retinopathy, age related macular degeneration.
- Patients who had a history of uveitis or ocular trauma.

The list of eligible patients was compiled from the clinic and surgery registers of the Ophthalmology Department of University College Hospital, Ibadan and patients were contacted on phone and clinic appointment was scheduled.

Ethical approval and clearance were obtained from the ethical committee of the University College Hospital, Ibadan and the study adhered to the Tenets of the Helsinki Declaration. Informed consent was obtained from all participants prior to recruitment and the study duration was 7 months (September 2021 – March 2022) which was prolonged due to a decline in clinic attendance as a result of COVID-19 pandemic**.**

Data collection

Brief explanation of the survey was given to the participants. Data of interest obtained from both case notes and participants via the interviewer administered questionnaire included sociodemographic data, information about time of surgery (first and second eye), pre- and post-operative best corrected visual acuity, type of surgery as well as surgical complications.

Data analysis

Data entry, cleaning and analysis were done using IBM-SPSS version 25. Descriptive statistics such as means, medians, ranges and standard deviations were used to present quantitative variables while categorical variables were presented in the form of proportions and percentages. One-way Anova test was used to find the difference between means of some variables for the SECS group in order to identify the factors associated with shorter interval between FECS and SECS. Analyses were carried out at 5% level of statistical significance.

RESULTS

Descriptive characteristics of participants: A total of 480 participants were enrolled in the study, out of which 427 (89%) participants who completed the study were analyzed. There were 212 (49.6%) males and 215 (50.4%) females with a male to female ratio of 1:1.01. The mean age was 70 ± 8.8 years with a range of 52 to 108 years. The sociodemographic characteristics of all participants are represented in Table 1.

Table 1: Sociodemographic characteristics of all participants

Variable	Frequency (n=427)	(%)
Mean age ± Standard deviation (years)	70.1 ± 8.8	
Age in category(years)		
<65	109	25.6
65-74	196	46.0
≥74	122	28.4
Gender		
Male	212	49.6
Female	215	50.4
Marital status		
Married	344	80.6
Widowed	76	17.8
Divorced	3	0.6
Single	2	0.5
Separated	2	0.5
Occupation		
Employed	287	67.4
Unemployed	125	29.3
Retiree	15	3.3
Average monthly income*		
< 30,000 naira/month	308	72.2
30,000 – 60,000 naira/month	95	22.2
>60,000 naira/month	24	5.6
Distance from the hospital by road (hours)	1.4 ± 1.32	
Living alone		
Yes	41	9.6
No	386	90.4

*1 US Dollar = 403.12 Nigerian Naira

Proportion of participants that had Second Eye Cataract Surgery (SECS): A total of 124 (29%) participants had Second Eye Cataract Surgery (SECS) done within two years of First Eye Cataract Surgery (FECS) while 303 (71%) were yet to have SECS. Of the 303 participants yet to have SECS, 220 (72.6%) expressed interest in having their SECS done. However, only 79 (26.1%) expressed readiness for surgery, all of whom were promptly booked.

Interval between First Eye Cataract Surgery and Second Eye Cataract Surgery: Average interval between FECS and SECS: The average interval between FECS and SECS was 12 ± 7.4 months. Table 2 shows the breakdown of the interval between surgeries.

Table 2: Breakdown of interval between FECS and SECS

Interval (Months)	Frequency (n=124)	(%)	Cumulative percentage (n=124)
≤6	34	27.4	27.4
7-12	30	24.2	51.6
13-18	30	24.2	75.8
>18	30	24.2	100.0

Only 34 (8%) of all the participants had SECS within 6 months of FECS while 64 (15%) had it within year.

Factors associated with shorter interval between FECS and SECS: One-way Anova test was used to find the difference between means of some variables for the SECS group in order to identify the factors associated with shorter interval between FECS and SECS as shown in Table 3.

Table 3: Factors associated with shorter interval between FECS and SECS

Parameter	Number of participants (n=124)	Average interval ± SD (months)	P-value
Age in category (years)			
<65	32	10.13 ± 6.36	0.121
65-74	56	12.15 ± 6.98	
>74	36	13.82 ± 8.53	
Type of surgery (First eye)			
ECCE + PCIOL	21	13.91 ± 8.43	0.001*
SICS + PCIOL	94	11.67 ± 7.33	
SICS Only	9	12.56 ± 5.10	
Portal of clinic entry			
Walk-in	93	11.85 ± 7.52	0.735
Clinic referral	24	12.63 ± 7.00	
Outreach	7	13.86 ± 7.63	
Level of education			
No formal Education	22	10.39 ± 7.73	0.366
Formal education	102	12.49 ± 7.30	
Who paid for first eye surgery			
Self	46	13.43 ± 7.32	0.964
Family	67	10.79 ± 7.54	
Sponsorship	4	15.25 ± 5.44	
Insurance	7	14.86 ± 5.79	
FECS (BCVA* in other eye)			
≥ 6/18	34	13.33 ± 7.55	0.282
>6/60-6/24	41	12.49 ± 7.09	

≥HM- 6/60	39	10.66 ± 7.46	
LP	6	9.83 ± 8.61	
FECS (BCVA* in operated Eye)			
≥ 6/12	51	11.26 ±7.17	0.457
>6/60 – 6/18	60	12.79 ± 7.66	
≥ HM-6/60	12	12.25 ± 7.09	
LP	1	3.00	
Gender			
Male	69	12.99 ± 7.05	0.424
Female	55	11.01 ± 7.71	
Average monthly income#			
<30000 Naira/month	84	11.83 ± 7.20	0.682
30000- 60000 Naira/month	28	12.22 ± 7.74	
Occupation			
Employed	84	11.69 ± 6.97	0.289
Retiree	36	13.50 ± 8.23	
Unemployed	4	12.11 ± 7.39	

*BCVA: Best Corrected Visual Acuity
1 US Dollar = 403.12 Nigerian Naira

Type of surgery being MSICS for FECS was the only statistically significant variable associated with shorter interval between the two FECS and SECS (p = 0.001).

DISCUSSION

Proportion of participants that underwent SECS within 2 years of FECS

Of the 427 participants, only 124 representing 29% had undergone SECS within the 2-year period. This implies a 29% SECS rate in 2 years while further analysis revealed that only 64 participants had theirs within a year representing 15% SECS rate in 1 year. This suggests a significant improvement as compared with the study by Fasina *et al*[14]. The latter revealed an abysmally low rate of 0.9% in 3 years which however did not include those who had SECS outside UCH. This fact alone does not completely explain the increased rate as only 13% of participants that underwent SECS in this study had it outside UCH meaning almost 90% returned to UCH. A possible contributing factor is the proportion of participants that had MSICS during FECS which had increased significantly from 28% in the study by Fasina *et al*[14] to 71% in this study because of improvement in expertise and proficiency in MSICS. This in turn has been associated with improved uptake of SECS due to better postoperative outcome[15]. This may also have contributed to the high rate of satisfaction with FECS recorded in this study as over 90% of the participants were satisfied with the outcome of their FECS.

The SECS rate of 15% in one year and 29% in 2 years obtained in this study, though higher than that of Katibeh *et al*[13] in Iran which was 28.1% in 4 years, is comparable with that of Malik *et al*[12] in India which was 20% in 1 year. It is, however, much lower than that of Castells *et al*[16] which was 51% in 2 years as well as those of the Western world (over 40% in one year)[10,11]. This could be related to the fact that all participants in the study by Castells *et al*[16] were sponsored compared to the 14% in this study. The availability of sponsorship for cataract surgery eliminates cost as a barrier to SECS hence the provision of sponsorship opportunities may, therefore, help improve the rate of uptake of SECS.

Interval between FECS and SECS

The average time interval between FECS and SECS in this study was 12 ± 7.4 months. This is shorter than that of Malik *et al*[12] which was 2.39 ± 2.19 years but longer than that of Castells *et al*[16] which was 9 months. This average interval is thought to be prolonged considering that about 70% of all participants in this study had vision worse than 6/18 in the second eye as at the time of undergoing

FECS. This implies that these participants still delayed surgery despite having vision lower than the threshold recommended by Agency for Healthcare Research and Quality[17]. Only 8% of the participants had SECS within 6 months while 15% had SECS within the first year after FECS. This is lower than that of Castells *et al*[16] which showed that 22% of their participants had SECS within 6 months of FECS. Undergoing MSICS during FECS was found to be associated with shorter interval in this study (p=0.001). Introduction of phacoemulsification may therefore improve both uptake of SECS and shorten the interval as revealed by the study by Katibeh *et al*[13]. Impact of this on uptake of SECS in our environment is an area of future research.

Other factors associated with shorter interval between FECS and SECS but failed to reach statistical significance include; Age <65 years, portal of clinic entry, walk- in patients, source of funds for FECS, poor vision in second eye as at FECS, having no formal education. An area of future research is to identify the factors associated with the uptake of SECS as well as the barriers to its uptake with a view towards improving the uptake of SECS.

Study limitation

Being a hospital based cross-sectional study with retrospective component, missing records could have affected the outcome of this study.

CONCLUSION

Although, the rate of SECS in UCH, Ibadan has improved over the years, it is still relatively low with a prolonged interval between surgeries. Undergoing MSICS was found to be associated with shorter interval between surgeries. Identifying factors that could be responsible for this low rate with a view towards improving uptake of surgery is desirable.

Declaration

Consent for publication: All authors have consented.

Conflict of interest: None.

Authors' contributions: All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Dr. Nafisat Ijaiya-Olatoke. The first draft of the manuscript was written by Dr. Nafisat Ijaiya-Olatoke. Prof. Bolutife Olusanya and Prof. Charles Bekibele supervised the project and edited previous versions of the manuscript. All authors read and approved the final manuscript.

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