

Original Article

Access this article online	
Quick Response Code:	Website: www.annalsafmed.org
	DOI: 10.4103/1596-3519.126943
	PMID: *****

# Outcome of cataract surgery in rural areas of Kaduna State, Nigeria

**Kehinde K. Oladigbolu, Abdulkadir L. Rafindadi, Abiodun F. Mahmud-Ajeigbe, Dominic Chinda, Victoria Pam, Elsie Samaila**

Department of Ophthalmology, Ahmadu Bello University Teaching Hospital, Shika, Zaria, Nigeria

**Correspondence to:** Dr. V. Pam, Department of Ophthalmology, Ahmadu Bello University Teaching Hospital, Shika, Zaria, Nigeria. E-mail: victoriahpam@yahoo.com

## Abstract

**Aim:** To evaluate the visual outcome of all patients who had cataract surgery with intraocular lens implant in five Local Government Areas (LGAs) of Kaduna State and to identify reasons for poor outcome and to proffer suggestions to improve outcome.

**Materials and Methods:** A prospective study using the WHO cataract surgery record form to collect data from consecutively screened and operated cataract patients over a period of 18 months (January 2006-June 2007). Data was analysed using Monitoring Cataract Surgery Outcome V2.3 software by the WHO.

**Results:** A total of 690 eyes of 644 patients were operated, ECCE+PCIOL implantation was achieved in 664 (96.2%) while 26(3.8%) had anterior chamber lens implant. The age range was 40 – 99 years and male to female ratio was 1: 0.9. Good outcome was obtained in 239 (34.6%) and 370(53.6%) of patients at 2 and 8 weeks respectively in the postoperative period. Surgical complications like striate keratopathy/corneal oedema (18.3%), cortical remnant (4.2%) and posterior capsular rupture (2.9%), and uncorrected refractive error were identified as reasons for poor outcome.

**Conclusion:** A good outcome of greater than 80% at 8 weeks postoperative period was not achieved. Provision of postoperative correction of residual ametropia in the rural community, as well as improved surgical techniques of surgeons, will go a long way to improve the visual outcome and cataract surgery uptake.

**Keywords:** Cataract surgery, outcome, rural areas

## Résumé

**Objectif :** Pour évaluer le résultat visuel de tous les patients qui ont eu la cataracte chirurgie avec lentille intraoculaire implant dans cinq zones de gouvernement Local (LGA) de l'Etat de Kaduna et d'identifier les raisons de mauvais pronostic et pour présenter des suggestions pour améliorer le résultat.

**Matériaux et méthodes :** Étude prospective de A en utilisant le formulaire d'enregistrement WHO cataracte chirurgie pour collecter les données de façon consécutive projeté et opéré des patients de la cataracte sur une période de 18 mois (janvier 2006-juin 2007). Données ont été analysées à l'aide de logiciels de surveillance Cataract chirurgie résultats V2.3 par l'OMS.

**Résultats :** Un total de 690 yeux de 644 patients ont été opérés, implantation de ECCE + PCIOL a été atteint en 664(96.2%) tandis que 26(3.8%) eu lentille de chambre antérieure de l'implant. La tranche d'âge était de 40 à 99 ans et mâle-femelle ratio était de 1:0.9. Bon résultat a été obtenu en 239(34.6%) et 370(53.6%) des patients à 2 et 8 semaines respectivement dans la période postopératoire. Complications chirurgicales comme le œdème cornéen/ kératopathie strié (18,3 %), remnant corticale (4,2 %) et la rupture capsulaire postérieure (2,9 %), et l'erreur de réfraction non corrigé ont été identifiés comme motifs de mauvais pronostic.

**Conclusion :** Un bon résultat de plus de 80 % à la période postopératoire 8 semaines n'a pas été atteint. Fourniture

de correction postopératoire des amétropies résiduelle dans la communauté rurale, ainsi que d'amélioration des techniques chirurgicales de chirurgiens, ira un long chemin pour améliorer l'absorption de chirurgie visuelle résultat et cataracte.

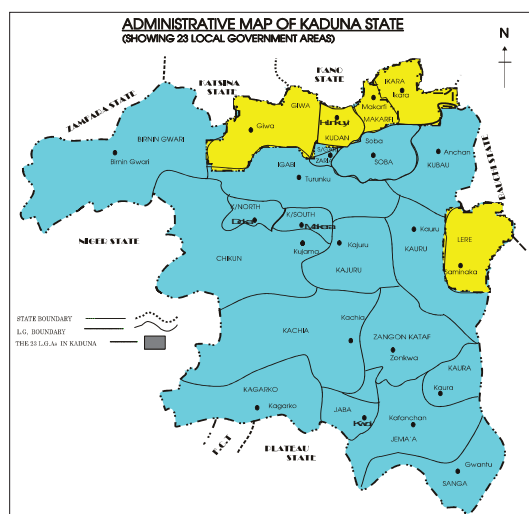
**Mots-clés :** Chirurgie de la cataracte, les résultats et les zones rurales

## Introduction

Most of the estimated 20 million people who are blind with cataracts<sup>[1-3]</sup> live in the rural areas of the developing countries. Cataract blindness is curable through cataract surgery. It is one of the most successful and cost effective of all health interventions and forms an integral part of global strategy for prevention of avoidable blindness.<sup>[1,2]</sup>

Cataract outreach program aims at the delivery of cataract surgical service to persons with cataracts in their communities making it available, accessible and affordable. In addition, this system reduces the stress, the risk of travel outside a familiar environment to which the patient is used to and the extra financial burden of an escort on the already impoverished cataract patient.

In pursuance of the Vision 2020 objective of elimination of preventable causes of blindness including cataract by the year 2020, Guinness Ophthalmic Unit (GOU), Ahmadu Bello University Teaching Hospital (ABUTH), Zaria in partnership with the Kaduna State Government and Sight Savers International (SSI) provided cataract surgery to some rural communities in five Local Government Areas (LGAs) of Kaduna State (Giwa, Ikara, Kudan, Lere and Makarfi LGAs) between January 2006 and June 2007 [Figure 1].



**Figure 1:** Administrative map of Kaduna state showing local government areas of cataract outreach (shaded yellow)

The impact of cataract surgery in any population can be assessed by the visual outcome. A good outcome advertises the program and increases uptake of cataract surgery in most communities. On the contrary a poor visual outcome may have a negative impact on the uptake of this program. A good outcome is defined

(WHO classification) as visual acuity of 6/6 - 6/18 in 80-90% of patients, borderline outcome of < 6/18 – 6/60 in less than 5% of patients and poor outcome of < 6/60 in less than 5% patients.<sup>[2,3]</sup>

In keeping with the recommendation of regular clinical audit and reporting of outcome of cataract surgery, GOU analysed data from the five rural communities that benefited from the cataract outreach program during the period January 2006 - June 2007.

The aim of this study was to evaluate the visual outcome of all the patients who had cataract surgery with intraocular lens implant in the five LGAs (Giwa, Ikara, Kudan, Lere and Makarfi) of Kaduna State, to identify reasons for poor outcome and to suggest ways of improving outcome.

## Materials and Methods

All adult cataract blind (VA < 3/60) and unocular cataract patients screened in several villages and wards of five Local Government Areas of Kaduna State by the Community Ophthalmic Nursing Officers (CONOs) and the Community Health Extension Workers (CHEWs) between January 2006 and June 2007 were enrolled in the study.

Visual acuity (Snellen's and illiterate E chart) and intraocular pressure (Shiotz) assessment as part of the screening exercise were carried out at venues of the eye screening. Non ophthalmic assessment at the base hospital included blood haemogram, urinalysis and blood pressure.

Re- screening with pen-torches and direct ophthalmoscopes was by the authors (mainly senior registrars) at the base hospital of each of the LGAs. Bio data and clinical data on each patient for cataract surgery were entered into the World Health Organization (WHO) Cataract Surgery Form.

The study was approved by the Ahmadu Bello University Teaching Hospital (ABUTH), Zaria Ethic Research Committee (ERC) and was conducted following research principles as contained in the Declaration of Helsinki. Consent for cataract surgery with intraocular lens implant was obtained from all the patients or their relatives.

Standard extracapsular cataract extraction (ECCE) and posterior chamber intraocular lens (PC IOL) implantation were performed using either corneal or limbal based section. There were no facilities for biometry therefore; posterior chamber IOLs of power range 19-22 dioptre was used. However, few anterior chamber IOLs of power range 17-19 dioptre were also implanted in some patients.

The medical records of all the patients were used for analysis of personal data, preoperative and postoperative VA at discharge and two and eight weeks after discharge, and intraoperative and postoperative complications.

Definitive postoperative refraction had not been done for all the patients, so uncorrected and pinhole acuity was recorded. Data was analysed using the Monitoring Cataract Outcome V2.3 software by WHO.

**Results**

A total of 690 eyes of 644 patients had extracapsular cataract extraction (ECCE) and intraocular lens (IOL) implantation in the 5 LGAs [Table 1]. Forty-six patients had bilateral ECCE with IOL implants at different period (average of 4 weeks to 1year).

The patients' age range was 40-99 years with 186 (27%) of them in the age group 56-60 years [Figure 2]. The male to female ratio was 1: 0.9. The pre-operative visual acuity (VA) was hand motion (HM) in 367 (53.2%) and perception of light (LP) in 124 (18.0%).

Six hundred and sixty four (96.2%) patients had extracapsular cataract extraction with posterior

chamber intraocular lens implantation (ECCE + PCIOL) while 26 (3.8%) had anterior chamber IOL.

Figure 3 shows the visual acuity at discharge (24-48 hours post-operative), two and eight weeks post-operative. The most common 29 (4.2%) intra-operative complication recorded was cortical remnants while striate keratopathy (SK) 126 (18.3) was the most common post-operative complication encountered [Table 2]. The dreaded endophthalmitis was seen in only two patients (0.3%).

At 2 and 8 weeks post-operative period 7.3% and 20.8% of patients respectively were lost to follow up.

**Discussion**

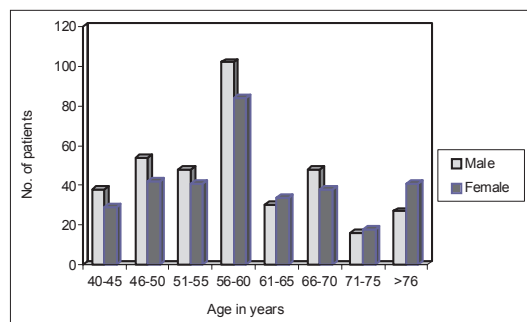
Senile cataracts were diagnosed in patients aged 40 years and above in the 5 LGAs with increasing

**Table 1: No of cataract surgery per LGA**

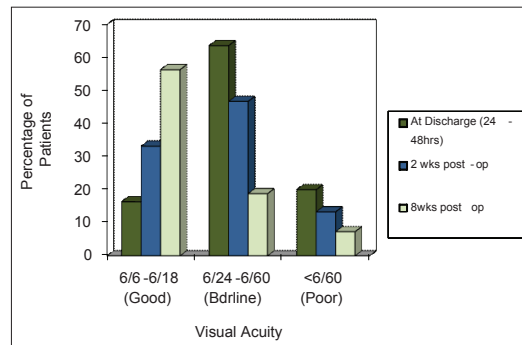
LGA	No of eyes operated	%
Ikara	168	24.3
Makarfi	143	20.8
Giwa	134	19.4
Lere	125	18.1
Kudan	120	17.4
Total	690	100.0

**Table 2: Surgical complications**

Complication	No of eyes (n=690)	%
<b>Intraoperative</b>		
Posterior capsular rupture	20	2.9
Cortical remnants	29	4.2
Anterior capsular tag	14	2.0
Hyphaema	7	1.0
<b>Postoperative (2 weeks)</b>		
Striate keratitis / corneal oedema	126	18.3
Cortical remnant	27	3.9
Iris prolapse	2	0.3
Endophthalmitis	2	0.3



**Figure 2:** Age /Sex distribution of cataract patients in 5 LGAs of Kaduna State



**Figure 3:** Post-operative visual outcome at discharge, 2 and 8 weeks

frequency as the age of the patient increased. No significant difference was observed in the male / female uptake of cataract surgery. This observation dispels the fear of gender inequality in the uptake of cataract surgery in a male dominated environment.

The pre-operative visual acuity (VA) was hand motion in more than 50% of the patients. Visual needs of most rural dwellers who are either farmers or petty traders by profession are not as high as for skilled professionals living in the urban areas or cities; hence a delayed access to cataract surgical uptake by patients. Extracapsular cataract extraction with posterior chamber intraocular lens (ECCE-PCIOL) implant was the surgical procedure in 96.2% and extracapsular cataract extraction with anterior chamber intraocular lens (ECCE-ACIOL) implant in 3.8% patients with posterior capsular rupture.

Extracapsular cataract extraction with posterior chamber intraocular lens implant (ECCE-PCIOL) is not new to Nigeria; the first report<sup>[4]</sup> was published about a decade and half ago with encouraging outcome. Furthermore, in the last decade several ophthalmologists in ophthalmic institutions and clinics in Nigeria have undergone microsurgical training and have converted from intracapsular cataract extraction (ICCE) to ECCE+ PCIOL and more recently the small incision cataract surgery (SICS). Good outcome of 12 - 28% on discharge<sup>[4-7]</sup> and a steady improvement<sup>[5,6,8-11]</sup> have been reported from some tertiary and secondary eye facilities in Nigeria where the surgical environment is different from what obtains in the rural areas.

In this study a good outcome of 16.0% was obtained on discharge. This value falls far below WHO category of a good outcome in 80 - 90% of cases. However, the percentage of patients with good outcome doubled by the end of the 2<sup>nd</sup> postoperative week [Figure 3]. At the end of 8<sup>th</sup> post-operative week 53.6% of the patients achieved good outcome. In a study of outcome of cataract surgery in Nepal<sup>[12]</sup> under a similar operating environment a good outcome was obtained in 54.4% of cases at the end of 8 weeks. However, after refraction and correction 87.1% was achieved. A similar study in Plateau reported 73.6% good outcome with best available correction at 8 weeks.<sup>[13]</sup>

Surgical and post-operative complications contributed to the poor outcome of less than 10% at the end of 8 weeks. Other factors which contributed to the borderline and poor outcome include the lack of pre-operative biometry, uncorrected residual post-operative refractive error and also failure to

detect pre-existing eye pathology due to the lack of adequate technology (e.g. slit- lamp) at the outreach post.

The authors believe that a good outcome of more than 80% is possible eight weeks post-operative even in the rural environment as has been demonstrated in the Nepal<sup>[12]</sup> study.

Refraction and correction of residual post-operative ametropia will improve the visual outcome. Furthermore, regular retraining of ophthalmic surgeons in operating techniques and management of intra-operative / post-operative complications will enhance a good outcome. In addition, provision of minimum technology such as a portable slit lamp can improve the quality of pre-operative assessment of cataract patients and reduce the effect of co-existing ocular morbidity on the final outcome.

## Acknowledgement

We wish to acknowledge the immense contribution of the Sight Savers International to the Kaduna State Eye Care Programme. We are also grateful to Kaduna State for her contribution and the Local Government Areas for the enabling environment to operate on their patients. To the management of Ahmadu Bello University Teaching Hospital, Zaria we appreciate the support we have always received during the cataract outreaches.

## References

1. Thylefors B, Negrel AD, Pararajasearam R. Global data on blindness. Bull World Health Organ 1995;73:115-21.
2. Global Initiative for the Elimination of Avoidable Blindness, Geneva, July 1996.WHO / PBL / 97. 61. Rev. 1 p. 3
3. Hall A, Rosenthal AR. Cataract. In: Yanoff, D, editors. Textbook of Ophthalmology. London: Mosby International Publishers; 1999. p. 4,9,1.
4. Agbeja AM. Intraocular lens implantation, the Nigerian experience. Afr J Med Sci 1994;23:233-7.
5. Adejor GO. Early experience with posterior chamber intraocular lens implantation in Kaduna, Nigeria. Niger J Ophthalmol 1997:6-12.
6. Nwosu SN, Onyekwe LO. Intraocular lens implantation surgery in Onitsha, Nigeria. Niger J Ophthalmol 2002;1:5-9.
7. Eruchalu UV, Pam VA. A preliminary review of extracapsular cataract extraction with posterior chamber intraocular lens implantation in Kaduna, Nigeria. Niger J Med 2004;13:26-31.
8. Mypet CD, Ahmad UI. Initial experience with posterior chamber lens implant, NJSR 2000;2:135-8.
9. Bekibele CO. Evaluation of the outcome of ECCE surgery with PC IOL at Ago-Iwoye, Ogun State, Nigeria. Niger J Ophthalmol 2001;1:32-6.
10. Ashaye AO, Komolafe OO. Visual outcome of cataract surgery in UCH, Ibadan, Nigeria. West Afr J Med 2009;28:102-5.
11. Alhassan MB, Kyari F, Achi IB, Ozemela CP, Abiose A.

- Audit of outcome of an extracapsular cataract extraction and posterior chamber intraocular lens training course. *Br J Ophthalmol* 2000;84:848-51.
12. Pokhel GP, Selvaraj S, Ellwein LB. Visual function and quality of life outcome among cataract operated and unoperated blind populations in Nepal. *Br J Ophthalmol* 1998;82:606-10.
13. Oduqbo OP, Babalola OE, Morgan RE. Outcome of

cataract surgeries in Plateau State, Nigeria. *Highland Res Med J* 2009;8:30-6.

**Cite this article as:** Oladigbolu KK, Rafindadi AL, Mahmud-Ajeigbe AF, Chinda D, Pam V, Samaila E. Outcome of cataract surgery in rural areas of Kaduna State, Nigeria. *Ann Afr Med* 2014;13:25-9.  
**Source of Support:** Nil, **Conflict of Interest:** None declared.

**Erratum**

**Annals of African Medicine April-June 2013; Vol 12; No 2**

**Title: Evaluation of the histopathology of orofacial lesions in a North-East Nigerian tertiary centre**

Page 105; Abstract (Result section) line 6 and 11

**Results:** A total of 102 (51.3%) benign lesions, 59 (29.6%) malignant lesions and 38 (19.1%) inflammatory/reactive lesions were seen. The common benign neoplasms were ameloblastoma (23.5%), fibrous dysplasia (15.7%) and pleomorphic adenoma (13.7%). The malignant lesions were mainly well differentiated squamous cell carcinomas (28.8%) and terminal duct carcinoma (11.9%). Inflammatory lesions comprised mainly of chronic osteomyelitis (15.8%) and non-specific chronic inflammatory lesions; giant cell granulomas, granulation tissues which constituted 10.5% each. The addition of each section is wrong. There were 104 (52.3%) males and 95 (47.7%) females giving a male: female ratio of 1.1:1. The mean age of the patients was 36.1(SD±18.9) years with a range of 1 to 85 years. Most tissue specimens were soft tissues (61.3%), while bone specimen accounted for 15.6% of all specimens analysed. There were 62 (31.2%) mandibular lesions, 24 (12.1%) palatal lesions and 15 (7.5%) parotid lesions, while maxillary antral lesions were the least, constituting only 0.5% of all lesions studied. The addition of each section is wrong.

Should read as

**Results:** A total of 102 (51.3%) benign lesions, 59 (29.6%) malignant lesions and 38 (19.1%) inflammatory/reactive lesions were seen. The common benign neoplasms were ameloblastoma (23.5%), fibrous dysplasia (15.7%) and pleomorphic adenoma (13.7%). The malignant lesions were mainly well differentiated squamous cell carcinomas (28.8%) and terminal duct carcinoma (11.9%). Inflammatory lesions comprised mainly of chronic osteomyelitis (15.8%) and non-specific chronic inflammatory lesions; giant cell granulomas, granulation tissues which constituted 10.5% each. There were 104 (52.3%) males and 95 (47.7%) females giving a male: female ratio of 1.1:1. The mean age of the patients was 36.1(SD±18.9) years with a range of 1 to 85 years. Most tissue specimens were soft tissues (61.3%), while bone specimen accounted for 15.6% of all specimens analysed. There were 62 (31.2%) mandibular lesions, 24 (12.1%) palatal lesions and 15 (7.5%) parotid lesions, while maxillary antral lesions were the least, constituting only 0.5% of all lesions studied.

The error is regretted

**-Editor-in-Chief, AOAM**