

## RAPID ASSESSMENT OF CATARACT BLINDNESS AMONG UGHELLI CLAN IN AN URBAN/RURAL DISTRICT OF DELTA STATE, NIGERIA

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**Key words:** Cataract, blindness, rapid assessment

### Abstract

**Background:** A population based, rapid assessment for cataract blindness was conducted in Ughelli North local government area of Delta State, an urban/rural area of Nigeria between June and July 2001 with the aim of establishing baseline data for developing cataract intervention services for the area.

**Method:** A cluster random sampling method was used based on the guidelines for the Rapid Assessment for Cataract Surgery. A total of 8 clusters of 90 persons were randomly selected from the 8 communities that make up the Ughelli clan. Only people of 50 years and above who had been resident in the area for up to six months were included. A total of 684 persons were examined (91.2% coverage) using a designed survey form. The barriers to the uptake of cataract surgery were also identified during the survey. The WHO definitions of blindness and visual impairment according to visual acuity were used as criteria for classification of visual blindness and visual impairment.

**Results:** The prevalence of bilateral cataract blindness (cataract causing visual acuity of less than  $\frac{3}{60}$  in the better eye) for people of 50 years and above was 4.1% (95% CI: 2.96 to 5.24%) with cataract accounting for 41.2% of all the blindness in this age group. Prevalence of cataract blindness was higher in females than in males (5.0% versus 3.6%) About 80% of the cataract blindness occurs in people of 70 years and above. The cataract surgical coverage for eyes was 4.5%; cataract surgical coverage for couching was 18.2%. The major barriers to the uptake of cataract surgical services were lack of awareness of eye care services in nearby district (71.0%), the imagined high cost of the services (17.9%) the perception of women that their health problems are not of immediate importance (7.1%).

**Conclusion:** At the time of study about 2000 person required immediate cataract surgery in the area. With an estimated incidence of 400 new cases per year, there is a need to set up cataract surgical services in the Ughelli North local government area. Special attention should be given to reduction of cataract blindness in females.

**Mots clés :** cataracte, aveuglement, évaluation rapide

### Résumé

**Introduction :** Évaluation rapide, basée sur une population de la cécité provoquée par une cataracte a été effectuée dans l'administration locale du nord d'Ughelli de l'État de Delta, une zone urbaine/rurale du Nigéria entre juin et juillet 2001 dans le but d'établir des données de base pour le développement du service d'intervention chirurgicale de la cataracte pour la région.

**Méthode :** Une méthode d'un groupe d'échantillonnage au hasard a été utilisée basée sur des directives pour l'Évaluation Rapide pour l'intervention chirurgicale de la Cataracte. Un nombre total de 8 groupes composés de 90 personnes ont été sélectionnés au hasard parmi les 8 communautés dont le clan d'Ughelli est composé. Un nombre total de 684 personnes ont été

examinées soit 91,2% traitement à travers l'utilisation d'un formulaire conçu pour faire un sondage.

**Résultats :** La fréquence de la cécité de la cataracte bilatérale (la cataracte qui provoque une acuité visuelle de moins de 3/60 dans le meilleur oeil) pour des peuples de 50 ans et plus était 4,1% soit 95% CL : 2,96 au 5,24%) dont la cataracte constitue 41,2% de toute les cécités dans cette tranche d'âge. La fréquence de la cécité de la cataracte était élevée chez le sexe féminin plus que chez le sexe masculin (5,0% contre 3,6%) Environ 80% de la cécité de la cataracte arrivent chez des gens âgés de 70 ans et plus. Les traitements à travers l'intervention chirurgicale de la cataracte pour des yeux était 4,5%. Les traitements pour l'intervention chirurgicale pour le couching contitue 18,2%. Les barrières principales contre les services d'intervention chirurgicale de la cataracte étaient manque de l'opinion publique sur la conscience de services de soins des yeux dans la région d'à côté (71,0%), le soi-disant services à grands frais, (17,9%), la conception des femmes que les problèmes relatifs à leurs santé n'est pas d'urgence (7,1%).

**Conclusion :** Pendant cette étude, environ 2000 personnes avaient besoin de l'intervention chirurgicale de la cataracte d'urgence dans cette région. Avec une fréquence d'environ 400 nouveaux cas chaque année, c'est nécessaire de créer un service d'Intervention Chirurgicale de la Cataracte dans l'administration locale du nord d'Ughelli. Une attention particulière devrait être portée sur la réduction de la cécité de la cataracte chez des femmes.

## Introduction

Cataract is the most common cause of blindness in most developing countries of which Nigeria is one, accounting for more than 50% of blindness. The estimated prevalence of cataract blindness varied widely in the different populations ranging from 0.3 to 1.3%.<sup>1,2</sup> Studies on prevalence of cataract blindness are few.<sup>3-5</sup> Most authors report the prevalence of cataract blindness in blindness surveys.<sup>6-8</sup> Even then the reported prevalence of blindness due to cataract vary.

Rapid assessment for cataract blindness is a relatively easy and fast epidemiological method that enables eye health personnel to collect data and develop a plan of action for cataract intervention based on community needs.<sup>9</sup> It allows rational use of scarce resources for data collation where funds for survey are not available. This method was used in this study.

Neither planned national nor have district surveys been conducted in Nigeria. Such exercises are major and the resources needed to conduct such surveys are not available. Besides in Nigeria, large variations in socio-economic conditions, age, gender and resource availability is expected to cause variations in prevalence results between districts. The study aims at the rapid assessment of cataract blindness in the population aged 50 years and above to make possible an estimation of the burden of cataract blindness and implement cataract surgical services for the Ughelli North Local Government area.

## Patients and Methods

### Delta State

Delta state has a population of 3,372,080 (projections from 1991 national census) with a growth rate of 3%

per annum. With the adoption of the Primary HealthCare (PHC) system for the national health policy, the overall responsibility of the health care services of the state is maintained by the state ministry of health. The management of the hospitals is directly under the state hospital management board. Apart from government, private and missionary hospitals, provides health care services in the state. There are 36 government state hospitals, which fall under 10 medical zones. There are also several health centers located in the local government area and managed by the local government council.

### Study location and population

The Ughelli North local government area is one of the 25 local government areas of the state. It has a total population of approximately 248,800 (Projected figures 2000 – the National Population Commission). It is estimated that people of 50 years and above make up 20% of the population. It is made up of 7 clans with Ughelli being the local government headquarters.

Ughelli clan, which is both urban and rural areas, comprise of eight communities, which make up the two electoral wards. These villages are Iwreko (presently referred to as Ughelli Township), Ekiugbo, Otovwodo, Afisere, Ofoma, Ododegho, Eruemokouarien and Oteri clans. The total population of these clans is approximately 99,404. These communities are fairly homogenous in many ways.

The state government maintains a central hospital located in Ughelli Township, which serves as a referral centre for the health centers run by the local government councils. There are also several privately owned health care facilities in the area. None of the latter hospital offered eye care surgical services at the time of this study.

The State's central hospital has a recently established eye department, which offered optical services only; there were also several private optical

shops. These health facilities were only able to offer limited eye care to its population.

### *Sampling design*

A cluster random sampling method as recommended for rapid assessment of cataract blindness was done. For the purpose of determining the sample size, we estimated the prevalence of cataract blindness ( $< \frac{3}{60}$ ) to be 4.3% for adults 50 years and over. A design effect of 1.0% was assumed for cluster sampling, a confidence interval of 95% and a non-response rate of 10% were assumed. The target population was 20,000. This led a sample size of approximately 750 persons of 50 years and above.

Four communities were randomly selected from the 8 communities. These are Ofoma, Afisere, Ugwru-Ughelli and Ughelli Township. Based on the available population figures, the communities were divided into 8 clusters of 90 persons to attain the sample size of 750. In each cluster, all persons of 50 years and above who consented to be included in the study were examined.

In each cluster, the starting point was randomly selected and beginning from there, the nearest door rule (i.e. the first house, whose door is nearest to the door of the current house) was used for locating the subjects.

The survey form was pretested amongst patients presenting to the eye clinic of the central hospital, Ughelli and amendment done before commencement of the survey.

Visits were made to the National population commission office in the local government area to collect information on the population and distribution in the area. The local government council was also visited. Meetings were held with the leader of the council, the supervising councilor on health and two other councilors of the local government area, acquainting them with the planned survey and soliciting for their support in mobilizing their various constituencies.

A tour of the study area was also undertaken; the numbering of the houses has recently been concluded in some of the community.

The survey team comprised of a team manager/researcher and five assistants (secondary school leavers) who were fluent in the local language were recruited. They were trained for three days on filling or survey forms, measuring and recording of visual acuity.

Announcements about the survey were made by the town criers in each community. The people were informed of the target age group and that no payments were involved. The people were reminded a day before the actual visit.

### *Field work*

Consent was sought from each subject. Those who refused been included were not coded. The assistants filled the address and demographic data. For subjects who could not remember their ages, the age was calculated from the estimated age at the time of the eclipse in 1947, the visit of Queen Elizabeth in 1952,

and also from their position in the family. History and date of cataract surgery if done, were also recorded.

Examination included a visual acuity, a measurement using the Snellens chart or illiterate "E" chart as appropriate at 6 metres. Individuals with visual acuity better than 6/18 were noted and allowed to go. Those with visual acuity less than  $\frac{6}{18}$  but better than  $\frac{3}{60}$  were referred to the central hospital and those with visual acuity less than  $\frac{3}{60}$  were further examined using the torch light and Ophthalmoscope. Dilated funduscopy was done when indicated. All identified bilateral/cataract blind individuals were further interviewed on the reason for not seeking medical treatment. The first volunteered answer was then recorded as a barrier for the uptake of cataract surgical service. Results of the examination were recorded on the survey forms. All subjects absent or unavailable at the time of the survey were not revisited due to time constraints.

All minor ocular problems were treated in the field and diagnosed cases and those with presbyopic symptoms were referred. At the end of the day all forms were crosschecked by the researcher for errors and corrected accordingly.

All data were included on epinfo version 6.0 software and univariate analysis was done to assess the prevalence of cataract blindness and cataract surgical coverage for eyes was also calculated. Chi-square and odds ratio were calculated for the variables.

## **Results**

A total of 684 persons aged  $\geq 50$  years were examined and 15 others did not consent to be included in the study. Thus the overall coverage was 91.2%.

Of all persons examined, persons who were 50-59 years made up 42.1% of the sample (Table 1). There were more men than women in all age groups. Of the 15 others who did not give consent to be studied, 10 were males and 5 were females. Their ages could not be ascertained.

Farming was the most common occupation in the people of this age group, being the occupation in 55% (376) of study subjects. The other occupations of the subjects were trading, 19% (128). Others include teaching, civil service and retirees (11%) and a group of artisan (15%) which includes mechanics, drivers.

The prevalence of blindness (visual acuity less than  $\frac{3}{60}$  in the better eye) in persons 50 years and above was 9.9%.

Twenty eight out of the 68 blind subjects were blind from cataract, thus cataract accounted for 41.2% of all blindness in people of 50 years and above. The prevalence of cataract blindness in the persons 50 years and older studied was 4.1% (95% CI 2.96% to 5.24%) (Table 2). Other causes of blindness identified include uncorrected aphakia (23.5%), glaucoma and posterior segment disorders. The prevalence of cataract blindness was higher in females (5.0%) than in males (3.6%).

Ninety two persons (13.4%) were found to be

unilaterally blind (with visual acuity in the worse eye of less than 3/60). Out of these, 32 were due to cataract, thus accounting for 34.7% of all unilateral blindness. Another major cause of unilateral blindness in this age group was disorganized/phthysical globe.

Twenty eyes of 20 subjects had undergone cataract surgery. 16 eyes (80%) of those were done by couching, 4 eyes had intracapsular cataract extraction, only one of those subjects had spectacle correction but in that subject, corrected visual acuity was less than 3/60. The Cataract Surgical Coverage (CSC) eyes for visual acuity less than  $3/60$  was therefore 4.5%, and the CSC for couching was 18.2%.

Out of the 28 cataract blinds, 20(71%) were not aware of the availability of cataract surgical services in nearby districts. 5 subjects knew cataract to be the cause of blindness but expected the cost of hospital services to be out of their reach. 2 others who were females realized they needed to seek help but could not because of their family situation since there was no one to look after their families in their absence. Thus the major barriers to uptake of available services was lack of knowledge about the services (71%) cost (17.9%) and domestic responsibilities (7.1%) and poor outcome (4%).

Table 1: Age and sex of the study population

Age (years)	F (%)	M (%)	Total (%)
50 – 59	132 (45.2)	156(54.4)	288(42.1)
60 – 69	60 (38.5)	96 (61.5)	156 (22.8)
≥70	48 (20.0)	192 (80.0)	240 (35.1)
Total	240 (35.1)	444 (64.9)	684 (100)

Table 2: Age and sex of patients with cataract blindness

Age (years)	F		M		Total	
	n	No. blind	n	No. blind	n	No. blind
50 – 59	132	0 (0)	156	0 (0)	288	0 (0)
60 – 69	60	4 (6.7)	96	0 (0)	156	4 (2.6)
≥70	48	8 (16.7)	192	16 (8.3)	240	24 (1.0)
Total	240	12 (5.0)	444	16 (3.6)	684	28 (4.1)

## Discussions

This was the first eye survey to be conducted among the Ughelli clan of Delta State, Nigeria. The inhabitants were very co-operative and hospitable. One of the communities visited requested that a similar test be conducted for the youths. The overall coverage of 91% attests to this. Although the coverage was high, the expected 90 persons per cluster was not achieved as some subjects were absent and revisits were not done because of cost constraints.

The Rapid Assessment of Cataract Surgical Services (RACSS) survey has been scientifically designed and tested in several states and districts in India for its methodology and validity.<sup>4</sup> The RACSS was designed for easy assessment of cataract blindness by health workers, who on identifying such cases refer them to the examination centre for confirmation of diagnosis.

In this study all eligible subjects had a complete visual acuity testing using the Snellen's chart as opposed to the RACSS vision testing which starts the visual acuity testing at 6/18. This modification was included, as these people have never had their eyes tested before. This created a lot of awareness and demand and need for eye care service as most of the

referred subjects later presented at the eye clinic of the central hospital.

The RACSS was applied to Ughelli clan of Delta State, a homogenous group of people, as an initial step to conducting the same study among the less homogenous groups of people in Ughelli local government areas. The findings here only apply to the group examined.

The prevalence of bilateral blindness (9.9%) in those 50 years and above among the Ughelli clan was much higher than the estimate for the region.<sup>1,2,10</sup> The prevalence of cataract blindness in those 50 years and above among the Ughelli clan in Ughelli North local government area was 4.1% accounting for 41.2% of all blindness. Cataract blindness was two times higher than estimated for Ughelli area and is much higher than the 2.4% reported by Ezepeue in adjacent Enugu State but compares with the reported prevalence of 4.93% in the Karnataka State of India.<sup>11</sup>

Enugu is more urban than Ughelli and has more eye-care facilities, although it is a neighbouring state, its eye care services were remote to the people of Ughelli, and this may account for the differences observed between the two neighbouring districts and states. Variations of results within states may also reflect large variations in demographical and

socioeconomic conditions even among neighbouring states or districts. This justifies the use of RACSS as a rapid assessment tool with moderate cost to provide information needed to plan at district level. State or National figures may not be valid for individual districts.

Unlike other settings in developing countries men outnumbered women, this unusual age-sex reversal could not be adequately explained but this reversal was found in Ethiopia.<sup>11</sup> Despite this reversal of ratio between men and women, the rate of cataract blindness in women were more presumably because of the lower chances of intervention. These women specifically need eye care services directed to them.

As in most developing countries, persons who are 70 years and above are increasing as people are living longer; the high rate of cataract blindness in subjects 70 years of age found in this study suggests that efforts are needed to promote blindness prevention and treatment as a programme for the most elderly.

Of the subjects who were aphakic identified in this study, only 4 subjects had intracapsular cataract extraction. The other 3 persons had no aphakic correction. The subject who had aphakic correction had a corrected visual acuity less than 3/60 depicting a poor visual outcome. The subject had optic atrophy from onchocerciasis.

Couching was the main form of cataract intervention available in the area. These "couchers" reside amongst the people and therefore their services are readily available. Correction of the ensuing refractive error is not priority for these couchers hence the high prevalence of uncorrected aphakia. The prevalence of uncorrected aphakia is also high in patients who had intracapsular cataract extraction (ICCE). The difficulties in adjusting to aphakic glasses, the loss of the spectacles prevent them from using such spectacles. The occupation of most of these people farming is also a hindrance to the wearing of aphakic spectacles.

It is possible that the subject with poor visual outcome became an aphakic demotivator. Proper screening of patients for cataract surgery could eliminate problems of aphakic demotivators.

The Cataract Surgical Coverage (CSC) though an indicator to measure the impact of cataract intervention programmes, also shows clearly the extent to which the problem of cataract blindness has been reduced. This study found a Cataract Surgical Coverage (CSC) (eyes) in this urban/rural community to be only 4.5% while CSC (eyes) for couching was 18.2%. This figure is lower than 16% reported for a rural community in Northern Nigeria.<sup>12</sup> Low CSC is expected in a grossly underserved area. The poor level of awareness of eye care in the neighbouring community, the presence of aphakic demotivator found in areas such as this community and even where there are eye services are frequent findings in developing countries.<sup>3-8</sup> In contrast, the CSC calculated from a population based surveys of 19 rural districts found a range of 42% - 68% for persons and 22%-45% for eyes.<sup>9</sup>

Over 70% of the cataract blinds in this survey were not aware of available services located in neighbouring States. High cost of surgery was the expectation of subjects. This could have resulted from the high cost the subjects pay for other health services. Commitments of women to their families were other barriers to uptake of surgery identified in this study. Presence of aphakic demotivators may explain the high prevalence of cataract blindness in the persons studied. These are similar to barriers found in some African developing countries where there is maldistribution of services and lack of expertise, and lack of organized eye care.<sup>11</sup>

In this study, 28 bilateral and 32 unilateral cataract blinds were identified. A total of 60 (8.8%) persons needed cataract surgery. With approximately 20,000 persons expected to be 50 years and above, it is estimated that 1,760 persons require immediate surgery. The cataract surgical service, to be planned has to deliver cataract surgery through a primary health/eye care approach, thus making the service acceptable, accessible, affordable and using scientifically sound methods. It would also involve the community at all levels and other intersectoral inputs essential for the successful outcome of such a programme.

When no information is available on the distribution of the different causes of blindness in the general population, it is difficult to have an effective, preventive and curative eye care programme.

This survey has assessed the magnitude of cataract blindness in people who were 50 years and above among the Ughelli clan an urban/rural community in the Ughelli North local government area of Delta State, concludes that the prevalence of cataract blindness was much higher than a neighbouring district, was more in older age groups and in females. There may be a large variation of blindness rates in different parts of Nigeria. National survey will have to take this unto consideration. The major barriers against the utilization of eye care facilities is a challenge and needs to be tackled so as to reduce the burden of blindness in this underserved community.

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