WORLD VIEW

Cataract surgical coverage and barriers to uptake of cataract surgery in leprosy villages of north eastern Nigeria

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Aims: To determine the coverage, outcome, and barriers to uptake of cataract surgery in leprosy villages of north eastern Nigeria.

Methods: People 30 years and above resident in eight leprosy villages were examined. Cataract blind people were questioned about the reasons they had not been treated. Subjects who had received an operation for cataract were examined to determine the outcome and, where applicable, the causes of poor outcome.

Results: 480 people were examined. Cataract was the commonest cause of blindness. The cataract surgical coverage (people) was 39.2% for orthodox surgery and 29.7% for couching. After surgery, visual acuity ⩾3/60 had been restored to 82.1% of eyes that had had orthodox surgery, but only 58.6% of eyes that had been couched. Cost was the commonest reason given for not seeking treatment for cataract.

Conclusions: Cataract is the major cause of blindness in this population but cataract surgical needs are currently not being met. There is a need for better collaboration between leprosy control and ophthalmic services, improved education of people affected by leprosy, a commitment to improving orthodox cataract surgery outcomes, and consideration of a possible role for traditional healers as sources of referral for orthodox surgical services.

People affected by leprosy (PALs) have a risk of developing cataract of up to three times that of people without leprosy.[1–3] An estimated 200 000–300 000 PALs are blind,[4] and cataract may be responsible for up to half of this blindness.[3]

We have recently reported the results of a 2003 survey of prevalence and causes of blindness and low vision in leprosy villages of north eastern Nigeria.[5] In 480 individuals examined, the prevalence of blindness was 10.4%; 46% of this was the result of cataract. This paper reports the cataract surgical coverage, the outcome of cataract surgery, and the barriers to uptake of cataract surgery in the same population.

PATIENTS AND METHODS

Eight of the 13 leprosy villages of north eastern Nigeria were visited. All residents of these villages aged 30 years or older were asked to participate, provided they were on, or had completed, multidrug therapy or dapsone monotherapy for leprosy. Verbal consent was obtained. Ethical approval was granted by the research ethics committees of the Jos University Teaching Hospital and the London School of Hygiene and Tropical Medicine.

Demographic data and cataract surgical history were obtained using a standard form. Visual acuity (VA) was assessed for each eye with available correction (or +10 lenses for aphakic patients without aphakic spectacles) using a Snellen ''E'' chart. VA for the better eye was used as the VA for the person. All subjects were then examined (undilated) by an ophthalmologist (CM) using a pen torch and direct ophthalmoscope. In those who had undergone an operation for cataract, the type of procedure performed was established using history and physical signs. Individuals found to be cataract blind in one or both eyes were asked (by CM, using open questions) to indicate the reason(s) they had not sought treatment, in order to determine barrier(s) preventing uptake of surgery. Multiple answers were permitted.

Blindness was defined as VA<3/60; severe visual impairment as 3/60 ⩽ VA<6/60; and visual impairment as 6/60 ⩽ VA<6/18. Normal vision was defined as VA⩾6/18. Cataract blindness was defined as blindness adjudged to be caused by unoperated lens opacity. Orthodox cataract extraction was defined as surgical removal of the lens by a trained health worker, while couching was defined as deliberate displacement of the lens into the vitreous and away from the visual axis by a sharp instrument inserted into the eye with therapeutic intent.

Statistical analysis

Cataract surgical coverage (CSC) for eyes was calculated as follows:

$$\text{CSC (eyes, orthodox surgery)} = a\times 100/(a+b+c);$$
$$\text{CSC (eyes, couching)} = c\times 100/(a+b+c)$$

where a is the number of (pseudo)aphakic eyes, b is the number of cataract blind eyes, and c is the number of couched eyes.

CSC for people was calculated as follows:

$$\text{CSC (people, orthodox surgery)} = (x+y)\times 100/(x+y+z+p+q);$$
$$\text{CSC (people, couching)} = (p+q)\times 100/(x+y+z+p+q)$$

where x is the number of people with unilateral (pseudo)-aphakia; y is the number of people with bilateral (pseudo)-aphakia; z is the number of people with bilateral cataract blindness, p is the number of people with one couched eye, and q is the number of people with two couched eyes. No study subject had been couched in one eye and received orthodox cataract surgery in the other.

Data were entered and analysed in Epi-Info version 6.04d.[6] The 95% confidence intervals for proportions were determined according to the normal approximation method. Odds

Abbreviations: CSC, cataract surgical coverage; PALs, people affected by leprosy; VA, visual acuity

Table 1 Cataract surgical coverage (letters in parentheses refer to the notation used to define the CSC formulas given in the methods section)

	Needing surgery		Operated		CSC	
Type of surgery	Eyes	People	Eyes	People	Eyes	People
Orthodox	84 (b)	23 (z)	39 (a)	29 (x+y)	25.7%	39.2%
Couching	84 (b)	23 (z)	29 (c)	22 (p+q)	19.1%	29.7%
Any	84 (b)	23 (z)	68 (a+c)	51 (x+y+p+q)	44.7%	68.9%

Table 2 Visual outcomes of orthodox cataract surgery and couching

	Visual acuity of operated eye* (number of eyes (%))				
Type of surgery	Normal (VA≥6/18)	Visual impairment (6/18>VA≥6/60)	Severe visual impairment (6/60>VA≥3/60)	Blind (VA<3/60)	Total
Orthodox	19 (48.7)	10 (25.7)	3 (7.7)	7 (17.9)	39
Couching	9 (31.0)	6 (20.7)	2 (6.9)	12 (41.4)	29
Any	28 (41.2)	16 (23.5)	5 (7.4)	19 (27.9)	68

*Using available correction, or +10 lenses for aphakic patients without aphakic spectacles.

ratios (ORs) and their 95% confidence intervals were calculated according to the logit method for adjusted ORs, using confidence interval analysis software.[7]

RESULTS

In all, 480 people (269 males, 211 females; age range 30–96 years; median age 50 for females and 53 for males) were examined.[5] Twenty three people (4.8%; 95% CI: 3.2% to 7.1%)—10 males, 13 females—had bilateral cataract blindness. Another 38 people (7.9%; 95% CI: 5.8% to 10.7%)—27 males, 11 females—had one cataract blind eye.

Cataract surgical coverage

The total number of people who might have had surgery for cataract blind eyes (x+y+z+p+q) was 74. Of these, 29 (11 females, 18 males) had undergone orthodox cataract extraction, giving a CSC (orthodox) of 39.2% (table 1) (30.6% for females, 47.4% for males). Ten people had had bilateral orthodox surgery. Only three (7.7%) of 39 eyes subjected to orthodox cataract surgery had an intraocular lens implant. Twenty two subjects (12 females, 10 males) had undergone couching, giving a CSC (couching) of 29.7%. Seven subjects had been couched in both eyes.

Cataract surgery outcome

Seven (17.9%) of 39 eyes that had had orthodox surgery were blind (table 2). However, visual outcomes after couching were even worse (OR for blindness compared to orthodox surgery = 3.2; 95% CI 1.1 to 9.7). Of three eyes with intraocular lenses, one was blind from corneal decompensation; the other two had normal vision. Only 15 (23%) of 65 couched or aphakic eyes were aided by aphakic spectacles. After correction of the refractive error caused by aphakia, corneal opacity was the commonest condition associated with blindness following either orthodox surgery or couching (table 3).

Barriers to cataract surgery

Among 61 subjects (37 males, 24 females) with unoperated cataract blind eyes, the commonest reported barriers were the cost of treatment, followed by the perceived unavailability of a service (table 4). Two individuals had been told their cataracts were not sufficiently mature for surgery, one had been scheduled for surgery but not received it because he had had a leg ulcer on the designated day, and another did not trust the service because of a previous poor outcome. Most subjects with unilateral cataract did not feel the need for surgery.

DISCUSSION

Of 480 people over 30 years of age living in leprosy villages in north eastern Nigeria, 12.7% were blind in one or both eyes from unoperated cataract. Several reasons for this high prevalence can be suggested. Firstly, our population was relatively old, and age is a major cataract risk factor.[8] Secondly, as noted already, leprosy confers an additional risk of cataract. Thirdly, too few cataract surgeries are done; possible reasons for this will be considered below.

Cataract surgical coverage is low in many African populations. A CSC (people, orthodox surgery) of 4% was reported for a non-leprosy rural population in northern Nigeria.[9] The higher orthodox surgery CSC noted in the current study may be related to support, by Netherlands Leprosy Relief, of a per patient subsidy to eye care facilities that treat PALs. This

Table 3 Conditions associated with blindness after orthodox surgery or couching

	Type of surgery (number of eyes (%))	
Condition	Orthodox	Couching
Corneal opacity	4 (57.1)	5 (41.6)
Uveitis	2 (28.6)	2 (16.7)
Vitritis	0 (0)	1 (8.3)
Optic atrophy	1 (14.3)	2 (16.7)
Displaced lens in visual axis	0 (0)	2 (16.7)
Total number of blind eyes	7 (100)	12 (100)

Table 4 Barriers to cataract surgery reported by 61 subjects with one or two unoperated cataract blind eyes (multiple responses per subject permitted)

	Number (%) of subjects identifying this factor as a barrier		
Factor	**Males**	**Females**	**Both sexes**
Cost	21 (57)	17 (71)	38 (62)
Service unavailable	16 (43)	10 (42)	26 (43)
Need not felt	11 (30)	8 (33)	19 (31)
Unaware of treatment	4 (11)	6 (25)	10 (16)
Fear	6 (16)	3 (13)	9 (15)
Previously told cataract ''immature''	2 (5)	0 (0)	2 (3)
Lack of trust in surgical service	1 (3)	0 (0)	1 (2)
Distance to surgical service	0 (0)	1 (4)	1 (2)
Leg ulcer at time booked	1 (3)	0 (0)	1 (2)

allows cataract surgery to be provided free to such patients. However, the couching coverage (people) in our population was 29.7%; in people without leprosy in northern Nigeria, couching coverage has been estimated at 18%.[9] Free to recipient surgery is clearly not enough, even when competing against traditional healers who charge patients for couching services. Other factors leading to low surgical uptake must therefore be considered.

Surgical outcome

Over 25% of orthodox operated eyes and nearly 50% of couched eyes that we examined were blind or severely visually impaired. The most common cause of this (excluding inadequate refraction) was the presence of corneal opacity. Because of the study's cross sectional design, it is not possible to determine how much of this should be attributed to complications of the respective procedures. Research into the reasons for the high rate of poor outcomes after orthodox surgery is required.

Few of our aphakic subjects had spectacles; those who did not were either not given them at the time of surgery, or had lost or broken them. To circumvent the problem of replacing spectacles, and since many patients do not return for follow up, there is a need to provide good quality intraocular lens surgery. Doing so would also provide ophthalmic services with a further significant edge over couchers, who do not provide their clients with refractive correction. The results of intraocular lens surgery in leprosy patients have been encouraging.[10 11]

Barriers to surgery

Since orthodox surgery is provided free to PALs in this area, it was surprising that cost was the most important barrier. Lack of knowledge about (a) the fact that cataract is treatable and (b) where treatment might be obtained were also important barriers. Greater education of PALs by leprosy field workers could help tackle each of these problems. Women with unoperated cataract were less likely than men to know that the condition was treatable. This may be related to the traditional Muslim system, known as ''purdah'' of keeping women secluded, which is practised in this area.

CONCLUSIONS

Access to a free and effective cataract surgical service is vital for PALs. In north eastern Nigeria, several improvements to existing services are suggested. Firstly, leprosy control and blindness prevention programmes need to ensure that this group is adequately informed about the availability of free cataract surgery. Secondly, the proportion of patients achieving good visual outcome from surgery must be improved. To do this, and to facilitate use of intraocular lenses, retraining of existing surgeons may be required. Better outcomes may help to drive up demand.[2 12] Thirdly, efforts to engage couchers as case identifiers or even surgical assistants could be considered: despite charging fees and delivering poor outcomes, they already have the trust of many in the community.[13 14]

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