

Visual Outcomes of Cataract Surgery in a Rural Population of South India: Results from a Population-Based Survey

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Abstract

We aimed to assess the outcomes of cataract surgery in a rural population of south India. A house-to-house survey was carried out in 15 villages. Out of the 156 eyes operated on for cataract, the outcome was good, borderline and poor in 49.3%, 35.2% and 14.1% of the eyes respectively. There is a need to focus on the quality of cataract surgical services rather than just the number of cataract surgeries to reduce the burden of cataract blindness.

Introduction

The data generated by two nationwide surveys have shown that the single largest cause for blindness in India is cataract related (Mohan 1987, 1992). Recent surveys carried out in India and elsewhere have demonstrated that cataract blindness continues to be the leading cause of blindness in developing countries (Murthy et al. 2001; Dandona et al. 2001; Limburg and Kumar 1998; Thulasiraj et al. 2002; Pokharel et al. 1998; Zhao et al. 1998; Li et al. 1999).

The National Program for Control of Blindness (NPCB) has focused on increasing the number of cataract surgeries performed to reduce the “backlog” of cataract blindness with an emphasis on the quality of surgical services as well. In 1994, the World Bank Assisted Cataract Blindness Control Project was launched by the Government of India (Jose and Bachani 1995). The performance of such cataract intervention programmes is assessed by the total number of cataract surgeries performed each year. These statistics have a limited value, because it is not only the number of surgeries performed that is of significance, but also the number of individuals benefiting and the extent of that benefit (Foster 1992). The indicator commonly used to measure the qualitative output is the success rate (i.e., the percentage of eye operations that result in restoration of sight in one year) (Limburg et al. 1996). An examination of visual acuity with available correction in cataract-operated eyes during population-based surveys can assess the long-term visual outcomes of cataract surgery.

Recent reports from well-designed population-based surveys in Nepal (Pokharel et al. 1999), China (Zhao et al. 1998; He et al. 1999) and a few population-based surveys from India have underscored the need for improving visual outcomes among the cataract-operated patients (Dandona et al. 1999; Murthy et al. 2001; Thulasiraj et al. 2002). A population-based survey was conducted in a rural population of Karkala taluk (taluk is an administrative unit), Karnataka state, south India, to estimate the prevalence and causes of blindness among people aged 50 years and above. The rural Karkala taluk has a land area of 1,091 square kilometres, and its population is 1,080,453, living in 50 villages. Most of these villages are located at the foothills of Western Ghats. The striking feature of this area is a high level of socio-economic development, which is reflected by high literacy rate of 81.4%, birth rate of 16.9 per 1,000 population and a favourable sex ratio of 1,155 females per 1,000 males. The infant mortality rate was 28 per 1,000 live births according to the 2001 census, but the same for India was 60 per 1,000 live births (Registrar General and Census Commissioner 2002). Prevalence and causes of blindness are reported elsewhere (Chandrashekhara et al. in press). In the present article, we are reporting the visual outcomes of the cataract-operated patients.

Materials and Methods

Sample Size Estimation

A previous study conducted by DANPCB (Danish Assisted National Program for Control of Blindness 1995) estimated that the prevalence of all blindness (Visual Acuity $<6/60$) among persons aged 50 years and above in Dakshina Kannada district (the district was divided into Udupi and Mangalore districts in the year 2000) was 9.19%. The required sample size was calculated for 95% confidence limits, allowable error of 20% and a design effect of 1.5 for cluster sampling. The sample size thus obtained was 1,439. We assumed a non-response rate of 5% and a final sample size of 1,505 was chosen.

Sampling Method

A cluster sampling method was followed. Each village was considered as a cluster. For logistical reasons, it was arbitrarily decided that 15 clusters would be selected from the list of 50 villages in rural Karkala taluk. The cumulative population was calculated for each village in the list. The sampling interval was calculated by dividing the total population of the taluk by the number of villages to be selected (i.e., 15). A random number was chosen between one and the sampling interval using a random number table. The random number thus chosen had the same number of digits as the sampling interval. The first cluster selected from the list was the village whose cumulative population was equal to or more than the initial random number. The initial random number was added to the sampling interval. The number obtained selected the second cluster as explained above. The number that selected the second cluster was added to the sampling interval. The number thus obtained selected the third cluster and so on. One hundred eligible subjects were to be randomly selected from each cluster (Anker 1991).

Field Procedure

Data collection was done between January and October 2002. The investigators obtained permission from the Panchayat Office (a local governing body) to conduct the survey. On reaching the centre of the village, a random direction (east, west, south or north) was chosen to conduct the survey. All the consecutive houses in the chosen direction were visited until the required cluster size of 100 people was reached. If there were not 100 eligible people, the investigator returned to the centre of the village and moved in another randomly chosen direction until a total of 100 eligible people were examined. If 100 people were not covered in the same village, the investigator moved on to the adjacent village to cover the remaining number of subjects required.

On reaching the house, the nature and purpose of the study was explained to the head of the family. The investigator explained the details of the procedures to be carried out on each eligible person and sought verbal consent to perform visual acuity and eye examination.

Testing of Visual Acuity

Visual acuity was tested using a modified Snellen's chart in a shaded area near the subject's house. All persons who were currently using corrective glasses had their visual acuity tested with the glasses. The respondents were shown two E cards; one having the optotype corresponding to 6/18 on the standard Snellen's chart, and the other having the optotype corresponding to 6/60 on the standard Snellen's chart. The respondents were instructed about indicating the direction of E. To facilitate the subject's understanding, E was compared to a table with three legs, and the subject had to indicate the direction in which the legs were pointing.

Examination of Eyes

The eyes were examined inside the subject's house by oblique focal illumination using a penlight. The condition of the lens and the pathology in the anterior chamber were recorded. All individuals with visual acuity less than 6/60 in one or both eyes were referred to Dr. T.M.A. Pai, at the Rotary Hospital (a constituent hospital of Kasturba Medical College, Manipal) in Karkala town. An ophthalmologist evaluated them to ascertain the cause of blindness. Pupillary dilatation for fundal examination was done in all individuals who were referred for ascertaining the cause of blindness. Cause of blindness was ascertained based on the findings of fundal examination. The blind individuals who did not come for the follow-up appointment were visited in their houses along with an ophthalmologist to evaluate the cause of blindness.

Data Collection

Information on demographic profile, socio-economic status, visual acuity and examination of eyes was collected on a specially designed proforma. Patients who had undergone cataract surgery in the past in either one or both eyes were interviewed. The details of duration since surgery, place of surgery, type of surgery were recorded. The place of surgery was classified as private hospital, voluntary/charitable hospital, eye camp or government hospital. The type of surgery was decided on the basis of eye examination and the status of lens as aphakia or pseudophakia. Presence of aphakia was considered as conventional intracapsular cataract extraction (ICCE) and pseudophakia as extracapsular extraction (ECCE) with intraocular lens implantation. Based on the visual acuity, the outcome of cataract surgery was classified as follows (Limburg et al. 1999).

1. good outcome (visual acuity \geq 6/18)
2. borderline outcome (visual acuity 6/18–6/60)
3. poor outcome (visual acuity $>$ 6/60)

If an operated eye did not present with visual acuity of 6/60 or better, the patient was referred for evaluation of the cause of the poor outcome, and the procedures followed were as explained earlier.

Data Analysis

Data were entered in the SPSS- version 7.5 (Statistical Package for Social Sciences) for Windows and analyzed. Outcomes of cataract surgery were expressed as proportions according to type of surgery and the principal cause of the poor outcome. Chi square test was used to test the statistical significance in the difference in outcomes according to type of surgery. First operated eyes were defined as either those patients who had received unocular surgery or the first eye to be operated on among those who had cataract surgery in both eyes. Univariate and multivariate logistic regression analysis was done for the good outcomes in first operated eyes with socio-demographic factors, type of surgery, place of surgery and duration since surgery. Odds ratios and 95% confidence intervals were calculated. P value less than 0.05 was considered as significant.

Results

There was a cross-sectional sample of 109 cataract patients who were operated on either one or both eyes, of whom 65 were females and 44 males. There were 156 cataract-operated eyes out of which 64 (41%) were operated by conventional intracapsular cataract extraction and 92 (59%) eyes by extracapsular extraction with intraocular lens implantation. Sixty out of 109 cataract-operated patients (55%) were in the age group ≥ 70 years. Fifty-nine patients were operated on one eye and 47 on both eyes. Both eyes had pseudophakia in 18 patients and 21 patients had aphakia in both eyes. Eight patients had aphakia in one eye and pseudophakia in the other eye (data not shown). The lens could not be examined in one eye of each of three cataract-operated patients due to disorders of the globe or cornea (central corneal opacity, phthisis bulbi and disorganized globe). However, these patients gave details of the cataract surgery they had undergone in the past. Visual acuity could not be tested in two cataract-operated patients due to non-comprehension of the instructions. The majority (79.6%) (51 out of 64) aphakic eyes had aphakic correction. Since eight patients had aphakia in one eye and pseudophakia in the other eye, they were not using aphakic spectacles. The remaining five eyes had either broken spectacles, lost their spectacles or were not wearing spectacles (data not shown).

Table. 1 Visual outcome of cataract-operated eyes

| Category | Aphakia (%) | Pseudophakia (%) | Total (%) |
|-------------|-------------|------------------|------------|
| Good | 19 (29.6%) | 58 (63.04%) | 77 (49.3%) |
| Borderline | 25 (39.1%) | 30 (32.6%) | 55 (35.2%) |
| Poor | 18 (28.1%) | 4 (4.3%) | 22 (14.15) |
| VA not done | 2 (3.1%) | - | 2 (1.2%) |
| Total | 64 (100%) | 92 (100%) | 156 (100%) |

Chi square = 24.19, p < 0.001

Of all the operated eyes, the outcome was good in 49.3%, borderline in 35.2% and poor in 14.1%. On further analysis done separately for aphakia and pseudophakia, the outcome was good in 63% of pseudophakic eyes compared to 29.6% in aphakic eyes, whereas the outcome was poor in only 4.3% of the pseudophakic eyes compared to 28.1% of the aphakic eyes (Table 1). Refractive errors or uncorrected aphakia accounted for one-third (7 out of 22) of all causes of poor outcomes. The category of surgical complications was the cause in four eyes, and the remaining 11 eyes had co-

existing eye diseases. The co-existing eye diseases were age-related macular degeneration, glaucoma, diabetic retinopathy and optic atrophy. Posterior capsule opacification was present in one pseudophakic eye (Table 2). There were 105 first operated eyes. The first operated eyes included eyes of those patients who received unioocular surgery and also the first eye to be operated on among those who received cataract surgery in both eyes. By univariate analysis, type of surgery and duration since surgery were associated with good outcome in the first operated eyes, whereas on multivariate regression analysis, only type of surgery was associated with the outcome of cataract surgery (Table 3).

Table 2. Principal cause of poor outcome in cataract-operated eyes

| Cause | Aphakia | Pseudophakia | Total (%) |
|--------------------------------------|---------|--------------|-----------|
| Refractive error/uncorrected aphakia | 6 | 1 | 7 (31.8%) |
| Surgical complications | 3 | 1 | 4 (18.2%) |
| Age-related macular degeneration | 2 | - | 2 (9.1%) |
| Glaucoma | 1 | 1 | 2 (9.1%) |
| Diabetic retinopathy | 2 | | 2 (9.1%) |
| Posterior capsule opacification | - | 1 | 1 (4.5%) |
| Optic atrophy | 1 | - | 1 (4.5%) |
| Phthisical/disorganized globe | 1 | - | 1 (4.5%) |
| Central corneal opacity | 1 | - | 1 (4.5%) |
| Other | 1 | - | 1 (4.5%) |
| Total | 18 | 4 | 22 (100%) |

Discussion

In 1976, India was one of the first countries to embark on a National Program for Control of Blindness (NPCB). Under the NPCB cataract surgical services are provided through outreach camps provided by non-governmental organizations (NGOs) and district mobile units (DMUs) from the government sector. Blindness control programs are implemented at the district level by the District Blindness Control Society (DBCS). The DBCS coordinates the blindness control activities with the NGOs and eye hospitals. The voluntary/charity eye hospitals provide cataract surgical services by outreach screening camps. The patients are escorted to the hospital and cataract surgery is performed free of cost. A few NGOs are also providing intraocular lenses free of cost or at subsidized rates. Traditionally, cataract intervention programs have been evaluated by the number of cataract operations performed each year. In India, this has increased from 1.2 million operations in 1989 to 2.7 million in 1996. At present, the number of cataract operations has reached about four million.

The importance of reducing the cataract blindness has increased in India since the World Bank Assisted Cataract Blindness Control Project was started in 1994. We took this opportunity to assess the performance of the cataract surgical services and analyzed the data on visual outcomes of the cataract operations from a population-based survey on prevalence of blindness among older adults. Overall, the visual outcome was below the acceptable levels, but outcomes were better in pseudophakic eyes than in aphakic eyes. Though a majority of the patients with aphakia were using spectacles, the outcomes were good in only a small proportion of patients.

Table 3. Multivariate analysis for good outcome in the first operated eyes with socio-demographic factors, type of surgery, duration since surgery and place of surgery

| Category | No of eyes | Crude OR (95% CI) | Adjusted OR (95% CI) |
|---------------------------------|------------|----------------------|-------------------------|
| Age | | | |
| 50–59 | 17 | 1 | 1 |
| 60–69 | 30 | 1.24 (0.43–3.57) | 0.96 (0.28–3.30) |
| 70–79 | 34 | 0.27 (0.07–1.01) | 0.25 (0.06–1.06) |
| ≥80 | 24 | 0.38 (0.13–1.06) | 0.65 (0.20–2.13) |
| Gender | | | |
| Female | 63 | 1 | 1 |
| Male | 42 | 1.0 (0.45–2.20) | 1.44 (0.50–4.17) |
| Literacy | | | |
| Literate | 44 | 1 | 1 |
| Illiterate | 61 | 0.53 (0.24–1.19) | 0.58 (0.17–1.94) |
| Socio-economic status † | | | |
| Middle | 47 | 1 | 1 |
| Lower | 58 | 0.83 (0.38–1.82) | 1.56 (0.52–4.69) |
| Type of surgery | | | |
| ICCE (Aphakia) | 40 | 1 | 1 |
| ECCE (Pseudophakia) | 65 | 3.75 (1.63–8.59) | 3.35 (1.01–11.14) |
| Duration since operation | | | |
| ≤1 year | 20 | 1 | 1 |
| 1–5 years | 42 | 3.05 (1.26–7.42) | 2.29 (0.71–7.32) |
| ≥5 years | 43 | 0.66 (0.20–2.20) | 0.60 (0.15–2.31) |
| Place of operation | | | |
| Private hospital | 55 | 1 | 1 |
| Voluntary/charity hospital | 34 | 0.84 (0.35–2.00) | 0.74 (0.25–2.22) |
| Government hospital | 5 | 1.52 (0.38–5.95) | 0.29 (0.05–1.70) |
| Eye camp | 11 | 0.84 (0.12–5.71) | 0.31 (0.03–3.07) |

† Socio-economic status was assessed by modified IDRC scale (International Development and Research Center)

Good outcomes of the cataract surgery in 49.3% of the eyes in the present study is comparable to the results of the earlier studies in other parts of India: Andhra Pradesh, rural Punjab and an urban district of Gujarat (Dandona et al. 1999; Anand et al. 2000; Limburg et al. 1999). But a study from a rural district of Rajasthan reported that a lesser proportion (31.5%) of eyes had presented a visual

acuity of $\geq 6/18$, and the same visual acuity was found in 64.2% of eyes in Sivaganga of Tamilnadu and 63.9% of eyes in Thirunelveli district (Murthy et al. 2001; Thulasiraj et al. 2002; Nirmalan et al. 2002). Reports from two population-based surveys of Doumen County and Shunyi County in China have shown a lesser proportion of operated eyes with a visual acuity of $\geq 6/18$ than the present study. In Doumen county 26.4% of 152 operated eyes and in Shunyi county 25% of 116 operated eyes presented a visual acuity of $\geq 6/18$ (Zhao et al. 1998; He et al. 1999). Results of the present study are comparable to those reported from neighbouring countries Nepal and Bangladesh. In Nepal, 42.6% of 216 cataract-operated eyes presented a visual acuity of $\geq 6/18$, and in Bangladesh, the corresponding rate was 47.3% (Pokharel et al. 1999; Bourne et al. 2003). But such results should be interpreted with caution, because a small proportion of eyes had pseudophakia in the sample of operated eyes in Nepal, Rajasthan and Bangladesh (Pokharel et al. 1999; Murthy et al. 2001; Bourne et al. 2003).

Approximately 30% of aphakic eyes in the present study presented a visual acuity of $< 6/60$. Similar results were reported from an urban sample from the Andhra Pradesh survey, Bharathpur and Sivaganga (Dandona et al. 1999; Murthy et al. 2001; Thulasiraj et al. 2002). But in these studies, the principal cause of poor visual outcome was lack of refractive correction. Patients who were not using aphakic spectacles responded that the spectacles were broken, lost or not provided at all. However, we could not investigate the reasons for not using spectacles or replacing lost/broken spectacles. In the present study, only 4.3% of the pseudophakic eyes had vision $< 6/60$. This is comparable to the earlier studies where a small percentage of pseudophakic eyes presented with vision $< 6/60$: 5.6% in Andhra Pradesh, 4.2% in Sivaganga and 5.1% in Tirunelveli (Dandona et al. 1999; Thulasiraj et al. 2002; Nirmalan et al. 2002). It is important to note that in the present study, as well as the studies cited above, the outcomes were better for pseudophakic eyes compared to aphakic eyes.

In the present study, uncorrected aphakia/refractive error accounted for 31% of poor outcomes. Population-based studies from other parts of India reported that uncorrected aphakia/refractive error was the cause of poor outcomes in a higher proportion of the operated eyes (Dandona et al. 1999; Murthy et al. 2001; Thulasiraj et al. 2002; Nirmalan et al. 2002). But in these studies, a higher proportion of operated eyes were aphakic. In India, there is a trend towards increasing the proportion of ECCE with IOL implantation, which is known to have a better outcome. Therefore, it can be expected that there could be a decrease in occurrence of poor outcomes in cataract-operated eyes.

The principal cause of poor outcomes in the present study was co-existing eye diseases at the time of surgery (i.e., age-related macular degeneration, diabetic retinopathy and optic atrophy). Such co-existing diseases could have been present before surgery or developed after cataract surgery. Such a distinction was not possible in our study. Poor outcomes due to co-existing diseases is often a consequence of poor patient selection. In India, blindness due to non-cataract causes is overlooked, and often patients remain blind even after surgery (Dandona et al. 1998). Moreover, surgeons often operate even in the presence of other pathology to improve the vision to some extent. Vision deteriorates with the progression of co-existing pathology after the cataract surgery. Such strategy may make cataract surgery less popular among the cataract patients. Hence, more meticulous screening camps are required to select cataract patients for whom surgery is more likely to improve vision.

Another important cause of poor outcomes was posterior capsule opacification (PCO) for which treatment with laser capsulotomy is readily available. There was only one patient operated on by ECCE with IOL where PCO was the cause for a poor outcome. As the number of ECCE with IOL is increasing in India, PCO might become an important cause of poor outcomes in the future. Another cause for poor outcomes was surgical complications (18.2%), which could probably be due to the surgeries conducted in the eye camps or even for those conducted in the base camp hospitals where the facilities were inadequate. However, we could not assess such details in our study.

On univariate analysis, good outcomes in the first operated eyes were significantly associated with type of surgery and duration since the surgery was performed. To control the effect of potential confounding factors, a multivariate regression analysis was done and only type of surgery had association with the outcome (OR 3.35, 95% CI: 1.01-11.14). There was a significant drop off in

the probability of a good outcome in the eyes operated on more than five years prior to the survey. This could be due to the disadvantage of these subjects having been operated on more than five years ago and who might have subsequently developed other blinding pathoses. These conditions could be primarily age-related ocular pathoses such as age-related macular degeneration or related comorbid conditions such as diabetic/hypertensive retinopathy. The association between type of surgery and outcome cannot be explained because a higher proportion (79.6%) of aphakic eyes had aphakic correction. There could be other factors such as place of operation, pre-existing blinding ocular pathoses, skill of the surgeon, regularity of follow-up, etc., which possibly influenced the outcome of surgery. The present analysis was done on data from a cross-sectional survey where the groups were not matched; the differences in the subgroups could be influenced by unidentified confounding factors. Moreover, the sample of cataract-operated eyes was small as evidenced by wider confidence intervals. Hence, the results should be interpreted with caution.

To improve the outcomes of cataract surgery, it is necessary to gradually adopt IOL surgeries for all cataract patients, unless it is clinically inappropriate. But there are some issues regarding adoption of IOL surgeries that need to be addressed in India and other developing countries. These issues are the creation of permanent infrastructure (i.e., slit lamp, operating microscope and reasonable operating room environment consistent with principles of sterility), training of adequate number of ophthalmic surgeons in IOL surgery and cost of IOL. At present the IOL are provided through the NPCB at subsidized rates. But the cost may also be a deterrent to adoption of IOL surgeries. But the scenario is changing as more IOL surgeries are being conducted by providing IOL free or at a highly subsidized rate.

The proportion of operated eyes with a poor outcome (post-operative visual acuity of $<6/60$ with available correction) is proposed as the initial indicator for monitoring visual outcome of the cataract surgical intervention (Limburg et al. 1996). But well-designed population-based studies can yield such data. Outcomes of cataract surgery can be measured as the visual acuity in the operated eye/patient or in terms of ability to function, quality of life and economic rehabilitation. But the last three parameters can only be assessed by time-consuming studies (Limburg et al. 1996). Studies that have made such assessment have been reported from Nepal and China (Pokharel et al. 1999; Zhao et al. 1998; He et al. 1999). Such an attempt could not be made in the present study, and such studies are necessary in India as well.

The results of this study indicate that co-existing eye diseases and uncorrected aphakia/refractive errors are the main causes of poor outcomes. This study also indicates that outcomes might improve with an increase in the number of surgeries by ECCE with IOL implantation. Since surgical complications were also an important cause of poor outcomes, issues such as adequate permanent infrastructure and training an adequate number of surgeons need to be addressed in India as well as in other parts of the developing world.

Conclusions

Visual outcomes are still poor in a large proportion of cataract-operated eyes. Co-existing eye diseases and uncorrected aphakia/refractive errors were the main causes of poor outcomes. This reiterates the need for proper case selection, adequate refractive correction, quality of the cataract surgery and regular follow-up instead of high volume cataract surgery to clear the "backlog" of cataract-related blindness.

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Annexure-1

PROFORMA SERIAL NO _____

Identification and related details

- 1) Village _____
- 2) Date of examination _____
- 3) Name _____
- 4) Age (years) _____
- 5) Sex: Male Female
- 6) Address _____ Phone no _____
- 7) Marital status: (a) Married (b) Widowed (c) Separated (d) Divorced (e) Single
- 8) Religion: (a) Hindu (b) Muslim (c) Christian (d) Others
- 9) Occupation:

| | |
|--|----|
| • Manager/ administrator/ professional | 20 |
| • Semi-professional/office workers | 16 |
| • Retired | 14 |
| • Skilled worker | 12 |
| • Housewife | 10 |
| • Semi-skilled | 08 |
| • Farmers | 06 |
| • Petty business | 04 |
| • Unskilled/service worker | 02 |
| • Unemployed | 00 |
- 10) Literacy:

| | |
|----------------------------------|----|
| • More than graduation | 20 |
| • 11th standard to graduation | 15 |
| • 5 to 10 years of schooling | 10 |
| • Can read write or upto 4th std | 05 |
| • Illiterate | 00 |
- 11) Family member working abroad:

| | | |
|-----|--|---|
| yes | | 2 |
| No | | 0 |
- 12) Live stock:

| | | |
|------------------|--|---|
| Nil | | 0 |
| goat/cow/buffalo | | 1 |

| | | |
|--------------------------------------|-----------------------------|-------|
| 13) Type of houses: | Kuccha | 0 |
| | Mixed | 1 |
| | Pukka | 2 |
| 14) Ownership: | own | 2 |
| | rented | 1 |
| | free | 0 |
| 15) Land holding: | Nil | 0 |
| | up to 1 acre | 1 |
| | 1-5 acres | 2 |
| | more than 5 acres | 3 |
| 16) Getting newspaper/daily: | Nil | 0 |
| | daily/weekly | 1 |
| 17) Possession of vehicles: | Nil | 0 |
| | bicycle | 1 |
| | two-wheeler | 2 |
| | three-wheeler | 3 |
| | four-wheeler other than car | 4 |
| | car | 5 |
| 18) Household belongings: | Nil | 0 |
| | radio | 1 |
| | telephone | 2 |
| | television | 3 |
| | fridge/VCR | 4 |
| Assessment of socio-economic status: | upper | ≥40 |
| | middle | 21-39 |
| | lower | <20 |

Annexure-4

Details of cataract surgery

1) Years since operation

| Years since operation | Right Eye | Left Eye |
|-----------------------|-----------|----------|
| > 5 years | | |
| 1—5 years | | |
| <1 years | | |

2) Place of operation

| Place | Right Eye | Left Eye |
|----------------------------|-----------|----------|
| Eyecamp | | |
| Government hospital | | |
| Voluntary/charity hospital | | |
| Private hospital | | |

3) Provision of service

| Provision of service | Right Eye | Left Eye |
|----------------------|-----------|----------|
| Totally free | | |
| Partially free | | |
| Paid | | |

4) Provision of spectacles

- 1) Provided and in use
- 2) Provided and broken
- 3) Purchased and in use
- 4) Never provided or purchased