

Barriers to up take cataract Surgery in Gandaki Zone, Nepal

Sapkota YD¹, Pokharel GP¹, Dulal S¹, Byanju RN¹, Maharjan IM¹

¹Gandaki Western Regional Hospital, Pokhara, Nepal

Abstract

Objective: Cataract though avoidable remains as leading cause of blindness in Nepal. Though, Himalaya Eye Hospital rendering high quality surgical service through its base hospital and out reach service in Gandaki Zone having cataract surgical rate is below 1500 per million. Therefore, it is matter of interest to investigate the reason and the finding would be helpful to plan the future cataract programme to CSR to desirable level, if we know the reason(s) that forced them living as blind in community and not seeking available surgical services.

Method: All person with cataract affecting their visual acuity to <6/60 (corrected) in either eye found in stratified cluster design sampling were enrolled in the study. They were interviewed with structured questionnaire investigating their knowledge and attitude of their visual impairment and barriers for not seeking cataract surgical service to date.

Results: A total of 303 eligible subjects were enrolled in the study. Out of them 57.8 % of people knew about the cataract and they also think their vision impairment is due to cataract. But 56.11 % of people were not aware their vision will improve. Surgical camp attendant or operated patients were found to be effective media to spread the message that the cataract is curable. Among the barriers: fear for surgery 31.1 %, lack of attendant and geographical distance 32.8 %, Financial 24.1 % and Other clinical reason were found to be 12 % as a reason for not seeking available surgical service.

Conclusion: The cataract service marketing, eye health education disseminating the information on cataract and its curability is not found to be adequate. Therefore, the future cataract programme should give more concentration on creating awareness on cataract and subsidizing the available surgical service and service need to be brought to more proximity for the needy poor people.

Key Words: cataract, barriers, Gandaki zone

Blindness is an increasing problem affecting almost 50 million people worldwide. The majority of them live in Asia and Africa (India 23.5 %, China 17.6 %, Sub-Saharan Africa 18.8 %) ¹. Almost 80 % chances of developing these kinds of blindness are either preventable or curable. This increase is due to increasing life expectancy of human population in the world and due to barriers preventing them seeking eye care service.

Cataract though avoidable remains as leading cause of blindness responsible for approximately 50% ² of worldwide blindness and is curable. There are 20 million cataract blind people estimated in the world and the numbers are increasing despite of 7 million cataract sight restoring surgery performed per year ³.

Various strategies have been initiated after launching of global initiative: Vision 2020: the right to sight. The number of cataract surgery needs to be increased from 7 million at present to

32 million per year by the year 2020 ³ to reach the goal of VISION 2020. The poor surgical outcome and high cost of surgery are recognized factors ⁴ for low up take of cataract surgery worldwide. This problem is further worsened by additional barriers to obtain the available cataract surgical services.

According to Nepal Blindness Survey cataract is responsible for almost 72% of over all causes of blindness ⁵. In last two decades there has been rapid development of eye care services in terms of human resources, physical infrastructures and cataract surgical outputs in the country. The cataract surgical rate has improved to 1500 ⁶ cataract surgeries per million population and annual output of cataract surgery has exceeded 120,000 in 2003.

Correspondence

Mr YD Sapkota MSc (CHHM), DCEH
Gandaki Western Regional Hospital
Pokhara, Nepal

The survey conducted in western and mid western part of the country in 1994 shows that the magnitude of problem is still challengingly high due to inadequate coverage and low quality of surgical outcome⁷.

The Gandaki survey conducted in 2002^{8,9} shows that surgical outcome has improved in recent years but the prevalence of blinding cataract and surgical coverage is not adequate in all sections of community.

Eye hospitals in Terai have high cataract surgical output. But, more than 80 % of the surgical beneficiaries are from India¹⁰. Himalaya Eye Hospital, Pokhara situated in mid hills of Western Nepal completed its ten years of operation in 2002. This eye hospital has extensive community eye care programme for more than 2 million population of Western Nepal. The Cataract Surgical Rate (CSR) for this hospital is still under 1500¹¹. The cataract surgical coverage among cataract blind is 59.5 %. Prevalence of blindness among age of 40 or over was found to be 2.6 % and cataract blindness burden was 4.1 %⁸. Despite availability of state of the art technology and service at Pokhara, why the uptake of service is low? Why the service is not accessible to all people needing cataract surgical service?

This is a fact that the magnitude of blindness problem is high and need of service is obvious. At the same time availability of service is becoming more and more proximal to community. But still many of Nepal eye care programmes especially in hilly area are facing low acceptance of cataract surgical service by the needy population. This is evident that there are barriers for the needy people to avail services which prevent them to undergo cataract surgery. The finding of this study will be able to guide the providers to take appropriate measures in appropriate directions and focus their eye care programme in the country.

A study conducted in mid Western Nepal¹² has found reasons for not accepting the available cataract surgical services. The reasons are economical in 48 % and logistical in 44.8 % followed by fear of surgery 33.3 % and lack of time 18.8 %.

Study conducted in rural India¹³ revealed reason for low uptake of surgery were fear of surgery (principally of eye damage), cost (direct and

indirect) and family responsibility, ageism, fatalism and attitude of being able to cope with low vision were found as prominent barriers to obtain cataract surgical services.

Another hospital based study conducted in Dr Rajendra Prasad Centre for Ophthalmic Sciences in India to evaluate the health seeking behaviours of cataract blind¹⁴ revealed that reputation of facility, competence of staff, free service and easy accessibility were the factor affecting the utilization of service. Distance, cost, lack of professional trust, escort and empathy of staff were causes for low utilization of available cataract surgical service in the community.

A population base study conducted by Melese et al Orbis International Ethiopia¹⁵ also revealed the primary reason for failure to use available eye care services were indirect cost (40 %) associated with accessibility of service. The same study suggests significant difference higher service utilization rate for male and persons with binocular vision loss.

A population based study conducted in Korea¹⁶ among the leprosy resettlement found the barriers to acceptance of available surgical service were immaturity of cataract as informed to patients by doctor and patient's perception that no surgery is needed. This statement was further explained by the study conducted in Karnataka India¹⁷ which found changing trends in barriers to cataract surgery in India. They suggested that the trend is changing from earlier found barriers such as poverty, lack of transport felt need, sex related, rural access lack of awareness difficult access and cost etc to bad case selection and poor service provision.

However another population based cross sectional survey conducted in rural community of Nigeria, Africa¹⁸ revealed that the main barriers to seeking cataract surgery were cost of service (61%) and non availability of information and place of treatment even they could afford it (10%). Virtually people with unilateral cataract reported that they see with one eye will not seek cataract surgery service.

A cross sectional survey for willingness to pay for cataract surgery¹⁹ among the cataract blind, conducted in the vicinity of Kathmandu valley revealed 48.5% of people were willing to pay less than \$13 and 51.5% were willing to pay

more than \$13. Patients with bilateral cataract were more willing to pay than unilateral cases. Poverty (44.4%) was the main barrier for unwillingness to pay for cataract surgery. Other reasons were lack of family support (28.9%), lack of knowledge of surgery and belief that it was an unnecessary procedure (15.6%), and waiting for availability of free surgical service (11.1%).

Methods and methodology

The protocol and sampling procedure is similar to the studies previously conducted in Nepal, China and India^{20,21,22,23}

The study is conducted in Syangja, Kaski, and Tanahu districts of Gandaki Zone of Nepal which represents the characteristics of population in Gandaki zone. This area consists of valleys, hills and mountains. Eighty percent of the service recipients of the Himalaya Eye Hospital are from these districts. These districts are partitioned into Village Development Committee (VDCs) and each Village Development Committee is divided into nine wards. The demographic data (2001 Census) of these three districts were used to design the sampling frame. Desirable sampling clusters size was approximately 200 (125 to 250) persons \geq 45 years. Sampling clusters were created by grouping wards with the less than 850 populations and subdividing wards with more than 1,700 populations into segments. A table of 806 clusters with population of 1007070 was listed as sampling frame. Simple random sampling was used to choose twenty-five study clusters.

Sample size calculation

Of the objectives outlined, the one considered for the sample size calculation is the estimation of prevalence of cataract blindness (VA $<$ 6/60) in persons of age 45 years and over is 8% (p=0.08). The simple random sampling calculated the size of 1963. Thus number is adjusted upward by factor of 2.0 considering cluster sampling design effect and 15 % for possible non-response rate. Finally the sample size reaches 4619 persons age 45 or over to be studied. Therefore 25 Cluster of 200 people 45 or over of age were enrolled in the study.

Field Procedure

Necessary clearance from National Committee for Prevention of Blindness in Nepal and the consent of community leaders such as VDC secretary, former VDC chairman and ward chief of the

participant villages were obtained. A social mapping and central location as eye examination site were confirmed before actual enumeration.

The teams were divided into enumeration team and eye examination team. The eye examination team consists of one ophthalmologist, two Ophthalmic Assistant one interviewer. Two Enumeration teams were consisting of one supervisor (Mapper) and two enumerators in each.

Enumerators visited all households in selected clusters and listed the study subject (people age 45 and over). They were given with referral slips and asked to come to centrally located clinical examination site arranged earlier. The household form with detail identification information was filled and kept inside household folder. At the end cluster, summary detail was filled and kept as leading sheet of household folder.

All enumerated persons \geq 45 years were tested for VA by the ophthalmic assistant and examined by ophthalmologist. EDTRS self-illuminating visual acuity chart were used to record the vision. Any person failed to read more than two letters in specified line considered as unable to read that line.

Refraction (Retinoscopy and Subjective) were performed in all person presenting VA $<$ 6/18, Aphakic and Pseudophakic. Basic eye examination eyelid, globe, pupillary reflex were performed by ophthalmologist using torch, 2 X binocular loupe and KOWA handheld slit lamp. Optic disc and retinal evaluation were performed by using direct Ophthalmoscope in each subject. All persons not improving vision $>$ 6/18 with refraction except the corneal cause, were dilated and under gone detailed evaluation of posterior segment. Intra Ocular pressure was measured using Perkins handheld Tonometer by ophthalmologist.

The patients were received in examination site by the same enumerator who has visited the house. The referral slip presented by people was registered and verified with household form. At the end of the day list of people enumerated but not presented in the examination were prepared and revisited the same day or the following day. All the forms were checked and crosschecked by the other enumerators, and the ophthalmologists to ensure that it was complete.

Staff Training

All enumerators were experienced in similar study conducted earlier in Nepal. However, they underwent for 3 days training on orientation on forms and purpose, ethical aspects, people's right and social aspects of the study in Pokhara.

Ophthalmologists and Ophthalmic Assistants underwent in form filling procedure in more than 100 hospital patients of Himalaya Eye Hospital Pokhara, prior to study. The study protocol manual was provided to all study members as reference and discussed practical aspect of the procedures prior to study.

Pilot study

After completion of training pre-pilot and pilot study were conducted in two clusters in Kaski District. These clusters were not among those selected for the survey. Both enumeration teams worked together in pre-pilot cluster and separately in pilot clusters. The field procedure forms filling were tested in 192 enumerated people in 162 households in pre-pilot and 208 enumerated in 231 households in pilot cluster.

Two ophthalmic assistants were compared in 100 cases each other for visual acuity test in hospital and these pilot clusters. Fifty percent of them had presenting vision $<6/18$. There was good agreement between two observers. This procedure was carried out in six randomly selected clusters to ensure that any drift between two OA would not go unrecognized. The data was analyzed using unweighted Kappa statistic. Inter observer agreement for presenting visual acuity was 98.4 % (unweighted Kappa 0.92) and 91.18 (unweighted Kappa 0.89) for best corrected visual acuity.

Data Management

All completed data form was reviewed at the end of each cluster. The errors were corrected as much as possible. Final cluster summary was prepared and sent to Pokhara for computer data entry. The data entry was carried out in Fox pro software. Consistency check was done at the end of each cluster data entered and at the end.

Statistical analysis

Five vision categories were defined for analysis and reporting purposes in this study

- Normal Vision: Visual acuity (VA) 6/9 or better in both eye
- Visual impairment: Visual acuity $<6/9$ but better than 6/60 in worse eye, equal or better than 6/60 in better eye

- Unilateral Blind: VA $<6/60$ in the worse eye, equal or better than 6/60 in better eye (4) Economic Blind: VA $<6/60$ in worst eye, $<6/60$ to equal or better than 3/60 in better eye (5) Social Blind: VA $<3/60$ in both eyes. Because these categories do not correspond precisely with those defined in the World Health Organization's international classification of diseases, different category terminology was used to avoid confusion.. Estimates (with 95 % confidence intervals) of impairment and blindness prevalence were calculated along with that attributed specifically to cataract.

The study subjects were selected after examination by ophthalmologist. Those whose best corrected visual acuity is $<6/60$ in either eye due to cataract and were fit for surgery were enrolled in the study. The selected subjects were interviewed by structured questionnaires for barriers to using eye care services.

Result:

A total of persons with cataract $<6/60$ in either eye were enrolled in the study. Among them 34 (11.2 %) did not complain of their impaired vision, 140 (46.2 %) of them informed that vision has affected a little in their daily work, 129 (42.6 %) complained about significant problem due to low vision.

Six persons (2%) noticed their visual loss at the time of examination, 7 (2.3%) reported duration of their visual symptoms since <1 month, 31(10.2%) had the symptom for more than 1 month but less than 6 months. Similarly 31 (10.2 %) had symptoms for more than six month but less than 1 yr and 225 (74.3 %) were having visual symptom for more than 1 year. Three people did not remember the duration of their vision loss.

When asked about knowledge on cause of vision loss, 175 (57.8 %) knew that the cataract was the cause of their vision loss, 41 (13.5 %) had heard about cataract but they think their loss of vision is not due to cataract and 87 (28.7 %) did not know about cataract and cause of their vision loss.

The subjects were asked whether they knew their vision could be improved by treatment. 133 (43.89) answered that their vision can be improved and 170 (56.8%) were not aware that their vision can be improved.

As shown in Table 5 People who knew that their vision can be improved 87 (65.4%) said they received the information just now, 1(0.8 %) received information since less than one month, 3 (2.3 %) more than one month but less than 6 month, 13 9.8 % received information since more than 6 month but less than one year and 24 (18.8 %) received the information since more than 1 year ago. 4 (3 %) person cannot remember when they received the information.

Eye Camp was most prominent media spreading the source of information regarding the curability of cataract. A total of 84 (63.16 %) out of 1333 had received the information from eye camp. Only 2 (1.5%) of them answered that they received the information from hospital, 4 (3.01 %) received information from private practitioner, 5 (3.76 %) received information from other operated patients and 38 (28.57%) received information from other source (family member and other people).

Table 7a evidenced that the main barrier for not seeking cataract surgical service were lack of awareness and cost of surgery. 75 (31.1%) were not seeking treatment is due to fear for surgery, 53 (22%) answered due to no escort, 26 (10.8

complain about geographical distance to the service and 58 (24.1%) shows the financial reason for not seeking service. Twenty nine people (12 %) show the clinical reason inability to walk or due to other physical problem seeking the eye care service.

A total of 100 people complained about behavioural reason for not seeking eye care service of which 31 % had no support from family and 69 % because of old age and no need of better vision.

A total of 59 (19.47 %) people had complete knowledge of where to go for service and that their vision will improve after treatment.

A total of 206 people participated in attitude questionnaire interview. While testing their attitude towards eye care service and their visual problem, 41 (19.9%) said they had no time to avail services, 19 (9.2%) had no faith in treatment, 72 (35 %) felt that it is not necessary, 12 (5.8%) did not think that their vision could improve, 20 (9.7 %) still able to see adequately (Table 7d). Among these peoples 30 (14.6%) had already got operated in one eye and felt it was not necessary to have binocular vision. Whereas 3 (1.5 %) had known about bad outcome of surgery in their neighbourhood and thus did not want treatment and various other reasons were sighted by 9 (4.4%).

Table 1

Vision problem	No	%
Not at all	34	11.2
A little	140	46.2
Quite a bit	83	27.4
A lot	46	15.2
Total	303	100.0

Table 2

Duration of visual symptom		
Now	6	2.0
< 1month	7	2.3
1 - 6 months	31	10.2
7 -12 months	31	10.2
> 1 yr	225	74.3
Ca not remember	3	1.0
Total	303	100.0

Table 3

Do you know the cause of low vision		
Yes, Cataract	175	57.8
Yes, Other	41	13.5
Do not know	87	28.7
Total	303	100.0

Table 4

Do you know your vision can be improve		
Do not know	170	56.11
Yes, I know	133	43.89
Total	303	100.00

Table 5

When did you receive this information		
Now	87	65.4
< 1month	1	0.8
1 - 6 months	3	2.3
7 - 12 months	13	9.8
> 1 yr	25	18.8
Cannot remember	4	3.0
Total	133	100.0

Table 6

Source of information		
Eye camp	84	63.16
Hospital	2	1.50
Pvt. Practitioner	4	3.01
Operated pts.	5	3.76
Other source	38	28.57
Total	133	100.00

Table 7a

Reason for not seeking Treatment		
Fear	75	31.1
No attendance	53	22.0
Too far	26	10.8
Clinical reason	29	12.0
Money	58	24.1
Total	241	100.0

Table 7b

Family Opposition	31	31
Aging process	69	69
Total	100	100

Table 7c

Knowledge		
Where to go	48	81.4
Treatment will improve	11	18.6
Total	59	100.0

Table 7d

No time	41	19.9
No faith for treatment	19	9.2
Do not think necessary	72	35.0
Do not think will improve vision	12	5.8
Able to see adequately	20	9.7
One eye operated felt not necessary	30	14.6
Known bad outcome	3	1.5
Others	9	4.4
Total	206	100.0

Discussion

There are many studies which have been conducted reporting barriers towards uptake of cataract surgical services in Asia and Africa. The prominent barriers are usually financial, geographical distance and ignorance. This study finding suggests almost 72 % of cataract blind people had heard about the diseases and 57.8 % of total cataract blind knew that their vision loss is due to cataract and 43.89 % knew that the treatment could improve their vision. But 65.4 % of people knew about such information only during present examination. Because, after cataract was identified he was advised to under go cataract surgery by the examining ophthalmologist before interview take the place. This shows that majority of cataract blind either did not know about the presence of cataract or it is curable before the eyes were examined by the study doctor.

People attending the eye camp have been effective media to spread the information about the curability of cataract. Because 63.16 % out of 133 receive information that cataract is curable from the people visiting the surgical eye camps. Fear of surgery in old age is a principal barrier (31.1%) of surgery and other major barrier found was financial, non availability of escort and geographical distance to the service providers. The geographical distance is also indirectly related to finance and escort. This finding suggests that though there were expansion of the services in last two decades in Nepal but due to topography of the country, services are not close enough or not accessible to them. As suggested by Kathmandu study¹⁹ the willingness to pay is directly related to poverty and 60 % of population in the country lived under poverty line. Average per capita of the country (USD320) per year is not enough to spend on this painless problem of cataract blindness. The changing trends of barriers found in Korean study¹⁶ and study of South India¹⁷ are very much related to economic status, paying capacity and increased economic growth of population in recent years. Poor surgical outcome is not significant factor for not seeking cataract surgical service.

Conclusion: The service provision need to be in more proximity to the population and cataract awareness campaign should be introduced in all out reach programmes. Cost of surgery still needs to be subsidized to overcome these barriers

for cataract surgery uptake especially in the rural areas of the country.

References

1. Thylefors et al "Global data on blindness" WHO Bulletin 1995,73 (11) Page 115 – 121
2. WHO Fact Sheet No 213 Revised February 2000, Blindness Vision 2020 – The Global Initiative for the Elimination of Avoidable Blindness
3. WHO Fact sheet No 214 Blindness: Vision 2020-control of major blinding disease and disorder
4. Jenifer Arnold, Editorial Global cataract blindness: The unmet challenge Br J Ophthalmol 1998;82:593/594
5. Brilliant G et al The Epidemiology of Blindness in Nepal : Report of the 1981 Nepal Blindness Survey
6. Annual Report Nepal Netra Jyoti Sangh, National Society for Comprehensive Eye Care in Nepal (unpublished)
7. Pokharel et al Prevalence of Blindness and cataract surgery in Bheri and Lumbini Zone Nepal, BJO....
8. Sapkota YD ,Dulal S, Prevalence of Blindness and Cataract Surgery in Gandaki Zone Nepal
9. Sapkota YD, Dulal S, Visual outcome among the cataract operated patient in Gandaki Zone Nepal
10. Annual Report, Sagarmatha Chaudhari Eye Hospital, Lahan Eastern ,Nepal
11. Annual Report Himalaya Eye Hospital Pokhara (unpublished)
12. T Snellingen et al, Socioeconomic barrier to cataract surgery in Nepal: the South Asian cataract management study, Br J Ophthalmol 1998;82:1424 – 1428 (December)
13. Fletcher AE et al, Low uptake of eye services in rural India: a challenge for programme for blindness prevention, Arch Ophthalmol 1999 oct;117 (10):1393-9
14. Gupta SK, Murthy GV, Where do persons with blindness caused by cataracts in rural area of India seek treatment and why? Arch Ophthalmol 1995 oct;113 (10):1337 - 40
15. Melese M et al, Indirect costs associated with accessing eye care services as barriers to service use in Ethiopia, Trop Med Int Health 2004 Mar;9(3):426 - 31

16. Courtwright P et al Cataract in leprosy patients: cataract surgical coverage, barriers acceptance of surgery, and outcome of surgery in population based survey in Korea, Br J Ophthalmol, 2001 Jun ; 85(6): 635-7
17. Vaidyanathan K et al, Changing trends in barriers to cataract surgery in India, Bulletin World Health Organization 1999;77(2):104 – 9
18. Mansur M Rabi Cataract blindness and barriers to uptake of cataract surgery in a rural community of northern Nigeria, Br J Ophthalmol 2001;85:776-780 (July)
19. MK Shrestha et al Willingness to pay for cataract surgery in Kathmandu valley, Br J ophthalmol 2004;88:319 – 320
20. Jialiang Jhao et al; Prevalence of blindness and cataract surgery in Shunyi county, China, American Journal of Ophthalmology Volume 126 Issue 4, 1998 506 - 514
21. Nirmalan P et al; A population based eye survey of older adults in Tirunelveli district of south India: blindness, cataract surgery and visual outcomes, British Journal of Ophthalmology 2002;86:505 – 512
22. RD Thulasiraj et al The Sivaganga Eye Survey: I Blindness and cataract surgery, Ophthalmic Epidemiology 2002 Vol 9 No 5, P 299 -312
23. RD Thulasiraj et al The Sivaganga Eye Survey: II Outcome of Cataract surgery Ophthalmic Epidemiology 2002 Vol 9 No 5 P 313 - 324