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Low Uptake of Eye Services in Rural India

A Challenge for Programs of Blindness Prevention

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Objectives: To investigate service uptake in a rural Indian population served by outreach eye camps and to identify barriers to uptake.

Participants and Methods: A routine eye camp was conducted within 5 km of each of 48 randomly selected villages of typically Hindu, backward-caste communities. Subsequently, participatory rural appraisal—community mapping, focus groups, matrix ranking, and semistructured interviews—was undertaken to explore community views of eye problems. An eye examination was conducted on persons with eye problems who did not attend the eye camp. Predictors of attendance were identified by multilevel regression analysis.

Results: Of 749 adults with an eye problem, 51 (6.8%) attended the eye camp. Independent predictors of attendance were being male (odds ratio = 2.3; 95% confidence interval, 1.2-4.5) and living within 3 km of the camp (odds ratio = 4.5; 95% confidence interval, 1.7-12.5). Of the 552 persons who did not attend the eye camps and had an eye examination, 242 (43.8%) had low vision (visual acuity <6/18 to ≥3/60 in presenting better eye) and 38 (6.9%) were blind in both eyes. Cataract surgery was recommended for 197 (35.8%) of the persons who did not attend the eye camps. Of 109 persons with a previous cataract operation, 42 (38.5%) had low vision and 11 (10.1%) were blind. Fear (principally of eye damage), cost (direct and indirect), family responsibilities, ageism, fatalism, and an attitude of being able to cope (with low or no vision) were the principal barriers to attending the eye camps.

Conclusions: A high proportion of people who could have benefited from eye treatment were not using available services. Poor visual outcomes were observed in surgically treated persons.

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THE PROBLEM of the low uptake of eye services in developing countries has taken a lower priority to more pressing needs for resource provision. Some evidence exists[1-5] that, even when eye services are available, they are underused by potential beneficiaries. If programs for blindness prevention, mainly targeted at cataract treatment, are to be effective, the reasons for low use need to be identified and appropriate strategies implemented. We investigated the uptake of adult eye services in an area of high service provision and explored the attitudes, beliefs, and behaviors of the local population toward eye problems and their treatment to identify the determinants of, and barriers to, the uptake of eye services.

RESULTS

Seven hundred forty-nine adults (representing 13% of all households and 4% of all adults) were identified by their community as having an eye problem. The reported prevalence of eye problems increased with age and was higher for women than men, except for people aged 60 years and older (161 men [17.8%] and 167 women [17.8%]), in whom the prevalence was comparable. Only 51 (6.8%) of these 749 people had attended the eye camp. Of those who attended the camp, 13 accepted treatment, 12 did not accept treatment, and 26 had trivial eye problems for which no significant treatment was recommended. About half of the 698 persons with eye problems who did not attend the eye camp had substantial visual loss (**Table 1**). Of these, 280 persons (50.7%) had low vision (VA <6/18 in the presenting better eye), including 38 (6.9%) who were functionally blind (VA <3/60 in the presenting better eye). Ninety-two people had been previously operated on for cataract. Using the classification of bilateral vision of Pokharel et al[9] and excluding persons who had previous

STUDY DESIGN AND METHODS

Forty-eight small villages (70-150 households per village) in the rural outreach area of Aravind Eye Hospital (AEH), in Madurai Tamil Nadu, southern India, were randomly sampled from local government census data. The village size was chosen to optimize the participatory rural appraisal methods used in the fieldwork (see the subsection "Fieldwork Methods").[6] Ten sampled villages were replaced because of incorrect data on village size (9 villages) or involvement in the pilot study (1 village). Based on previous AEH surveys, we estimated that 48 villages would yield 400 people with significant eye disease adequate to investigate predictors of attendance with an odds ratio of 2 or more at 90% power and an α of .05. Routine outreach eye camps, each serving an average population of 27 000 people, were conducted by AEH within 5 km of study villages. Eye camp staff were masked to the identity of study villages to avoid changes in staff behavior and service delivery. To protect the identity of study villages, the research officer (M.D.) gave camp organizers a list of towns or villages from which to choose the camp site. Villages located near each other were served by the same eye camp. To minimize any camp effect, no more than 2 study villages were served by 1 eye camp. A member of AEH monitored the type (posters, leaflets, or loudspeaker announcements) and amount (number of leaflets printed and number of days of publicity) of precamp publicity. Eye camp registers were examined to identify persons from study villages who attended the eye camps. The study was approved by the state government of Tamil Nadu, and the ethics committee of the London School of Hygiene and Tropical Medicine, London, England.

FIELDWORK METHODS

Fieldwork took place 2 to 4 weeks after the eye camp, and was conducted by a local nongovernmental organization (the Society for Peoples' Education and Economic Change) with expertise in participatory rural appraisal methods. Field-workers stayed between 8 and 12 days in each village, carrying out a range of participatory rural appraisal activities. A community mapping activity was used to collect sociodemographic and economic data on all village households and to identify adults with a current eye problem. Heads of households, or their spouses, were randomly selected to participate in focus groups using the household cards from the community mapping exercise. Groups were conducted separately for men and women and by caste because these factors were deemed important influences on group dynamics. Matrix ranking was used in focus group discussions to elicit the types of eye problems, their causes, impacts on daily life, sources of treatment, and possible barriers to cataract treatment. Barriers to cataract treatment were particularly explored because cataract is the major cause of preventable adult blindness in India. Semistructured interviews were conducted with adults with eye problems identified by the community map, and with their key informants, usually the household's principal decision maker. For both focus groups and

Table 1. Presenting Visual Acuity in the Better Eye of Community-Identified and Self-referred Persons, by Cataract Operative Status*

	Community-Identified Persons			Self-referred Persons		
Visual Acuity	No Cataract Surgery (n = 460)	Previous Cataract Surgery (n = 92)	Total (N = 552)†	No Cataract Surgery (n = 265)	Previous Cataract Surgery (n = 17)	Total (N = 282)‡
≥6/18	225 (48.9)	47 (51.1)	**272** (49.3)	195 (73.5)	9 (52.9)	**204** (72.3)
<6/18 to ≥6/60	175 (38.0)	31 (33.7)	**206** (37.3)	51 (19.2)	6 (35.3)	**57** (20.2)
<6/60 to ≥3/60	31 (6.7)	5 (5.4)	**36** (6.5)	14 (5.3)	0	**14** (5.0)
<3/60	29 (6.3)	9 (9.8)	**38** (6.9)	5 (1.9)	2 (11.8)	**7** (2.5)

*Values are given as number (percentage).
†Of 698 persons who did not attend eye camp, 567 persons (81.2%) had an eye examination by an ophthalmic assistant; visual acuity data are missing for 15 of these people.
‡A total of 290 people self-referred; visual acuity data are missing for 8 of these people.

cataract surgery, 289 (62.8%) had some degree of vision impairment, including 54 with unilateral blindness (11.7%) and 29 with bilateral blindness (6.3%) (**Table 2**). Of those visually impaired and blind (excluding those with previous cataract surgery), about half were recommended cataract surgery, 17 (5.9%) were recommended some other type of eye surgery, and 96 (33.2%) were recommended glasses (**Table 3**).

A further 282 persons who had not been identified by the community as having an eye problem were seen by the ophthalmic assistant (self-referred) for an eye examination. These people tended to be younger, and more were literate. They had better sight than their community-identified counterparts and consequently had fewer treatment recommendations. Seventeen had previously been operated on for cataract. None had attended the study eye camps. Excluding previously surgically treated persons, 97 (36.6%) of 265 persons who were self-referred had a bilateral vision classification of visual impairment or worse (Table 2), of whom 44 (45.4%) were recommended cataract surgery and 42 (43.3%) glasses (Table 3). Persons who self-referred with substantial eye problems (VA <6/60, or a treatment recommendation for cataract surgery) were invited to have a semistructured interview, although this was not part of the original study design. There were 109 people who had previously had an operation for cataract. Of these, 88 persons (80.7%) had some degree of vision impairment, including 44

semistructured interviews, a second field-worker, who did not participate in the discussion, made a written transcript. At the end of the fieldwork, an ophthalmic assistant from AEH visited each village to examine people with eye problems who had not attended the eye camp. Visual acuity (VA) was measured in each eye using a "tumbling E" chart developed in the Early Treatment Diabetic Retinopathy Study[7] and included presenting vision (with glasses, if worn) and pinhole correction if the VA was less than 6/18. Eye examinations were conducted using a flashlight and included an examination of the lids, conjunctivae, cornea, anterior chamber, iris, pupil, lens, and ocular movement. Dilation and fundus examination were not done. A referral for cataract surgery was made if a patient's corrected VA was less than 6/60 due to cataract.

DATA PROCESSING AND ANALYSIS

Data were translated into English by a team of translators and a random sample checked by an independent bilingual speaker. The creation of coding classifications and the coding of focus group and semistructured interviews were undertaken by 2 research assistants. Random checks were made on duplicate sets of coded interviews for quality control. Data were double entered. Predictors of eye camp attendance were examined by univariate analysis (χ^2 tests) and a stepwise multivariate logistic regression model, and adjustments were made for cluster sampling using multilevel modeling[8] with a commercially available statistical software package (MLN, Software for Multilevel-Level Analysis, version 1.0a; Institute of Education, University of London, London, England). The results from the semistructured interviews and focus groups were summarized descriptively according to the coding classifications. Before the main study, pilot studies were conducted to test the feasibility and acceptability of the protocol.

CHARACTERISTICS OF STUDY VILLAGES AND CAMPS

Of the 48 villages, 47 took part in the fieldwork, comprising 5484 households (22 046 people). Most households (94%) were Hindu, unskilled laborers (49%), and from the backward caste (caste terminology is standard as used by the Government of India Census Department for classification of caste groups) (69%). About a third of all households (31%) were from the scheduled castes, and the overall literacy rate was 54%. High participation rates were obtained in the 130 randomly sampled focus groups (96%), semistructured interviews (95%), key informant interviews (84%), and the ophthalmic assistant examinations (81%). Forty-one eye camps covered the 48 study villages. The average distance between study villages and the eye camps was 5.2 km. Fifty percent of study villages had a direct bus connection to the eye camp village, and the remaining 50% of villages were an average of 2.4 km from the nearest bus stop. Ten villages had no road connection. The level (amount and type) of eye camp publicity was subjectively assessed by the AEH fieldworker as good (23 villages [47.9%]), fair (19 villages [39.6%]), and poor (6 villages [12.5%]).

Table 2. Bilateral Vision of Persons Not Attending Eye Camp Identified by the Community Map and Self-referral*

Bilateral Vision	Community Map	Self-referral	Previous Cataract Surgery†	Total
Normal or near normal	171 (37.2)	168 (63.4)	21 (19.3)	**360**
Visual impairment	175 (38.0)	59 (22.3)	28 (25.6)	**262**
Unilateral blindness	54 (11.7)	19 (7.2)	44 (40.4)	**117**
Moderate blindness	31 (6.7)	14 (5.3)	5 (4.6)	**50**
Severe blindness	29 (6.3)	5 (1.9)	11 (10.1)	**45**
Total	**460**	**265**	**109**	**834‡**

**Values are given as number (percentage). Percentages may not total 100 due to rounding. Bilateral vision is classified as follows, visual acuity in better eye vs worse eye: normal or near normal, both eyes 6/18 or higher; visual impairment, 6/60 or higher vs less than 6/18 to 6/60 or higher; unilateral blindness, 6/60 or higher vs less than 6/60; moderate blindness, less than 6/60 to 3/60 or higher vs less than 6/60; and severe blindness, both eyes less than 3/60 (from Pokharel et al[9]).*

†Identified from the community map (n = 92) or self-referral (n = 17).

‡Of the 749 who were identified via the community map as having an eye problem, 552 had the eye examination. A further 282 who were not identified from communtiy mapping self-referred to the ophthalmic assistant.

persons (40.4%) with unilateral blindness and 11 persons (10.1%) with bilateral blindness (Table 2). Poor vision in the surgically treated eye was the reason for blindness in about a third of people. Most surgically treated-people had aphakia (n = 93), and 71 (76.3%) of these were wearing their glasses when examined. Double vision and not being able to see properly with their glasses were the main reasons given by those with aphakia who were not wearing their glasses. Of those people with aphakia, 19 persons were blind in their surgically treated eye (VA <3/60) 5 of whom were wearing glasses; a further 31 persons with aphakia had low vision in their surgically treated eye (<6/18 to ≥3/60), 24 of whom were wearing glasses.

PREDICTORS OF CAMP ATTENDANCE

In a univariate analysis, men and those of a scheduled caste, living in a village with direct bus service to the camp, living nearer to the eye camp, and being from a village with 1 or more people with poor surgically treated vision were more likely to attend the eye camp (**Table 4**). These factors were all selected by multivariate stepwise logistic regression as independent predictors of attendance. After adjustment for village clustering, only being male and distance remained significant predictors. Men were twice as likely as women to attend the camp

Table 3. Treatment Recommendations for Persons Identified by Community Mapping, Self-referral, and With Previous Cataract Surgery, by Bilateral Vision Category*

Principal Treatment Recommendations	Normal or Near Normal			Visual Impairment			Unilateral Blindness		
	CM (n = 171)	SR (n = 168)	OC (n = 21)	CM (n = 175)	SR (n = 59)	OC (n = 28)	CM (n = 54)	SR (n = 19)	OC (n = 44)
Cataract surgery	0	0	0	54 (30.9)	11 (18.6)	10 (35.7)	41 (75.9)	16 (84.2)	30 (68.2)
Other eye surgery	20 (11.7)	15 (8.9)	2 (9.5)	16 (9.1)	2 (3.4)	0	1 (1.8)	0	0
Further investigation	17 (10.0)	9 (5.4)	1 (4.8)	7 (4.0)	3 (5.1)	2 (7.1)	6 (11.1)	2 (10.5)	7 (15.9)
Refraction or glasses	89 (52.0)	74 (44.0)	10 (47.6)	91 (52.0)	40 (67.8)	14 (50.0)	5 (9.3)	1 (5.3)	6 (13.6)
Minor or no treatment†	45 (26.3)	70 (41.7)	8 (38.1)	7 (4.0)	3 (5.1)	2 (7.1)	1 (1.8)	0	1 (2.3)

*Values are given as number (percentage). Percentages may not total 100 due to rounding. CM indicates those nonoperated-on people identified via the community map; SR, nonoperated-on self-referrals; and OC, operated-on cases identified via the community map (n = 92) and self-referrals (n = 17).
†Minor treatment refers to eyedrops.

Table 4. Predictors of Eye Camp Attendance in 749 People Identified From Community Mapping*

Predictors	No. of Persons (%) (n = 749)	No. of Attenders (%) (n = 51)	P	Odds Ratio (95% CI) From Logistic Regression	P	Odds Ratio Adjusted for Clustering (95% CI)	P
Men	323 (43.1)	31 (9.6)	.008	2.51 (1.29-4.89)	.007	2.29 (1.18-4.46)	.01
Women	426 (56.9)	20 (4.7)					
Castes							
Scheduled	221 (29.5)	26 (11.8)	<.001	2.75 (1.42-5.31)	.003		. . .
All other	528 (70.5)	25 (4.7)					
Village with ≥1 person with poor postoperative vision							
Yes	479 (64.0)	41 (8.6)	.01	2.4 (1.11-5.17)	.02		. . .
No	270 (36.0)	10 (3.7)					
Bus							
Available	393 (52.5)	36 (9.2)	.007	2.34 (1.12-4.86)	.02		. . .
Not available	356 (47.5)	15 (4.2)					
Distance, km†							
≤3	239 (35.8)	29 (12.1)	<.001	4.35 (2.22-9.09)	<.001	4.54 (1.67-12.50)	<.00
>3	429 (64.2)	14 (3.3)					
Illiteracy rate							
100%	180 (24.0)	12 (6.7)	.93	. . .	. . .		. . .
<100%	569 (76.0)	39 (6.8)					
Publicity							
Good	432 (57.7)	33 (7.6)	.29	. . .	. . .		. . .
Fair or Poor	317 (42.3)	18 (5.7)					
Age,‡							
<60	463 (61.8)	32 (6.9)	.90	. . .	. . .		. . .
≥60	285 (38.1)	19 (6.7)					
Village contains ≥1 person with good postoperative vision							
Yes	288 (38.4)	20 (6.9)	.09	. . .	. . .		. . .
No	461 (61.5)	31 (6.7)					
Occupation							
Daily wage earner	359 (47.9)	26 (7.2)	.65	. . .	. . .		. . .
Other	390 (52.1)	25 (6.4)					

*CI indicates confidence interval; ellipses, logistic regression was only performed on variable with a P value <.05 on univariate analysis. χ^2 Test was used to calculate P values.
†Of the 749 people identified with eye problems, 81 came from villages where information on distance was not available. Thus, odds ratios for distance used 668 people.
‡Data are missing for 1 person.

(odds ratio, 2.3; 95% confidence interval, 1.2-4.5), and persons living 3 km or less from the eye camp were more likely to attend than those living farther away (odds ratio, 4.5; 95% confidence interval, 1.7-12.5). Age, literacy, publicity, the presence of people with good postoperative outcomes within a village, and economic status showed no association with attendance. In a second model that included data from the semistructured interviews, neither self-reported eye symptoms nor reported impacts on daily life showed any association with attendance. The association of sex and distance was the same as in the first model.

Moderate Blindness			Severe Blindness		
CM (n = 31)	SR (n = 14)	OC (n = 5)	CM (n = 29)	SR (n = 5)	OC (n = 11)
30 (96.8)	13 (92.9)	5 (10.0)	27 (93.1)	4 (80.0)	4 (36.4)
0	0	0	0	0	1 (9.1)
0	0	0	1 (3.4)	0	2 (18.2)
0	1 (7.1)	0	0	0	4 (36.4)
1 (3.2)	0	0	1 (3.4)	1 (20.0)	0

Table 5. Reasons for Nonuse of Eye Care Services*

Reasons	Persons With Eye Problems (n = 743)†	Key Informants (n = 565)‡
Fear		
Spoiling eyes	163 (21.9)	78 (13.8)
Miscellaneous	85 (11.4)	70 (12.4)
Can manage	207 (27.9)	126 (22.3)
Cannot leave family or work responsibilities	194 (26.1)	82 (14.5)
Treatment cost	180 (24.2)	97 (17.2)
Postoperative recommendations	128 (17.2)	48 (8.5)
"God's will"	103 (13.9)	80 (14.2)
Too old	95 (12.8)	63 (11.2)
No point, blind already	2 (0.3)	1 (0.2)
Miscellaneous reasons	118 (15.9)	133 (23.5)
Made no comment	47 (6.3)	69 (12.2)

**Values are given as number (percentage).*

†A total of 708 persons (95.3%) identified by community mapping were interviewed. Excluding the 44 people with eye problems who attended the eye camp and were interviewed, this table shows the reasons given for nonattendance for 664 persons identified by community mapping and 79 self-referrals (who fulfilled interview criteria).

‡A total of 659 key informants for community-identified persons were approached for interview (90 people had no key informant); 555 (84.2%) key informants for persons identified by community mapping were interviewed. Excluding the 44 key informants of people who attended the eye camp and were interviewed, this table shows the reasons given for nonattendance by 511 key informants of persons identified by community mapping and 54 self-referrals (74 of 79 key informants of self-referrals approached, and 5 self-referrals had no key informants).

BARRIERS TO USING EYE SERVICES

In interviews with persons who did not attend the eye camps, several important reasons for the poor use of services were identified (**Table 5**). Fear was the reason most commonly given (by about a third of persons). This fear ranged from a common belief that treatment would damage the eyes—described in destructive language such as "pluck," "peel," "spoil," or "tear" the eyes—to more diffuse anxieties, including a fear of death. A fear of surgery was a major barrier even among persons whose eye problem did not require surgery but whose perception of possible treatment recommendations included this. A poor treatment outcome in somebody known to the person was identified as the source of fear in a small proportion (5%) of persons not attending the eye camps. About a third of these persons reported that they did not seek treatment because they were able to manage. This included 17 (23.0%) people with a VA of less than 6/60 in the better eye, and a similar proportion of persons (n = 7, 18.4%) who were blind in both eyes. Treatment costs were identified as a barrier by about a quarter of persons not attending the eye camps. Other commonly reported barriers such as the time and difficulty involved in leaving day-to-day responsibilities (including income loss) may be viewed as indirect costs. In addition, about 1 in 5 people cited the limitation of daily activities as a result of postoperative recommendations (such as avoiding smoke from fires or not lifting heavy objects) as a reason for their reluctance to attend for treatment. Negative attitudes to treatment in old age included perceptions, both by elderly persons and by their families, that treatment in old age was not worthwhile because they were near the end of their lifespan (reported by 1 in 5 of nonattenders aged 60 years and older). Other negative views related to their poor vision being "God's will," an attitude reported by 103 persons not attending the eye camps (13.9%).

Ignorance about the availability of eye services was not an important barrier. Of the 743 persons who did not attend the eye camps and had a semistructured interview, 467 (62.9%) had previously sought treatment for their eye problem, principally from hospitals (312 [66.8%]). Reported compliance with treatment recommendations was variable, with high levels for medication use and less (50%) for surgery or glasses, but the eye examinations of these persons showed lower levels of compliance (18% for glasses and 35% for surgery). Interviews with key informants revealed similar views on barriers as those given by persons with eye problems, but key informants were less likely to put forward a view (Table 5) or to describe the effects of the eye problem on the person (data not shown). Particularly noticeable was the small proportion of key informants (3%) identifying a psychological effect compared with persons with eye problems (28%).

COMMUNITY VIEWS OF EYE PROBLEMS

Eye problems most frequently identified by focus groups were cataract, blurred vision, and watering eyes. Injury was perceived to be the major cause of cataract, as well as old age, fever with a rash, and poor nutrition. Old age and poor nutrition were considered to be the main causes of blurred vision, and smoke (eg, from cooking), body heat, and eye strain the causes of watering eyes. Psychological factors such as worrying, feeling sad, feeling a burden, or facing teasing were among the strongest perceived impacts of cataract. Other strong impacts were on work and social activity. Only a few focus groups thought that mobility and dependency were affected by cataract, and many groups did not even mention problems with visual discrimination. No strong effects were reported for blurred vision. On the whole, people believed that the consequences of blurred vision were either minor or no problem, or they were not commented on by the groups. Similarly, watering eyes was not viewed by most groups as strongly affecting daily life. Hospitals were identified by many focus groups as the most likely source of treat-

ment for all 3 problems, but not eye camps, village grocery shops, medical shops, or village nurses. There was a consensus among almost all groups that money, family circumstances and responsibilities, and fear of treatment were the major barriers to cataract treatment. Distance from services was considered a less important barrier by half the groups. A lack of transport, indifference, and ignorance were mentioned by about 1 in 5 focus groups but were not perceived as strong barriers.

COMMENT

A high proportion of people with eye problems who could have benefited from treatment were not using available services because either they had not sought treatment advice or they had not accepted treatment recommendations. A third of people identified by their community as having eye problems needed cataract surgery, and 40% had refractive errors requiring glasses. The levels of visual disability were not trivial: 280 (50.7%) had presenting VA in the better eye of less than 6/18, including 6.9% who were blind in both eyes.

Ignorance about the availability of eye services was not a reason for the low uptake of the eye camps. Many persons with cataract, however, were unaware of their diagnosis, with most (73%) complaining only of blurred vision. This, along with the community view of blurred vision as a problem of old age with only a minor effect on daily life, suggests that this symptom may not be accorded adequate importance.

The decision to either not seek treatment or not follow up on a treatment recommendation was influenced by a range of factors. A fear of treatment was the most commonly cited reason, mainly expressed as a fear of damage to the eyes. Fear was also perceived as a major barrier to cataract treatment by family members of people with eye problems and by the community. Other studies[1-4] have also reported fear as a barrier to seeking cataract treatment, whereas fear of surgery has been described[10,11] for other diseases and in a range of population settings. Most efforts have been directed at providing more information about the surgical procedures and prognosis during the consultation.[12-14] In blindness prevention programs with an emphasis on high-volume surgery, time constraints may restrict opportunities for discussion. Investment in patient counseling and education at the consultation stage may improve the uptake of surgery and lead to greater efficiency.

We found no evidence of a positive influence from a previously surgically treated person. None of the persons who attended the eye camps gave this as a reason. Conversely, 5% of people gave poor outcomes in others as a reason for their nonuse of eye services. The success of strategies such as the "aphakic or pseudophakic motivator" may be outweighed by the adverse effect of people in the community with poor postoperative outcomes. Of 109 people who had previously had a cataract operation, the presenting vision was classified as low in 42 persons (38.5%) and blind in 11 persons (10.1%). Studies[9,15] evaluating blindness prevention programs in Nepal and China have also described poor vision in surgically treated persons. In the Nepal study, the main cause of low vision or worse (58% of surgically treated eyes) was postoperative complications (accounting for 38%), and conditions such as macular degeneration or glaucoma accounted for about 25% of these. A community is likely to view continued poor vision after an operation as a failure of treatment, irrespective of the cause.

Direct costs have previously been identified[2] as a barrier to seeking treatment, and efforts to minimize them have concentrated on reducing the costs of surgery and providing money for food, travel, and medication. In our study, indirect costs, such as the loss of income from work and delegating household responsibilities, were perceived as a major barrier. In low-income communities without financing schemes, eg, social insurance, persons have no means to meet indirect costs. There may be opportunities for eye care providers to reduce the time spent away from home and work, eg, through fewer follow-up visits, a shorter hospital stay, and by locating services within an accessible distance.

The view expressed by people with eye problems that they did not need treatment or could cope has been reported in several studies. In one study,[2] 24% of bilaterally blind women said that they had no need or desire for surgery. We found similar results. Coping mechanisms may conceal considerable levels of anxiety about the eye problem. In our study, a high level of psychological problems (38% of persons with a VA of $<$6/60 in the better eye) was reported, but household members showed little awareness of these psychological problems. The focus groups also identified psychological problems as a major effect of cataract, and a small proportion thought that a loss of face was an important barrier to cataract treatment uptake. Additional plausibility for the stigma of poor vision was the large number of people self-reporting as having substantial eye problems who had not been identified by their community.

Men were twice as likely as women to attend the eye camp, a finding consistent with the surgical coverage rates reported[2,3,5] in other studies. We did not find any major differences between men and women in their reporting of barriers or health beliefs that could explain this. Higher attendance rates in men probably reflect their higher social standing and a perceived role as principal decision makers and breadwinners. Nonetheless, the attendance rates in men—10% of those with eye problems—were still low. We also did not observe any independent effect of socioeconomic indicators on attendance. Although our study population was mixed with respect to caste, illiteracy, and levels of poverty, most of the people were poor and in low-paying occupations. Few persons in the study attended the eye camps; thus, our ability to identify the determinants of successful uptake (ie, attending a treatment source and following treatment recommendations) was limited.

We restricted the study to small villages to maximize community participation. Although these represent only 20% of rural villages in the outreach area, we think our results can be generalized to other villages. Routine AEH camp data suggest that there is substantial underuse irrespective of village size, even in an area with a well-known service provider. It is unlikely that the major perceived barriers to eye services would differ substantially among villages in this area. The results of the study may well not apply to urban communities or to other

populations. In many settings, such as in Africa,[16,17] community access and awareness of services are likely to be considerably lower than in the communities described in this article. A salient message from this study is that providing services and promoting the knowledge of them is not sufficient to ensure the use of eye care.

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Section Editor's Note

The "Socioeconomics in Ophthalmology" section is expanding its focus to "Socioeconomics and Health Services." The ongoing changes in the health care system today have made clear the vital importance of an integrated approach to understanding how the advances in science and clinical care reported in the ARCHIVES are—or are not—being translated into patient care today. Health services encompasses a wide range of issues that deal with how care is organized, provided, and used. Patient-centered care, shared decision making, alternative medicine, and many other trends are transforming how we as a society view health care. However, readers will continue to find emphasis in the ARCHIVES on rigorous and sound scientific methods in the studies that are published in the new section. We encourage readers and investigators to submit their manuscripts and ideas to this newly expanded section.

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