Barriers to the Uptake of Cataract Surgery and Eye Care After Community Outreach Screening in Takeo Province, Cambodia

Gail M. Ormsby, MPH, PhD,† Manfred Mörchen, MD, FEBO,‡§ Kathy Fotis, GDipScApp,† Dawn Grant Skiba, MSc, MTch (Sec),* Channeang Chim, BA,¶ and Jill E. Keeffe, PhD† ‖*

Purpose: To assess the barriers influencing eye healthcare seeking behavior after community outreach screening.

Design: A concurrent mixed methods study.

Methods: A total of 469 patients screened during the previous 12 months were followed up, of which 354 (75%) from 5 districts were interviewed in person, using a semi-structured questionnaire, in-depth interviews (n = 11), and 16 focus groups (n = 71). SPSS and NVivo were used to analyze response frequency and identify themes.

Results: Of the respondents, 98% (350/354) reported they were told they had an eye problem, with 295 individuals (83%) told to attend CARITAS Takeo Eye Hospital (CTEH) and 55 to have their eyes checked at Kiri Vong Vision Centre. Of those 68.9% (244/354) who reported seeking treatment, only 7.4% (18/244) reported they attended CTEH, 54% (n = 132) attended a "local pharmacy," 31.6% (n = 77) "self-treated at home," 11% (n = 27) reported "using steam from boiling rice," and 10.7% (n = 26) attended a "traditional healer." Of those who reported reasons for "not attending," responses included "no time" (47.8%, 86/180), "no one to accompany" (21.7%, n = 39), "fear of losing sight" (17.8%, n = 32), "cannot afford to travel" (16.1%, n = 29), and "eye problem is not serious enough" (15.6%, n = 28). Follow-up of patient records identified that 128 individuals (79 females) attended eye care services.

Conclusions: Socioeconomic factors, personal concerns, and the use of local cultural remedies were reasons for not seeking eye hospital treatment. An integrated community approach to improve awareness and uptake of appropriate treatment is recommended.

Key Words: Cambodia, barriers, outreach community screening, seeking eye treatment, concurrent mixed methods

(Asia-Pac J Ophthalmol 2017;6:266–272)

The reduction of avoidable blindness and vision impairment is impeded by access to eye care services or lack thereof.[1,2] In low-income countries, several factors, including poverty, beliefs, and knowledge, have been identified as hindering the uptake of health services.[3–5] To entice people to use eye care services, free outreach screening programs are often conducted in rural or remote areas. However, even where free transportation has been provided, a proportion of people are still noncompliant in seeking surgery or other treatment.[6]

In Africa and Asia, barriers to the uptake of cataract surgery have been well documented.[1,6–13] A range of barriers, including fear of surgery, perceived need,[1] lack of knowledge,[11,12] attitudinal barriers,[13] and cost,[2,6] have been reported. Although cataract surgical services have been made more accessible through the provision of transportation and fee waivers, the ratio of persons seeking follow-up treatment still remains low in some locations.[5–6] In Tanzania, research into the follow-up of patients who had been advised to have cataract surgery but did not have surgery showed that many social factors other than cost also played a role in the uptake of services.[6]

In Cambodia, little is known about the reasons for neglecting the uptake of eye care services. A population-based cross-sectional study in Takeo Province, Cambodia, revealed that there were significant gaps in the understanding of people's knowledge of eye problems and suitable treatments. Some people were sceptical about seeking eye care services.[14]

The purpose of this study was to follow up a sample of people who had attended a community outreach screening session in their local community and who had been referred for further treatment to assess the factors influencing patients not seeking follow-up eye healthcare services.

MATERIALS AND METHODS

This study, conducted during mid-2011 using a concurrent mixed methods approach, was framed predominantly within a qualitative paradigm to gain a descriptive understanding about patients' perspectives of eye care treatment.[15,16] Methods included a survey, individual interviews, and focus group discussions (FGDs).

Takeo Province is a densely populated rural province approximately 75 km south of Phnom Penh, where the socioeconomic status is generally low and education is limited among older people.[17,18] The CARITAS Takeo Eye Hospital (CTEH) is classified by the government as a regional eye hospital. It is 1 of 3 training institutions in Cambodia recognized by the National Program for Eye Health and the University of Medical Sciences to train ophthalmologists and ophthalmic nurses.[19] The CTEH conducts community outreach screening sessions in isolated communities within Takeo Province in an endeavor to reach people. These screenings are conducted free of charge and are facilitated by trained ophthalmic nurses. A free pickup service was provided the week after the screening session for patients needing eye surgery.

From the *Faculty of Education, Business and Science and Lifestyle Research Centre, Avondale College of Higher Education, Cooranbong, NSW, Australia; †Population Health Unit, Centre for Eye Research Australia (CERA), Royal Victorian Eye and Ear Hospital, East Melbourne, The University of Melbourne, Australia; ‡CARITAS Takeo Eye Hospital, Takeo Province, Cambodia; §CBM; ¶Consultant, Cambodia; and ‖ LV Prasad Eye Institute, Hyderabad, India.

Received for publication October 1, 2015; accepted October 16, 2016.

Financial support was provided through the AusAID Avoidable Blindness Initiative project monitored by CBM Australia in collaboration with CARITAS Takeo Eye Hospital. CERA receives operational infrastructure support from the Victorian Government.

The authors have no other funding or conflicts of interest to declare.

Reprints: Gail M. Ormsby, MPH, PhD, Faculty of Education, Business and Science, Avondale College of Higher Education, PO Box 19, Cooranbong, NSW, 2265 Australia. E-mail: gail.ormsby@avondale.edu.au.

ISSN: 2162-0989

DOI: 10.22608/APO.2015127

Site Selection and Respondents

All patients who had been previously examined by an ophthalmic nurse at a community outreach screening session during the previous year were eligible for the study. However, a decision based on cost and time available was made to draw samples from among all the screening sites conducted between July 2010 and June 2011. The outreach screening session was made available to anyone who attended the health center on the day of the screening. All communities were notified by community health workers, commune leaders, or health center staff the week before the screening, and attendance was at their own choice. All people in attendance were examined by an ophthalmic nurse. Visual acuity was tested but was not included in this analysis. The referral of individuals was based upon their need for surgery, further treatment, or visual acuity.

The 6 sites were selected in consultation with CTEH and drawn from 5 of 10 districts: Bati, Angkor Borey, Koh Andaet, Kiri Vong, and Treang. The specific sites included Lum Pong (52 km from CTEH), Punley (45 km), Chi Khmar (21 km), Sar Nge (8 km), Soam (18 km), and Prey Yutka (61 km) Health Centres. A list of patients who had attended the screening sessions (n = 379) was prepared for a follow-up interview. Some people had died, some had moved to Phnom Penh or Vietnam, and a few could not be located. From this remaining group, 354 patients were interviewed in person.

Question Guides

The semi-structured questionnaire was made up of demographic questions, including sex, age, and level of education, and general questions associated with eye health knowledge and practice, including cataract and best treatment, causes of poor vision and blindness, reported diagnosis at the time of the screening, reasons for not seeking follow-up treatment, self-treatment, and home remedies. Most interviews using the questionnaire were conducted at the patient's home.

In-Depth Interview and FGD Guide

The in-depth interview and FGD guides consisted of open-ended questions to guide the 2 main areas of discussion: why the patient "did not go" or "did go" for eye care treatment and the reasons for their decision. The themes included understanding of eye diseases, effects of their eye problem on daily life, perception of overall eye problems in their community, home practices used to treat eye problems, reasons why people didn't seek follow-up treatment, and the perception of eye care services for those who did attend follow-up treatment.

Eleven in-depth interviews and 16 FGDs were conducted. The locations of the discussions included the commune office, the commune police post, or the political party office. The selection criteria for those who participated in the FGD depended upon their availability and willingness to participate, ability to speak and share information, and ability to identify and understand eye problems in the community. The Khmer field researchers selected the participants. The discussion groups were organized by sex and by those who had attended the eye hospital for follow-up treatment and those who had not attended.

Data Collection and Analysis

All interviews and discussions were conducted in Khmer by experienced researchers. All discussions were recorded, transcribed, and translated into English for analysis.

Frequencies were conducted using SPSS software (version 19; SPSS Inc, Chicago, Illinois). Qualitative data were analyzed by themes using NVivo software (version 10; QRS International, Doncaster, Victoria, Australia).

Ethics Approval

The study followed the tenets of the Declaration of Helsinki. Ethical approval for the study was granted by the Human Research and Ethics Committee of the Royal Victorian Eye and Ear Hospital (Reference:11/1016H). Permission was granted by CTEH, the provincial and district health departments, and each commune and village leader. Informed consent was requested before each interview or FGD with respondents either signing or providing their thumbprint.

RESULTS

A total of 354 patients were interviewed. From this group, 11 individual in-depth interviews and 16 small group discussions (n = 71) were conducted (Table 1).

The age of the respondents ranged between 30 and 85, with the mean being 61 years old, and the majority (67.8%; n = 240/354) being female. Of the respondents, 29.2% (n = 103) reported they had no schooling, and a further 40.4% (n = 143/354) said that they had only attended primary school. The majority of respondents aged 50 or older had never attended school.

Of the respondents, 44% (156/354) lived within a 30-km radius of CTEH, whereas the remainder lived further away, with 13% (n = 47) living more than 46 km from the eye hospital.

The reported assets of the total respondents interviewed included the following: 71% had a bicycle, 63% a mobile phone, 54% a television, 51% a motorbike, 49% a radio, and 2% a rice threshing machine. Just over half the households used well water

TABLE 1. Respondent Groups

Health Center	Original No. Screened	Survey Females	Survey Males	FGD with Females	FGD with Males	In-Depth Interview
Lumpong	88	50	17			1 female
Punley	79	42	23	2 groups	2 groups	1 male, 1 female
Sra Ngae	73	31	23	1 group	1 group	1 female
Chi Khumar	87	47	20	2 groups	2 groups	1 male, 1 female
Prey Yuthaka	66	30	13	1 group	1 group	2 males, 2 females
Soam	76	39	19	2 groups	2 groups	1 female
Total	469	239	115	8	8	11

(59%); pond or river water was used by 36% and only 1.6% had access to tap water. A total of 56.7% reported that they had no sanitation facility.

Knowledge and Practice

Self-awareness of eye problems was significantly different ($P < 0.001$) when comparing 2 age groups: aged 30–49 (n = 113) and age 50 or older (n = 241). In the older group, 44.8% (n = 108) reported that they had a cataract, 32.0% (n = 77) had pterygium, and 15% (n = 36) suffered from blurred vision.

When asked a knowledge question, 94.9% (n = 336) of the respondents had "heard of cataract," and 89.8% (n = 318) reported that "surgery was the best treatment" for cataract. However, the main causes of vision impairment and blindness were reported to be "dust" and "foreign bodies" (70.9%, n = 251), "injury" (30.5%, n = 108), "complication from other diseases" (18.4%, n = 65), and "old age" (14.9%, n = 53) (Table 2).

Of the survey respondents, a total of 98% (n = 350/354) reported that they were told they had an eye problem and 90% (n = 316/350) were told to acquire treatment within a month. Of this group, 36% (n = 113/316) reported they were told they had cataract, 32.9% (n = 104) pteryguim, 9% (n = 29) blurred vision, 2.5% (n = 8) trichiasis, and 2.2% (n = 7) eye infection; 295 (84.5%) were told to attend CTEH and 55 (15%) to attend Kiri Vong Vision Centre. Of those people who reported being "told to attend eye care services," 49% (n = 172) recounted they "did attend." Similarly, of the 55 who were advised to visit Kiri Vong Vision Centre to have their eyes checked, only 1 person reported attending.

A total of 68.9% (n = 244/354) of people reported they "did something" to treat the eye problem; 54% (n = 132/244) reported visiting the local pharmacy, 10.7% (n = 26) attended a traditional healer, 31.6% (n = 77) self-treated at home, and 11% (n = 27) reported "using steam from boiling rice" to treat their eyes.

Of the survey respondents (n = 295) who were told to attend CTEH for further treatment, the main reasons reported by a subgroup of 180 for not seeking further treatment included the following: 47.8% (n = 86/180) cited "no time to go," 21.7% (n = 39) said "no one to accompany me," 17.8% (n = 32) noted "fear of losing eye sight," 16.1% (n = 29) reported "cannot afford to travel to the hospital," and 15.6% (n = 28) thought the "eye problem not serious enough" (Table 3).

Of the total group (n = 354), 128 patients (79 females) were identified from CTEH and Kiri Vong Vision Centre patient records in November 2011 as having attended eye care services (Table 4). Of these patients, 80 were diagnosed with cataract, 18 with pterygium, and 18 with refractive error. The main diagnosis at the time of attendance was cataract among those aged 50–89 and refractive error among those aged 30–59. Visual acuity tested in the better eye revealed that there were a total of 24 patients classified as blind (<3/60) and 46 with moderate vision impairment (6/24–3/60).

Qualitative Themes

Of the FGD and in-depth interview respondents, 54.9% (45/82) said they "did not go" for surgery or treatment at the eye hospital for multiple reasons: 77.7% (35/45) cited "costs and being poor," 64.4% (29/45) "needed to continue work," 44.4% (20/45) had "fear about the procedures," 35.5% (16/45) "did not know" or lacked understanding of the procedure, and 28.8% (13/45) "missed the pickup transportation."

Failing Eyesight

The effects of failing eyesight and poor vision upon people's daily life were described in different ways, such as "poor vision," "cloudy," "smudgy," and "like darkness," that hindered activities as explained below.

When rowing a boat to go fishing … unless the woman (his wife) uses her hand for signalling, I cannot see the net.
— male, age 50

I dare not to ride a bicycle very fast because I cannot see the pits in the road. — female, age 58

Busy Life Hinders Seeking Treatment

Both the FGDs and the in-depth interviews support the notion that respondents were very busy with their daily lives and could not attend the hospital. Many described circumstances associated with poverty, including having to work in the rice paddy fields to get sufficient food for their families, and were afraid that if they attended the hospital, the surgery would hinder their return to work.

TABLE 2. Reported Causes of Impairment and Blindness by Sex (Questionnaire)*

	Male		Female		Total	
	n = 114	%	n = 240	%	n = 354	%
Dust/foreign body	80	22.6	171	48.3	251	70.9
Injury	35	9.9	73	20.6	108	30.5
Complication from other disease	16	4.5	49	13.8	65	18.3
Old age	13	3.7	40	11.3	53	15.0
Poor hygiene	24	6.7	19	5.4	43	12.1
Sunlight	15	4.2	18	5.1	33	9.3
Poor nutrition	6	1.6	11	3.1	17	4.8
From birth/genetics	5	1.4	10	2.8	15	4.2
Diabetes	2	0.5	3	0.8	5	1.4

*Multiple responses possible.

I was told to go to CETH. I was not able to go because of the harvest and nobody would be responsible for my young kids. Furthermore, I was afraid that I could not do housework or farming after the eye operation/treatment. I decided to stay home. — female, age 50

Some reported a desire to go for treatment but were interrupted by other household issues.

I received an appointment … but when the time came, I was sick, and I missed the chance to go to the hospital. — female, age 58

I missed going [to the hospital] because my daughter [delivered]. — female, age 56

Fear of Surgery Outcome

Some respondents talked about fear of the surgery outcome. However, this was also counter-balanced by stories that they had heard from other people who had satisfactory cataract surgery.

When I was young I heard that after postop, my eye would turn blind. That was the reason that stopped me from going to hospital. I was afraid. — female, age 53

I feared my eyes would not see after the treatment. — male, age 54

Cost of Services

The cost of services and purchasing glasses was a significant point of discussion, as illustrated below.

I did not go because I had not enough money. I heard that to get eye glasses cut, it cost about US$10–15. I thought that was a cost I could not afford. I decided not to go … My wife was asked to get eye glasses as well. It would cost both of us about US$20 for glasses and this cost did not include the travel expenses. If I go, I need to borrow a motor bike and fill it with gasoline. That's why both of us did not go. — male, age 44

My main reason was lack of money. The doctor told me to go to the eye hospital within 15 days, but I did not have money. — female, age 40

Even although the [doctor] asked me to go, I have no means of transport [and I have] a centless pocket. — male, age 43

Home Treatments

Many FGD and in-depth interview respondents resorted to locally available options for treatment as an alternate to going to the eye hospital: 57.7% (n = 26/45) "used eye drops," 48.8% (n = 22) "visited a traditional healer," 42.2% (n = 19) "went to a local health person," 42.2% (n = 19) "used betal leaf," 33.3% (n = 15) "took medicine or tablets," 31.1% (n = 14) used the "steam from boiling rice," 28.8% (n = 13) said they "just had to bear it" (tolerate the condition), and 8.8% (n = 4) said they "scratched the eye" (to remove pterygium).

A variety of home treatments were described for the treatment of pterygium: "scratching eyes with the leaf of garlic," "cutting with the edge of flatten bamboo," or a "sharp edge piece from broken ceramic."

The following sample quotes provide scenarios described by the patients.

I went to the "Kru" (Khmer traditional header) for scratching. He was a chief of the monks. Later on I went to another "Kru" who used cut garlic to scratch the eye. It was not healed but only a little better. — male, age 42

Some use "karma" (twisted or folded cloth) and blow against the eye, hot and warm, over the eye injury in order to melt down the blood clot and to protect from cataract. — female, age 37

After the eye injury, and I got cataract (red clot in the eye), I picked a big skov leaf (type of fruit) and wrapped it around warm steamed rice and then blew the eye to melt the red clot. If this does not help, then use wax in a coconut shell and steam it. — female, age 58

TABLE 3. Reasons Why Patients Did Not Attend Follow-Up Treatment (Questionnaire)*

	Male		Female		Total	
	n = 56	%	n = 124	%	n = 180	%
No time available to go/other priorities	29	16.1	57	31.7	86	47.8
No one can accompany me to the hospital	8	4.4	31	17.2	39	21.7
Fear of losing eyesight	12	6.7	20	11.1	32	17.8
Cannot afford to travel to the hospital	7	3.8	22	12.2	29	16.1
Eye problem is not serious enough	7	3.8	21	11.6	28	15.6
Cannot afford the surgery	3	1.7	7	3.8	10	5.5
In too much pain to go to hospital	3	1.7	5	2.7	8	4.4
Fear of having eye operation	0	0	5	2.7	5	2.8
Fear of going to eye hospital	0	0	4	2.2	4	2.2
No transport to travel to the hospital	1	0.5	3	1.7	4	2.2
Old age so no need to get eye care services	1	0.5	2	1.1	3	1.7
Not able to see enough	0	0	2	1.1	2	1.1
One eye provides adequate vision	2	1.1	0	0.5	2	1.1
Told to wait for the cataract to mature	0	0	0	0	0	0
Physically unable to get there	0	0	0	0	0	0

*Multiple responses possible.

Perspectives of Those Who Sought Treatment

Of those who did seek treatment, there was often initial reluctance toward seeking treatment.

At the beginning, I did not believe, but the eye screening team advertised and disseminated [information] at the health center. They had many pictures of various kinds of eye problems. I saw those pictures and thought that if I did not go, in any day my eye would be in serious condition as in the pictures. — male, age 52

I prayed to the spirit of my mother and father to help me to be restored. It was very difficult to live with obscured vision. If it (the surgery) hurt I could bear it … The following day after surgery the eye pad was removed. I was very happy and very excited that I could see everything clear in front of me. My heart was beating very fast. The staff asked me to read the examination letters. I could read and see. I felt I had a rebirth. — female, age 51

Many described the hospital as a busy place with a "happy environment" that was clean and inviting. Staff were "helpful" and "kind" as illustrated below.

I felt happy because I saw the good hospital environment ... I was greeted at the reception. — male, age 60

Takeo Eye Hospital has [a positive] reputation. Many people with eye problem around the country came to get treatment ... and staff were confident and cared for patients. — male, age 51

Sharing Their Experience With Others

I told Yay (an old woman) she would be blind if she kept the eye problem for a longer time. It (surgery) was not painful, just a prick pain as a small ant bit. No need to fear, it was not pain. I just told her because she is living nearby my house. But she did not want to go, although her children gave her money to go, she was dissatisfied. Her children were afraid she would be blind. They encouraged her to go and promised to do her work. It was just peeling the eye ... it was not a cut abdomen. I tried to explain to her many times but she did not listen.— female, age 58

I told villagers who had eye problems they should go to the hospital to get treatment. Staff request us to inform other villagers who have cataract and pterygium to get treatment. — female, age 56

There was evidence of social capital,[20] that is, that people felt concerned about other people's eye health and were willing to act to provide assistance, as demonstrated below.

They were in financial difficulty; some people have no one to accompany them to hospital. Three years ago, I accompanied two persons [to hospital]. I felt pity for them. — female, age 56

DISCUSSION

This concurrent mixed methods study assessed the factors associated with seeking and uptake of surgery and eye treatment after an outreach screening program in rural communities of Takeo Province, Cambodia. The multiple data collection methods provided a deeper understanding of the barriers, and the results showed that there were complex issues influencing the seeking or uptake of appropriate eye healthcare treatment.

From the questionnaire in this study (n = 180/354), the 5 main reasons reported for not seeking follow-up treatment were as follows: 1) "no time available to go or other priorities" (47.8%), 2) "no one to accompany me to the hospital" (21.7%), 3) "fear of losing eyesight" (17.8%), 4) "cannot afford to travel to the hospital" (16.1%), and 5) "eye problem not serious enough" (15.6%). In comparison, in the group discussions (n = 45), the reasons for not seeking treatment varied and the most common reasons were as follows: 1) "costs and being poor" (77.7%), 2) "needing to continue work" (46.4%), 3) "fear about the procedure" (44.4%), and 4) "lacked understanding of the procedure" (35.5%). The reasons are similar to other studies, but there was some difference in the order of priority.

In Andhra Pradesh, India, fear about the services and outcome, work commitments, and cost were the predominant reasons reported for those who did not seek cataract surgery.[5] A study in rural China showed that the main barriers to cataract surgery included cost as the major determinant, but knowledge about cataract and its treatment was poor.[1] Patients were also sceptical about the benefits and outcomes of treatment. In Tanzania, it was determined that cost, even where fees were reduced or waived,

TABLE 4. Main Diagnosis and Presenting Visual Acuity of Attendees of Eye Care Services by Age

	Sex		Main Diagnosis					Presenting Visual Acuity in Better Eye		
Age (y)	Male	Female	Cataract	Cataract & Trichiasis	Cataract & Pterygium	Pterygium	Refractive Error	Normal (6/6–6/18)	Moderate Impairment (6/24–3/60)	Blind (<3/60)
80–89	2	4	5	0	1	0	0	1	3	2
70–79	13	20	29	1	1	2	0	6	16	11
60–69	14	23	27	1	0	6	1	15	17	4
50–59	9	23	16	0	1	7	7	20	7	5
40–49	8	6	3	0	0	3	5	10	2	2
30–39	1	2	0	0	0	0	3	2	1	0
20–29	0	1	0	0	0	0	0	1	0	0
10–19	2	0	0	0	0	0	2	2	0	0
Total	49	79	80	2	3	3	18	57	46	24

χ^2 test: Age and main diagnosis, $P < 0.001$.

χ^2 test: Age and presenting visual acuity in better eye, $P = 0.085$.

did not result in major changes to people's decisions about accessing cataract surgery.[6]

In China, anticipated pain was not seen as an impediment, as long as the government funded the surgery.[8] However, in a later study, it was reported that the lack of family support and the lack of understanding about the importance of surgery or perceived need were major factors hindering patients from the uptake of cataract surgery.[1] In Cambodia, we found that only a few people discussed concerns about the anticipated pain. People were more vocal about their dislike of traveling long distances to acquire eye healthcare and insufficient funds. They also lacked an understanding about the nature of the eye problem: "we hoped that we would be given medicine or eye drops" to solve the problem.

The literature review by Zhang et al[20] demonstrated that several studies have focused upon individual characteristics and their influence on the use of services. In our experience at CTEH, despite offering free transport from the village to the eye hospital, many individuals who had been screened for eye problems in their community did not seek follow-up services (unpublished information from a 2011 Annual Report). In the Indian study, 70% of illiterate individuals did not seek cataract surgery.[5] A limitation of the Indian study was that individuals were followed up within 15 days after the outreach screening session, whereas our study followed up after 6–12 months. In another Indian study, it was found that barriers, including the patient's ability to maintain routine work or being busy with work, the cataract was not mature, and the other eye provided sufficient sight, ranked above issues concerning cost.[13] In Timor-Leste, a population-based study of the utilization and barriers to eye care found the "lack of awareness of service availability was the most frequent reason for not seeking treatment (32.9%), especially for rural respondents; attitudinal reasons were also prevalent (32.5%), with social (11.8%), economic (11.5%) and service-related (9.0%) issues less so."[21]

Compared with an initial eye health knowledge, attitude, and practice survey conducted in 2009 where only 19% (n = 599) of respondents reported knowing the best treatment for cataract to restore avoidable blindness,[14] in this study, the majority (94.9%) had heard about cataract and 89.8% reported that surgery was the "best treatment," demonstrating that health promotion messages have reached communities in the past 4 years. However, despite having participated in an outreach screening session and being advised to seek treatment at the eye hospital, only 7.4% (18/244) of respondents in this study reported that they did attend the CTEH, with the majority using other self-selected methods of care, including visiting the pharmacy and using traditional medicines and treatments, and reporting that issues of poverty hindered them seeking treatment at the hospital. However, in November 2011, we were able to verify that 36% (n = 128/354) of patients from the 6 districts did seek follow-up treatment after the screening session at either CTEH or Kiri Vong Vision Centre.

There are some limitations to this study. Firstly, although the study was conducted about 4 years ago, the authors believe that not many changes would have occurred since that time. A Cambodian study conducted by the London School of Tropical Medicine and World Health Organization in 2013 found "some interviewees reported that there are more than 2000 primary eye care facilitators trained in the country but only 5% of them occasionally refer patients to eye units for treatment."[22] Therefore, in addition to the complex issues identified in our study, there are significant challenges associated with the quality of the health referral system along with the training, supervision, and nurturing of eye healthcare workers. Secondly, this was a qualitative study, and although it provided a rich description of eye health issues, some difference was noted between people's accounts and their actions. Thirdly, analysis and comparison of the initial screening diagnosis and the diagnosis at the time of follow-up would have added a further dimension of understanding.

In conclusion, this study assessed various barriers associated with seeking and uptake of surgery and eye treatment after an outreach screening program in rural communities of Takeo Province. The findings demonstrate the complexity of factors influencing people's decisions about the need for eye healthcare. The focus group discussions revealed issues associated with vision impairment and the complexity surrounding family life, the need to continue work on their farms to provide for their needs, the matter of distance and the need to accompany the elderly to the eye hospital, misunderstandings about eye healthcare and appropriate treatments, and the lack of perceived need for prompt eye care. The ongoing development of community approaches that include eye health promotion to the whole family along with service providers is encouraged to address not only knowledge concerns but also issues of perceived need and the importance of appropriate treatment.

ACKNOWLEDGEMENTS

The authors acknowledge the contribution made by respondents who willingly participated in the study. Additionally, the positive comments by the reviewers were noted.

REFERENCES

1. Zhang XJ, Jhanji V, Leung CKS, et al. Barriers for poor cataract surgery uptake among patients with operable cataract in a program of outreach screening and low-cost surgery in rural China. *Ophthal Epidemol.* 2014; 21:153–160.
2. Ocansey S, Kyei S, Gyedu BN, et al. Eye care seeking behaviour: a study of the people of Cape Coast Metropolis of Ghana. *J Behav Health.* 2014;3: 101–106.
3. Holden B. Blindness and poverty. A tragic combination. *Clin and Exp Optometry.* 2007;90:401–403.
4. Singh PK, Kumar C, Rai RK, et al. Factors associated with maternal healthcare services utilization in nine high focus states in India: a multilevel analysis based on 14,385 communities in 292 districts. *Health Policy Plan.* 2014;29:542–559.
5. Kovai V, Prasadarao BVM, Paudel P, et al. Reasons for refusing cataract surgery in illiterate individuals in a tribal area of Andhra Pradesh, India. *Ophthal Epidemol.* 2014; 21:144–152.
6. Kessy JP, Lewallen S. Poverty as a barrier to accessing cataract surgery: a study from Tanzania. *Br J Ophthalmol.* 2007;91:1114–1116.
7. Mpyet C, Dineen BP, Solomon AW. Cataract surgical coverage and barriers to uptake of cataract surgery in leprosy villages of north eastern Nigeria. *Br J Ophthalmol.* 2005;89:936–938.
8. Zhang M, Wu X, Huang Y, et al. Understanding barriers to cataract surgery among older persons in rural China through focus groups. *Ophthal Epidemiol.* 2011;18:179–186.
9. Athanasiov PA, Casson RJ, Newland HS, et al. Cataract surgical coverage and self-reported barriers to cataract surgery in a rural Myanmar population. *Clin Experiment Ophthalmol.* 2008;36:521–525.
10. Geneau R, Lewallen S, Bronsard A, et al. The social and family dynamics

behind the uptake of cataract surgery: findings from Kilimanjaro Region, Tanzania. *Br J Ophthalmol.* 2005;89:1399–1402.
11. Yin Q, Hu A, Liang Y, et al. A two-site, population-based study of barriers to cataract surgery in rural China. *Invest Ophthalmol Vis Sci.* 2009;50: 1069–1075.
12. Finger R, All M, Earnest J, et al. Cataract surgery in Andhra Pradesh State, India: an investigation into uptake following outreach screening camps. *Ophthal Epidemol.* 2007;14:327–332.
13. Dhaliwal U, Gupta SK. Barriers to the uptake of cataract surgery in patients presenting to a hospital. *Indian J Ophthalmol.* 2007;55:133–136.
14. Ormsby G, Arnold AL, Busiji L, et al. The impact of knowledge and attitudes on access to eye-care services in Cambodia. *Asia-Pac J Ophthamol (Phila).* 2012;1:331–335.
15. Creswell JW. *Qualitative Inquiry & Research Design. Choosing Among Five Approaches.* 3rd ed. Thousand Oaks, California: Sage Publications Inc; 2013.
16. Creswell JW, Plano Clark VL. *Designing and Conducting Mixed Methods Research.* 2nd ed. Los Angeles: Sage Publications Inc; 2011.
17. Cambodian National Institute of Statistics. *General Population Census of Cambodia 2008.* Phnom Penh: National Institute of Statistics, Ministry of Planning; 2010.
18. Cambodian Ministry of Health. *National Program for Eye Health Report on the Progress of Blindness Control in 2010*. Phnom Penh: Ministry of Health; 2011.
19. Mörchen M, Mao N, Ang C, et al. Outcome and monitoring of cataract surgical services at Takeo Province, Cambodia. *Asia-Pac J Ophthamol (Phila).* 2012;1:340–344.
20. Zhang X, Andersen R, Saaddine J, et al. Measuring access to eye care: a public health perspective. *Ophthal Epidemol.* 2008;15:418–425.
21. Ramke J, Brian G, Palagyi A. Spectacle dispensing in Timor-Leste: tiered-pricing, cross-subsidization and financial viability. *Ophthalmic Epidemiol.* 2012;19:231–235.
22. Sok K, Ngy M, Do S, et al. *Eye Health System Assessment.* Cambodia Manila WHO Western Pacific Regional Office: International Agency for the Prevention of Blindness; 2013.