Barriers and enablers to uptake of cataract surgery services at the Siaya County Referral Hospital, Kenya

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Abstract

Introduction: Cataracts are the leading cause of blindness globally, affecting approximately 94 million people, predominantly the elderly. Despite effective surgical interventions, disparities in access to cataract surgery persist in Kenya, with surgical coverage below 35% in rural areas. This study identified barriers and facilitators to the uptake of cataract surgical services at Siaya County Referral Hospital.

Methods: A descriptive cross-sectional study with a mixed-methods approach was conducted. A survey questionnaire was administered to patients with cataracts, complemented by key informant interviews with four healthcare providers and focus group discussions with patients.

Findings: A total of 239 cataract patients participated in the study. Majority of the respondents (84.3%) were over 60 years old (median age: 79, age range of 35–93 years), with 53.1% male. Cataract was correctly identified as an eye disease by 59.8%. Barriers included lack of awareness (30.4%), fear (30.1%) and geographical distance (33.7%), while facilitators were counselling (69.5%), proximity to facilities (39.3%), and financial support (32.2%, NHIF). Religious factors significantly influenced surgical willingness ($p = 0.01$, $\chi^2 = 11.234$). No significant associations were found with education, marital status, or occupation.

Conclusion: Lack of awareness, fear, and distance are major barriers to cataract surgery uptake, while counselling, facility proximity, and financial aid are key enablers. Recommendations include enhanced community education, strengthened counselling, and additional surgical facilities to improve access in underserved areas.

Keywords: Cataract surgery, barriers, enablers, Siaya County, Kenya.

Introduction

Cataract accounts for approximately 51.3% of global blindness, affecting over 39 million people worldwide, with prevalence rising sharply after the age of 50 years (1). It is a leading cause of avoidable blindness, particularly in low- and middle-income countries, where access to timely and affordable surgical services is limited (2). In Kenya, cataract is responsible for 42.9% of blindness, impacting more than 945,000 individuals (3). While cataract surgery with intraocular lens implantation is a safe, highly effective, and cost-efficient treatment, uptake remains low in many resource-limited settings due to a combination of patient, socio-economic, cultural, and health system barriers (4,5).

Siaya County, located in western Kenya, faces a substantial unmet need for cataract surgical services. The Siaya County Referral Hospital (SCRH) is the sole provider of comprehensive cataract surgery in the county, performing only 1,514 surgeries in 2019 despite a backlog of more than 3,500 cases (6). Many residents live in rural areas with limited transportation infrastructure, while poverty, low awareness, and misconceptions about cataract surgery further hinder timely treatment (7,8). The consequences extend beyond vision loss, as untreated cataract often leads to dependency, reduced productivity, social isolation, and a diminished quality of life for affected individuals and their families (9).

The global and national public health agenda, including the World Health Organization's (WHO) Universal Eye Health: Global Action Plan 2014–2019 and Kenya's Vision 2030 health targets, prioritises the elimination of avoidable blindness (10,11). In this context, improving access to

cataract surgery is not only a medical necessity but also a critical socio-economic intervention that can enhance wellbeing, promote equity in healthcare access, and support the attainment of the Sustainable Development Goals, particularly those related to health, poverty reduction, and economic productivity (12).

This study is therefore grounded in the need to generate evidence to inform policies and strategies that can improve cataract surgical coverage in rural and underserved populations. It hypothesizes that specific patient-related, socio-economic, cultural, and health system factors - particularly fear of surgery, religious beliefs, and service accessibility significantly influence the uptake of cataract surgery services at SCRH. The study therefore aimed at determining the key barriers and enablers influencing the uptake of cataract surgery in Siaya County, Kenya. The findings are intended to guide the development of targeted interventions that improve access, reduce preventable blindness, and enhance the quality of life for residents of Siaya County and similar settings.

Methods

Research Design

A facility-based descriptive cross-sectional study with a mixed-methods approach was used. Quantitative data were collected via semi-structured questionnaires, and qualitative data through focus group discussions (FGDs) and key informant interviews (KII).

Study Population

The study involved patients with cataract at SCRH, four healthcare providers (including the Cataract Surgeon and County Director of Health), and two FGDs. The sample size of 239 cataract patients was calculated using Fisher's formula for sample size determination, assuming a prevalence of X%, a confidence interval of 95%, and a margin of error of 5%. An additional 10% was included to account for non-response.

Data Collection

The questionnaires captured demographic and clinical data. FGD and KII explored gender-specific and systemic factors. Informed consent was obtained in Luo, the local dialect. Four KII were conducted with health workers directly involved in cataract management to capture expert perspectives. Two FGDs (one male, one female group) were held with cataract patients to allow for gender-sensitive exploration of community views. The numbers were deemed sufficient to reach diverse perspectives within the constraints of time and resources.

Data was collected by trained research assistants. Questionnaires were administered face-to-face in Luo (local language) or English, depending on participant preference. KIIs and FGDs were conducted in private spaces within the hospital to ensure confidentiality, each lasting 45–60 minutes. Sessions were audio-recorded with written consent and supplemented by field notes.

Data Analysis

Quantitative data were analysed using SPSS version 25, with descriptive statistics, chi-square tests ($p \leq 0.05$), and binary logistic regression. Qualitative data from KIIs and FGDs were transcribed verbatim, translated where necessary, and coded manually using an inductive approach. Codes were grouped into categories and themes following Braun & Clarke's six-step framework for thematic analysis (2006). Themes were validated by cross-checking with supervisors to ensure reliability.

Eligibility Criteria

Inclusion Criteria: Adult patients diagnosed with cataract attending SCRH eye unit and willing to give informed written consent.

Exclusion criteria: Adult patients with other major ocular pathologies, patients too ill to participate, or those unwilling to consent.

Ethical Considerations

Ethical approval was obtained from the Maseno University Ethics and Research Committee (MUERC). A study licence was obtained from the National Commission for Science, Technology and Innovation. Informed consent was secured from the study participants.

Participant confidentiality was ensured by using codes instead of names. Paper records were kept in locked storage, while digital files (audio and transcripts) were password-protected. All data were anonymised before analysis and will be securely destroyed after five years as per MUERC guidelines.

Results

Demographic Characteristics

A total of 239 cataract patients participated in the study, with more males (53.1%) than females. The majority (84.2%) were aged above 60 years, with a median age of 79 years, reflecting the age-related nature of cataract. Most participants (71.1%) resided within Siaya County, and farming was the most common occupation (36.4%). Chi-square analysis indicated no statistically significant association between demographic factors—such as gender, age, or occupation—and willingness to undergo surgery, although the side of the affected eye showed a borderline association ($p = 0.073$), suggesting that patients with bilateral involvement may perceive a greater urgency for treatment.

Table 1: Demographic characteristics of respondents and association with willingness to undergo cataract surgery

Characteristic	n (%)	χ^2	df	p-value
Gender				
Male	127 (53.1%)	0.01	1	0.94
Female	112 (46.9%)			
Age Group				
≤60 years	38 (16.0%)	0.06	1	0.83
>60 years	201 (84.0%)			
Eye(s) Affected				
Left	108 (45.2%)	5.24	2	0.07
Right	78 (32.6%)			
Both	53 (22.1%)			
Residence				
Within Siaya	170 (71.1%)	0.47	1	0.49
Outside Siaya	69 (28.9%)			
Occupation				
Farming	87 (36.4%)	---	---	>0.05
Others	152 (63.6%)			

Knowledge and Perceptions

Quantitative data revealed that 59.8% correctly identified cataract as an eye disease, while 25.1% attributed it to ageing. Fear of surgery was present in 30.1% of respondents, driven primarily by anticipated pain (41.7%) and risk of blindness (36.1%). Conversely, 69.5% expressed no fear, often citing reassurance from pre-operative counselling. In focus group discussions, some participants recalled hearing stories of people "never seeing again after surgery." However, those who had received counselling shared different perspectives, with one patient noting: "When the doctor explained the process and I met people who had been treated and could see, I stopped fearing."

Table 2: Knowledge and perceptions related to cataract surgery

Variable	n (%)	χ^2	df	p-value
Correctly identified cataract as eye disease	143 (59.8%)	---	---	---
Attributed cataract to ageing	60 (25.1%)	---	---	---
Fear of surgery (overall)	72 (30.1%)	---	---	<0.001
Main reason for fear – anticipated pain	30 (41.7% of those with fear)	---	---	---
No fear of surgery	167 (69.5%)	---	---	---

Qualitative data revealed that participants who correctly identified cataract often stated: "I was told it's a disease that blocks the eye lens." Fear was commonly expressed as: "I heard people go blind after the operation," while those without fear emphasised: "When the doctor explained, I stopped fearing."

Cultural Factors

Participants were mainly Protestant (45.2%) or Catholic (35.1%). Religion was significantly associated with willingness to undergo surgery (p = 0.01). In qualitative interviews, some patients expressed beliefs that surgical intervention was against divine will, stating: "God gave me this eye problem; if He wants, He will take it away." Others saw religious faith as supportive of treatment, with a church leader noting: "Faith without action is dead—God also works through doctors." The choice of initial care location was not significantly associated with surgical uptake.

Table 3: Cultural factors influencing uptake

Cultural Factor	n (%)	χ^2	df	p-value
Religion				
Protestant	108 (45.2%)	11.23	3	0.01
Catholic	84 (35.1%)			
Preferred care-seeking location				
Health centre	85 (35.6%)	2.93	4	0.57
Mission hospital	68 (28.5%)			
Private clinic	46 (19.2%)			
Others	40 (16.7%)			

Socio-Economic Factors

While marital status, education, and occupation were not statistically linked to uptake ($p > 0.05$), qualitative data suggested that financial strain influenced decision-making. Some patients postponed surgery until they could gather enough funds for transport and post-operative care. Community Health Volunteers (CHVs) emerged as a trusted source of information, with one focus group discussion participant noting: "When the CHV came to my home and told me about the free surgery, I decided to go."

Table 4: Socio-economic and health system factors

Factor	n (%)	χ^2	df	p-value
Married	139 (58.1%)	5.81	3	0.12
CHVs as main info source	81 (33.7%)	---	---	---
Main reason for delay – lack of awareness	72 (30.0%)	---	---	---
Main reason for delay – fear of pain	100 (41.7%)	---	---	---
Lived within 5 km of SCRH	94 (39.3%)	1.62	3	0.66
Out-of-pocket payment	130 (54.5%)	---	---	---
Payment range KES 3,500–8,000	---	1.382	3	0.71
Rated services as excellent	86 (36.0%)	---	---	---
Poor service rating due to cost	41 (17.2%)	---	---	---
Suggestions for improvement linked to uptake	---	11.45	4	0.02

Health System Factors

Although 39.3% lived within 5 km of the hospital, transport challenges and costs remained significant barriers. More than half (54.5%) paid out-of-pocket for surgery, with costs ranging from KES 3,500 to 8,000. Service quality ratings were mixed: 36.1% rated services as excellent, while 17.2% gave poor ratings, mostly due to cost. Qualitative findings revealed frustration with long waiting times and understaffing, with patients noting: "You arrive early but wait the whole day before being seen." Others praised the surgical outcomes: "After the operation, I could see my grandchildren clearly for the first time in years." Some patients had to make financial sacrifices, as one shared: "I had to sell two chickens to raise the fare." Patient suggestions for service improvements were significantly associated with willingness to undergo surgery ($p = 0.02$).

Predictors of Uptake

Binary logistic regression identified fear ($p < 0.01$), religious beliefs ($p = 0.01$), and patient-suggested service improvements ($p = 0.02$) as significant predictors of uptake. Both quantitative and qualitative findings suggest that addressing psychosocial barriers, enhancing patient counselling, and improving service delivery could substantially increase cataract surgery coverage in Siaya County.

Discussion

This study aimed to test the hypothesis that specific patient-related, socioeconomic, cultural, and health system factors—particularly fear of surgery, religious beliefs, and service accessibility—significantly influence the uptake of cataract surgery at the SCRH. The hypothesis was tested quantitatively using chi-square tests to examine associations between categorical variables and willingness to undergo surgery, and binary logistic regression to identify the strongest predictors while controlling for confounding factors. These statistical findings were then triangulated with qualitative insights from focus group discussions and key informant interviews, which provided explanatory depth and context.

Demographic Factors

The predominance of elderly participants (84.3% aged 60 years or older) reflects the well-documented association between advancing age and cataract prevalence (13,17). The slight male majority (53.1%) is consistent with patterns reported in rural Kenya and India, where gender disparities in access to eye care persist due to cultural norms and differential care-seeking behaviour (17,23). However, unlike studies from Nigeria and Ghana (7) where gender significantly influenced uptake, our study found no statistical association between gender and willingness for surgery. The borderline significance of the affected eye side ($p = 0.073$) parallels findings from rural India (17), where bilateral involvement increased the urgency of surgery due to greater functional impairment.

Knowledge and Perceptions

Limited knowledge about cataract emerged as a barrier, with 40.2% of respondents either unaware or misinformed. This aligns with studies in Kenya, Nigeria, and Brazil where misconceptions—such as attributing cataract to ageing or supernatural causes—reduced service uptake (3,23,14). Fear was a major deterrent, with 30.1% of participants concerned about pain and blindness. This finding mirrors results from Zambia (14) and Bangladesh (13), where fear was often fuelled by negative community anecdotes. Our qualitative data reinforced this, with participants citing stories of unsuccessful surgeries as reasons for hesitation. Conversely, effective pre-operative counselling significantly reduced fear, consistent with studies in Isiolo County, Kenya (15), which found counselling interventions led to higher surgery acceptance.

Cultural Factors

Religious beliefs significantly influenced willingness to undergo surgery ($p = 0.01$). Some participants perceived cataract as a divine condition, echoing findings from Ethiopia (12) and Southern India (11), where fatalistic beliefs discouraged medical intervention. However, others viewed surgery as consistent with religious faith, suggesting opportunities to engage religious leaders in promoting uptake. Unlike studies in Nigeria and India (17,18), where mission hospitals were associated with higher acceptance rates, our study found no significant link between facility type and uptake, possibly due to limited service-decentralisation in Siaya County.

Socio-Economic Factors

While statistical analysis did not show significant associations between marital status, education, or occupation and surgery uptake—like findings from Kwale, Kenya (23) and Ghana (7)—qualitative data revealed that financial barriers, especially transport costs, often delayed surgery. This is consistent with evidence from Ethiopia and Sudan (12,20), where indirect costs were as prohibitive as surgical fees. The pivotal role of community health volunteers (CHVs) as trusted information sources aligns with previous studies (18), which noted their effectiveness in promoting eye health services in sub-Saharan Africa.

Health System Factors

Distance to the facility and transport challenges were recurring themes, even for the 39.3% of participants living within 5 km of SCRH. Similar patterns have been reported in Kenya, Nigeria, and Ghana (6,9,7), where physical proximity did not always translate into accessibility due to transport costs and terrain. Out-of-pocket payments were common (54.5%), with costs ranging from KES 3,500 to 8,000, reflecting findings from Nigeria and Ethiopia (12,19) where affordability was a barrier. Service ratings revealed that cost, waiting time, and staffing influenced patient perceptions—echoing previous research (16) that emphasised service quality is as critical as service availability.

Predictors of Uptake and Implications

Binary logistic regression identified fear, religious beliefs, and patient-suggested service improvements as significant predictors of uptake. The interplay between these factors suggests that strategies to improve coverage must address psychosocial, cultural, and systemic barriers simultaneously. Like WHO's Global Action Plan (1), our findings highlight the importance of community engagement, culturally tailored health education, and financial protection mechanisms.

Conclusion

Cataract surgery uptake at SCRH is driven more by fear, misconceptions, religious beliefs, and perceptions of service quality rather than by socio-demographic factors alone. Financial and transport barriers remain, but counselling, community health volunteers, and peer testimonies improve acceptance. To increase uptake, interventions should address psycho-social barriers, engage religious leaders, decentralise services, and strengthen financial protection, aligning with national and global eye health priorities.

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Author Contributions:

Chrispory Juma Ombuya: Conceptualisation, data collection, analysis, writing the original draft.
Doreen Maloba Othero: Supervision, methodology, writing, review and editing.
Dickens Omondi Aduda: Supervision, validation, writing, review and editing.

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