

Barriers to Cataract Surgery among Adults with Visually Impairing Cataract in Northern Togo: Results from the 2024 RAAB Survey

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Abstract

Purpose: To describe the sociodemographic characteristics of patients with cataract and visual impairment and to analyze the main barriers to access to cataract surgery in northern Togo. **Methods:** A population-based cross-sectional study using the Rapid Assessment of Avoidable Blindness (RAAB7) methodology was conducted from November to December 2024. A multistage cluster sampling design selected 4300 individuals aged ≥ 50 years across 86 clusters. Presenting visual acuity (PVA) was measured using Peek Acuity. Visually impairing cataract was defined as unoperated lens opacity causing PVA $<5/10$ ($<6/12$ equivalent) in the better eye. Prevalence estimates were calculated with 95% confidence intervals (95% CI). Associations were assessed using Chi-square tests. **Results:** Of 4300 eligible participants, 4290 were examined (response rate: 99.8%). The prevalence of unoperated cataract was 28.5% (95% CI: 27.2 - 29.9). The prevalence of visually impairing cataract was 23.7% (95% CI: 22.4 - 25.0). Cataract was bilateral in 73.7% of cases. Women accounted for 74.2% of patients, with a mean age of 71.0 ± 10.1 years. Moderate visual impairment was the most frequent category (49.8%). The main barriers to cataract surgery were inability to afford the procedure with 46.1% (95% CI: 43.0 - 49.2), lack of awareness of the availability of treatment with 32.4% (95% CI: 29.5 - 35.3), and poor access to eye care services with 18.0% (95% CI: 15.6 - 20.4). No significant association was found between barriers and sex ($p > 0.05$). Lack of perceived need was significantly associated with age ($p = 2.4 \times 10^{-8}$). All barriers except fear were significantly associated with severity of visual impairment ($p < 0.01$). **Conclusion:** Financial and informational barriers remain the main obstacles to cataract surgical uptake in northern Togo. Strength-

ening surgical subsidies and community awareness strategies is essential to reducing avoidable blindness.

Keywords

Cataract, Surgery, Barriers, RAAB, Togo

1. Introduction

Cataract is the leading cause of avoidable blindness worldwide. According to the World Health Organization (WHO), it accounts for more than half of all cases of blindness, despite the availability of effective surgical treatment [1] [2]. Globally, more than one billion people live with visual impairment that could have been prevented or treated, with cataract being among the most readily curable causes [1].

In sub-Saharan Africa, cataract remains a major public health challenge. Despite technical and organizational progress, access to surgery is still limited by financial, geographic and sociocultural constraints [3]-[6]. Several studies have shown that the cost of surgery, lack of awareness of treatment availability and fear of surgery are the main barriers to cataract surgical uptake in low- and middle-income countries [3] [5] [6].

In Togo, Rapid Assessment of Avoidable Blindness (RAAB) surveys conducted since 2014 have highlighted the importance of financial barriers, geographic accessibility and sociocultural beliefs contributing to delays in cataract management [7] [8]. Although efforts have been made over the past decade to improve eye care delivery, particularly through outreach surgical campaigns and strengthening human resources, the magnitude of persistent barriers in the northern regions of the country has remained insufficiently documented.

This study, based on the 2024 RAAB survey, aimed to estimate the prevalence of visually impairing cataract among adults aged ≥ 50 years, describe sociodemographic characteristics, and analyze self-reported barriers to cataract surgery and associated factors.

2. Patients and Methods

2.1. Study Design and Setting

This was a population-based analytical cross-sectional study using the RAAB methodology, conducted from 18 November to 13 December 2024. The study took place in the Centrale, Kara and Savane regions, as well as in the prefectures of Akebou and Est Mono, covering approximately 60% of the national territory.

2.2. Study Population

The target population included all men and women aged 50 years and older who had been living in the study area for at least six months. Individuals living in

boarding schools, healthcare institutions and temporary visitors were excluded.

2.3. Sampling

A multistage cluster sampling design was used. Sample size was calculated using RAAB software based on an expected blindness prevalence of 3.6%, a confidence interval of 95%, a relative precision of 20%, a design effect of 1.5 and a non-response rate of 10%.

A total of 4300 participants were required, distributed across 86 clusters of 50 individuals selected with probability proportional to size using 2022 census data. Compact segment sampling was applied within clusters.

2.4. Definitions

Visually impairing cataract was defined as presenting visual acuity (PVA) $< 5/10$ ($< 6/12$ equivalent) in the better eye primarily attributable to lens opacity on examination. Visual impairment categories followed ICD-11 classification. For the purposes of this study, “unoperated cataract” refers to visually significant cataract in individuals who had not previously undergone cataract surgery.

2.5. Data Collection

Data were collected by trained teams consisting of an ophthalmologist and ophthalmic paramedical staff. Visual acuity was measured using the Peek Acuity application. Cataract was diagnosed using a portable slit-lamp examination. When visual acuity did not improve with pinhole testing and no corneal opacity or refractive error was present, pupillary dilation was performed to exclude posterior segment pathology. The principal cause of visual impairment was assigned according to RAAB guidelines, selecting the most easily treatable cause when more than one condition was present. Participants with unoperated cataract associated with visual impairment were interviewed regarding reasons for not undergoing surgery. Participants were allowed multiple responses. Percentages therefore represent the proportion of individuals reporting each barrier, and totals may exceed 100%.

2.6. Statistical Analysis

Data were entered using RAAB software version 7 from the London School of Hygiene and Tropical Medicine (LSHTM). Data were analyzed using Excel and R software. Prevalence estimates were calculated with 95% confidence intervals. Associations were assessed using Chi-square or Fisher’s exact tests. Statistical significance was set at $p < 0.05$.

2.7. Ethical Considerations

Confidentiality and anonymity of participants were respected in accordance with ethical principles. Written informed consent was obtained from all participants before examination. The protocol was approved by the Ethics Committee of the

Faculty of Health Sciences of the University of Lomé and by the Health Research Bioethics Committee.

3. Results

3.1. General Characteristics

A representative sample of 4300 individuals aged 50 years and older was selected. Of these, 4290 were examined, yielding a response rate of 99.8%. The prevalence of unoperated cataract was 28.5% (1224/4290; 95% CI: 27.2 - 29.9). The prevalence of visually impairing cataract was 23.7% (1016/4290; 95% CI: 22.4 - 25.0). The study flow diagram is presented in **Figure 1**.

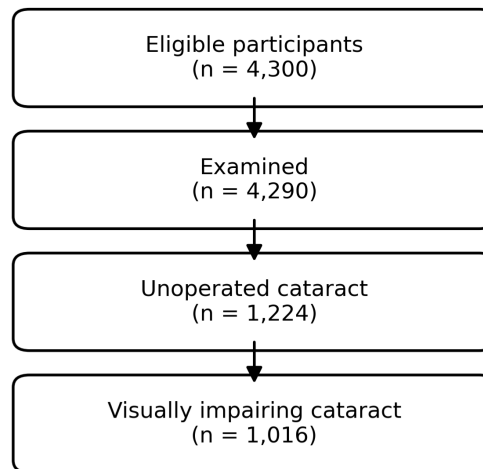


Figure 1. Flow diagram of the study population.

3.2. Characteristics of Patients with Visual Impairing Cataract

Patients with visual impairing cataract were predominantly female (74.2%). The mean age was 71.0 ± 10.1 years. The predominant age group was 70 - 79 years (33.9%), followed by 60 - 69 years (32.1%), ≥ 80 years (23%), and 50 - 59 years (11%). Cataract was bilateral in 73.7% of cases (n = 749) (**Table 1**).

Table 1. Distribution of patients according to type of cataract with visual impairment.

	Number (n)	Percentage (%)
Bilateral	749	73.7
Right eye (unilateral)	117	11.5
Left eye (unilateral)	150	14.8
Total	1016	100

3.3. Severity of Visual Impairment

Moderate visual impairment was the most common category (49.8%), followed by mild visual impairment (18.9%), severe visual impairment (17.1%) and blindness (14.2%).

3.4. Barriers to Cataract Surgery

The most frequently reported barrier was inability to afford surgery with 46.1% (95% CI: 43.0 - 49.2). Lack of awareness of the availability of surgical treatment was the second most common barrier with 32.4% (95% CI: 29.5 - 35.3), followed by poor geographic access to eye care services with 18.0% (95% CI: 15.6 - 20.4) (Table 2). Sociocultural beliefs, fear of surgery and medical contraindications were less frequently reported.

No significant association was found between barriers and sex ($p > 0.05$). Lack of perceived need was significantly associated with age ($p = 2.4 \times 10^{-8}$). All barriers except fear were significantly associated with severity of visual impairment ($p < 0.01$).

Table 2. Barriers to cataract surgery.

	n	%	95% CI
Inability to afford surgery	468	46.1	43.0 - 49.2
Lack of awareness	329	32.4	29.5 - 35.3
Poor geographic access	183	18.0	15.6 - 20.4
Lack of perceived need	149	14.7	12.5 - 16.9
Fear of surgery	86	8.5	6.8 - 10.2

4. Discussion

This study confirms that cataract remains a major cause of avoidable blindness in northern Togo, consistent with WHO data and findings from other sub-Saharan African countries [1] [3] [4]. The female predominance observed likely reflects the demographic structure of older populations, characterized by higher life expectancy among women, as reported in several RAAB surveys in West Africa [8] [9].

Inability to afford cataract surgery was the main barrier identified, in line with findings from the 2014 RAAB survey in Togo [7] and studies conducted in Mali, Cameroon, Ghana and Tanzania [5] [6] [10]-[12]. In contexts where patients are predominantly elderly, without stable income and reliant on family support, surgical costs represent a major obstacle to care.

The high proportion of patients unaware of the availability of effective surgical treatment highlights persistent gaps in information and community awareness. Similar findings have been reported in studies conducted in Nepal and West Africa [6] [11], underscoring the need to strengthen community-based health education and involvement of community health workers.

Geographic access barriers were also commonly reported. In northern Togo, where many communities are located far from surgical facilities, outreach surgical campaigns and transportation support mechanisms could help reduce access inequalities. Together, these findings highlight the importance of combining financial, informational, and geographic strategies to improve cataract surgical cover-

age in the region.

The lack of significant association between sex and reported barriers is consistent with some African studies [10], although others have reported greater vulnerability among women in accessing cataract surgery [3]. These discrepancies may reflect contextual, sociocultural and organizational differences between settings.

The limitations of this study include its cross-sectional design, the subjective nature of self-reported barriers, and the absence of in-depth qualitative data to explore underlying sociocultural determinants. Nevertheless, the standardized RAAB methodology, large sample size and excellent representativeness strengthen the robustness of the findings.

5. Conclusion

Blinding cataract remains a major public health concern in northern Togo. Financial, informational and geographic barriers continue to limit access to surgery, the only effective curative treatment. The implementation of sustainable subsidy policies, combined with community awareness campaigns and strengthened decentralized ophthalmic services, is essential to achieve a lasting reduction in avoidable cataract-related blindness.

Author's Contributions

All authors participated in drafting and revising the manuscript and approved the final version.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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