Perceived barriers to cataract surgery among individuals aged 50 and older in Nepal: A population-based cross-sectional survey

Ranjan Shah,¹ Sailesh Kumar Mishra,¹ Rajiv Khandekar,² Parikshit Gogate,³ Yuddha Dhoj Sapkota,⁴ Reeta Gurung,⁵ Mohan Krishna Shrestha, ⁵ Islay Mactaggart,6 Ian McCormick,6 Brish Bahadur Shahi, ⁷ Matthew Burton.⁶

¹Nepal Netra Jyoti Sangh, Kathmandu, Nepal, ²Department of Ophthalmology & Visual Sciences, Faculty of Medicine, The University of British Columbia, Vancouver, Canada, ³Community Eye Care Foundation, Dr. Gogate's Eye Clinic, Pune, India, ⁴International Agency for Prevention of Blindness, Southeast Asia, Kathmandu, Nepal, ⁵Nepal Eye Program, Tilganga Institute of Ophthalmology, Kathmandu, Nepal, ⁶International Centre for Eye Health, London School of Hygiene and Tropical Medicine, London, UK, ⁷Ministry of Social Development, Karnali Province, Nepal

INTRODUCTION

Cataract surgery is the most cost-effective public health initiative to address avoidable blindness.¹ Therefore, the WHO and professional agencies supported cataract surgery provisions to address avoidable visual impairment due to cataracts.² All efforts were focused to identify and address the factors affecting the uptake of cataract surgeries, especially in low and middle-income countries.³

Studies in Nepal have also identified 'high cost,' fear of surgery,' distance,' and 'lack of awareness' as prominent barriers to cataract surgery, leading to low uptake.⁴⁻⁶

This study, part of the 2021 RAAB survey, aimed to identify the key barriers to cataract surgery among adults aged 50 and older with severe visual impairment and blindness due to cataracts in Nepal.

Table 1: Gender wise barriers to cataract surgery in Nepal

	Male		Fe	male	Total	
Barriers/Gender	Number	Percentage	Number	Percentage	Number	Percentage
Felt no need	92	33.9	145	32.4	237	33.0
Fear	28	10.3	60	13.4	88	12.1
Cost	87	32.1	131	29.3	218	30.4
Treatment Denied	6	2.2	18	4.0	24	3.3
Unaware of treatment possible	9	3.3	9	2.0	18	2.5
Cannot access treatment	36	13.3	57	12.8	93	13.0
Local reasons (Lack of	13	4.8	27	6.0	40	5.6
accompany)						



INTERNATIONAL SOCIETY FOR GEOGRAPHICAL & EPIDEMIOLOGICAL OPHTHALMOLOGY SOCIETE INTERNATIONALE D'OPHTHALMOLOGIE GEOGRAPHIQUE ET EPIDEMIOLOGIQUE



Presenting Author Mr. Ranjan Shah Program Manager Nepal Netra Jyoti Sangh Tripureshwor, Kathmandu, Nepal Email: ranjan_shah@nnjs.org.np



Survey design and setting:

A population-based cross-sectional RAAB survey using, multistage cluster random sampling, was conducted across all provinces of Nepal between 2019 and 2021.

Sample Size:

METHODS

The sample size (n = 33,414 from 956 cluster) was calculated using the RAAB7 software with parameters of 95% Cl, 20% allowable error, 10% non-response rate and 1.4 design effect where the cluster size was 35.



Survey population and examination:

- Participants aged 50 years or older residing in the same cluster for at least six months were enrolled in the survey.
- Visual acuity assessments, anterior segment exams, and fundus evaluations were performed using standardized protocols at their doorstep by the trained team led by an ophthalmologist.
 All the bilateral blind due to cataract (BCVA <3/60) and severe visually impaired (BCVA <6/60) in better eye were further interviewed using a pretested questionnaire with seven known barriers.

Province wise perceived barriers to cataract surgery in Nepal

High cost was a perceived barrier in all provinces except Gandaki, where low visual needs were the primary concern. In Madhesh and Bagmati, one in four participants feared surgery. Nearly half of cataract-blind individuals in Madhesh and Lumbini did not feel the need for vision restoration. In Karnali, limited access to surgery and high costs were the most significant barriers.

Table 2: Province wise perceived barriers to cataract surgery in Nepal

Barriers/Province	Koshi	Madhesh	Bagmati	Gandaki	Lumbini	Karnali	Far Western	Total
No need felt	16 (21.9%)	84 (49.7%)	10 (16.4%)	17 (27.4%)	96 (41.0%)	4 (6.3%)	10 (17.9%)	237 (33.0%)
Fear	7 (9.6%)	41 (24.3%)	17 (27.9%)	5 (8.1%)	6 (2.6%)	1 (1.6%)	11 (19.6%)	88 (12.1%)
Cost	21 (28.8%)	37 (21.9%)	13 (21.3%)	9 (14.5%)	84 (35.9%)	25 (39.7%)	29 (51.8%)	218 (30.4%)
Treatment denied	2 (2.7%)	7 (4.1%)	5 (8.2%)	7 (11.3%)	0 (0.0%)	2 (3.2%)	1 (1.8%)	24 (3.3%)
Unaware of treatment possible	3 (4.1%)	0 (0.0%)	4 (6.6%)	5 (8.1%)	2 (0.9%)	1 (1.6%)	3 (5.4%)	18 (2.5%)
Cannot access treatment	7 (9.6%)	0 (0.0%)	6 (9.8%)	8 (12.9%)	46 (19.7%)	24 (38.1%)	2 (3.6%)	93 (13.0%)
Local reasons (Lack of accompany	17 (23.3%)	0 (0.0%)	6 (9.8%)	11 (17.7%)	0 (0.0%)	6 (9.5%)	0 (0.0%)	40 (5.6%)
Total	73 (100%)	169 (100%)	61 (100%)	62 (100%)	234 (100%)	63 (100%)	56 (100%)	718 (100%)

Barriers to cataract surgeries in Nepal from different studies

Multiple studies in Nepal have identified similar key barriers to cataract surgery uptake. High cost is a major challenge across all studies, while lack of awareness is particularly significant in the plains. Logistic difficulties, including long distances, lack of accompaniment, and fear, are also common. Socio-cultural factors, such as decisional roles and low visual needs in urban women, further influence surgery acceptance.

Table 3: Barriers to cataract surgeries in Nepal in different studies

		T 7	A 4 T
onulation Vlain harriers	Ponulation	Vear	Authors
	I opulation	Ivai	Authors
opulation Main Dallies	i opulation	Ital	Authors

Data management and statistical analysis:

- Barrier-related survey data were captured through a digitized structured questionnaire on tablets equipped with the mRAAB7 mobile application.
- The collected data were synced and imported into the RAAB7 software for analysis.

Ethical considerations:

- Written informed consent was obtained prior to data collection and ocular examination.
- Approval from Department of Health Services and the Nepal Health Research Council was taken and adhered to the principles outlined in the Declaration of Helsinki.
- Additionally, appropriate remedial actions were taken to address any eye or other health-related issues identified during survey.

RESULTS

Of the 33,228 participants enrolled, 32,565 were examined. Among them, 718 were, found to be bilateral blind due to cataract and severe visual impairment (BCVA <6/60), interviewed for the barrier study.

Demographic profile of participants (n=718)

Nearly two-thirds of participants with blinding cataracts, 447 (62.3%), were female (Fig 1). About 40% (297, 41.4%) were aged 50 to 59 years (Fig 2). Lumbini accounted for one-third (234, 32.6%) of the surveyed participants, while Madhesh contributed one-fourth (169, 23.5%), both from the densely populated plains (Fig 3).



Snellingen ⁷	1998	decliners of cataract surgery	Cost (48%), logistic (45%), fear (33%)
Sneg S ⁸	2021	Morang and Sunsari districts of	High cost, lack of awareness, female gender
		Nepal	
Gurang R ⁹	2007	Cataract blind women in	Low visual needs in urban and Lack of access in
		screening camp	rural participants
Ansari ¹⁰	2022	Govt hospital, Koshi	High cost, lack of awareness, long distances
Karn R ¹¹	2020	Non-acceptors in Eastern Nepal	Nobody to accompany, systemic illness, busy,
			high cost
Yuddha ¹²	2010	Unoperated cataract blind at	Decisional role and lack of awareness
		Gaur Eye Hospital	
Pradhan S ⁶	2017	RAAB study in n Narayani	Plains: no need, high cost.
		Zone	Hills: high cost, fear of surgery
Das T ¹³	2018	Southeast Asia region	Lack of accessibility, high cost

CONCLUSIONS

- Address Key Barriers to improve cataract surgical coverage.
- Implement Provincial Strategies to overcome regional challenges.
- * Provide Financial Support through health insurance, local government subsidies, and cross-subsidy models.
- * Raise Eye Health Awareness to reduce fear and highlight service availability & vision importance.
- **Solution** Conduct Further Research to understand why people delay cataract surgery despite its affordability and safety.

ACKNOWLEDGEMENT

We want to acknowledge to the entire ophthalmic and administrative personnel from all the eye hospitals who contributed to the survey. We are grateful to the Nepal Health Research Council for granting ethical approval for the survey.

Gender wise perceived barriers to cataract surgery in Nepal

Among cataract-blind individuals aged 50 and older, high surgical costs and low perceived visual needs affected one in three participants equally across both genders. The third most cited barrier was limited access to treatment, followed by fear of cataract surgery.



Author(s) received funding from NNJS, TIO, ECF, Seva Foundation, FHF, CBP and NRCS.

COMPETING INTERESTS None declared

REFERENCES

5. doi: 10.22608/AP0.2017425.

Grimes CE, Henry JA, Maraka J, Mkandawire NC, Cotton M. Cost-effectiveness of surgery in low- and middle-income countries: a systematic review. World J Surg. 2014;38(1):252-63. doi: 10.1007/s00268-013-2243-y. Vision Loss Expert Group of the Global Burden of Disease Study; GBD 2019 Blindness and Vision Impairment Collaborators. Global estimates on the number of people blind or visually impaired by cataract: a meta-analysis from 2000 to 2020. Eye (Lond). 2024;38(11):2156-2172. doi: 10.1038/s41433-024-02961-1. Keel S, Müller A, Block S, Bourne R, Burton MJ, Chatterji S, et al. Keeping an eye on eye care: monitoring progress towards effective coverage. Lancet Glob Health. 2021;9(10):e1460-e1464. doi: 10.1016/S2214-109X(21)00212-6. Sapkota YD, Pokharel GP, Dulal S, Byanju RN, Maharjan IM. Barriers to up take cataract surgery in Gandaki Zone, Nepal. Kathmandu Univ Med J (KUMJ). 2004;2(2):103-12. PMID: 15821375. Shrestha MK, Thakur J, Gurung CK, Joshi AB, Pokhrel S, Ruit S. Willingness to pay for cataract surgery in Kathmandu valley. Br J Ophthalmol. 2004;88(3):319-20. doi: 10.1136/bjo.2003.026260 Pradhan S, Deshmukh A, Giri Shrestha P, Basnet P, Kandel RP, Lewallen S, et al. Prevalence of blindness and cataract surgical coverage in Narayani Zone, Nepal: a rapid assessment of avoidable blindness (RAAB) study. Br J Ophthalmol. 2018;102(3):291-294. doi: 10.1136/bjophthalmol-2017-310716. Snellingen T, Shrestha BR, Gharti MP, Shrestha JK, Upadhyay MP, Pokhrel RP. Socioeconomic barriers to cataract surgery in Nepal: the South Asian cataract management study. British Journal of Ophthalmology. 1998;82(12):1424-8. doi: 10.1136/bjo.82.12.1424. Sheng SN, Kaiying W, Wei-En H, Deborah LM, Vijayan S, Betzler BK, Agrawal M, Khatri A, Agrawal R. Barriers to Cataract Surgery in Peri-urban Regions of Eastern Nepal. Nepalese Journal of Ophthalmology. 2021;13(2):154-68. Gurung R. Cataract surgical outcome and gender-specific barriers to cataract services in Tilganga Eye Centre and its outreach microsurgical eye clinics in Nepal. Community Eye Health. 2007;20(61):14. Ansari Z, Maharjan RK, Basnet R, Khatoon S, Koirala A. Barriers to cataract surgery in peri-urban regions of Eastern Nepal: An experience at a government eye department. Nepalese Journal of Ophthalmology. 2022;14(2):175-7. Karn RR, Adhikari PR, Anwar A, Thakur SK, Singh SK. Barriers of cataract surgery among camp screened patients of Sunsari and Morang district of eastern Nepal. Al Ameen J Med Sci 2020; 13(1): 5-9. Sapkota YD, Sunuwar M, Naito T, Akura J, Adhikari HK. The prevalence of blindness and cataract surgery in rautahat district, Nepal. Ophthalmic epidemiology. 2010;17(2):82-9. Sapkota YD, Sunuwar M, Naito T, Akura J, Adhikari HK. The prevalence of blindness and cataract surgery in rautahat district, Nepal. Ophthalmic epidemiology. 2010;17(2):82-9. 13. Das T. Blindness and visual impairment profile and rapid assessment of avoidable blindness in South East Asia: Analysis of new data. 2017 APAO Holmes lecture. The Asia-Pacific Journal of Ophthalmology. 2018;7(5):312-