Indian Journal of Clinical and Experimental Ophthalmology 2023;9(3):369–374

Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Clinical and Experimental Ophthalmology

Journal homepage: www.ijceo.org

Original Research Article

Cataract referral pattern among Indian optometrists: A cross-sectional study

Sarbojeet Goswami [1,*], Shreya Chakraborty [1], Khushbu Mishra [2], Ritesh Kumar Chaurasiya [3], Gulafsha Saifi [4]

[1] *Dept. of Optometry, Arka Jain University, Jamshedpur, Jharkhand, India*
[2] *Dept. of Optometry, Tata Main Hospital, Jamshedpur, Jharkhand, India*
[3] *Dept. of Optometry and Vision Sciences, C L Gupta Eye Institute, Moradabad, Uttar Pradesh, India*
[4] *Dept. of Optometry, Faculty of Paramedical Sciences, Bareilly International University, Bareilly, Uttar Pradesh, India*

ARTICLE INFO

Article history:
Received 05-05-2023
Accepted 04-07-2023
Available online 29-09-2023

Keywords:
Cataract
Referral
Optometrists
Cataract surgery

ABSTRACT

Background: According to WHO (World Health Organization), cataract is the second leading cause for visual impairment or blindness globally. In the Indian context, Optometrist's role in identification and appropriate referral of cataracts requiring surgery is of utmost important. The aim of the current study was to investigate the knowledge and cataract referral pattern among Indian optometrists.

Materials and Methods: A cross-sectional study was carried out on 262 optometrists by distribution of a validated, well-structured questionnaire with data on participant demographics and optometric assessment practises, including participant age group and gender, primary clinical practise location, objective patient visual assessment methods, referral criteria for cataract surgery, and factors to be taken into account when deciding where and when to refer patients for cataract surgery was made. The analysis of survey questions with Likert scales was done using ordinal logistic regression. Categorical variables between groups were evaluated using Chi-square test. Statistical Significance was considered if P was less than 0.05.

Results: Visual acuity less than 6/18 and glare sensitivity were common benchmarks for cataract referral. A significant proportion of optometrists indicated driving dependent (55%), current employment (33%), high visual demand (31%) and post-operative vision less than 6/18 in other eye (34%) as important factors for urgent referral for cataract surgery to Ophthalmologists. Majority of the participants indicated surgical costs (53.8%), surgeon skills (56.9%) and caring environment/caring staff (49.2%) as extremely important factors in deciding where to refer for cataract surgery.

Conclusion: While optometrists were able to refer patients for cataract surgery based on changes in visual acuity, Indian optometrists should also assess contrast sensitivity and take that into consideration when making this decision.

1. Introduction

According to WHO (World Health Organization), cataract is the second leading cause for visual impairment or blindness globally.[1,2] In Southern India, the prevalence of cataract in rural population (> 40 years of age) was 47.5%.[3] Similarly, a recent study has reported that the prevalence of cataract in older age group (> 60 years) was 58% in northern India and 53% in Southern India.[4] The data reflects that almost 6 in every 10 Indian population aged more than 60 years were having cataract that was left operated. Global productivity losses due to visual impairment are expected to cost US$411 billion annually, placing a significant financial burden on the entire world.[1,2] As per the report, India had a

* *Corresponding author.*
E-mail address: g.shanu11@gmail.com (S. Goswami).

https://doi.org/10.18231/j.ijceo.2023.070

cataract surgical rate (CSR) of 6000 for cataract procedures in 2012 (CSR = number of cataract surgeries per million persons, per year).[5] Additionally, the report also suggested that 8002-8700 CSR will be needed to eliminate cataract blindness in India.

Prior to COVID 19, according to NPCB &VI (National Programme for Control of Blindness and Visual Impairment) showed that about 557,568 cataract surgeries were performed in India. However, the surgical rate were affected due to onset of COVID 19 pandemic in the year 2020.[6] A recent single centre study showed that there was reduction of 20% in cataract surgeries during COVID 19 due to restrictions imposed by government.[7] The ministry has suggested gradually increasing the number of cataract operations nationwide in the fiscal years 2022–2023 to 7.5 million, 9 million in 2023–2024, and 10.5 million in 2024–25, for a total of 27 million operations over the following three years.[8]

In India, optometrists are the primary eye care professionals who provide comprehensive eye and visual examination that includes refraction, prescribing spectacles, detecting and diagnosing ocular diseases and referring for appropriate management.[9] Therefore, optometrist's role in identification and appropriate referral of cataracts requiring surgery is of utmost important. Similarly, the criteria for the referral of patients for cataract surgery to ophthalmologists have not been studied till date. Given the predicted increase in the global prevalence of age-related cataract and the growing backlog of cataract surgical cases in India,[6–8] the current study aimed to investigate the practice of cataract referral among Indian optometrists.

2. Materials and Methods

An online poll was given to optometrists working in India. The study followed the declarations of tenets of Helsinki and received institutional review board approval. Before taking part in the survey, each participant gave their informed consent. Social media platforms like WhatsApp (Facebook, Inc., USA) and Gmail (Google Corp., USA) were used to distribute a self-administered, electronic questionnaire (Google Forms) along with a covering letter outlining the purpose of the study. The questionnaire asked each respondent to participate in the survey by filling it out, as well as to share it with their social contacts. Invitations were sent to email addresses or phone numbers.

2.1. Study questionnaire

A validated, well-structured questionnaire was adopted from previous literature.[10] The questionnaire consisted of information on the demographic and optometric assessment practices of participants, that included the participants age group and gender, place of primary clinical practice, objective methods used for patient visual assessment, referral criteria for cataract surgery and considerations in deciding where and when to refer patients for cataract surgery.

Optometrists were asked to indicate the influence of patients factors on their urgency of cataract referral using following criteria (Do not refer, Delay Referral, No influence, Refer sooner, Refer Urgently). Additionally, participants were also asked to rate the importance of the factors that were taken care while referring for cataract surgeries, using five point Likert scale (Not important = 1 to Very important = 5).

Lastly, the role of optometric assessment practices (Visual acuity (VA) and contrast sensitivity), and patient demographics in cataract surgery referral decisions were assessed by open response questions.

2.2. Statistical analysis

Statistical analysis was performed using SPSS software (Statistical Package for Social Sciences [IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp]). Demographic characteristics were summarized using descriptive statistics (Frequencies, Percentage, mean and Standard deviation). Survey questions comprising of Likert scales were analysed using ordinal logistic regression. Additionally, categorical variables between groups were evaluated using Chi-square test. Statistical Significance was considered if P was less than 0.05.

3. Results

The mean age of the respondents were 28.04 ± 5.86 years. Majority of the respondents were male with a ratio of almost 2.5:1. Similarly, majority of the participants had optometric experience of less than 5 years while one third of the respondents were having more than 5 years of clinical experience. Most of the participants were working in the state of Uttar Pradesh (42.36%) followed by Bihar (15.64%) and West Bengal (11.83%) and Jharkhand (8.77%).(Table 1)

Visual acuity between 6/24 and 6/36 (n = 125; 47.7%) was common benchmark for cataract referral with almost 50% of respondents indicated referral at this level of visual acuity. Similarly, almost 3 in every 10 participants indicated cataract referral between visual acuity of 6/12 and 6/18. Visual acuity between 6/6 and 6/9 were less likely to be indicated for cataract referral among the optometrists who participated in the survey. Similarly, majority of the participants (84%) indicated glare sensitivity as an important factors in deciding cataract referral along with visual acuity. About 10% (26 out of 262) of optometrists reported using contrast sensitivity testing as part of their cataract referral assessment practices with Pelli-Robson Contrast Sensitivity Chart (60%) and logMAR low contrast visual acuity (40%). Additionally, we found significant association between years of professional experience with

Table 1: Demographic characteristics of participants (n = 262)

Characteristics	Number (%)
Gender	
Male	186 (71)
Female	76 (29)
Optometric Practice Experience	
≤ 5 years	180 (68.7)
>5 years	82 (31.3)
Location of Practice (State)	
Uttar Pradesh	111 (42.36)
Jharkhand	23 (8.77)
Bihar	41 (15.64)
Haryana	16 (6.10)
West Bengal	31 (11.83)
Maharashtra	14 (5.34)
Delhi	13 (4.97)
Punjab	6 (2.30)
Uttrakhand	7 (2.67)

indication of glare as an important parameter for referral ($\chi 2$ = 4.68, P = 0.03). However, there was no evidence suggesting relationship between use of Contrast sensitivity chart as cataract referral assessment practices and year of optometry experiences ($\chi 2$ =0.41, P = 0.60).

A significant proportion of optometrists indicated driving dependent (55%), current employment (33%) and high visual demand (31%) and post-operative vision less than 6/18 in other eye (34%) as important factors of urgent referral for cataract surgery to Ophthalmologists. Similarly, the factors which had the greatest influence on a decision to delay referral were patients not wanting surgery (46%), having acceptable vision in the other eye (42%) and patient wanting to go on public waiting list for cataract surgery (40%). A proportion of respondents also chose not to refer patients based on these same three criteria (11, 14 and 5 percent, respectively) (Figure 1). Additionally, we found that the individuals with an early professional career (≤ 5 years) were more likely to indicate driving dependent (OR 3.51, 95% CI 2.11 – 5.84, P < 0.05) and high visual demand (OR 3.05, 95% CI 1.86 – 4.97, P < 0.05) as important factor for urgent referral for cataract surgery.

Majority of the participants indicated surgical costs (53.8%), surgeon skills (56.9%) and caring environment/caring staff (49.2%) as extremely important factors in deciding where to refer for cataract surgery. Similarly, the factors like convenience of location (33.2%) and optometrists-ophthalmologists relationship (32.4%) were indicated as very important factors on deciding the location for cataract surgery. Additionally, waiting time for surgery and initial appointment were two factors considered as "not important or of little important" in deciding where to refer the patients (Figure 2). We found that the individuals with an late professional career (> 5 years) were more likely to indicate surgical cost (OR 2.30, 95% CI 1.34 – 3.95, P < 0.05) and convenience of location (OR 2.09, 95% CI 1.28 – 3.39, P < 0.05) as important factors on deciding where to refer for cataract surgery.

4. Discussion

The present study evaluated the referral pattern among Optometrists practicing in India with regards to Cataract management. The study found that majority of the respondents indicated referral for cataract surgery if the patient's BCVA was less than 6/18. Similarly, we also found that the referral was less likely to be indicated for cataract surgery. The results of the current study adhered the standard management guidelines of ICMR (Indian Council of Medical Research)[11] and Vision 2020: Right to sight[12] regarding cataract surgery. Cataract management guidelines suggested that subjective and objective method should be evaluated along with visual acuity. Subjective assessment include the limitation of carrying out daily routine work whereas objective assessment include the ophthalmic examinations (Visual acuity and grade of cataract).[12] Several factors like visual acuity, glare sensitivity, contrast sensitivity, colour vision, Visual field, and stereopsis have an important role in driving safety and performance. However, visual acuity was found to be a predictor of driving safety.[13] Most of the countries have made visual acuity of 20/40 (6/12) as the minimum requirement for commercial driving. The MVA (Motor Vehicle Act) of 2017 in India has excluded any criteria related to vision. However, for a commercial driver's license, the better eye must have visual acuity of 6/9 and a horizontal field of vision of 140 degrees. If the better eye's visual acuity is less than 6/24, the application for a driver's license will be rejected.[13]

The results of the current study showed significant discrepancies between its findings and those of earlier studies conducted in other nations and regions, with a significant portion of respondents (50 percent) preferring to refer patients after their vision had deteriorated to this level (< 6/12), with an emphasis on more objective measures when making surgical referral decisions.[10,14,15] Based on the findings, we hypothesize that the optometrists in India should also decide the need of cataract surgery based on subjective assessments and not only on the objective measurements.

Despite evidence from the literature suggesting its value in predicting visual function, only 10% of the responding optometrists used contrast sensitivity testing, whereas almost all of them (84%) considered it when referring patients for cataract surgery.[13] According to Hard et al., glare issues improved or vanished following cataract surgery. Additionally, post surgery the contrast sensitivity had improved to the point where the glare-induced visual loss did not cause any problems with vision, both with and without glare.[16] While VA and glare did not have any statistically significant correlations, Owsley et al.[17]

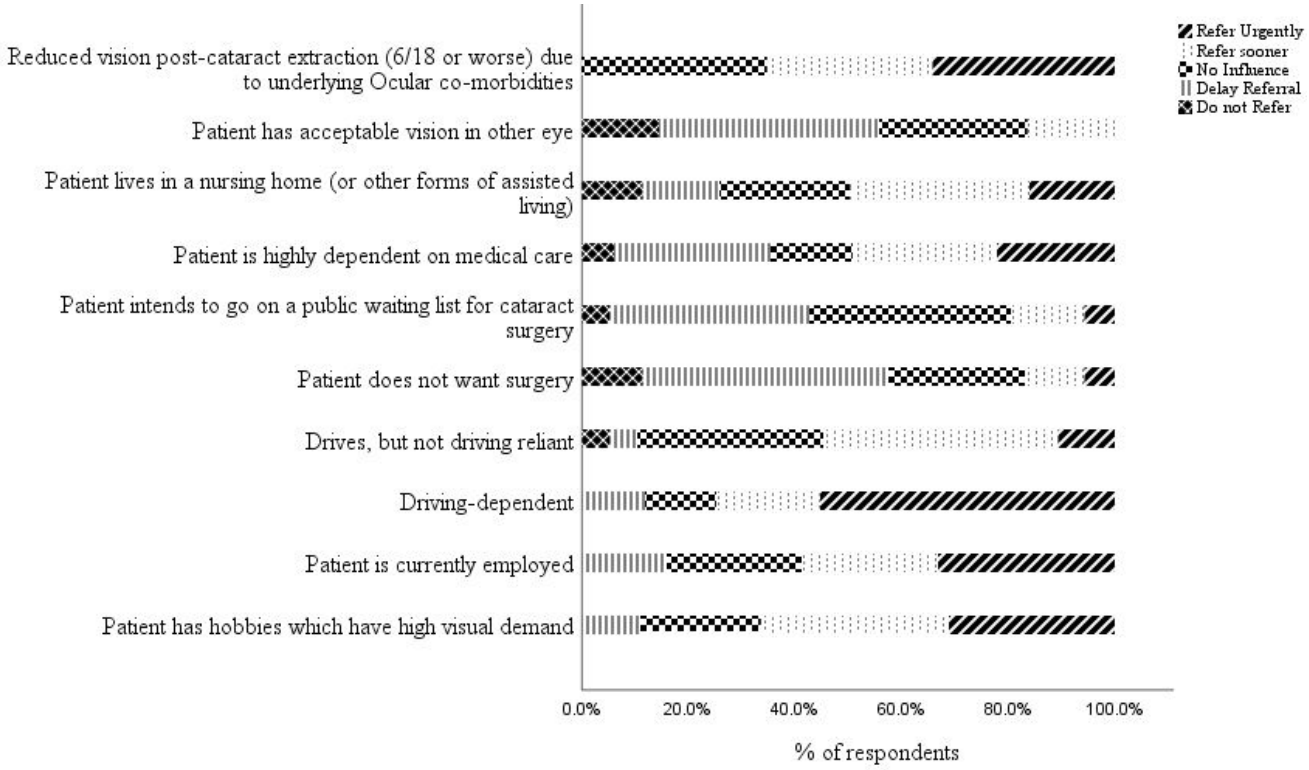

Fig. 1: Percentage of respondents (%) reported the factors influencing urgency of referral for cataract surgery

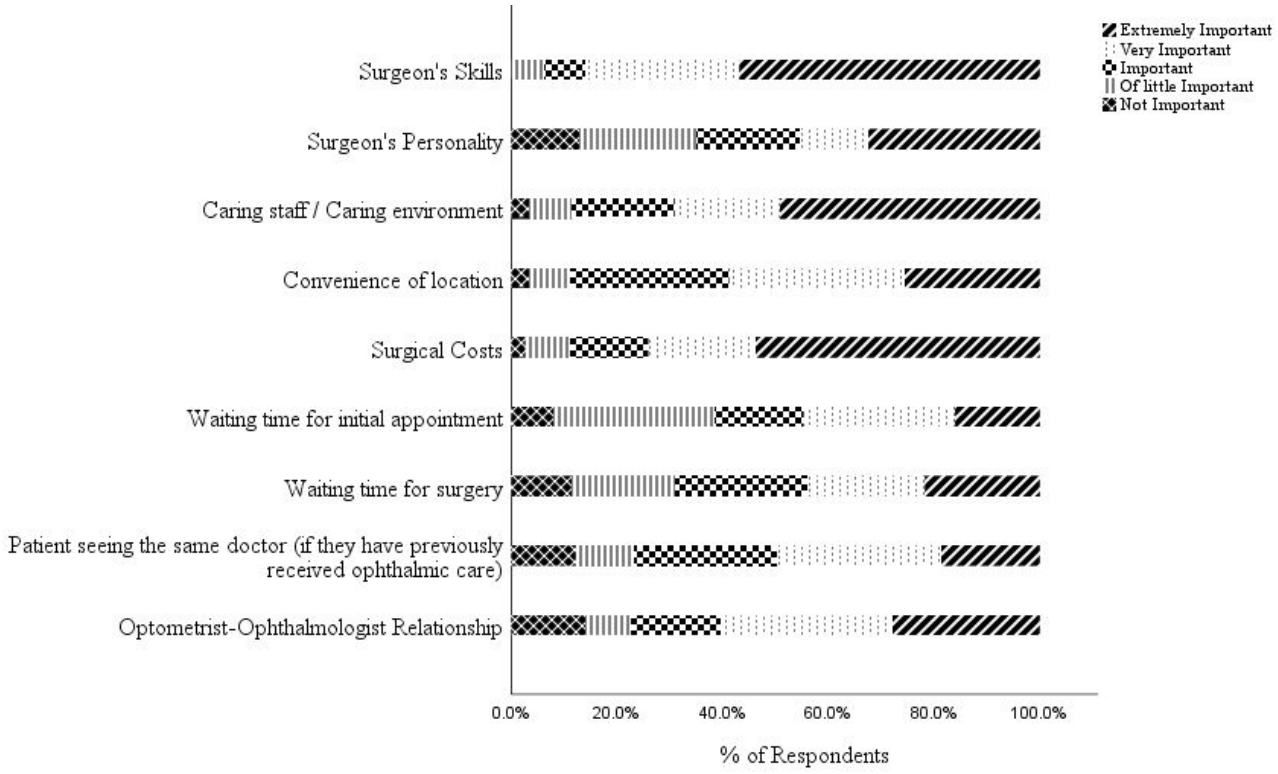

Fig. 2: Percentage of respondents (%) who rated factors influencing optometrists' decisions on where to refer for cataract surgery

discovered that a contrast sensitivity of 1.25 or less was related to road traffic accident. Similarly, Rubin et al.[18] found that while visual acuity, contrast sensitivity, and stereo acuity were unrelated to crashes, glare sensitivity, visual field loss, and UFOV (Useful Field of View) were significant predictors of crash involvement. These findings also suggested that the current vision screening process for obtaining a driver's license, which focuses primarily on visual acuity, may ignore significant visual impairments.

Driving dependent was the most indicated parameter for urgent referral for cataract surgery among optometrists. Previous literature has suggested that cataract increases glare sensitivity which may affect the daily routine activities including driving.[11–16] The participants are aware of reduced glare sensitivity which might have accounted for maximum referral under this category. Similarly, surgical costs and surgeon skills were two extremely important factors on deciding the location for referral. Gupta et al[19] found that majority of the respondents were aware of cataract as a disease, but potential barriers preventing them from seeking treatment were accessibility, cost of surgery and personal belief. Similarly, Snellingen et al[20] also found that almost half of the patients were not accepting cataract surgery due to economic and logistic constraints followed by fear of surgery and lack of time.

The study's findings can be interpreted with some restrictions. Firstly, the respondents were confined to a single state (Uttar Pradesh) at most, which limits the ability of the current study to generalize the findings. Secondly, because the survey was self-reported, there is a chance that optometrist referral practices were overestimated. Lastly, young age of respondents and less experience are also limitations as older optometrists (aged 50 years +) were not adept with google forms.

5. Conclusion

The current study provided the referral pattern of Indian optometrists related cataract management. Majority of the optometrists were aware and followed the cataract referral pattern as per guidelines. Similarly, glare sensitivity as an important factor in deciding cataract referral along with visual acuity. Optometrists with an early professional career were more likely to indicate driving dependent and high visual demand as important factors for urgent referral for cataract surgery than late professional career. Similarly, the individuals with late professional career were more likely to indicate surgical cost and convenience of location as important factors on deciding where to refer for cataract surgery. Contrast sensitivity were less indicated as an important procedure for cataract referral.

6. Source of Funding

None.

7. Conflict of Interest

Nil.

Acknowledgments

Nil.

References

1. Blindness and Vision Impairment. World Health Organization (WHO). [Last accessed on 15/12/2022]. Available from: https://www.who.int/news-room/fact-sheets/detail/blindness-and-visual-impairment.
2. Bourne R, Steinmetz JD, Flaxman S. Trends in prevalence of blindness and distance and near vision impairment over 30 years: an analysis for the Global Burden of Disease Study. *Lancet Glob Health*. 2019;9(2):130–43.
3. Nirmalan PK, Robin AL, Katz J, Tielsch JM, Thulasiraj RD, Krishnadas R, et al. Risk factors for age related cataract in a rural population of southern India: The Aravind Comprehensive Eye Study. *Br J Ophthalmol*. 2004;88(8):989–94.
4. Vashist P, Talwar B, Gogoi M, Maraini G, Camparini M, Ravindran RD, et al. Prevalence of cataract in an older population in India: The India study of age-related eye disease. *Ophthalmology*. 2011;118(2):272–8.
5. Lahane TP. Tackling the cataract backlog-An initiative by the Maharashtra State, India. *Indian J Ophthalmol*. 2018;66(10):1391–3.
6. Reddy JC, Vaddavalli PK, Sharma N, Sachdev MS, Rajashekar YL, Sinha R, et al. A new normal with cataract surgery during COVID-19 pandemic. *Indian J Ophthalmol*. 2020;68(7):1269–76.
7. Gupta PC, Aggarwal S, Jain P, Jugran D, Sharma M, Pandav SS, et al. Impact of COVID-19 pandemic on cataract surgical volume: A North Indian experience. *Indian J Ophthalmol*. 2021;69(12):3648–50.
8. Kaul R. Centre to clear backlog of 10 million cataract surgeries over 3 years; 2022. Available from: https://www.hindustantimes.com/india-news/centre-to-clear-backlog-of-10-million-cataract-surgeries-over-3-years-101651513823483.html.
9. DeSouza N, Cui Y, Looi S, Paudel P, Shinde L, Kumar K, et al. The role of optometrists in India: An integral part of an eye health team. *Indian J Ophthalmol*. 2012;60(5):401–5.
10. Do VQ, Li R, Ma M, Pooley C, Trinh C, Peattie C, et al. Investigating cataract referral practices used by Australian optometrists. *Clin Exp Optom*. 2014;97(4):356–63.
11. Standard Treatment Workflow (STW) for the management of Cataract. [Last accessed on 06/01/2023]. Available from: https://stw.icmr.org.in/images/pdf/Ophthalmology/Cataract.pdf.
12. Guidelines for the Management of Cataract in India. [Last accessed on 06/01/2023]. Available from: https://www.sightsaversindia.org/wp-content/uploads/2019/03/16480_Cataract_Manual_VISION2020.pdf.
13. Honavar SG. Should visual function tests be mandatory for a driving license. *Indian J Ophthalmol*. 2022;70(6):1871–4.
14. Latham K, Misson G. Patterns of cataract referral in the West Midlands. *Ophthalmic Physiol Opt*. 1997;17(4):300–6.
15. Skiadaresi E, Mcalinden C, Pesudovs K, Polizzi S, Khadka J, Ravalico G. Subjective quality of vision before and after cataract surgery. *Arch Ophthalmol*. 2012;130(11):1377–82.
16. Hard AL, Beckman C, Sjostrand J. Glare measurements before and after cataract surgery. *Acta Ophthalmol (Copenh)*. 1993;71(4):471–6.
17. Owsley C, Stalvey BT, Wells J, Sloane ME, Mcgwin G. Visual risk factors for crash involvement in older drivers with cataract. *Arch Ophthalmol*. 2001;119(6):881–7.
18. Rubin GS, Ng ES, Bandeen-Roche K, Keyl PM, Freeman EE, West SK. A prospective, population-based study of the role of visual impairment in motor vehicle crashes among older drivers: the SEE study. *Invest Ophthalmol Vis Sci*. 2007;48(4):1483–91.
19. Gupta R, Gupta A, Omair M, Chauhan L, Agarwal P, Khurana A. Health Literacy on Cataract and Its Treatment Options Among Patients

with Operable Cataract: A Cross Sectional Study from Moradabad (India). *Delhi J Ophthalmol*. 2022;32(3):50–4.
20. Snellingen T, Shrestha B, Gharti M, Shrestha J, Upadhyay M, Pokhrel R. Socioeconomic barriers to cataract surgery in Nepal: the South Asian cataract management study. *Br J Ophthalmol*. 1998;82(12):1424–8.

Author biography

Sarbojeet Goswami, Assistant Professor https://orcid.org/0000-0002-9106-1807

Shreya Chakraborty, Assistant Professor https://orcid.org/0009-0001-1046-623X

Khushbu Mishra, Consultant Optometrist https://orcid.org/0009-0000-4658-2059

Ritesh Kumar Chaurasiya, Assistant Optometrist & Faculty https://orcid.org/0000-0001-8853-2279

Gulafsha Saifi, Assistant Professor https://orcid.org/0009-0007-4796-4316

Cite this article: Goswami S, Chakraborty S, Mishra K, Chaurasiya RK, Saifi G. Cataract referral pattern among Indian optometrists: A cross-sectional study. *Indian J Clin Exp Ophthalmol* 2023;9(3):369-374.