

# Health Literacy on Cataract and Its Treatment Options Among Patients with Operable Cataract: A Cross Sectional Study from Moradabad (India)

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**Purpose:** To investigate the awareness of cataract disease and treatment options among patients with operable cataract.

**Methods:** Participants were selected by means of eye disease screenings throughout Moradabad district. A pre-tested structured, content-validated questionnaire, translated in Hindi, was used for seeking study-related information and consisted of three sections: 1) Socio-demographic characteristics, 2) Knowledge and 3) Attitude of patients regarding cataract and its treatment. Questionnaire was administered by a trained interviewer after it was determined that the patient needed cataract surgery.

**Results:** A total of 192 participants were interviewed. Of all, 98.5% patients were aware of their condition. Surgery as a treatment for cataract was known to 57.6% respondents. 50.2% patients knew that during surgery, natural lens was replaced with an artificial lens. 89.2% believed that the cost of cataract surgery prevented people from seeking interventions, while 31.5% deemed it unaffordable. An acquaintance getting operated was the motivating factor for 47.3% patients. The principal barriers in seeking cataract treatment were found to be lack of accessibility and fear of pain in by 98% and 65.5% of patients respectively.

**Conclusion:** Our study highlighted that majority of the respondents were aware of cataract as a disease, but the potential barriers preventing them from seeking treatment were accessibility, cost of surgery and personal belief. This study emphasizes the need for increasing the uptake of cataract services in the North Indian community. We apprehend that focused propagation of knowledge and communication will successfully enhance demand for cataract surgical services.

## Abstract

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**Keywords:** Awareness, Cataract surgery, Knowledge, Barrier, Affordability

## Introduction

Worldwide, over 300 million people are visually impaired and 45 million are blind.<sup>1</sup> Cataract is the leading cause of non-refractive reversible blindness. Studies have also shown that even though the visual function can be recovered by cataract surgery, still the uptake of cataract surgery is low in developing countries. The barriers for uptake of cataract surgery ranged from economic and socio-cultural influencing factors such as beliefs, values, and the individual's attitudes and perceptions, to fear, lack of confidence, and insecurity.<sup>2,3</sup> Lack of knowledge about the disease, its surgical procedure and occasionally, unrealistic expectations about the visual outcomes have also been identified as contributing factors.<sup>4,5</sup> Globally, in the last two decades, the number of blind and visually impaired due to cataract have decreased by 11.4% and 20.2% respectively.<sup>6</sup>

Though, India has been successfully raising its cataract surgical rate,<sup>7,8</sup> which is defined as the number of cataract operations performed per year per million people of an area,<sup>4</sup> the burden of cataract remains a major public health concern. According to the State Census 2011, the most populated state in India, Uttar Pradesh (UP) has a population of 199.6 million,<sup>9</sup> out of which 0.7 million people are visually impaired.<sup>9</sup> Such a high degree of disability necessitates an extensive effort towards increasing the uptake of cataract surgeries. While reviewing the data of our community eye screening camps, a significant number of patients were identified to have opted out of cataract surgery. This study was planned to identify the potential barriers to the uptake of cataract surgery.

## Methods

This population based cross-sectional study was designed and conducted by a tertiary eye care institute in Moradabad district of Uttar Pradesh (India) during August 2019 to January 2020. It was reviewed and approved by the Institutional Ethics Committee and was conducted in accordance to the tenets of Declaration of Helsinki. Informed consent was taken from every patient before enrollment.

Study enrollment was done at community eye screening camps by convenient sampling technique. Inclusion criteria were- patients diagnosed with senile cataract with sub-optimal best corrected visual acuity (BCVA), and counselled for cataract surgery. Eyes with congenital cataract and secondary causes of cataract like trauma, uveitis etc. were excluded from the study. A comprehensive eye examination of all patients was done according to community eye screening camp protocol.<sup>10</sup>

A total of 192 participants were interviewed. A content-validated questionnaire was used during interview, which was developed by performing literature review of previously published studies and was pretested by interviewing 30 cataract patients identified at our institute. Content validation was done by subject matter experts. Pre-testing was done to improve its reliability and ease of implementation. The resultant data generated was not included in the final analysis. As Hindi is the local language; all questions were asked verbally in Hindi accordingly by an independent trained interviewer. Apart from socio-demographic characteristics, questionnaire consisted of two sections comprising of knowledge and attitude of participants regarding cataract and its treatment. Socio-

demographic section contained five questions on age, gender, education, occupation and duration of symptoms. A patient who has completed at least primary education was considered as literate. Nine questions were included in the knowledge and attitude sections each. (Annexure 1)

**Statistical Analysis**

Statistical analysis was performed using Statistical software IBM SPSS Statistics version 20. Descriptive statistics were obtained to determine the frequency and proportions. Mean and standard deviation was calculated for continuous variables. Summaries of descriptive statistics and group comparisons were provided, which were made using the unpaired t-test for continuous data and the chi square test for proportions.

**Findings**

[A] Demographics: Of all participants, 90 (46.9%) were male and 102 (53.1%) were female (p=0.42; One sample binomial test). Average age of participants was 60.7±9.5 (Range: 40-86) years (males: 60.5±9.7 and females 60.8±9.3 years {p=0.85; independent t test}). The average duration of symptoms was 9.8±8.7 months. The average duration of symptom of male participants was 8.7±0.9 and of female participants was 8.8±0.8 months (p=0.7; independent t test). The frequency distribution of education and occupation of participants are presented in (Table 1).

[B] Knowledge: A total of 189 (98.4%; 95% CI: 95.5-99.7%) participants were aware of the term cataract. Of all 90 (46.9%; 95% CI: 39.1-54.2%) knew that aging caused cataract, 183 (95.3%; 95% CI: 91.3-97.8%) were conscious of blindness as its possible complication and 146 (76%; 95% CI: 69.4-81.9%)

**Table 1: Frequency distribution of respondents as regards to socio-demographics characteristics (n=192)**

Variable	Category	Female n (%)	Male n (%)	Total	P-Value
Age	40-50 Years	16 (53.3%)	14 (46.7%)	30	0.97
	51-60 Years	30 (51.7%)	28 (48.3%)	58	
	>60 Years	56 (53.8%)	48 (46.2%)	104	
Occupation	Farmer	0 (0.0%)	31 (100%)	31	0.00
	House wife	104 (100%)	0 (0.0%)	104	
	Service	0 (0.0%)	33 (100%)	33	
	Not working	0 (0.0%)	24 (100%)	24	
Education	Illiterate	49 (55.1%)	40 (44.9%)	89	0.66
	Literate	53 (51.5%)	50 (48.5%)	103	
Duration of eye problem	1-12	85 (52.5%)	77 (47.5%)	162	0.82
	13-24	13 (59.1%)	9 (40.9%)	22	
	>24	4 (50%)	4 (50%)	8	

considered it as a treatable disease. A total of 110 (57.3%; 95% CI: 50-64%) were well informed about its basic surgical procedure, like availability of different types of cataract surgeries {by 113 subjects (58.9%; 95% CI: 51.5-65.9%)} and that natural lens was replaced with an artificial lens during surgery {by 99 participants (51.6%; 95% CI: 44.3-58.8%)}. Less than half of the patients, {60 (31.3%; 95% CI: 24.8-38.3%)} deemed cataract surgery affordable. An acquaintance already operated for cataract surgery was the most frequent source of information, as responded by 91 (47.4%; 95% CI: 40.2-54.7%) participants. The frequency distributions of responses to all questions asked in this section are presented in (Table 2).

**Table 2: Knowledge of respondent as regards to cataract and its surgery (n=192)**

Questions	Options	Response (N %)
Q1: Previous knowledge about cataract	Yes	189 (98.4)
	No	3 (1.6)
Q2: What cause cataract	Aging	90 (46.9)
	Malnutrition	18 (9.4)
	Smoking	25 (13.0)
	Prolong physical/ Outdoor activity	17 (8.9)
	Don't know	42 (21.9)
Q3: Is cataract treatable/or preventable	Yes	146 (76.0)
	No	46 (24.0)
	Yes	183 (95.3)
	No	9 (4.7)
Q5: What is the effective treatment for cataract	Medication	5 (2.6)
	Spiritual	18 (9.4)
	Don't know	59 (30.7)
Q6: How cataract is operated in hospital	Eye is removed	37 (19.3)
	Lens is removed and replaced	99 (51.6)
	Don't know	34 (17.7)
	Others	22 (11.5)
	Affordable	60 (31.3)
Q7: Are all cataract surgeries the same	Not affordable	46 (24.0)
	It should be free	37 (19.3)
	Can't say	49 (25.5)
	Media	41 (21.4)
Q9: Sources of information that motivates people to go for cataract intervention	Someone operated	91 (47.4)
	Family/ community	27 (14.1)
	None	33 (17.2)

[C] Attitude: A total of 150 (78.1%; 95% CI: 71.6-83.8%) patients had consulted a doctor previously for diminution of vision. In our study, the most common reason preventing people from seeking treatment for cataract was found to be lack of accessibility by 188 (97.9%; 95% CI: 94.8-99.4%) subjects, followed by the cost of cataract surgery and fear of surgical outcome by 173 (90.1%; 95% CI: 85-93.9%) subjects each, the personal belief of a person by 145 (75.5%; 95% CI: 68.8-81.4%) participants and fear of pain during surgery by 126 (65.6%; 95% CI: 58.4-72.3%) participants. A total of 137 (71.4%; 95% CI: 64.4-77.6%) subjects knew that cataract did not recur after surgery, 187 (97.4%; 95% CI: 94-99.1%) agreed that a person with poor vision should visit an eye hospital for treatment. For their ailments, 40 (20.8%; 95% CI: 15.3-27.3%) participants agreed that urban population sought treatment more frequently than rural population. The frequency distributions of responses to all questions asked in this section are presented in (Table 3).

**Table 3: Attitude of respondent regarding cataract and its surgery (n=192)**

Questions	Options	Response (N %)
Q10: Do you ever attended hospital for treatment	Yes	150 (78.1)
	No	42 (21.8)
Q11: Personal belief can prevent people from cataract treatment	Agree	145 (75.5)
	Disagree	15 (7.8)
	Neutral	32 (16.7)
Q12: Cost of cataract surgery can prevent people from seeking treatment	Agree	173 (90.1)
	Disagree	0 (0.0)
	Neutral	19 (9.9)
Q13: Fear of pain can prevent people from seeking treatment	Agree	126 (65.6)
	Disagree	27 (14.1)
	Neutral	39 (20.3)
Q14: Fear of surgical outcome can prevent people from seeking treatment	Agree	173 (90.1)
	Disagree	1 (0.5)
	Neutral	18 (9.4)
Q15:Lack of accessibility can prevent people from seeking treatment	Agree	188 (97.9)
	Disagree	1 (0.5)
	Neutral	3 (1.6)
Q16: Cataract will recur after surgery	Agree	3 (1.6)
	Disagree	137 (71.4)
	Neutral	52 (27.1)
Q17: Person with poor vision should go to hospital for treatment	Agree	187 (97.4)
	Disagree	0 (0.0)
	Neutral	5 (2.6)
Q18: Cataract extraction restore sight	Agree	192 (100.0)
	Disagree	0 (0.0)
	Neutral	0 (0.0)
Q19:People from cities go to hospital for intervention than those in rural areas	Agree	40 (20.8)
	Disagree	87 (45.3)
	Neutral	64 (33.3)

Gender and the level of literacy did not affect the frequency of responses for any question in any section.

### Discussion

In this study, majority of the respondents belonged to more than sixty years of age group. This is a typical reflection that cataract is a disease of ageing, and also has been reported by Soundarssanane et al and Chatterjee et al.<sup>11,12</sup> Also, we found more number of female respondents as compared to males, although the difference was not significant. The study population was gender matched in terms of age and education level of participants. This validates the finding of this study as the responses of the participants had not been gender biased. Many previous studies had reported gender inequalities in case of cataract and other eye diseases in developing countries.<sup>13-17</sup> Dhaliwal et al reported female gender as an attitudinal barrier to uptake of cataract surgery.<sup>18</sup> Almost all participants of our study were aware of the word cataract (98.4%) (Commonly termed as "Motiabind" in the study area). This data is in concordance with international studies including the Australian Blue Mountain Eye Studies (98%),<sup>19</sup> Hong Kong Study (92.9%)<sup>20</sup> and Australian Visual Impairment Study (92%).<sup>21</sup>

Most of the respondents knew that cataract was treatable and the natural lens was replaced during cataract surgery. Almost half of the participants considered ageing as its main cause. Many of the study participants were illiterate or educated only up to primary level; still the level of literacy did not seem to have an impact in the disease awareness amongst the subjects, and was high in the study area. This may be due to the extensive media campaigns about cataract conducted; both at the government as well as nonprofit organization level. Most of the study participants had had a previous history of hospital for treatment; and could be another possible reason behind this high awareness.

The study had been conducted in the proximity (within 30 kilometer) of a tertiary eye care institution. A previous study reported that the health service availability had an impact on health seeking behavior.<sup>22</sup> However, direct relation to knowledge level about a disease of community residing in proximity of a health care institution has not been studied.

Personal belief, cost of cataract surgery, fear of surgical outcome and associated pain and lack of accessibility have been identified as potential barriers for the uptake of cataract surgery by majority of study participants. This is in conformity with previous study by Dhaliwal et al<sup>18</sup> who reported that patients opted to undergo cataract surgery only when they were unable to see anything, and this decision was irrespective of their knowledge and awareness level. Cost of cataract surgery and better vision in other eye have been published as the major barriers to uptake of cataract surgery by Rabiou et al.<sup>23</sup> This corroborates with our findings regarding cost of surgery, however the better vision of other eye has not been studied by us.

Snellingen et al from Nepal reported economic, logistical constraints followed by fear of surgery and lack of time as the most frequent reasons for not accepting cataract surgery.<sup>24</sup> Fear of surgery (either due to pain during surgery or due to outcome of surgery) has also been reported by Amritanand et al<sup>25</sup> and Vaidyanathan et al.<sup>26</sup> Fear of operation can be overcome by imparting knowledge about cataract surgery, its complication and outcome at the camp site during community eye screening. Counsellors in the community outreach team play a key role in educating people and providing this information. Other barriers reported are: could manage daily work, too busy, fear of surgery, fear of surgery causing blindness or death, old age, it is God's will, insufficient family income, not knowing another person who had undergone cataract surgery, no one to accompany, distance from hospital and lack of transport.<sup>18,25,27</sup>

Our study reflects a lesser precedence given to eye care diseases and its education programs, despite a high burden of ocular morbidity. A higher motivation to seek timely treatment, thus preventing blindness has been evident with better ocular health promotion and awareness.<sup>28</sup> This study is limited by the fact that it was conducted in the field practice area of the hospital, which could be a confounding factor for higher awareness in the study population. Awareness, accessibility, affordability of cataract surgery and lower demand for visual improvement have been the major factors impeding the uptake of cataract surgeries, especially in developing countries. It is imperative to escalate the eye health education programs to enhance demand generation among the affected people and provide low cost, but high quality, cataract surgery to them, for early restoration of vision.

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