Original Article

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Demographic Profile of Patients with Bilateral Mature Cataract: A Cross-sectional Study from Central India

Ophthalmology Section

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ABSTRACT

Introduction: In India, cataract is responsible for 50-80% of the bilateral blindness in the country. With government funded and private hospitals offering cataract surgeries, patients still report late with advanced bilateral cataract. There is scarcity of local data about the profile of late presenters of cataract and its associated factors.

Aim: To study the socio-demographic profile of patients with bilateral mature and hypermature cataracts and to evaluate reasons for delayed presentation at the Ophthalmology Department of a medical college hospital in rural Chhattisgarh, India.

Materials and Methods: A cross-sectional, observational study was carried out at Durg, Chhattisgarh, India over a period of 12 months from October 2018 to September 2019. The study comprised 48 consecutive and consenting adult patients of bilateral mature and hypermature cataracts reporting to the Outpatient Ophthalmology Department of a medical college included by convenience sampling. All patients were subjected to detailed history taking and ocular examination. Socio-demographic details and reasons for delay in reporting were obtained with a face-to-face interview. Descriptive data analysis was conducted and reported as mean, standard deviation, frequencies and percentage.

Results: The mean age of patients was 68.45±7.4 years. About 29 (60.42%) patients were females, 70.83% patients were unemployed or retired. About 87.5% patients stated having systemic co-morbidities. Lack of awareness, old age, systemic ailments, want of assistance and fear of surgery were the prime factors revealed for the delayed presentation to the hospital.

Conclusion: Female sex, rural territory, low socio-economic status and lower literacy rates were associated with patients seeking delayed medical attention for cataract. Educational efforts and improvement in accessibility to health centres appear vital to overcome the hurdles in the way of timely presentation of cataract.

Keywords: Advanced cataract, Bilaterally blind, Delayed presentation, Socio-demographic

INTRODUCTION

Estimates from World Health Organisation (WHO) reveal that 47.8% of global blindness is due to cataract [1]. Cataract accounts for 62.6% of all blindness affecting 9-12 million bilaterally blind persons in India [2]. Cataract has been reported to be responsible for 50-80% of the bilateral blindness in our country [3-6]. The newer adopted definition of blindness in India is in line with the WHO which states that a person who is unable to count fingers from a distance of three meters would be considered 'blind' as against the earlier stipulation of six meters [7]. Considering the present definition, the cited figures might have altered; still there is a need to consider the growing geriatric population. As per the recently completed 'The National Blindness and Visual Impairment Survey', planned by the Ministry of Health and Family Welfare, Government of India, cataract accounts for 66.2% of blindness and 80.7% of severe visual impairment in India [8].

In India and in many other developing parts of the world, the burden of cases presenting with advanced cataract is high [9-12]. The growing elderly community and inadequate doctor-patient ratio lead to inaccessibility of medical resources in developing countries. In order to mobilise the resources and effectively manage cataract, it is important to have the knowledge of clinico-epidemiological and socio-economic factors associated with this disease. There is a paucity of data on this subject from the rural area of Chhattisgarh, India. Though barriers to cataract surgery in bilaterally cataract blind patients has been explored, analogous studies on profile of patients with mature cataract in India are limited [10,13,14]. As per author's knowledge, there are no similar published observations on bilateral mature cataract from Central India. Hence, the present study was conducted in the patients visiting the ophthalmology department of a medical college and hospital situated in a rural area of Chhattisgarh to study the socio-demographic profile of patients with bilateral mature cataract. This study supplements to understand the profile of such patients. The results of this study might help to understand the local issues and guide us in designing implementation strategies to encourage early presentation in cataract patients.

MATERIALS AND METHODS

This cross-sectional, descriptive, observational study was done over a period of 12 months from October 2018 to September 2019. The study was undertaken at a private medical college and 750 bedded hospital located at the rural village of Kachandur, Durg, Chhattisgarh in Central India. The hospital caters to the rural as well as the neighboring urban population. The college also organises frequent multi-specialty health screening camps within a locus of 50 kilometer.

All consecutive patients who visited the outpatient department of ophthalmology of the hospital were screened for cataract. Mature cataract is defined as a cataract that is opaque, totally obscuring the red reflex. Types of mature cataracts include dense nuclear sclerotic cataracts (brunescent) and softer white cataracts. Hypermature cataract is defined as the stage of mature cataract in which the entire lens capsule is wrinkled and the contents have become solid and shrunken or soft and liquid [15]. Visual acuity in the cases of mature and hypermature cataracts is reduced to hand movements or light perception. Patients having mature or/and hypermature cataracts in both eyes were identified and were invited to participate in the study, with adequate time given to the patient and attender(s) to consider whether they wished to participate. Informed consent was taken from the willing patients. Non-willing subjects, uncooperative patients, patients having significant mental illness and patients with

communication difficulties were excluded. All participants were informed about the scope and purpose of the study and told that it was voluntary to participate, without any compensation, and that their medical assistance would not be compromised if they refused or decided to participate in the survey. The study adhered to the tenets of the Declaration of Helsinki. Permission and ethical clearance was obtained from the Institutional Ethical Committee of the medical college where the study was undertaken (Project code: RES2018031CLI).

Willing cases underwent routine ophthalmic examination including vision test, detailed slit lamp examination and tonometry by Goldmann applanation tonometer. Nasolacrimal duct syringing test was done for patients willing for cataract surgery. Relevant systemic examinations including blood pressure and blood sugar measurements were undertaken. All the patients were asked about the details regarding their locality, occupation, known systemic illness, use of steroid, history of significant trauma or pastophthalmic surgery. The duration of bilateral defective vision and the reasons for the late presentation was recorded. Many patients did not have idea about their better eye or the eye that developed defective vision later. For ease of interpretation, patients were told to state the duration when they personally felt their eye sight were significantly deteriorating, as per their subjective perception. The duration of this reported vision loss was grouped as less than one month, one month to three months, three months to six months and more than six months.

Three age groups were arbitrarily assigned: 20-40 years age group, 41-60 years age group and >60 years age group. Regarding educational level, four divisions were established: 1) Illiterate or incomplete primary school; 2) completed primary school (till fifth standard or class of formal school education); 3) completed secondary school (till twelfth class); and 4) completion of university or tertiary studies. The socioeconomic status was categorised according to the modified Kuppuswamy classification [16].

STATISTICAL ANALYSIS

All data was coded, entered and analysed using Microsoft excel 2010. Descriptive data analysis was conducted and reported as mean, standard deviation, frequencies and percentage.

RESULTS

Each patient was interviewed, over an average duration of 15 to 20 minutes. Majority of patients of cataract were above 60 years (83.33%). Three patients were below 40 years and were all diabetic on insulin treatment. The age of the patients ranged from 34 years to 91 years and the mean age of patients was 68.45±7.4 years. The male to female ratio was 1:1.5 with 60.42% of the patients being females. An 81.25% subjects were from rural background. Most of the patients were illiterate or had primary schooling (79.17%). Again, majority of patients (81.25%) were poor and belonged to low socio-economic status [Table/Fig-1]. Most patients were unemployed or retired. Majority of females were housewives. Others reported being farmers or labourers [Table/Fig-2].

Out of 48 patients, 42 (87.5%) patients reported having hypertension, diabetes or other systemic ailments like cardiac disease, renal disease, arthritis, thyroid, neurodegenerative disorder or significant postural abnormalities. Few patients had two or more co-existing systemic diseases. Four patients were on long term steroid therapy for asthma and arthritis. One patient above 60 years gave history of past blunt trauma in left eye, though no medical record or related clinical findings were noted. Six eyes of four patients had chronic dacryocystitis. There was history of uveitis in two eyes of two patients and history of retinal laser in one eye of a patient. Two patients reported history of pterygium surgery and one patient mentioned nasolacrimal sac surgery. Two patients reported using anti-glaucoma medications. Intraocular pressure above 21 mmHg was found in 16 eyes of 10 patients. Acute presentation of lens induced glaucoma was found in three eyes of three patients.

Variable	Number of patients	Percentage
Age group (in years)		
20-40	3	6.25
41-60	5	10.42
>60	40	83.33
Gender		
Male	19	39.58
Female	29	60.42
Residence		
Rural	39	81.25
Urban	9	18.75
Socio-economic status		
Upper	2	4.17
Middle	7	14.58
Lower	39	81.25
Education level		
Illiterate or incomplete primary school	26	54.17
Completed primary school	12	25
Completed secondary school	8	16.66
Completion of tertiary studies/college	2	4.17
Systemic diseases		
Hypertension	15	31.25
Diabetes	11	22.91
Cardiac disease	05	10.42
Arthritis	05	10.42
Renal disease	03	6.25
Neurodegenerative disorder	02	4.17
Spinal kyphosis	01	2.08
No disease	06	12.5

[Table/Fig-1]: Socio-demographic variables of respondents.

Occupation	Number of patients	Percentage of patients
Unemployed	22	45.83
Retired	12	25
Farmer/Labourer	09	18.75
Self-employed	03	6.25
Government/Private job	02	4.17

[Table/Fig-2]: Vocation distribution of the patients.

Majority reported that significant vision loss has been noted since past one to three months [Table/Fig-3]. In their words, before this period, they could 'carry on their routine work without much difficulty'. The reasons provided for late presentation to the hospital were lack of awareness (45.83%), old age and systemic ailments (43.75%), not having accompanying attendant (37.5%), fear of surgery and its complications (33.33%) [Table/Fig-4].

Time period	Number of patients	Percentage of patients
Less than one month	08	16.67
One to three months	27	56.25
Three to six months	10	20.83
More than six months	03	6.25

[Table/Fig-3]: Time from the self-perceived bilateral gross diminution of vision to presentation at the hospital.

DISCUSSION

In the present study, the maximum prevalence of bilateral mature cataract was seen in the age group above 60 years and in females. In a recent population based study from Southern India, on multivariate analysis, the only significant risk factor for any cataract in subjects

Reason for late presentation	Number (%)*
Personal attitudinal reasons	
Fear of surgery	10 (20.83)
Fear of complication of surgery	06 (12.50)
Lack of awareness	
Cataract not ripe enough	14 (29.17)
Not having knowledge on cataract and surgery	08 (16.67)
Medical reasons	
Old age, severe co-morbidities	21 (43.75)
Blood sugar level not getting controlled	04 (8.33)
Other reasons	
No attender or long distance from hospital	18 (37.50)
Trying treatments in the form of eye drops/home made preparations	06 (12.50)
Economic issue	04 (8.33)
No defined reason	08 (16.67)

[Table/Fig-4]: Reported reasons for late presentation to the hospital.
*Many subjects had a combined influence of more than one factor leading to late presentation

≥60 years was increasing age in both rural and urban population [17]. In another population-based Indian study, it was found that the prevalence of unoperated cataract increased with age and was higher in women than men [18]. Increased incidence of senile mature cataract in females can be attributed to multiple factors like lower nutritional status, confinement to household chores which mostly require near vision and cultural insensitivity to a female's health needs. Attitudinal barriers like "could manage daily work", "fear of surgery" and "no one to accompany" were also more commonly seen with females [19]. Many studies worldwide have reported a higher prevalence of cataract among women [20-22]. Lower cataract surgical coverage by women has been documented in many populations [22]. Mahajan B et al., mentioned that though women are more commonly affected, cataract extraction is 1.6 times more common among males [23]. Increasing age, female sex and illiteracy are shown to be associated with cataract blindness, as previously proven by a large scale survey done in Southern India [4,24].

Another Indian study also shows female gender, socio-economic status, literacy status, and urban-rural difference to be major determinants of cataract surgical coverage [2]. In a recent case-control study exploring the risk factors for cataract, lower socio-economic status was concluded as one of the significant contributor with $p<0.001$ [25]. In the study of epidemiological correlates of cataract in rural Maharashtra, significant association was observed between education and cataract, with 78% cases being illiterates or educated till primary school [26]. In present study, 81.25% patients were from rural area. This was in agreement with the studies conducted on mature cataracts by Raina B and Sharma P, (78.04%), Naik VD et al., (75.5%) [13,14] and study on hypermature cataract by Hegde SP et al., [10]. Accessibility comes forth as a major barrier for the rural population, with the surgical facilities located more frequently in towns and cities. These patients also face an economical challenge, with many living below poverty line. Along with the direct costs, there are also indirect costs incurred by these patients, such as loss of daily wages, expenditure on transport and delegation of responsibilities [26]. Comparison of some of the variables considered in the study with few related recent Indian studies is summarised in [Table/Fig-5] [10,13,14].

In the present study, hypertension and diabetes mellitus were found to be the most common systemic co-morbidities associated with cataract as reported in other Indian studies [27-29]. About 70.83% patients in the study, revealed being unemployed or retired. Since majority patients lived in rural area, they were working as farmers or labourers. Manhas A et al., in their study have shown that about half of the cataract patients from rural population of northern India

Variable	Present study	Hegde SP et al., [10]	Raina B et al., [13]	Naik VD et al., [14]
Age >60 years	83.33%	35.5%	58.52%	77.5%
Females	60.42%	52%	58.53%	49%
Higher education	20.83%	No data	23.9%	14.5%
Rural residence	81.25%	70.39%	78.04%	75.5%
Unemployed/ retired	70.83%	No data	No data	63%
Major reasons for delayed presentation	Lack of awareness, Old age/ systemic disease, no attender, fear of surgery	Good vision in other eye, no attendants, fear of surgery in patients with bilateral mature/ hypermature cataract	Not directly enquired. Postulated as lack of awareness, presence of co-morbidities	Good vision in other eye, lack of awareness

[Table/Fig-5]: Present study in comparison to recent published Indian studies [10,13,14].
*Figures in Percentage (%) denote percentage of patients

were farmers and labourers [30]. In a recent study, to determine the factors responsible for delay in cataract surgeries in senile mature cataracts in Goa, 63% patients were unemployed or retired [14].

About 56.25% of the patients in this study acknowledged that their vision has greatly diminished since past one to three months. Only three patients declared that their eye sight has been considerably affected since more than six months. These patients explained that they were not able to undergo surgery due to co-existing systemic diseases or unavailability of supportive attender. In a prospective study involving hypermature cataracts in Southern India, merely 8.5% patients came to the hospital within six months of onset of diminution of vision and 51.3% patients waited for more than a year before coming to the hospital for cataract surgery [10]. The mentioned study has dealt with both bilateral and unilateral cataracts and has considered the duration since onset of diminution of vision in contrast to present study that interviewed the period of 'substantial defective vision recognised by the patient bilaterally'. The identification of the patients waiting, even with serious disability in carrying out their routine life, made us better to analyse the factors responsible for the attitude.

Reasons for late presentation according to the previous studies are lack of caretakers, poverty, poor awareness, poor health education, acceptance of poor vision as a part of ageing, unwillingness for surgery, and co-existing systemic diseases [9,10]. In this study, 43.75% patients communicated that they were not able to come to the hospital because of their age factor and systemic ailments. A study from Southern India has shown fear of surgery as the main cause preventing cataract patients from attending the free eye camps [31]. In Hegde SP et al., study, fear of surgery was the chief reason for delayed presentation among patients with bilateral mature and hypermature cataract [10]. Lack of awareness was noted in 45.84% of the patients. There were 14 patients who divulged that they were waiting for their cataract to 'get ripe', because they believed that surgery is undertaken only once the cataract matures. There were eight patients who were not aware of having cataract and did not have idea on its management. As per a recent study in Maharashtra, the commonest reason for late presentation was lack of awareness (26.1%) followed by poor financial condition and lack of family support [32]. Most patients being aware that cataract surgery in the study hospital is covered under various government schemes, financial apprehension was expressed by only four patients. Educational efforts related to cataract should aim to reach the rural population and most issues can be addressed through repeated counseling sessions by healthcare providers.

Limitation(s)

Being a private medical college based study; the cohort may not be representative of general community. There may be bias associated

with the responses of the patients. Sample size could not be statistically computed owing to dearth of similar studies and lack of data on patients with bilateral mature cataract in Central India. Relatively small sample size is another limitation of the study.

CONCLUSION(S)

From this study, it was concluded that female sex, low socio-economic status, low education levels and associated co-morbidities play an important role in patients seeking treatment for cataract surgery at an advanced stage. Low awareness level is also a contributing factor. Creating strategies to reduce barriers will improve the uptake of cataract surgery.

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