Epidemiological Correlates of Cataract Cases in Tertiary Health Care Center in Rural Area of Maharashtra

Shubhada Sunil Avachat, Vaishali Phalke¹, Suchit Kambale²
Department of Community Medicine, Padmashri Dr. Vithalrao Vikhe Patil Foundation Medical College, ¹Rural Medical College, Loni, Ahmednagar, Maharashtra, ²Kurunji V Gowenkotaramanda Medical College, Sullia, Karnataka, India

Abstract

Background: The most recent estimates from World Health Organization (WHO) reveal that 47.8% of global blindness is due to cataract. Cataract has been documented to be the most significant cause of bilateral blindness in India. The most recent estimates from WHO reveal that 47.8% of global blindness is due to cataract and in south Asia region which includes India, 51% of blindness is due to cataract. In India cataract is the principal cause of blindness accounting for 62.6% cases of blindness. The key to the success of the Global Vision 2020: The right to sight initiative is a special effort to tackle cataract blindness which includes estimation of magnitude of the problem and understanding factors associated with it. Therefore, a study was conducted in the hospital to estimate the magnitude of cataract and study various epidemiological factors associated with it. Materials and Methods: A cross-sectional study was conducted in a tertiary health center in rural area. Total 746 patients who availed services from ophthalmology department during study period were included in the study and relevant data was collected from them. Data analysis was done by percentages, proportions, and tests of significance (Chi-square test). Results: Out of 746 patients, 400 (53.6%) were suffering from cataract. Senile cataract was the most common cause (54%). Fifty-five percent patients were in the age group of 60–80 years and majority of them were from low socioeconomic strata. Conclusion: The prevalence of cataract in a medical college hospital in rural area was 53.6%. Age, sex, and educational status were significantly associated with cataract.

Keywords: Associated factor, cataract, rural area

Introduction

Elimination of avoidable blindness is the goal of Vision 2020.¹¹ India is one of the signatory of Vision 2020. Cataract has been documented to be the most significant cause of bilateral blindness in India where vision <20/200 in the better eye on presentation is defined as blindness. Blindness, especially related to cataracts, poses a major challenge all over the developing world. India, as one of the biggest developing countries, has a large number of blind requiring sight restoring cataract surgery. In India, cataract has been reported to be responsible for 50-80% of the bilaterally blind in the country.²³

The most recent estimates from World Health Organization (WHO) reveal that 47.8% of global blindness is due to cataract; and in south Asia region which includes India, 51% of blindness is due to cataract.³¹ In India, cataract is the principal cause of blindness accounting for 62.6% cases of blindness.³¹ In India, according to a recent survey in the Rapid Assessment of Avoidable Blindness (RAAB) study, cataract was responsible for 77.5% of avoidable blindness.³⁰

Considering current population (121 crore) of India as per census 2011, approximately 62%, that is, 72 lakhs (7.2 million) are blind due to cataract. As per National Programme for Control of Blindness (NPCB), incidence of cataract is 0.4–0.5%; thus the number of new cases of cataract to be operated upon each year comes to 61.5 lakhs (6.15 million).³⁰

Since cataract is a major cause of avoidable blindness in the developing countries, the key to the success of the Global Vision 2020: The right to sight initiative is a special effort to tackle cataract blindness.³⁰

One recent study found that over two-thirds of adults in a rural Indian population with low vision, cataracts, glaucoma, and refractive error had never sought eye care.³¹
In a developing country, the government alone cannot meet the health needs of all owing to a number of challenges like growing population, inadequate infrastructure, low per capita income, aging population, diseases in epidemic proportions, and illiteracy. Partnering with local doctors is essential for efficient and effective healthcare delivery. Local providers are familiar with the etiologies, epidemiology, and distributions of diseases in their communities. Primary physicians can thus play a lead role especially in rural area in providing primary eye healthcare by diagnosing and referring the patient for specialist services.

To deal with such a vast problem of curable blindness it is necessary to know its magnitude especially in rural area where health resources are scarce in order to mobilize the resources. Equally important is knowledge of epidemiological factors associated with cataract. Knowledge regarding magnitude, associated sociodemographic factors will be helpful for healthcare managers and practitioners (physicians). Therefore, the present study was conducted among the patients in ophthalmology department of a tertiary health center in a rural area to study the prevalence, sociodemographic profile, and trend of causes of cataract.

Materials and Methods

Study design
Cross-sectional study.

Study setting
Medical College Hospital in rural area.

Sampling
All patients who visited or admitted in ophthalmology department during study period. Total 746 patients participated in the study.

Data collection
Participants were interviewed by using a structured questionnaire. Eye examination was done by the faculty members of Ophthalmology Department. Visual acuity was tested and lens opacities were graded at the slit lamp using the Lens Opacities Classification System (LOCS) III.[10] Socioeconomic status was classified according to modified B.G. Prasad’s classification.

Statistical analysis
Data was compiled and analyzed by using appropriate statistical techniques like percentages, proportions, and Chi-square test was used as test of significance.

Results
The study was conducted among 746 patients. Out of these 437 (58.5%) were males and 309 (41.5%) were females. Out of 746 patients, 400 (53.6%) were suffering from cataract. The prevalence of cataract among the patients in the medical college hospital was 53.6%. Majority of patients (55%) suffering from cataract were in the age group of 60-80 years. Cataract was significantly common among males ($P < 0.05$); 62.8% patients from lower socioeconomic status had cataract, but no significant association was observed after applying Chi-square test. However, significant association was observed between education and cataract [Table 1].

In the present study, senile cataract was the most common cause (53.85%), while traumatic and congenital cataract were least common (3.8%) [Table 2]. Out of 400 patients of cataract, 114 were diabetic, 130 were nondiabetic, and diabetic status of 156 patients was not known.

Out of 400 cataract patients availing healthcare in the hospital, 57% had mature cataract and 31.5 and 11.5% had immature and hypermature cataract, respectively [Table 3].

In the present study, more than half of the total cataract patients 209 (52.25%) had bilateral cataract.

Discussion
Present study was conducted in rural area to estimate the magnitude and epidemiological factors associated with cataract. This data is essential for healthcare managers and practicing physicians to understand and manage the problem.

This was a cross-sectional study, which was conducted in a medical college hospital among 746 patients, 400 patients (53%)

Table 1: Sociodemographic profile of study participants (n=400)

| Age-wise distribution | No. of patients with cataract (%) | Cataract absent | Total | Significance |
|-----------------------|----------------------------------|----------------|-------|-------------|
| <15 years             | 15 (3.7)                         | 11             | 26    | $\chi^2=13.1$, $P<0.001$; highly significant |
| 15-60 years           | 122 (30.5)                       | 118            | 240   |             |
| 60-80 years           | 220 (55)                         | 188            | 408   |             |
| >80 years             | 43 (10.7)                        | 39             | 82    |             |
| Total                 | 400 (100)                        | 346            | 746   |             |

| Sex                   | No. of patients with cataract (%) | Cataract absent | Total | Significance |
|-----------------------|----------------------------------|----------------|-------|-------------|
| Male                  | 247 (61.7)                       | 190            | 437   | $\chi^2=4.001$, $P<0.05$; significant |
| Female                | 153 (38.3)                       | 156            | 309   |             |
| Total                 | 400 (100)                        | 346            | 746   |             |

| Economic status       | No. of patients with cataract (%) | Cataract absent | Total | Significance |
|-----------------------|----------------------------------|----------------|-------|-------------|
| Upper                 | 149 (37.2)                       | 153            | 302   | $\chi^2=3.15$, $P>0.05$; not significant |
| Lower                 | 251 (62.8)                       | 193            | 444   |             |
| Total                 | 400 (100)                        | 346            | 746   |             |

| Education             | No. of patients with cataract (%) | Cataract absent | Total | Significance |
|-----------------------|----------------------------------|----------------|-------|-------------|
| Illiterate            | 170 (44.3)                       | 109            | 279   | $\chi^2=15.6$, $P<0.05$, significant |
| Primary               | 133 (33.3)                       | 84             | 217   |             |
| Secondary             | 87 (21.8)                        | 135            | 222   |             |
| Graduate and above    | 10 (2.6)                         | 18             | 28    |             |
| Total                 | 400 (100)                        | 346            | 746   |             |
had cataract and out of them majority of them were males and in the age group 60-80 years. Similarly, in a study conducted by Raizada et al., incidence of cataract increased with the age. 88.67% of persons in the age group of 70-80 years had cataract, while only 15.91% persons had cataract in the age group of 40-45 years. Age was the commonest risk factor observed for the cataract in the study conducted by Chaterjee et al.11 The prevalence of cataracts among elderly males was slightly higher (412.2/1,000) than females (372.6/1,000) in the present study. However, in the study conducted by Raizada et al., prevalence of cataract was more in females. Cataract was significantly associated with educational status in our study (P < 0.05). Similar association was observed by Chaterjee et al., and Nirmalan et al., in their studies,12,13 Mahajan et al., mentioned that though women are more commonly affected, cataract extraction is 1.6 times more common among males and low literacy and socioeconomic status are associated.14

Diabetes is one of the important risk factor for the development of cataract. In our study, 28.5% cataract patients had diabetes. Nirmalan et al., in his study mentioned that diabetes was associated with cataract. Senile cataract was most common cause followed by metabolic cause, in present study.

More than half of the cataract patients had mature cataract and 11.5% patients had hypermature cataract. Raizada et al., mentioned the incidence of 7.1% in their study, while incidence was only 1.4% in study conducted by Chaterjee et al. This variation in the stage of maturity of the cataract could be explained on the basis of variation in awareness, availability, and utilization of healthcare services.

**Acknowledgment**

Authors are thankful to Pravara Medical Trust and Ophthalmology Department of Pravara Rural Hospital for their support. We are also thankful to Dr. Kothari, Prof., department of Ophthalmology and the interns Tarun Tyagi, Sohil Chavan, and Bhairavi Samant for their help.

**Table 2: Etiological distribution of cataract**

| Etiology       | No. of patients (%) |
|----------------|---------------------|
| Senile         | 215 (53.8)          |
| Metabolic causes | 106 (26.5)          |
| Traumatic      | 50 (12.5)           |
| Other          | 15 (3.8)            |
| Congenital     | 15 (3.8)            |
| Total          | 400 (100)           |

**Table 3: Stage of maturity of cataract**

| Stage    | No. of patients (%) |
|----------|---------------------|
| Immature | 126 (31.5)          |
| Mature   | 228 (57)            |
| Hypermature | 46 (11.5)       |
| Total    | 400 (100)           |

**References**

1. Vision 2020: The cataract challenge. Community Eye Health 2000;13:17-9.
2. Thulasiraj RD, Rahamatullah R, Saraswati A, Selvaraj S, Ellwein LB. The Sivaganga eye survey: I. Blindness and cataract surgery. Ophthalmic Epidemiol 2002;9:299-312.
3. Nirmalan PK, Thulasiraj RD, Maneksha V, Rahmatullah R, Ramakrishnan R, Padmavathi A, et al. A population based eye survey of older adults in Tirunelveli district of south India: Blindness, cataract surgery and visual outcomes. Br J Ophthalmol 2002;86:505-12.
4. Murthy GV, Gupta S, Ellwein LB, Munoz SR, Bachani D, Dada VK. A population-based eye survey of older adults in a rural district of Rajasthan: I. Central vision impairment, blindness and cataract surgery. Ophthalmology 2001;108:679-85.
5. Mohan M. National survey of blindness-India. NPCB-WHO Report. New Delhi: Ministry of Health and Family Welfare, Government of India; 1989.
6. World Health Organization. Global initiative for the elimination of avoidable blindness: An informal consultation. Geneva: WHO; 1997.
7. Government of India Annual Report 2003-4 Ministry of Health and Family Welfare, New Delhi.
8. Neena J, Rachel J, Praveen V, Murthy GV. Rapid assessment of avoidable blindness in India Study Group. Rapid assessment of avoidable blindness in India. PLoS One 2008;3:e2867.
9. National program for control of Blindness Quarterly Oct-Dec 2011.
10. Foster A. Cataract and "Vision 2020-The right to sight" initiative. Br J Ophthalmol 2001;85:635-7.
11. Chang MA, Congdon NG, Baker SK, Bloem MW, Savage H, Sommer A. The surgical management of cataract: Barriers, best practices, and outcomes. Int Ophthalmol 2008;28:247-60.
12. Raizada I, Mathur A, Narang SK. A study of prevalence and risk factors of senile cataract in rural areas of western U.P. Indian J Ophthalmol 1984;32:339-42.
13. Chatterjee A, Milton RC, Thyle S. Prevalence and aetiology of cataract in Punjab. Br J Ophthalmol 1982;66:35-42.
14. Singh MM, Murthy GV, Venkatraman R, Rao SP, Nayar S. A study of ocular morbidity among elderly population a rural area of central India. Indian J Ophthalmol 1997;45:61-5.
15. 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;88:989-94.
16. Mahajan B, Gupta M, Ray R, Saha I. Textbook of Preventive and social Medicine, 4th edition New Delhi: Jaypee Medical Publishers; 2012. p. 378.

**How to cite this article:** Avachat SS, Phalke V, Kambale S. Epidemiological correlates of cataract cases in tertiary health care center in rural area of Maharashtra. J Fam Med Primary Care 2014;3:45-7.

**Source of Support:** Nil. **Conflict of Interest:** None declared.