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A Retrospective Hospital Based Study of the Epidemiology, Risk Factors and Treatment of Cataract Patients in the Central Gujarat

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Abstract

Background: 80% of the blindness is due to cataract in India and with Vision 2020: Right to Sight-India mission, it is needed assess the status of eye health care in the India. Therefore, a study was conducted in the hospital working under the National Programme for Control of Blindness and Visual Impairment (NPCBVI) to study various epidemiological factors, risk factors and treatment aspects.

Methodology: A retrospective study of 306 patients' records was conducted in Sat Kaival Eye Hospital, Sarsa located in the rural area of the central Gujarat. The detailed socio-demographic characteristics, ocular history, knowledge awareness, associated risk factors, type of cataract and type of surgery of recruited patients were recorded in the predesigned sheets.

Results: The results indicate that 89.9% of the patients were of 50 years or above age. More females (55.6%) were enrolled for the cataract surgery than males (44.4%). More cases were observed of rural (74.2%), poor (63.7%), less educated (90.2%), house workers (49.7%) and had not any prior knowledge (69.6%) of cataract disease. All religion and category of patients had availed the benefits of free eye care service of NPCBVI. Risk factors recorded for the cataract were aging, diabetes, hypertension, trauma, medication, alcohol, UV-radiations, and smoking. Greater number of the cases was of unilateral cataract (90.2%) and of nuclear cataract (52.9%). Most of the cataract patients (75.2%) underwent small incision surgery.

Conclusion: The results indicate that above vulnerable groups may require special attention to access free eye care services of NBCPVI programme. Further, Community awareness and preventive measures on modifiable risk factors of cataract disease may be significantly reduced burden of the cataract patients.

Keywords: Cataract; Epidemiology; Retrospective Study; Risk Factors; Cataract Surgery

Introduction

Cataract is the commonest cause of blindness (62.6%) followed by uncorrected refractive errors (19.7%); corneal blindness (0.90%), glaucoma (5.80%), surgical complication (1.20%) posterior capsular opacification (0.90%) posterior segment disorder (4.70%) and others (4.19%) [1]. The National Programme for Control of Blindness and Visual

Impairment (NPCBVI) India was initiated in 1976 as an entirely central government supported scheme with the target of reducing the prevalence of blindness from 1.4% to 0.3%. According to surveys done in 2001-02 and 2006-07 the prevalence of blindness was estimated at 1.1% and 1%, respectively [2]. Various activities undertaken during the Five Year plans under NPCBVI are targeted toward achieving the goal of reducing the prevalence of blindness to 0.3% by the year 2020. Gujarat state is contributing 22.3% of the work of NPCBVI. Elimination of avoidable blindness is the goal of Vision 2020 [3]. 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 sights restoring cataract surgery [4].

In a developing country like India, 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 non-governmental organizations is essential for efficient and effective healthcare delivery. Such local facilities can thus play a pivotal role especially in rural area in providing eye healthcare by diagnosing and providing specialist services to the patients [5].

Further, the treatment of cataract at the private hospitals are more expensive for rural people depending on locality, quality of intraocular lens implanted, and charges of surgeon, whereas hospitals working under the NPCBVI do the same with free of cost. It is a common practice adopted by the NPCBVI in the Gujarat to set up multipurpose district eye care units and to organize free services for the treatment of the eye disorders in collaboration with the non-governmental organizations [6,7]. Sat Kaival Eye Hospital, a non-government hospital located in the rural village of Sarsa at the central part of the Gujarat state is one of the best facilities for the treatment of the eye disorders working under Anand district level of NPCBVI program. The aim of the present retrospective study was to evaluate socio-demographic profile, associated risk factors, knowledge awareness and treatment plan in the cataract patients of central Gujarat availing free services at this hospital.

Methodology

This retrospective study of cataract was carried out at the Sat Kaival Eye Hospital, which is located at the Sarsa in Anand district of central Gujarat. A total of 306 patients from the rural and urban and semi urban area, who availed services from Sat Kaival Eye Hospital and diagnosed with cataract during January 2021 to March 2021 were included in the study. From their hospital records, the detailed socio-demographic characteristics, ocular history, knowledge awareness, associated risk factors, type of cataract and type of surgery of recruited patients were recorded in the predesigned sheets. For the data collection different parameters like, age, gender, category, religion, residence, education, family income, occupation, insurance of the patient, previous eye checkup, self-awareness about the cataract, cataract in eyes (unilateral or bilateral), treatment, factors affecting on cataract, type of cataract complication due to cataract, type of surgery, drug treatment of cataract were recorded. Collected data were compiled and appropriate descriptive analysis was done using MS excel software.

Results and Discussion

Cataract is a major cause of avoidable blindness in the India. In the culmination year of Vision 2020: Right to Sight-India, the results of present study provide central Gujarat data for effective assessment and monitoring of cataract intervention program of NPCBVI.

According to recently released report of the NPCBVI survey of India, the participation of NGO hospitals under the program is significant with the majority of cataract surgeries being performed by the NGO sector [6]. A non-governmental organization, Sat Kaival Eye Hospital is continuously working under Anand district NPCBVI program for high cataract surgical coverage. A total of 306 cataract patients were included in this study. Distribution of patients based on age groups are shown in the Table 1. Out of 306 patients of different age groups, 275 (89.9%) patients were in the age group above 50 years, 30 (9.8%) patients were between age group of 20-50 and only 1 (0.3%) patient was in the age group of 0-20.The maximum number of cases were above 50 years of age. prevalence of cataracts increases with increasing age and several studies from the India also indicated that steep rise in the prevalence of cataract in rural area in the patients above the age of 50 years [8-12].

Distribution of patients based on gender is shown in the Table 1. Out of 306 patients, 170 (55.4%) female and 136 (44.6%) male were recorded. This study shows a slightly exceeding number of female patients catered the cataract surgery than male patients, which shows that females are equally aware of their health problems. Similar reports also established from the research studies of other parts of Gujarat and India [9,12-14]. Incidence of cataract is higher in female than male probably due to lack of estrogen in post-menopausal years [15].

Sr. No.	Study Parameters	Answer choice	Frequency	Percentage
1	Age	0-20 years	1	0.3
		20-50 years	30	9.8
		Above 50 years	275	89.9
2	Gender	Female	170	55.4
		Male	136	44.6
3	Residence	Urban	17	5.2
		Semi-Urban	62	20.3
		Rural	227	74.2
4	Education	Below 10^{th} grade	128	41.8
		10^{th} grade	88	28.8
		12^{th} grade	60	19.6
		Graduate	30	9.8
5	Family income	Less than 50,000	195	63.6
		50,000-1,00,000	96	31.5
		1,00,000-3,00,000	14	4.6
		3,00,000-5,00,000	1	0.3
6	Religion	Hindu	294	96.1
		Muslim	9	2.9
		Christian	3	1
7	Category	General	109	35.6
		Schedule caste (SC)	124	40.5
		Schedule tribe (ST)	23	7.5
		Other backward class (OBC)	50	16.3
8	Occupation	House work	152	49.7
		Business	29	9.5
		Service	73	23.9
		Farming	52	17
9	Insurance	Yes	67	21.9
		No	239	78.1

Table 1: Socio-demographic characteristics of study patients.

Data of distribution of localities of patients are shown in the Table 1. Patients are categorizes by, 17 (5.2%) urban, 62 (20.3%) semi urban and 227 (74.4%) rural patients. Some reports also showed similar results [16,17]. As shown in the Table 1, 28 (41.8%) patients below 10th standard, 88 (28.8%) patients 10th standard pass, 60 (19.6%) patients 12th standard pass and 30 (9.8%) patients were graduate. Distribution of patients based on family income is shown in the Table 1. From 306 cases, family income of 195 (63.6%) cases <50,000 rupees, 96 (31.5%) in between 50,000 to 1,00,000 rupees, 14 (4.6%) cases in between 1,00,000-3,00,000 rupees and only 1 (0.3%) case was in between 3,00,000 to 5,00,000 rupees.

152 (49.7%) house workers, 73(23.9%) servicemen, 52 (17%) farmers, and 29 (9.5%) businessmen were occupation wise distributed (Table 1). Epidemiological distribution of 306 patients according to religion is shown in the Table 1. 294 (96.1%) Hindu, 9 (2.9%) Muslim and 3(1%) Christian was recorded. Category wise data of patients are shown in Table 1. 109 (35.6%) general, 50(16.3%) OBC, 23(7.5%) ST, and 124 (40.5%) SC categories of patients were in the study.

Out of 306 patients, 239 (78.1%) people did not have insurance. The study results indicated that majority of the study patients had low education level and poor socio-economic conditions. In another reported studies, persons

with lower education, low income and lack of health insurance had higher prevalence of cataract [9,18,19]. Well-structured outreach eye care services at this hospital with NPCBVI programme at sub-district levels is critical to improve eye health of persons. Further, the result data also indicated that all class and all religion patients availed the services of this hospital.

Regarding eye checkup history, 282 (92.2%) patients did not have any history of eye checkup; only 24 (7.8%) patients had previous eye checkup (Table 2). Further, 213(69.6%) patients did not perceive the knowledge about the cataract and only 93(30.4%) patients were well aware about the cataract (Table 2). Majority of patients undergoing cataract surgery did not have prior knowledge about the cataract [20]. Targeted educational interventions and patient counseling are needed to increase awareness of the cataract and associated complications of cataract surgery.

Sr. No.	Study Parameters	Answer	Frequency	Percentage
1	Previous eye checkup	Yes	24	7.8
		No	282	92.2
2	Self-awareness about cataract	Yes	93	30.4
		No	213	69.6
3	Cataract in the eye	Unilateral	276	90.2
		Bilateral	30	9.8
4	Types of cataract	Nuclear	162	52.9
		Cortical	113	36.9
		Posterior sub capsular	26	8.5
		Mixed	5	1.6
5	Major ophthalmic treatment	Small incision surgery	230	75.2
		Phacoemulsification	69	22.5
		Medical treatment	7	2.3

Table 2: Epidemiological distribution of Ocular details of the study population.

Unilateral cataract reported in 276 (90.2%) in the majority of the cases, while 30 (9.8%) cases had bilateral cataract (Table 2). Regarding distribution of types of cataract, 162 (52.9%) with nuclear cataract, 113 (36.9%) with cortical cataract, 26 (8.5%) with posterior sub capsular cataract and 5 (1.6%) with mixed of all three types of cataract were reported (Table 2). Prevalence of monotype and nuclear cataract is observed high in the present study. Consistent with the other studies from Indian subcontinent, nuclear cataract is the most common subtype of cataract [13]. As show in the Table 2, 230 (75.2%) patients had treated with small incision surgery, 69 (22.5%) patients treated with phacoemulsification technique and 7 (2.3%) patients were treated with medicines. Surgical coverage of cataract among persons with unilateral coverage more than bilateral coverage and number of patients implanted with the intraocular lens is more than that with non-intraocular lens surgery [5].

Sr. No.	Study Parameters	Answer choice	Frequency	Percentage
1	Factors affecting cataract	Aging	204	66.7
		Diabetes	190	62.1
		Hypertension	161	52.6
		Trauma	62	20.3
		Medicines	16	5.2
		Alcohol	11	3.6
		UV radiation	29	9.5
		Smoking	21	6.9
		Others	15	4.9

Table 3: Factors affecting the cataract in the study population.

Epidemiological distribution of risk factors associated with cataract patients are shown in the Table 3, 204 (66.7) patients with aging, 190 (62.1%) patients with diabetes, 161 (52.6%) patients with hypertension, 62 (20.3%) patients with trauma, 16 (5.2%) patients with medicines, 11 (3.6%) patients with alcohol, 29 (9.5%) patients with UV radiation, 21 (6.9%) patients with smoking and 15 (4.9%) patients associated with other risk factors were reported. Senility is also observed as a major factor in the other reported study [21]. Role of diabetes, hypertension, smoking, trauma, alcohol, and UV radiation as risk factors had been reported in different research studies [15,21,22]. It is possible that modulating these factors may delay the occurrence of cataract. Identification of modifiable risk factors and elimination of causes is the main key to manage this disease. However, this warrants further studies.

Conclusion

The National Blindness Control Programme (NBCP) has worked to reduce the overall blindness in the country. In the rural areas, implementation of free eye care facilities under NBCPVI programme would likely lead to a higher uptake of cataract surgery. In the present epidemiological analysis, females, geriatrics, low income, poorly educated, home stayed, rural people are most vulnerable groups who may require special attention to access eye care service. Aging, diabetes, hypertension, trauma, medication, alcohol, UV-radiation, and smoking may be risk factors associated with the study population. Majority of cases were of unilateral, nuclear cataract treated with small incision surgery. Community awareness on eye care and preventive measures on modifiable risk factors of cataract disease may be significantly reduced burden of the cataract patients. Further, significant scaling up of eye care facilities at the district level may fulfill aspiration of VISION 2020.

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Conflict of Interest

None

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