Original Research Article

Ocular Morbidity Profile of Elderly in Tertiary Care Hospital: A Hospital Based Study

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Received: 05-01-2021 / Revised: 08-02-2021/ Accepted: 18-02-2021

Abstract

Introduction: Quantum of ocular morbidity in India especially in elderly has been increasingly high year over, probably due to their increasing population, higher longevity and unavailability of timely ophthalmic care as well as increasing life expectancy.**Aim:** To study the entire ocular morbidity profile of elderly people attending OPD in our Institution. **Materials & Methods:** The present study was thus designed to study the ocular morbidity profile of elderly people attending our Hospital. A hospital based cross-sectional study on ocular morbidities among elderly was conducted for a period from June 2019 to Decebmer 2020 after the institutional ethical clearance. A total of 1236 elderly patients fulfilling the inclusion criteria were enrolled, out of which 841 subjects were willing to participate in the study. All selected cases were subjected to history taking, personal interview, detailed ocular examination and necessary investigations as required. Data entry and analysis was done using Epi-info software.**Results:** Out of total 841 study participants, 433 (51.9%) were males and 408 (48.1%) were females with a male to female ratio of 1.06:1 with no statistical significant difference between the age groups and the gender. Refractive error was found to be the most common ocular morbidity among all the study participants followed by cataract, corneal opacity, retinopathies, glaucoma and ARMD. The other ocular morbidities were pterygium, dry eye, conjunctivitis, meibomitis, blindness, dacryocystitis, keratitis, endophthalmitis, entropion and blepharitis respectively. **Conclusion:** Thus It is required to define the priorities for eye care services based on the current population-based data.

Keywords: Ocular Morbidity, Elderly ocular disease, Elderly Hospital attendees.

Introduction

Ocular morbidity is defined as spectrum of eye diseases which includes both visual impairing and non-impairing conditions experienced by population.These are conditions recognized or suspected as ocular or vision abnormality, which require surveillance,clinical assessment and rehabilitation. Epidemiological factors like age, gender, socioeconomic status, smoking, chewing tobacco, alcohol consumption, exposure to cooking fuel etc. have claimed to be associated with ocular morbid conditions[1-3]. Eye diseases have emerged as a major public health problem in most developing countries but have received lower priority as compared to HIV- AIDS.Nevertheless, Blindness and/or visual impairment, by their sheer magnitude, form an enormous problem of human suffering, economical loss and social burden[4,5] Globally, about 272.4 million people are visually disabled (i.e. low vision) out of which nearly 42.7 million are blind. Out of them 175 million people are suffering from cataract and refractive errors all over the world, of which more than 90% dwell in low income countries.

Quantum of ocular morbidity in India especially in elderly has been increasingly high year over, probably due to their increasing population, higher longevity as well as unavailability of timely ophthalmic care or increasing life expectancy per say. The India Human Development Survey-II (IHDS-II), is a nationwide, multi-dimensional survey of 42,152 households in 1,503 villages and 971 urban areas of India. These data are mostly re-visited households interviewed for IHDS-I (ICPSR 22626)[6]. The rising morbidity load of elderly people has raised the eyebrows of the health care providers. Of all diseases cataract occupies the greatest morbidity load and has been rising in prevalence continuously. Thus it was decided to study the entire ocular morbidity profile of elderly people attending OPD in our Institution.

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Materials and Methods

The study was conducted at department of ophthalmology, at Sri Krishna Medical College and Hospital, Muzaffarpur. The study was approved by institutional research and ethical committee. An informed and written consent was taken from all the participating subjects before the commencement of the study.

This study was a hospital based cross-sectional study on ocular morbidities among elderly (60 years and above) individuals attending Ophthalmology OPD /IPD of our institution. A hospital based Snow-Ball sampling method was adopted. Thus all cases aged 60 years and above attending the ophthalmology OPD/IPD in hospital on the alternate days were included in the study, between June 2019 to December 2020. Very sick and mentally challenged patients or Patients who did not agree to participate in the study were excluded.

A pilot study was conducted among 48 patients attending the ophthalmology OPD/IPD in order to assess the clarity, reliability and applicability of the study tool used in the study for data collection. The result of pilot study helped in necessary modifications of the tool. The elderly patients included in the pilot study were not considered further for the study population. "Test- retest" method was followed to rectify the tools / proforma used in the study during the pilot study period. A total of 1236 elderly patients fulfilling the inclusion criteria were enrolled by the serial recruitment during the study period. However, only 841 subjects were willing to participate in the study. All selected cases were subjected to detail history taking, personal interview, clinical examination, necessary

investigation and treatment as required. Investigations were undertaken using Illuminated Snellen's chart, Near vision reading chart, Ishihara's chart, Torch and batteries, Retinoscope, Refraction set and trial frames, Direct and indirect ophthalmoscope, Slit lamp, Schiotz and Applanation tonometer, Lensometer, Keratometer, Auto-refractometer, Perimeter, A scan, Binocular loupes, 20 and 90 Dioptres lenses, Dilating drops (Tropicamide with phenylpherine and mydriacyl) and Topical anesthetic (Paracaine/ Lignocaine) depending upon the requirement. Data analysis was done by using SPSS software Version 11.0.

Results and Discussion

Research on the ageing process, during past many years or so, has contributed to the realization that ageing need not be equated with inevitable decline of health and disease. Considering the above situation in mind the present hospital based observational study was undertaken with the matching equivocality of the literature among patients attending Ophthalmology OPD/IPD in our hospital.In the present study, there were total 841 study participants out of which 433 (51.9%) were males and 408 (48.1%) were females with a male to female ratio of 1.06:1. As the strategy of studying ocular morbidities in the elderly, the present study included participants ranged from 60 to 93 years. Out of which 97 (11.5%) participants were in the age group of 60-69 years, 545 (64.8%) participants in the age group of 70-79 years and 199 (23.7%) participants in the age group of 80 years and above respectively. Also, there was no statistical significant difference between the age groups and the gender of the study participants ($\chi 2$=2.81, p-value=0.24)[Table-1]. The mean age of male participants was 74.19 + 7.18 years and female participants was 73.60 + 6.05 years respectively. Among all the study participants majority of the subjects 761 (90.5%) were found to be Hindu by religion, 61 (7.3%) were Muslim and only 19 (2.3%) were Sikh.

Table 1: Age-gender distribution of the study participants (N=841)

Age (Years)	Gender				Total	
	Male		Female			
	No.	%	No.	%	No.	%
60-69	54	12.8	43	10.5	97	11.5
70-79	269	62.1	276	67.6	545	64.8
>80	110	25.4	89	21.8	199	23.7
Total	433	51.9	408	48.1	841	100.0

Majority of the study participants belonged to the joint family i.e. 742 (88.2%). A total of 604 (72%) participants reported of residing in rural area and 237 (28%) in urban area. Out of total study participants 536 (63.7%) were married, 293 (34.8%) were widow/widower and only 12 (1.5%) were unmarried. Educational profiling of the study participants was done and it was found that majority of the subjects were illiterate 355 (42.2%), 205 (24.4%) educated upto primary level, 247 (29.4%) educated upto secondary level and only 34 (4.0%) graduates and above. Majority of study participants 468 (55.7%) were unemployed, while 245 (29.1%) were employed and only 128 (15.2%) were retired. Among all the study participants, 453 (53.9%) were living with their spouse as well as children followed by 278 (33.1%) with their children only, 89 (10.5%) with their spouse only, 17 (2.0%) with relatives while 4 (0.5%) were living alone. Socio-economic profiling of the study subjects was also done by using Modified BG Prasad scale. It was observed that 72 (8.6%) subjects belonged to socio-economic class I, 245 (29.3%) in socio-economic class II, 341 (40.4%) in class III, 161 (19.1%) in class IV and 22 (2.6%) in class V respectively [Table-2].

Table 2: Socio-demographic profile of the study participants

Age (years)	Mean age of males	74.19 + 7.18	t=1.28; p=0.20
	Mean age of females	73.60 + 6.05	
		No.	%
Religion	Hindu	761	90.5
	Muslim	61	7.2
	Sikh	19	2.3
Type of family	Joint	742	88.2
	Nuclear	99	11.8
Area of residence	Urban	237	28.2
	Rural	604	71.8
Marital status	Married	536	63.7
	Unmarried	12	1.5
	Widow/widower	293	34.8
Literacy status	Illiterate	355	42.2
	Primary	205	24.4
	Secondary	247	29.4
	Graduate and above	34	4.0
Occupation	Employed	245	29.1
	Unemployed	468	55.7
	Retired	128	15.2
Living	Alone	4	0.5
	With spouse	89	10.5
	With spouse & children	453	53.9
	With children	278	33.1
	With relatives	17	2.0
Socioeconomic status (Modified BG Prasad)	Class I	72	8.6
	Class II	245	29.3

	Class III	341	40.4
	Class IV	161	19.1
	Class V	22	2.6

Among all the study participants, 90 (20.8%) males and 88 (21.6%) females were diabetics and were on medication. It was also observed that 150 (34.6%) males and 138 (33.8%) females were hypertensive. Of all study participants about 102 (23.6%) males and 75 (18.4%) females were suffering from chronic obstructive pulmonary disease (COPD) or asthma while 45 (10.4%) males and 18 (4.4%) females had cardiovascular disease (CVD). Probably because of smoking trends in rural elderly, CVD and COPD were higher among male participants. Only 6 (1.4%) males and 10 (2.5%) females had the history of tuberculosis in the past. There was no significant statistical difference between the co morbid condition (diabetes, hypertension, COPD and tuberculosis) and the gender of the study participants ($p>0.05$) except for CVD [Table-3].

In the study conducted, socio-demographic and other factors were almost similar to the other studies conducted in other different regions in India. As it was observed in different studies done by Murthy and Singh[7,8], Nirmalan[9]and Haq[10] in different parts of the countries, these studies have similar findings as the present study with respect to age, sex, literacy, occupation, socioeconomic class, use of fuel and addictions. Overall, some differences in these socio-demographic characteristics of the study population across all the studies may be attributed to the differences in study setting, sampling methods used, age group and socio-cultural milieu.

Table 3: Gender wise distribution of the study participants according to the co-morbid conditions (N=841)

Co morbid conditions	Gender				Chi- square value	p-value
	Male (N=433)		Female (N=408)			
	No.	%	No.	%		
Diabetes	90	20.8	88	21.6	0.0773	0.781
Hypertension	150	34.6	138	33.8	0.0625	0.802
COPD/Asthma	102	23.6	75	18.4	3.3845	0.065
CVD	45	10.4	18	4.4	10.843	0.0009*
Tuberculosis	6	1.4	10	2.5	1.2774	0.258

Detailed ocular history was also taken from the study participants and majority of the study subjects i.e. 755 (89.7%) reported of no history of regular eye checkups. Only 312 (37.1%) subjects reported of any kind of ocular surgery ever in their life time, out of which 118 (37.8%) had reported of ocular surgery of their left eye, 105 (33.7%) in right eye and only 89 (28.5%) got operated for both eyes. As a matter of the fact that the complaints of left eye accounted 43%, the left eye surgery also accounted about 37%. It is felt that in future a case control design could be done on probability of left eye involvement and surgery thereof. Only 50 (5.9%) of the study participants reported history of ocular trauma ever in their life time. Out of which ocular trauma was maximum reported in their left eye i.e. 32 (64%) and the reasons for ocular trauma were as follows- land mine fragments (48%), flying insect (44%) and accidents (8%) respectively may be because of heavy constructions in Gurugram day in and day out [Table-4].

Table 4: Distribution of the study participants according to the clinical ocular history (N=841)

Ocular history		No.	%
Ocular complaints	Only right eye	184	21.9
	Only left eye	366	43.5
	Both eyes	291	34.6
Use of spectacles	Near vision (reading)	126	15.0
	Distant vision	270	32.2
	No spectacles	445	52.8
H/o regular eye check ups	Yes	86	10.2
	No	755	89.8
H/o ocular surgery ever	Yes	312	37.1
	No	529	62.9
Ocular surgery of which eye? (N=312)	Right eye	105	33.7
	Left eye	118	37.8
	Both eyes	89	28.5
Ho ocular trauma ever	Yes	50	5.9
	No	791	94.1
Eye affected due to ocular trauma (N=50)	Left eye	32	64.0
	Right eye	18	36.0
Type of ocular trauma (N=50)	Accident	4	8.0
	Landmine fragments (foreign body)	24	48.0
	Flying insect	22	44

Study done by Lawrence et al reported that out of total study participants (270), 61 (22.6%) subjects' underwent ocular surgery in the past. He also reported that 23 (8.5%) study subjects had previous history of ocular trauma and the reasons for ocular trauma were accidents (47.8%), physical attack (26.1%), flying insect (13%) and landmine fragments (13%) respectively[11]The prevalence of ocular morbidities among the elderly population was observed to be high. Each person above 60 years of age was susceptible to suffer from one or more ocular morbidities. The higher prevalence of ocular morbidities in old age could be due to increasing degenerative conditions, increased susceptibility to infections and lack of proper eye care[12]. In the present study refractive error (69.6%) was found

to be the most common ocular morbidity among all the study participants followed by cataract (52.9%), corneal opacity (20.8%), retinopathies (15.6%), glaucoma (10.1%) and ARMD (5.1%). The other ocular morbidities found in elderly individuals were pterygium (3.6%), dry eye (3.2%), conjunctivitis (3.1%), meibomitis (2.6%), blindness(2.3%),dacryocystitis(2.3%),keratitis(2.0%),endophthalmitis(1.8%), entropion (1.8%) and blepharitis (1.4%) respectively. Apart from the above; 5 or less than 5 cases of the following morbidities were also observed for scleral thinning (0.6%), papilloma (0.4%), lagophthalmos(0.2%), retinal detachment (0.2%) and adherent leucoma (0.1%).

Table 5: Distribution of ocular morbidity profile of the study participants (N=841)

Ocular morbidities	No.	%
Cataract	445	52.9
Pseudophakia	301	35.8
Corneal opacity	175	20.8
Glaucoma	85	10.1
Dacryocystitis	19	2.3
Conjunctivitis	26	3.1
Refractive error	585	69.6
Retinopathies	131	15.6
ARMD	43	5.1
Dry eye	27	3.2
Pterygium	30	3.6
Keratitis	17	2.0
Meibomitis	22	2.6
Blepharitis	12	1.4
Scleral thinning	5	0.6
Endophthalmitis	15	1.8
PCO	32	3.8
Blindness	19	2.3
Papilloma	3	0.4
Adherent Leucoma	1	0.1
Lagophthalmos	2	0.2
Entropion	15	1.8
Retinal detachment	2	0.2

Majority of the participants in the present study were having >1 ocular morbidity, either in the same eye or in the opposite eye. All the multiple ocular morbidities found in the same participant were taken as separate disease or morbidity [Table-5]. Also, pseudophakia, the intraocular lens implantation is a post-operative condition of cataract and it amount to be 35.8% in study participants.In the present study the ophthalmologic morbidity attendance rate of the hospital was found to be 2.04% whereas the study done by Vibha Florence Baldev et al, the ocular morbidity rate was 2.13 lesions per eye[13]. This is because the present study was a hospital based study and therefore, the diagnosis and patient load becomes automatically /mathematically higher than the community based study.To conclude, the results of the present study correlate with the results found in most of the studies but also controvert with the results of some studies which may be due to the difference in the design of the present study as compared to other studies. The present study was a hospital based cross sectional study that might have caused a higher magnitude or prevalence of certain diseases. The area and duration of the study, the seasonal and geographical impact might also have affected the disease prevalence.Many other studies were conducted taking into account both younger and elderly population, while the present study was conducted only in elderly patients' i.e. 60 years and above; thus was more specific with diseases of elderly and showed a direct correlation of increasing age with the prevalence of certain ocular morbidities such as cataract, refractive error, corneal opacity, retinopathies, ARMD etc.

Conclusion

The occurrence of ocular morbidities greatly increases with age and most of the disabilities due to blindness usually occur in old age. The increase in life expectancy in India has further complicated this and it has become an economic as well as a humanitarian issue. Thus in the present study the ophthalmologic morbidity attendance rate of the hospital in elderly was found to be 2.04%. Refractive error was the most common ocular morbidity in the study population followed by cataract, corneal opacity, retinopathies, glaucoma and ARMD. The study explains the need of concentrated efforts required at the local ground level so that the ocular morbidities can be prevented and cured in time. Thus, it is also required to define the priorities for eye care services based on the current population-based data. A long-term emphasis should include ARMD, glaucoma and corneal diseases and short-term emphasis should be placed on cataract and refractive errors as well. There is also need for more comprehensive studies at the community level for the geriatric ocular problems and their precipitating risk factors so that proper strategies could be designed to reduce the bulk of ocular-morbidities.

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Conflict of Interest: Nil
Source of support:Nil