An Epidemiological Study Of Correlates Of Cataract Among Elderly Population Aged Over 65 Years In Ut, Chandigarh

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Abstract

This study was undertaken to find out the prevalence and correlates of cataract among elderly aged 65 years and above in UT Chandigarh. Nine hundred and fifty three houses from 6 randomly selected sectors and 2 villages were visited to cover 245 subjects. (104 were males and 141 females). A total of 178 (72.6%) elderly, [0 (67.3%) males and 108(76.6%) females] were found to have cataract. This prevalence was more among older elderly than the young elderly (78.0% in the age group 75+ years versus 69.9% in the age group of 65-74 years, in urban areas than in rural areas (77.9% versus 52%), for educated ones than for illiterates (75% versus 70.1%), in diabetics than in non-diabetics (81.5% versus 70.1%), in smokers than in non smokers (73.9% versus 73.5%), alcohol drinkers than in non drinkers (73.7% versus 72.6%) and amongst hypertensives than in non-hypertensives (74% versus 69.8%). The findings highlight that aging, diabetes mellitus, smoking, alcohol and hypertension might be operating in the causation of cataract. Since differences between most comparative groups were not statistically significant, a multi factorial causation of cataract is inferred. The above mentioned factors are important not only for cataract causation but also for many other public health problems. Therefore a multi pronged strategy to reduce these factors is required to control cataract development and improve the overall health of the nation.

INTRODUCTION

Unoperated cataract is the main cause (estimated 16 million cases) of visual loss globally [1]. Even after operation outcome may not be favourable in all cases [2]. In developing world, its prevalence is believed to be greater and the onset at earlier ages, making the social and medical cost of blindness from cataract highly disproportional in the areas of the world that can ill afford them [3]. Generally, the normal aging and cataractous changes in the lens are related to its metabolic activity. Despite extensive and on going results on the pathogenesis of cataract we are still unable to prevent the natural ageing changes of the human lens. Senile cataract (nuclear sclerosis) is the most common cause of lens opacity seen by the ophthalmologists. The most common type of cataract in older patients involves the lens nucleus [4]. Increasing age is associated with an increasing prevalence of cataract. Over the next 20 years, it is estimated that the World's population will increase by about one third. This growth will occur predominantly in developing areas. During the same period, the number of people over 65 years of age will more than double. If nothing else alters, these demographic changes will lead to a doubling in the amount of cataract, visual morbidity and need for cataract surgery. The current 20 million people with severally reduced vision of 3/60 or verse as a result of cataract will have swelled to 40 million by the year 2020 [5]. Studies evaluating risk factors for the development of cataracts have implicated dietary factors, medications, exposure to sunlight, race, level of education, metabolic abnormalities, smoking, body mass, handgrip strength and family history in the causation of cataract. With such a large list it is obvious that cataractogenesis is multifactorial. [6] Hence one finds that outside the primary risk factor of age, some environmental physical and nutritional risks have also been associated with earlier onset or progression of cataract [7]. Although surgery is effective, preventing or delaying the development of cataract remains the preferred approach to confront the global cataract problem. Should a factor be found to delay cataract onset by ten years the number of cataract operation is estimated to decrease by 45% [8]. Some of the factors associated with cataract have been studied by the present work.

MATERIALS & METHOD

The city Chandigarh has 3 governments. It is the capital of the states of Haryana and Punjab. The Govt. Medical College & Hospital, Sector 32 is under Union Territory,

Chandigarh Administration. The city is claimed to have highest per capita income in the country [9]. This factor, along with others, makes it possible for the citizen of the city to have higher life expectancy (projected calculated for 2006 as 70 years). The city has around 6.9% of population aged more than 65 years. The present study was conducted in randomly selected 6 sectors and 2 villages of UT, Chandigarh covering a population of 3976 family members in 953 houses. The house to house visit by trained team members enabled to interview 248 elderly >65 years of age. The sample was selected by stratified random technique. The methodology comprised of interview, clinical examination and checking of medical records. The information was collected on a pre-designed, pre-tested format. General demographic, socio-economic & family structure information was obtained by medical social worker. Examinations & morbidity enquiry were conducted by doctors.

The ophthalmic examination was limited to the examination of the lens for obvious opacity and aphakia and measuring the visual acuity with the available correction. In this study, cataract was defined as obvious lens opacity, with or without a visual acuity of less than 3/60 in the better eye with the available correction, absence of lens, diagnosed as or operated for cataract. All persons were examined at their homes. The data were entered on the survey forms. The data was entered in and analysed by computers.

RESULTS

Table - I shows that a total of 104 male elderly and 141 female elderly aged 65 years and above were examined. Out of these 70 males and 108 females were found to have cataract giving 67.3% and 76.6% prevalence of cataract respectively. The sexual predilection of cataract towards females was seen only in age group of 75 years and above. The male female differences were also significant in non-smoker elderly. It can be seen from the Table-I that the prevalence of cataract was significantly more (91.7%) amongst female as compare to 67.4% amongst males aged more than 75 years and also among non smokers (prevalence in females 75.9%; in males 57.4%).

Figure 1

TABLE – 1: DISTRIBUTION OF ELDERLY BY GENDER AND SELECTED CHARACTERISTICS

Characteristic	Total Males	Males with Cataract	Total Females	Females with Cataract	P-Value
Age					
65-74	58	39 (67.2)	105	75 (71.4)	P>0.10
75+	46	31 (67.4)	36	33 (91.7)	P<0.01
Area					
Rural	23	10 (43.5)	27	16 (59.3)	P>0.10
Urban	81	60 (74.1)	114	92 (80.7)	P>0.10
Education					
None	23	15 (65.2)	64	46 (71.9)	P>0.10
<8yrs	21	11 (52.3)	57	46 (80.7)	P<0.05
>8yrs	60	44 (73.3)	20	16 (80.0)	P>0.10
Diabetes					
Yes	16	12 (75.0)	38	32 (84.2)	P>0.10
No	88	58 (65.9)	103	76 (73.8)	P>0.20
Smoking					
Yes	15	10 (56.7)	8	7 (87.5)	P>0.05
No	89	60 (57.4)	133	101 (75.9)	P<0.001
Alcohol					
Yes	19	14 (73.7)	0	0	
No	85	56 (65.9)	141	108 (76.6)	P>0.10
Hypertension					
Yes	55	40 (72.7)	95	71 (74.3)	P>0.10
No	49	30 (65.2)	46	37 (80.4)	P>0.05
Total	**104**	**70 (67.3)**	**141**	**108 (76.6)**	**P>0.10**

It can be depicted from Table -II that out of a total of 245 elderly, 178 (72.6%) were suffering from cataract. Its prevalence varied with the place of residence being significantly more (77.9%) amongst urbanities as compare to 52% amongst elderly of rural areas. The cataract-prevalence was also more amongst older elderly, educated ones , diabetics, smokers, alcoholics and hypertensives amounting to 78%, 75%, 81.5%,73.9%,73.7% and 74% respectively as compared to elderly who were young, uneducated, non-diabetics, non-smokers, non-alcoholics and non-hypertensives representing 69.9%,70.1%,70.1%,72.5%,72.6% and 69.8% respectively. However, none of the above differences were statistically significant.

Figure 2

TABLE II: CORRELATES OF CATARACT IN ELDERLY

Correlates	Total Elderly	Elderly with Cataract	Elderly with -out Cataract	Odds Ratio	P-Value
Age					
65-74	163	114 (69.9)	49 (30.1)	1.00	
75+	82	64 (78.0)	18 (22.0)	1.53	P>0.10
Area					
Rural	50	26 (52.0)	24 (48.0)	1.00	
Urban	195	152 (77.9)	43 (22.1)	3.26	P<0.001
Education					
None	87	61 (70.1)	26 (29.9)	1.00	
<8yrs	78	57 (73.1)	21 (26.9)	1.16	P>0.20
>8yrs	80	60 (75.0)	20 (25.0)	1.28	P>0.20
Diabetes					
Yes	54	44 (81.5)	10 (18.5)	1.87	P>0.05
No	191	134 (70.1)	57 (29.9)	1.00	
Smoking					
Yes	23	17 (73.9)	5 (26.1)	1.29	P>0.20
No	222	161 (72.5)	61 (27.5)	1.00	
Alcohol					
Yes	19	14 (73.7)	5 (26.3)	1.06	P>0.20
No	226	164 (72.6)	62 (24.4)	1.00	
Hypertension					
Yes	150	111 (74.0)	39 (26.0)	1.19	P>0.20
No	95	67 (69.8)	28 (30.2)	1.00	
Total	**245**	**178 (72.6)**	**67 (27.4)**		

DISCUSSION

In the present study the proportion of persons with cataract was observed to increase from 69.9% in the age group of 65-74 years to 78.0% in the age group of 75 years and above. A study [10] amongst individuals aged more than 40 years in the Maharastra(India) demonstrated that Cataract prevalence increased with age; it was just 0.4% in age group of 40-44 years and 24.9% in the age group of 70 years and above . Another study [11] from seven high blindness prevalence states showed an overall 43.3% prevalence of cataract amongst 50 years and older individuals demonstrated that cataract prevalence was 25.5% among individuals aged 50-59 years and 63% among those age 70 years and above. The study from Punjab(India) [12] covering elderly aged more than 75 years showed a 82% prevalence of cataract. All these studies taken individually and as a group demonstrate that cataract increases with age. The study from Maharashtra (India) demonstrated 25% prevalence in the age group of 70 years and above.Studies from western demonstrated a low prevalence 10.4% by 10.4% NHANES-II The study covering seven states (one of the states being Maharastra) showed no sexual predilection of cataract (prevalence in males 43.4% and in females 43.3%) but a study from Maharastra and our study demonstrated that cataract is more common in females (cataract prevalence in males was 31.9%; and in females it was 48.8% as per Maharashtra based study ,Similar figures for our study was 67.3% and 76.6% respectively). Thus we see that result of two different studies [910] from same state differ as far as the sex difference of cataract prevalence is concerned. This in consistency in findings decrease the validity of results and shows that a disease can present differently even in close geographical areas and reflects a need of continuos & frequent surveillance in all areas.

In a China based study [13] also female preponderance of cataract blindness has been observed (prevalence in males 2.37% and in females 5.16%). In the present study, a 77.9% prevalence of cataract in urban areas is significantly higher than the 52% prevalence of it in rural areas. These observed higher prevalence of cataract in urban areas may well were due more commnon health-seeking behavior of its residents consequently more persons being diagnosed. Urbanites are more conscious about their eyesight as they have to read more. These people also drive more motorized vehicles than their counterparts in rural areas. These factors of higher health seeking behaviour and more use of eyes for reading, writing, driving may very well be the reason of observing higher prevalence (75%)of cataract amongst educated ones; lower (70.1%) prevalence amongst illiterates. In the study from Punjab [12] though a higher prevalence of cataract amongst illiterates compared to educated ones was observed, but the multivariate analysis concluded that, education was not an independent risk factor for cataract. Case control studies from Italy [14] and Boston [15] have demonstrated low education to be associated with cataract development. Prevalence of cataract in present study was more (81.5%) amongst diabetics than it was (70.1%) in non-diabetics. Similar positive association between diabetes and cataract has been found in the Framingham Eye Study [16] . Clinic-based studies [17] also demonstrated same results. In our study smokers had 73.9% prevalence of cataract and non-smokers 72.5%, showing no big difference. A case control study by Mohan M et al [18] did not find an association between smoking and senile cataract. However almost eight studies [19] has shown as association between smoking and lens opacities. A prevalence of 73.7% cataract among alcohol users is just little more than the prevalence of 72.6% cataract among non-alcohol users. This may well be due to the fact that most of the elderly in Chandigarh were light drinkers and later group may have less chances of cataract development as shown by Clayton et al [20] by J shaped relationship. In our study 74.0% prevalence of cataract among hypertensives was higher than its prevalence of

69.8% among normotensives. Many other studies including one by Szmyd L Jr et al [21] had shown the similar positive association between hypertension and cataract. It is thus concluded that cataract is a major public health problem in Chandigarh. Many factors including age, alcohol, education, smoking, diabetes, hypertension might be operating in its causation. The above risk factors are of concern not only for cataract prevention but also for public health at large. Future prospective studies of cataract progression as part of larger public health interventions could provide important data on the impact of these interventions in developing countries.

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