# **Research Article**

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# An epidemiological study of cataract among elderly population in Aligarh, Uttar Pradesh, India

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#### **ABSTRACT**

**Background:** Cataract is one of the major causes of avoidable blindness in India. The burden of cataract among the elderly population needs to be assessed therefor, the study was planned to find the prevalence of cataract among the elderly population, and related socio-demographic factors.

**Methods:** The study was a community-based cross-sectional study done at field practice area of rural health training centre and urban health training centre, J N Medical College, AMU, Aligarh, Uttar Pradesh, India. A sample of 550 was taken from the registered elderly population aged 60 years and above using systematic random sampling with PPS. Socio- demographic characteristics was obtained using pretested and predesigned questionnaire. Cataract was identified with the help of torch light examination of lens. Data was analysed using SPSS version 20. Tests of proportion (Wald's method to calculate confidence interval) and chi-square test was used. P value <0.05 was considered as significant.

**Results:** The prevalence of cataract in the study population was 72.1% (95% CI- 68.3%, 75.8%) which was significantly associated with age, marital status, type of family & working status.

**Conclusions:** The study concluded that approx. three- fourth of elderly population had cataract which was significantly associated with various socio- demographic factors. Therefore, these factors need to be addressed to reduce the burden of cataract among elderly population.

Keywords: Aligarh, Cataract, Elderly

# INTRODUCTION

Cataract is clouding of the lens of the eye which prevents clear vision. Although most cases of cataract are related to the ageing process, occasionally children can also be born with the condition, or a cataract may develop after eye injuries, inflammation, and some other eye diseases. According to the latest assessment, cataract is responsible for 51% of world blindness, which represents about 20 million people. Cataract remains the leading cause of blindness. As people in the world live longer, the number of people with cataract is anticipated to grow. Prevalence of cataract increases with increasing age. Although the percentage of aged population is more in developed

countries, because the size of the population is low, the burden of cataract is much less in these countries. It is also seen that cataract develops approximately 10 to 14 years earlier in Indian population than in industrialized countries.<sup>2</sup>

The population increase is much marked in developing countries than industrially advanced countries. The age adjusted prevalence of cataract in India is three times that of U.S with 82% of Indian of 75-85 years old having visually significant cataract or aphakia compared to 46% percent of those aged 74-85 years in U.S.<sup>3</sup> If no interventions would done, the number of people with blindness will increase from 44 million to 76 million in

2020 globally. So vision 2020- the right to sight initiative if implemented properly could decrease the number of blind persons to half of current level. <sup>4</sup> Therefore, the study was conducted to find the prevalence of cataract among the elderly population, and related sociodemographic factors.

#### **METHODS**

A community based cross-sectional study was conducted The study was a community based observational cross-sectional study carried out among elderly population residing at field practice area of Rural Health Training Centre and Urban Health Training Centre, JN Medical College, AMU, Aligarh. The study was done for a period of one year from July 2014- June 2015.

#### Sample size

The sample size was calculated on the basis of cataract prevalence of 81% reported in a study done by Haq et al in Aligarh.<sup>5</sup>

#### Sample size calculation

$$n = Z^2 p (100- p)/l^2$$

$$n = (1.96)^2 p(100- p)/l^2,$$
  
 $q = 100- p$ 

$$n \sim 4pq/l^2$$

p = Prevalence of cataract = 81%, q = 100 - p = 19,Absolute precision (l) = 5%

Substituting the values-  $(4 \times 81 \times 19) \div 5^2$ 

= 246+ 10% non-response

 $= 246 + 25 = 271 \approx 275$ 

Design effect = 2

Total population to be taken from UHTC & RHTC =  $275 \times 2 = 550$  which was sampled using systematic random sampling with PPS (RHTC=385, UHTC=165).

#### Inclusion criteria

- Individuals aged 60 years and above.
- Those individuals who gave consent.

#### Exclusion criteria

- Individuals less than 60 years.
- Individuals who did not give consent.

Those individuals in whom the lens couldn't be visualized due to any superficial corneal opacity.

The data was collected using predesigned & pretested questionnaire. Cataract was identified using torch light by the opacity of lens. Informed verbal consent was taken from each individual. The study was approved by Institutional Ethics committee. Data was analysed using SPSS version 20. Tests of proportion (Wald's method to calculate confidence interval) and chi-square test was used. P value<0.05 was considered as significant.

#### RESULTS

#### Prevalence of cataract

The prevalence of cataract in the study population was 72.1% (95% CI- 68.3%, 75.8%).

# Association of prevalence of cataract with various socio-demographic factors

With regard to age, it was noticed that the prevalence of cataract was significantly higher in the age group 80 years (97.4%) compared to the age group 60-69 years (67.4%). The association between increasing age and prevalence of cataract was found to be highly significant statistically (Table 1).

A higher proportion of women were found to have cataract when compared to men. The association between sex and cataract prevalence was not statistically significant, this could be because more number of females in the study were of the low prevalence age group 60-69 years (Table 1).

On observing the association of prevalence of cataract with the marital status of the study population it was found that prevalence was much higher (91%) in those who were widow/widower group. This could be due to lack of person to accompany or the poor economic status to avail the procedure for correction (Table 1).

The prevalence of cataract was highest in elderly living alone (94.7%) followed by those living in nuclear family (74.6%) and least among elderly living in joint families. (67.5%). This difference in the prevalence of cataract was found to be significantly associated with the type of family (Table 1).

No significant association was observed between religion and the cataract prevalence in this study although the cataract was found to be more in Muslims (75.2%) compared to the Hindus (24.8%) (Table 1).

With education of elderly the prevalence was almost equal in different groups. The association between educational level and prevalence of cataract was not found statistically significant (Table 1).

With regards to occupation of the elderly, cataract was found to be significantly associated. Cataract reported to

be higher in the non-working elderly in the study population (Table 1).

No significant association been reported with SLI of the study population, the prevalence was almost the same among the three SLI groups (Table 1).

Table 1: Distribution of cataract according to socio- demographic factors.

Socio-demographic factors	Cataract		Chi square	P value
	Present	Absent		
	N (%)	N (%)		
Age				
60-69	273 (67.1)	134 (32.9)	χ2=23.393	
70-79	86 (82.7)	18 (13.7)	$\chi z = 23.393$ df= 2	p-value<0.001
80 and above	38 (97.4)	1 (2.6)	ui – 2	
Sex				
Male	169 (68.4)	78 (31.5)	χ2=3.158	p voluo=0.076
Female	228 (75.2)	75 (24.8)	df= 1	p-value=0.076
Marital status				
Currently Married	306 (68)	144 (32)	χ2=21.555	n value <0.001
Single/Widow	91 (91)	9 (9)	df=1	p-value<0.001
Type of family				
Lives alone	18 (94.7)	1 (5.3)	2_0 261	
Nuclear	217 (74.6)	74 (25.4)	$\chi 2 = 8.261$ df=2	p-value=0.016
Joint	162 (67.5)	78 (32.5)	u1–2	
Religion				
Muslim	203 (75.2)	67 (24.8)	χ2=2.382	p-value=0.123
Hindu	194 (69.2)	86 (30.8)	df=1	p-value=0.123
Education				
Illiterate	280 (72.5)	106 (27.5)	χ2=0.082	p-value=0.774
Literate	117 (71.3)	47 (28.7)	df=1	p-value=0.774
Working				
Working	97 (64.2)	54 (35.8)	χ2=6.541	p-value=0.01
Non-working	300 (75.2)	99 (24.8)	df=1	p-varue=0.01
SLI				
Low	94 (69.1)	42(30.9)		
Medium	164 (71.6)	65 (28.4)	$\chi 2 = 1.476$ df=2	p-value=0.478
High	139 (75.1)	46 (24.9)	u1-2	

## **DISCUSSION**

This study was a community based cross-sectional study conducted in rural field practice area and urban field practice areas of Department of Community Medicine, JNMCH, AMU, Aligarh. The prevalence of cataract observed in this study was 72.1% (95% CI- 68.3%, 75.8%) which was significantly associated with age, marital status, type of family & working status.

Higher magnitude of cataract prevalence was reported by Haq et al to be 80.9% among elderly population in Aligarh district. The study done by Maroof et al showed that the prevalence of cataract was 79.6% in the elderly population. Raizada et al 79.31% cataract prevalence was reported in 60 year and above age group in western Uttar Pradesh.

Lower prevalence of cataract in elderly compared to this study reported by Thakur et al in Pune to be 29.2%. Sharma et al in their study done in Northern India reported that 30% of the elderly population had cataract. Makwana et al in Western part of India reported the prevalence of cataract to be 24.17% in the study population. 10

Qadri et al in their study done in Mullana revealed that the prevalence of cataract increased significantly with the age. <sup>11</sup> Kakkar et al in rural Dehradun reported that the prevalence of cataract significantly increased with the age. <sup>12</sup> The prevalence of cataract increases with the age also reported by Haq et al in their study. <sup>5</sup> Association of cataract prevalence with age was also shown by RAAB study (Neena et al). <sup>13</sup> Shankar et al in their study in Varanasi also found significant association of cataract with the age. <sup>14</sup> Age acts as accumulative factor for

development of cataract as it causes interaction of many factors over time. (Brian and Taylor).<sup>15</sup> Delcourt et al reported the prevalence of any type of cataract in men and women.<sup>16</sup> Raizada et al found that the incidence of cataract increased steadily with the increasing age.<sup>7</sup>

The present study shows that the prevalence of cataract was not significantly associated with gender. Similary, the study done by Maroof et al in urban Aligarh showed no significant gender difference in prevalence of cataract. However, the study done by Maroof et al in rural Aligarh shows that prevalence of cataract was significantly associated with gender. 18

The findings of other researchers were similar to this study like Swarnalatha in her study carried out in rural Chittoor found that significant association exists between visual disability and marital status with higher prevalence in single/widows.<sup>19</sup>

Similar association of cataract with marital status was shown by Shankar et al in rural Varanasi. <sup>14</sup> Goswami et al found significantly higher prevalence among widow/single as compared to the married elderly found in the study. <sup>20</sup>

This study reports a significant association of cataract with type of family with more lonely living elderly found to having cataract while study done by Goswami et al showed that no significant association exists between visual disability and type of family.<sup>20</sup>

Similar significant association of cataract non-working elderly reported by Kakkar et al and Goswami et al. <sup>12,20</sup>

#### **CONCLUSION**

The study concluded that approx. three- fourth of elderly population had cataract which was significantly associated with various socio- demographic factors. Therefore, these factors need to be addressed to reduce the burden of cataract among elderly population.

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Ethical approval: The study was approved by the Institutional Ethics Committee, J N Medical College, AMU, Aligarh, India

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