Original Research Article

Association of socio-demographic and specific causative factors associated with development of cataract: a cross-sectional study

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ABSTRACT

Background: Cataract is a major cause of blindness worldwide, particularly so in India. Cataract constitutes 55% of total blindness in this country. It is generally acknowledged that age-related (senile) cataract is a multifactorial disease. The combined effect of these risk factors can help in better prediction of cataract as compared to their individual effects and is also helpful in determining preventive and curative interventions in development of cataract. Objective: To study the association between development of cataract and specific causative factors, socio-demographic factors.
Methods: 274 patients diagnosed with cataract were interviewed with the help of a pre tested interview schedule.
Results: Total of 274 cases was included in the study, of which 126 (46%) were male and 148 (54%) were female. Illiterate females being more prone for the development of cataract (p-value=0.001). There are more than double the chances of developing cataract in people who are exposed to U-V radiation (OR=2.14). Out of total cases, 156 (56.9%) cases were having present or past history of addiction in the form of tobacco and the significant association was found between tobacco consumption and development of cataract (p value=0.012).
Conclusions: Improvement in knowledge, literacy level and protection against U-V radiation will be helpful to reduce morbidity of senile cataract among elderly people.

Keywords: Blindness, Cataract, U-V radiation

INTRODUCTION

Cataract is the condition where there is clouding of the lens of the eye leading to the impairment of vision. Senile cataract related to the ageing process being the most common type of cataract, though it may sometimes affect children or may develop after eye injuries, inflammation, and some other eye diseases.[1]

Cataract remains the leading cause of blindness. As the life expectancy of the people all over the world is increasing, we also expect the number of cases of cataract to increase. Cataract is also an important cause of low vision in both developed and developing countries.[1]

Cataract is a major cause of blindness worldwide, particularly so in India.[2] Cataract constitutes 55% of total blindness in this country.[3] It is a well-known fact that age-related (senile) cataract is a multifactorial disease. However, owing to inadequacies in epidemiologic understanding of this disease many risk factors have been hypothesised.

The combined effect of these risk factors can help in better prediction of cataract as compared to their

individual effects and is also helpful in determining preventive and curative interventions in development of cataract. Hence, this study was undertaken to study the association between development of cataract and specific causative factors, socio-demographic factors and U-V light exposure and tobacco addiction.

METHODS

Study participants

The patients who were diagnosed as senile cataract and admitted in the ophthalmology ward for cataract operation were included in the study after obtaining written informed consent.

Duration of study

Study was carried out from 1st September 2008 to 15th October 2008.

Study design

Cross-sectional study.

Study area

Present study was conducted in ophthalmology in-patient ward of Dr. Vithalrao Vikhe Patil Foundation's Medical College and Hospital, Ahmednagar, Maharashtra.

Inclusion criteria

All patients admitted in ophthalmology in-patient ward for senile cataract operation during this period were included in the study

Exclusion criteria

Patients not willing to participate in the study.

Sample size

All patients who sought treatment for senile cataract at our hospital during study period. A total around 280 patients came for cataract operation but 274 have given consent for study participation.

Data collection

Before commencing data collection we have got permission from the department of ophthalmology and list of all patients who sought treatment for senile cataract during study period was obtained. Written informed consent was obtained from each individual before the interview. Each patient was interviewed separately using pretested questionnaire. Questionnaire includes information on socio-demographic variables, symptoms and duration of cataract; causative factors of cataract; history of associated other eye and systemic diseases. Also we have included questions regarding specific factors which are more commonly associated with cataract like exposure to UV light, socioeconomic class, literacy, fuel used by women for cooking, addiction and associated systemic diseases.

Statistical analysis

Descriptive statistics was used to display sociodemographic profile of the participant. Data were entered in Microsoft Office Excel and Statistical analysis was done by using descriptive and inferential statics using chi square test and software used in analysis was Statistical Package for Social Science (SPSS) 22.0

Operational definition used during the study

Modified B. G. Prasad classification (2003) was used for determination of socioeconomic class.

Smoker: Subject who smoked ≥10 cigarettes/bidis daily for ≥2 years.[4]

Alcoholic: Subject who consumed ≥75 gm per day for ≥2 years.[4]

Exposure to UV-B radiation: Subject who had ≥6 hours average daily exposure to sunlight for a minimum period of 5 years and was not using any UV protective glasses.

RESULTS

Total of 274 cases were included in the study, of which 126 (46%) were male and 148 (54%) were female. Most of the patients were from the age group 51-70 years. (66.8%) (Table 1).

Table 1: Age and sex wise distribution of cataract patients.

Age group (yrs)	Sex		Total (%)
	Male	Female	
<40	6	6	12 (4.3)
41 to 50	27	22	49 (17.9)
51 to 60	39	46	85 (31.0)
61 to 70	38	60	98 (35.7)
>70	16	14	30 (11.1)
Total	126 (46)	148 (54)	274 (100)

Almost 60% of the study population was illiterate and the literacy level was significantly associated with the development of cataract (p value <0.001), the illiterate females being more prone for the development of cataract (Table 2).

Table 2: Gender wise distribution of literacy level and its association.

Literacy level	Sex		Total (%)	Chi-square value	P value
	Male (%)	Female (%)			
Illiterate	48 (38.1)	116 (78.4)	164 (59.9)		
Literate	78 (61.9)	32 (21.6)	110 (40.1)	45.96	0.001**
Total	126 (46.0)	148 (54.0)	274 (100)		

Out of the total cases, 99 individuals (36.1%) were exposed to U-V light at their workplace for ≥6 hours/day for a period of ≥5 years, of which 69.3% were male and 30.7% were females. Risk of developing cataract was 2.14 times more in the people who are exposed to U-V radiation (Table 3).

Table 3: Gender wise distribution of Exposure to U-V light among cataract patients and its association.

Exposure to U-V light	Sex		Total	Risk ratio
	Male (%)	Female (%)		
Yes	69 (69.7)	30 (30.3)	99 (36.1)	
No	57 (32.6)	118 (67.4)	175 (63.9)	2.14 (1.667-2.747)
Total	126 (46.0)	148 (54.0)	274 (100)	

Majority of the individuals belong to socioeconomic class III (101 i.e., 36.9%), class IV (93 i.e., 33.9%) and V (23 i.e., 8.4%).

Table 4: Gender wise distribution of socio-economic class and its association.

S-E class	Sex		Total (%)	Chi-square value	P value
	Male (%)	Female (%)			
Class I and II	29 (23.0)	28 (18.9)	57 (20.8)		
Class III, IV and V	97 (77.0)	120 (81.8)	217 (79.2)	0.693	0.405
Total	126 (46.0)	148 (54.0)	274 (100)		

There was no significant statistical association between socio-economic status and sex for the development of cataract (p value >0.05) (Table 4).

Use of tobacco was significantly associated with the development of cataract (p value <0.05). Both males and females who consume tobacco in any form are at greater risk for the development of cataract (Table 5).

Out of the total 148 females, 63.6% were using LPG for cooking purpose, 36.4% were using solid fuel i.e. wood, cow dung cake or both. Out of total 274 cataract patients.

Out of the total 274 cases, 72 (26.3%) were had associated systemic disease, of which 35 (12.7%) were diabetic and 38 (13.8%) were hypertensive.

Table 5: Gender wise distribution of tobacco consumption and its association.

Tobacco use	Sex		Total (%)	Chi-square value	P value
	Male (%)	Female (%)			
Yes	82 (65.1)	74 (50.0)	156 (56.9)		
No	44 (34.9)	74 (50.0)	118 (43.1)	6.312	0.012*
Total	126 (46.0)	148 (54.0)	274 (100)		

DISCUSSION

Our analysis shows that most of the patients presenting with the symptoms of cataract belong to the age group between 51 to 70 years, which is the common age for development of cataract and the finding is consistent with various textbooks.[5] In contrast to our result Navarro esteban et al study found that majority of cataract found in more than 74 years of age as compared to 65-74, it might be due to the difference in location and their life expectancy.[6] Our study significantly shows that illiterate female had more affected with cataract, which is consistent finding with study done by Navarro esteban et al and Ughade et al.[4,6] Our study gives strong evidence of association of U-V radiation with the development of cataract. The findings were similar to the study done by West et al, where they found out that the odds of cortical opacity increased with increasing ocular exposure to U-V radiation (OR=1.10).[7] Some other studies have also demonstrated the significant association of sunlight and cataract.[8,9] In our study majority of the patients are from lower socioeconomic class which is similar study done Ughade et al.[4]

Our study shows that around 57% of cataract patients had the history of tobacco addiction; and significant relation have been established among male and female between tobacco addiction and development of cataract, similarly case-control study to investigate the risk factors for cataract done by Ughade et al also showed the significant association with smoking and development of cataract.[4]

CONCLUSION

The governmental and voluntary organizations should provide the health education, increase awareness among all population by community participation. Arrange health session so that fear of surgery can be removed and help in better utilization of eye camp services. Health education sessions should arrange in order to make aware regarding harmful effects of environment for eye and provide aid to needy. Grass root level worker needs to be trained to screen for visual acuity and refer 'at risk' individuals. Preventive and curative eye health services should be developed as part of general health care at primary health centre.

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