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STUDY ON PREVALENCE OF CATARACT IN RURAL FIELD PRACTICE AREA OF A PRIVATE MEDICAL COLLEGE, TELANGANA

Yeyuvuri Praveen Raju¹, C. V. Mahesh Kumar², B. Chandrasekhar Reddy³, Manoj B. Patki⁴

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ABSTARCT: INTRODUCTION: Vision loss can contribute to significant injury and can impair a person's ability to perform daily activities.⁽¹⁾ Cataract is the most common easily correctable cause of blindness in developing regions of the world.⁽²⁾ There are approximately 20 million people blind from cataract in the world, the majority of who do not have access to affordable cataract surgery. **AIM:** To determine the prevalence of cataract in adult population aged 40 years and to determine the association of sex, socio-economic status, exposure to sun, diabetes mellitus and hypertension in relation to cataract. **MATERIAL & METHODS:** The present study is a community based cross-sectional study done in rural field practice area, Raghunathapalem and was conducted for a period of one year. A sample size of 950 adults 40 years and above was selected and Proportionate sampling was done. Data entry and statistical analysis were done using SPSS 16.0. Chi-square test was used to find out the association between the possible risk factors and cataract. **RESULTS:** In the study population of 198 cataracts there were 27.3% participants belonged to class-V. It was observed in the present study that 42.9% participants with cataract were exposed to sun in terms of hours of work in sun per year in the category of more than 1200 hours group. Among the total cases of cataract, 48.1% study participants were diabetic and 50.4% study participants were hypertensive. **CONCLUSION:** Cataract was highly significant with respect to age, sex, hours of work in sun per year, history of Diabetes mellitus and history of Hypertension. Cataract was significantly associated with socio-economic status.

KEYWORDS: Cataract, Prevalence, Diabetes Mellitus, Hypertension, Chi-square.

INTRODUCTION: For most people, eyesight is the most treasured of the senses. Eyes undergo many changes with ageing. Most commonly, vision loss among older people is due to clouding of the lens of the eye (Cataracts) or damage to the optic nerve (As occurs in glaucoma) or the retina (As occurs in age-related macular degeneration and diabetic retinopathy). Whatever the reason for vision loss, any vision change can compromise an older person's quality of life and, indirectly, health. Loss of vision can be especially devastating to older people coping with other problems as well, such as poor balance and hearing loss. In such cases, vision loss can contribute to significant injury and can impair a person's ability to perform daily activities.⁽¹⁾

Worldwide it is estimated that at least 39 million people are blind and that an additional 246 million have severely impaired vision. In all, about 285 million people are visually disabled in the world today, and the number is steadily increasing because of population growth and ageing.⁽³⁾ 90% of all blind people live in developing countries and more than two thirds of all blindness is avoidable (Either preventable or curable).⁽⁴⁾ Blindness, with its social and economic consequences, therefore represents a significant public health problem in many parts of the world.⁽⁵⁾ Cataract is the most common easily correctable cause of blindness in developing regions of the world.⁽²⁾

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The most common forms of cataract are still not prone to effective prevention and great efforts are therefore being made to provide sight restoring surgery; over the last 10 years new technology and techniques have improved such as surgery, including the implantation of intraocular lenses, now almost always used in patients in developed countries.⁽⁴⁾ There are approximately 20 million people blind from cataract in the world, the majority of who do not have access to affordable cataract surgery. The number of blind people in the world and the proportion due to cataract are increasing due to population growth and increasing longevity.

The present study will determine the prevalence of Cataract in an adult population of a rural community in Khammam. The study can help the public health administrators in planning and management of community eye services and will also serve as a reference point for researchers in their investigation.

AIM:

1. To determine the prevalence of cataract in adult population aged 40 years and above in a rural community.
2. To determine the socio-economic and demographic profile in relation to cataract.
3. To study environmental factors associated with cataract
4. To study the association between chronic diseases like Diabetes Mellitus and Hypertension in relation to cataract.

MATERIAL AND METHODS: The present study is a community based cross-sectional study done in Rural field practice area, Raghunathapalem under the administration of the Department of Community Medicine, Mamata Medical College, Khammam. The present study was conducted for a period of one year from September 2013 to August 2014. A sample size of 950 adults 40 years and above was selected from the Rural field practice area population using a two stage probability sampling. Proportionate sampling was used to find the number of households to be selected from each village. Pre tested semi-structured questionnaire was used for interview. The participants were informed about the purpose of the study and their informed verbal consent was taken. They were assured about their confidentiality. All individuals who were not willing to give consent for interview and examination were excluded from the study.

Data Entry and Statistical Analysis: Data entry and statistical analysis were done using SPSS 16.0. Chi-square test was used to find out the association between the possible risk factors and cataract. For the feasibility of carrying out statistical analysis adjacent categories were clubbed where ever necessary. For a test to be significant a “p” value of less than 0.05 was considered.

RESULTS:

Fig.1

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Age in years	Cataract	No. Cataract	Total
40-49	3 (0.8)	379 (99.2)	382 (100.0)
50-59	24 (12.4)	170 (87.6)	194 (100.0)
60-69	78 (45.6)	93 (54.4)	171 (100.0)
70-79	67(56.3)	52 (43.7)	119 (100.0)
80 and above	26 (66.7)	13 (33.3)	39 (100.0)
Total	198 (21.9)	707 (78.1)	905 (100.0)

Table 1: Distribution of study participants according to their age and presence of cataract

$\chi^2=294.3$, df= 4, $P<0.001$ * Figures in parenthesis shows row percentages.

Sex	Cataract	No. Cataract	Total
Male	84(18.2)	378(41.8)	462
Female	114(25.7)	329(36.4)	443
Total	198(21.9)	707(78.1)	905(100.0)

Table 2: Distribution of cataract cases according to the sex and presence of cataract

$\chi^2=7.546$, df= 1, $P= 0.006$ * Figures in parenthesis shows row percentages.

Socio-economic group	Cataract	No. Cataract	Total
Class II	2(10.0)	18(90.0)	20(100.0)
Class III	8(11.4)	62(88.6)	70(100.0)
Class IV	185(23.0)	619(77.0)	804(100.0)
Class V	3(27.3)	8(72.7)	11(100.0)
Total	198(21.9)	707(78.1)	905(100.0)

Table 3: Distribution of cataract cases according to their Socio-economic status(Modified Kuppu Swamy SES scale)⁽²³⁾

$\chi^2=6.193$, df=3, $P < 0.05$ * Figures in parenthesis shows row percentages.

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Hours of work in sun per year	Cataract	No. Cataract	Total
0-300	11(9.5)	105(90.5)	116(100.0)
301-600	6(30.0)	14(70.0)	20(100.0)
601-900	133(20.5)	516(79.5)	649(100.0)
901-1200	45(39.8)	68(60.2)	113(100.0)
>1200	3(42.9)	4(57.1)	7(100.0)
Total	198(21.9)	707(78.1)	905(100.0)

Table 4: Distribution of cataract cases according to their exposure to sun

$\chi^2=35.020$, $df=4$, $P < 0.001$ * Figures in parenthesis shows row percentages.

History of Diabetes Mellitus	Cataract	No cataract	Total
Present	13(48.1)	14(51.9)	27(100.0)
Not Present	185(21.1)	693(78.9)	878(100.0)
Total	198(21.9)	707(78.1)	905(100.0)

Table 5: Distribution of cataract cases according to their history of Diabetes Mellitus

$\chi^2= 11.237$, $df=1$, $P < 0.001$ * Figures in parenthesis shows row percentages

History of Hypertension	Cataract	No cataract	Total
Present	65 (50.4)	64 (49.6)	129 (100.0)
Not Present	133 (17.1)	643 (82.9)	776 (100.0)
Total	198 (21.9)	707 (78.1)	905 (100.0)

Table 6: Distribution of cataract cases according to their history of Hypertension

$\chi^2= 71.541$, $df=1$, $P < 0.001$ * Figures in parenthesis shows row percentages.

DISCUSSION: Out of the total 905 study participants 198 (21.9%) were having cataract in either eye. These findings are coherent with the studies done in the past. In more than 50 studies done around the world, prevalence of cataract in the elderly age group has ranged from 15.5% to 67.3%.

Age was found to have a significant relationship with cataract. In the present study the prevalence of cataract increased from 0.8% in the age group of 40-49 years to 66.7% for those aged 80 years and above ($p < 0.001$) (Table-1). A close association of cataract with increasing age has been well documented by studies in India Chatterjee et al,⁽⁶⁾ Raizada et al,⁽⁷⁾ Singh et al,⁽⁸⁾ Bachani et al,⁽⁹⁾ Nirmalan et al,⁽¹⁰⁾ and abroad Loewenthal and Pe'er,⁽¹¹⁾ Leske et al,⁽¹²⁾ McCarty et al,⁽¹³⁾ Tsai et al.⁽¹⁴⁾ In the present study the prevalence of cataract was increasing with the increase of age viz. in age group

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50–59 years=12.4%, 60–69 years=45.6%, 70–79 years=56.3%, 80 years and above=66.7% respectively.

A total of 84 males and 114 females were found to have cataract giving a prevalence of 18.2% for males and 25.7% for females (Table-2). The difference in the cataract prevalence among males and females was found to be statistically significant ($p=0.006$). Similar results have been reported by several studies, Raizada et al,⁽⁷⁾ Limburg et al,⁽¹⁵⁾ Reidy et al,⁽¹⁶⁾ Dandona et al⁽¹⁷⁾ Chatterjee et al⁽⁶⁾ and Nirmalan et al,⁽¹⁰⁾ Tsai et al.⁽¹⁴⁾ It was observed that the prevalence of cataract was increasing in both sexes with increasing age. In females cataract was more common in 60-69 years age group, while in males it was more common in 70-79 years age group.

Socio-economic status was calculated according to Modified Kuppu Swamy SES scale.¹⁸

The prevalence of cataract was found to be 10.0% and 27.3% in the class II (Upper middle class) and Class V (Lower social classes), respectively (Table-3). This difference in the prevalence was statistically significant ($p<0.05$). Cataract was found to be more prevalent in the lower socioeconomic strata by Raizada et al,⁽⁷⁾ Singh et al,⁽⁸⁾ Leske et al,⁽¹⁹⁾ Chatterjee et al⁽⁶⁾ and Reidy et al.⁽¹⁶⁾ Results from the present study were similar to the findings from these studies.

There was an increase in the number of cases of cataract with increase in hours of work in sun, per year. In the present study the prevalence of cataract was significantly related with exposure to sunlight measured in terms of “hours of work in sun per year”. The prevalence of cataract increased from 9.5% in ‘0-300 hours of work in sun per year’ category to 42.9% in ‘more than 1200 hours of work in sun per year’ category and is statistically significant ($p<0.001$). (Table-4) Studies Raizada et al⁽⁷⁾ and Leske et al⁽²⁰⁾ had shown similar results with higher prevalence of cataract in participants who had outdoor occupation and exposure to sun.

In the present study, prevalence of cataract was higher in participants with a history of diabetes mellitus and Hypertension (Table 5 & 6). Prevalence of cataract was 48.1% in individuals with diabetes compared to 21.1% in individuals without diabetes. Cataract prevalence was also high in individuals with hypertension (50.4%) than individuals without hypertension i.e. 17.1%. These findings in present study were coherent with studies done by Leske et al,⁽²⁰⁾ Szmyd et al,⁽²¹⁾ Tsai et al,⁽¹⁴⁾ Kuang et al⁽²²⁾ and Shakil et al⁽²³⁾ where there was a high prevalence of cataract in individuals with diabetes and hypertension.

SUMMARY AND CONCLUSION: A total of 905 persons were interviewed and examined at home. Majority of the participants i.e. 42.2% belonged to the age group of 40-49 years, while the least contribution i.e. 4.3% was by those aged 80 years and above.

The prevalence of cataract was 21.9%. Cataract was highly significant with respect to age, sex, hours of work in sun per year, history of Diabetes and history of Hypertension. Cataract was significantly associated with socio-economic status.

The prevalence of cataract increased from 0.8% in the age group of 40-49 years to 66.7% for those aged 80 years and above.

Cataract was more prevalent in females than in males; this gender differentiation to some extent could be attributed to involvement of women in cooking activities who may be exposed to domestic smoke. The study population consisted mostly of poor people with 50.0% belonging to social class V.

The prevalence of cataract increased with increase in hours of work in sun per year. Cataract prevalence was least i.e. 9.5% in 0-300 hours of work in sun per year and was increasing steadily

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with increase in hours of work in sun per year. Prevalence was highest i.e. 42.9% in more than 1200 hours of work in sun per year

Cataract prevalence is highly associated with co-morbid conditions such as history of diabetes and history of Hypertension. History of diabetes and hypertension were risk factors associated with cataract.

Limitations of the Study:

- Dilatation of eye with eye drops for mydriasis could not be used before eye examination
- No follow up was included.

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AUTHORS:

1. Yeyuvuri Praveen Raju
2. C. V. Mahesh Kumar
3. B. Chandrasekhar Reddy
4. Manoj B. Patki

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Community Medicine, ASRAM, Eluru, Andhra Pradesh, India.
2. Assistant Professor, Department of Community Medicine, Eluru, Andhra Pradesh, India.
3. Assistant Professor, Department of Community Medicine, ASRAM, Eluru, Andhra Pradesh, India.

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4. Ex-Associate Professor, Department of Community Medicine, Mamatha Medical College, Khammam, India.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Yeyuvuri Praveen Raju,
Plot No. 36,
Padmavathi Gardens,
Phase-1, Salipeta Road,
Poranki, Vijayawada,
Andhra Pradesh, India.
E-mail: praveen.rajuy@gmail.com

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