International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 829-834 www.ijdmsrjournal.com ISSN: 2582-6018

Prospective Observational Study of Presenile Cataract in South Indian Patients

DR. P. Geetha, Dr.Bharathi S, Dr. Mohamed Abrar, Dr.Lavanya G
[1]*MS Ophthalmology, Assistant Professor, Madras Medical College, Chennai, Tamil Nadu,*
MS., Ophthalmology, Madras Medical College, Chennai, Tamil Nadu,
MS Ophthalmology, Madras Medical College, Chennai, Tamil Nadu,
MS OphthalmologyMadras Medical College, Chennai, Tamil Nadu

Date of Submission: 15-04-2023 Date of Acceptance: 25-04-2023

ABSTRACT: **Background**:Cataract is a major cause of blindness worldwide with a greater prevalence in developing countries like India. Presenile cataract refers to an onset of this disease below 50 years of age

Objectives: To study the factors associated with development of presenile cataract among the total cataract patients who attended out-patient clinic of Ophthalmology department from January 2023 to March 2023 and to find out the proportion of different types of presenile cataract. **Materials & Methods** :This cross- sectional observational study was done on patients diagnosed with presenile cataracts (age group 18–50 years) at Regional Institute of Ophthalmology, Chennai from January 2023 to March 2023. A detailed history including the risk factors such as residence and occupation, diabetes mellitus (DM), atopy, and thyroid disorders was taken. Cataract was graded according to the Lens Opacities Classification System.
Statistical analysis of descriptive data was done with bar charts and pie diagrams.

Results: Out of the 65 participants included in the study, 66 % were female and 34% were male. The mean age of study population was 43.5%. Diabetes (21.53%) was the most common associated comorbidity in the study population. Significantly, hair dye exposure (32 %) and biogas fuel exposure (32%) were associated with early development of presenile cataracts. **Conclusion**: Apart from Diabetes Mellitus, Occupation and exposure to hair dyes and fuels are risk factors for early development of cataract.

KEYWORDS:Presenile cataract, Risk factors, Fuel Exposure

I. INTRODUCTION

Cataract is the leading cause of blindness in the world, accounting for 47.8% of the total blindness.[1]Cataract is the clouding of the lens in the eye leading to decrease in vision. It is primarily a disease of older age groups.

Presenile cataract is defined as the occurrence of cataract before the age of 50 years. Various risk factors have been linked to the development of cataract such as diabetes mellitus (DM), hypertension, atopy, prolonged use of steroids, trauma, severe dehydration crisis, exposure to ultraviolet (UV) light, and intraocular inflammation.[2]

This will definitely add on to the already existing burden of age-related cataract in India and worldwide. Some of the landmark studies have clearly established several factors contributing to both age related as well as presenile cataract formation.[3]

The Beaver Dam Study in Wisconsin concluded significant association of cigarette smoking with cataract.The Blue Mountains Eye Study was a similar study conducted in urban community of Australia which was conducted to identify the risk factors for age-related cataract formation such as dietary factors, smoking, alcohol consumption, medications, and refractive errors.[4]

This study proposes to explore the demography and magnitude of presenile cataract in Tamil Nadu, with the aim of identifying the modifiable risk factors.

II. AIM AND OBJECTIVE

The aim of this study was to determine the factors responsible for the development of presenile cataracts in patients between 18 and 50 years in Tamil Nadu.

International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 829-834 www.ijdmsrjournal.com ISSN: 2582-6018

III. MATERIALS AND METHODS

This was a cross-sectional hospital-based observational study conducted in the department of ophthalmology at a tertiary care centre. Sixty five consecutive patients in the age group of 18–50 years, diagnosed with cataract and posted for cataract extraction between January 1, 2023, and March 31, 2023, and who were willing to take part in the study were included in the study. Patients who had congenital or developmental cataracts were excluded from the study.

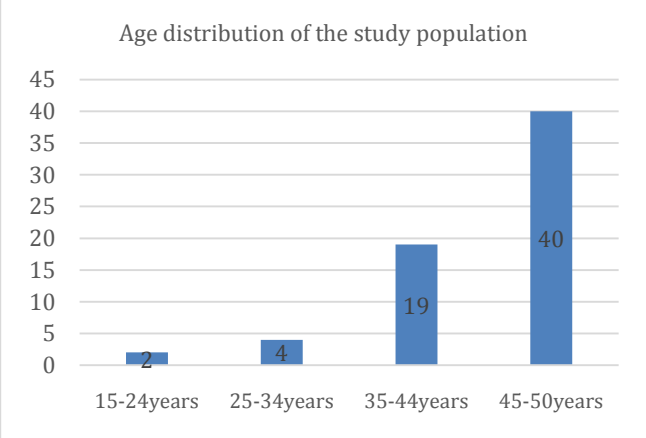
A detailed history including the patients' age, place of residence, risk factors such as DM, asthma, skin problems, high myopia, steroid intake, thyroid disorders, past history suggestive of uveitis, history of any ocular trauma, intraocular surgeries, history of long-term drug intake, and family history of presenile cataracts were noted. Slit-lamp examination was done to classify and grade the cataract, dilated fundus examination was done in all cases, and B-mode ultrasound scan was done in indicated cases. Cataract was graded according to the Lens Opacities Classification System III.[6] Axial length of the eye was measured using intraocular lens master. Participants were categorized as high myopia if the spherical refractive error was more than 6 diopters. Participants in whom none of the common known risk factors were observed were categorized as miscellaneous group.

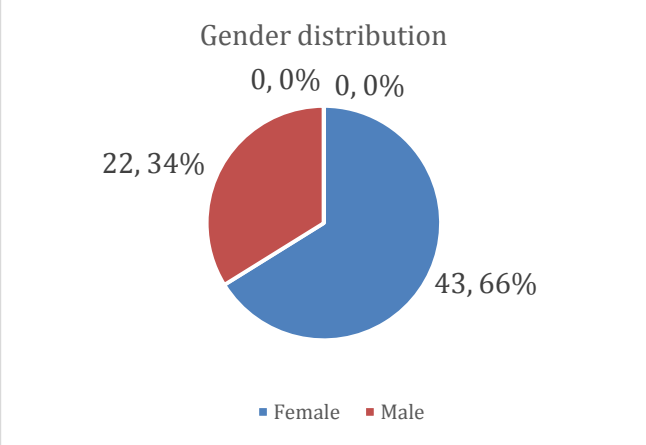
Informed written consent was taken after informing the participants about the possible benefits, risks and implications of the study. Strict confidentiality of their personal details and information related to the study was maintained at all level.

The data were entered in Excel spreadsheet. Data analysis was done using SPSS. Qualitative data- the association between the exposure variables (outdoor activity, drug history, atopy etc.) and outcome variables (presenile cataract) were tested using Chi-square test. p value <0.05 was considered as significant. The types of presenile cataract were expressed as frequency and percentage. Odds ratio 95% CI was calculated.

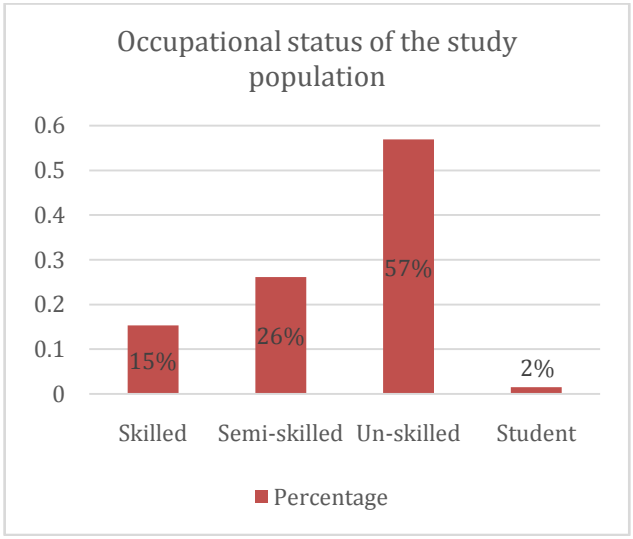
IV. RESULTS

Of the 65 patients studied, 43 were female and 22 were male. The mean age of study population was 43.47 years. The majority of patients belonged to 45-50 years age group (61.5%), followed by 35 – 44 years age group (29.23%).



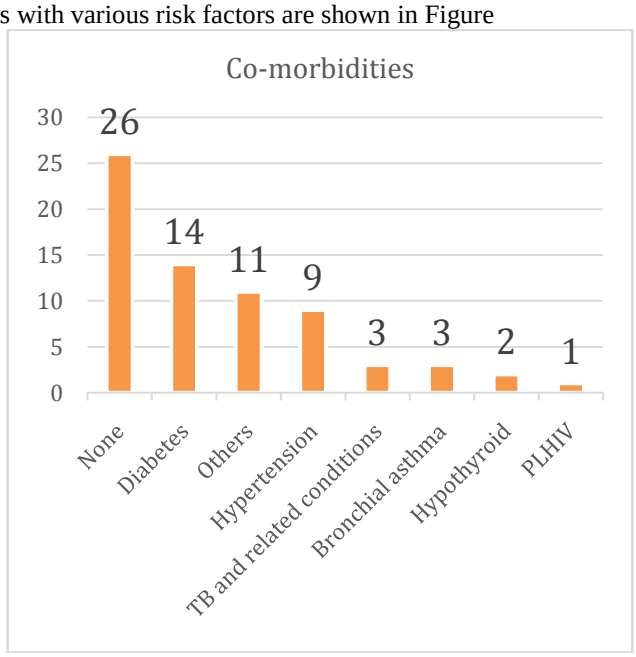


International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 829-834 www.ijdmsrjournal.com ISSN: 2582-6018



The occupational status of the population is given in the above graph.

The percentages of patients with various risk factors are shown in Figure



Most patients (29) with presenile cataracts had no comorbidities. Diabetes mellitus was the most common comorbidity (14), followed by systemic hypertension (9).

The most common type of cataract seen was posterior subcapsular cataract (38%, n = 84), followed by mature cataract (21.8%, n = 47), nuclear sclerosis (NS) (25.2%, n = 43), combined cataract (10%, n = 20), and cortical cataract (CC) (4%, n = 6).

International Journal Dental and Medical Sciences Research
Volume 5, Issue 2, Mar - Apr 2023 pp 829-834 www.ijdmsrjournal.com ISSN: 2582-6018

TABLE SHOWING COMPARISON OF RISK FACTORS IN PRESENILE CATARACT IN STUDY POPULATION

Dental caries	**No of participants**	**Percentage**
Yes	13	20
No	52	80
Smoking	**No of participants**	**Percentage**
Smoker	11	17
Passive smoker	13	20
Tobacco chewer	01	1.5
None	40	61.5
Alcohol	**No of participants**	**Percentage**
Yes	11	17
No	54	83
Menopause	**No of participants**	**Percentage**
Yes	10	15.3
Hystrectomy	4	6.1
No	51	78.4
Dyslipidemia	**No of participants**	**Percentage**
Yes	3	5
No	62	95
Hair dye	**No of participants**	**Percentage**
Yes	21	32
No	44	68
Refractive error	**No of participants**	**Percentage**
Yes	13	20
No	52	80
Fuel smoke	**No of participants**	**Percentage**
Yes	21	32
No	44	68
Trauma	**No of participants**	**Percentage**
Yes	5	8
No	60	92
Sunlight	**No of participants**	**Percentage**
Yes	10	15
No	55	85
Other Hospital	**No of participants**	**Percentage**
Yes	7	11
No	58	89

IV. DISCUSSION

Presenile cataract is increasingly becoming a common occurrence leading to cataract surgery at an earlier age. Some cases may result from trauma, metabolic, chromosomal, endocrine, and systemic disorders; yet a sizeable percentage is of unknown cause. In this study, the authors aimed to explore this disease cause relationship by studying an association between presence of presenile cataract with multiple epidemiological, social, and personal agents. Various authors have attributed different factors in the possible causation of presenile cataract. These included occupation, social factors like fuel and smoke exposure, personal factors like tobacco and alcohol intake, vitamin D levels, hypertriglyceridemia, etc.[9,10]

In a study to explore the risk factors for the early onset of cataract in India by Praveen et al.

conducted in western part of India, atopy was found to be the most common risk factor associated with the development of cataract, being associated with 25.6% of the cases. In our study, we found a higher association of cataract with DM. About 21.5% of our study population had DM. This study also found a higher odds for nuclear cataract in those with high myopia, which was similar to our study.

To our knowledge, this is the secondprospective observational study conducted in South India to report an association between various risk factors and presenile cataract. Vasudevan had conducted a prospective observational study in South India to analyze the causes and types of presenile cataract.[8]

Female preponderance was observed in this study for presenile cataract, whereas male preponderance was reported by Chen et al.. This higher prevalence of cataract in women may be related to gender- based differences in socioeconomic factors like low level of literacy, low income, behavioral factors like poor health seeking behavior, indoor cooking, exposure to smoke from cooking fuels, and/or to biological factor such as hormonal influences possibly due to some effect of estrogen and progesterone.[5]

Earlier studies have reported that use of tobacco is harmful to the eye as it contains toxic substance cyanide that leads to early cataract development.Tobacco intake was observed as one of the risk factors for presenile cataract in this study.[6]

It was observed that participants with 2 or more than 2 h of fuel exposure per day had preponderance for cataract formation with higher prevalence among women. Pokhrelet al. confirmed that the risk of cataract is increased by indoor exposure to smoke from solid cooking fuel combustion and poor kitchen ventilation. Prolonged exposure to this smoke (particularly in ill- ventilated spaces) could serve as an additional and cumulative source of oxidative damage to the eye.[7]

An increased incidence of presenile cataract could be seen in patients with exposure to hair dye usage (32%). This as a risk has been under explored as a risk factor for development of cataract. Further studies exploring this needs to be planned in future.

This study has few limitations. First, it was conducted on a small sample. Second, because of the inability to fully adjust for various confounders, the risk factors for early cataractogenesis may be attributed to other unmeasured confounders.

V. CONCLUSION

Our study concludes that diabetes mellitus, and hypertension are the most common risk factors associated with presenile cataract.As tobacco use, hair dye exposure, and fuel exposure were associated with presenile cataract, lifestyle modifications at personal level such as refraining from use of tobacco, use of organic hair dyes, and prevention of fuel exposure may help us in delaying/preventing the early onset of cataract

VI.FINANCIAL SUPPORT AND SPONSORSHIP
Nil.

VII. CONFLICTS OF INTEREST
There are no conflicts of interest.
.

REFERENCES

[1]. Abraham AG, Condon NG, Emily WG. The new epidemiology of cataract. Ophthalmol Clin N Am 2006;19:415-25.
[2]. Resnikoff S, Pascolini D, Etya'ale D. Global data on visual impairment in the year 2002. Bull World Health Organ 2004;82:844-51.
[3]. Lewallen S, Courtright P. Gender and use of cataract surgical services in developing countries. Bull World Health Organ 2002;80:300-3.
[4]. Abou-Gareeb I, Lewallen S, Bassett K, Courtright P. Gender and blindness: A meta-analysis of population-based prevalence surveys. Ophthalmic Epidemiol 2001;8:39-56.
[5]. Pokhrel AK, Smith KR, Khalakdina A, Deuja A, Bates MN. Case control study of indoor cooking smoke exposure and cataract in Nepal and India.Int J Epidemiol 2005;34:702-8.
[6]. Krishnaiah S, Vilas K, Shamanna BR. Smoking and its association with cataract: Results of the Andhra Pradesh eye disease study from India. Invest Ophthalmol Vis Sci 2005;46:58-65.
[7]. Nirmalan PK, Krishnadas R, Ramakrishnan R. Lens opacities in a rural population of southern India: The Aravind comprehensive eye study. Invest Ophthalmol Vis Sci 2003;44:4639-43.
[8]. Vasudevan M, Premnath G. A prospective observational study to analyze the causes and types of pre senile cataract in South Indian patients. J Evol Med Dent Sci 2014;3:12308-15.

[9]. Rahman A, Yahya K, Shaikh A, Fasih U, Zuberi BF. Risk factors associated with Pre-senile cataract. Pak JMed Sci 2011;27:145-8.
[10]. Murthy G, Gupta SK, John N, Vashist P. Current status of cataract blindness and Vision 2020: The right to sight initiative in India. Indian J Ophthalmol 2008;56:489-94.