

ORIGINAL RESEARCH

Evaluation of risk factors of Cataract in adults- A clinical study

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ABSTRACT:

Background: Cataract is the primary cause of blindness worldwide. The present study was conducted to assess the cases of cataract in adults. **Materials & Methods:** The present study was conducted on 125 patients of cataract of both genders. Total serum cholesterol, high density lipoproteins, serum triglycerides and the glycosylated hemoglobin fraction were examined. Visual acuity was estimated using the modified Early Treatment Diabetic Retinopathy Study chart. All subjects underwent detailed ophthalmic examination, which included cataract grading. The lens opacity was graded according to the Lens Opacity Classification System version III. **Results:** Out of 125 patients, males were 71 and females were 54. Age group 30-40 years had 10 males, 7 females, 40-50 years had 9 males and 9 females, 50-60 years had 12 males and 10 females, 60-70 years had 26 males and 13 females and >70 years had 14 males and 15 females. The difference was non- significant (P<0.05). Risk factors for cataract were family history in 45, diabetes in 55 and hypertension in 48. The difference was non- significant (P<0.05). **Conclusion:** Authors found diabetes, hypertension and positive family history as risk factors for cataract.

Key words: Cataract, Diabetes mellitus, Hypertension

Received: 10-03-2014

Revised: 22-04-2014

Accepted: 25-04-2014

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This article may be cited as: Kohli CM, Kohli GM. Evaluation of risk factors of Cataract in adults- A clinical study. J Adv Med Dent Scie Res 2014;2(3):245-248.

INTRODUCTION

Cataract is the primary cause of blindness worldwide. It is defined as a decrease in the transparency of the crystalline lens and can be further differentiated into nuclear, cortical, or posterior subcapsular cataract (PSC).¹ Main risk factors in the developed world, besides advanced age, appear to be smoking, exposure to sunlight, and use of corticosteroids. A potential association between female gender and cataract remains controversial.²

Several studies have reported diabetes, hypertension and family history as a risk factor for cataract. However, there are only few studies conducted with data from the UK, and only one previous study from the 1980s reported on incidence rates of cataract in a diabetic population.³ Cataract continues to be the leading cause of blindness according to the Global Burden of Disease, Injuries and Risk Factors Study. A The World Health Organization estimates that the number of cases of blindness from cataract will increase to 40 million in 2025 as a result of aging population and longer life expectancies.⁴

The cataract surgical rate is defined as the number of cataract operations performed per million of the population in 1 year and is a proxy indicator to the access of cataract

services in a country. There is robust evidence to demonstrate that the cataract surgical rate uptake has been on an upward trend over the past decade in both developed and underdeveloped countries.⁵ The present study was conducted to assess the cases of cataract in adults.

MATERIALS & METHODS

The present study was conducted in the department of Ophthalmology. It comprised of 125 patients of cataract of both genders. All were informed regarding the study. Ethical approval was obtained from institute prior to the study.

General information such as name, age, gender etc. was recorded. Ocular- and systemic-related conditions, family history of diabetes, treatment of diabetes, smoking and alcohol intake. Subjects underwent general physical examination such as height and weight, body mass index (BMI) was calculated using the formula, weight (kg)/height (m²). A careful eye examination was performed in all patients.

Total serum cholesterol, high density lipoproteins, serum triglycerides and the glycosylated hemoglobin fraction were examined. Visual acuity was estimated using the modified Early Treatment Diabetic Retinopathy Study

chart. All subjects underwent detailed ophthalmic examination, which included cataract grading. The lens opacity was graded according to the Lens Opacity Classification System version III. Results thus obtained

were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

	Total- 125	
Gender	Males	Females
Number	71	54

Table I, graph I shows that out of 125 patients, males were 71 and females were 54.

Graph I Distribution of patients

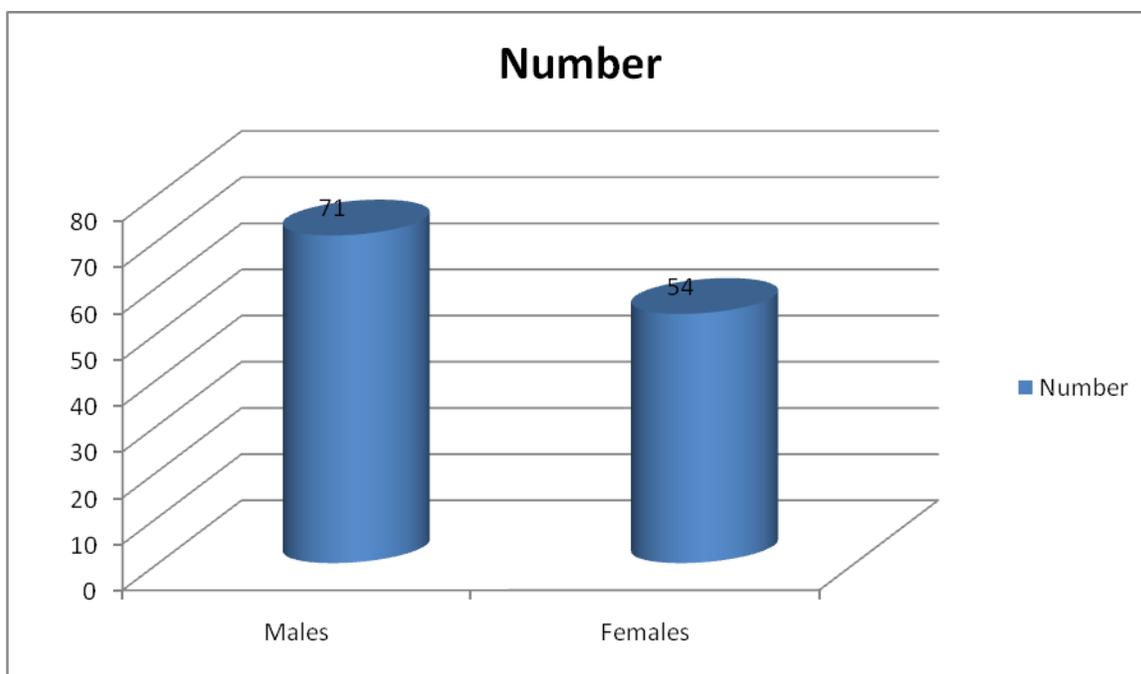


Table II Age wise distribution of patients

Age group (years)	Males	Females	P value
30-40	10	7	0.52
40-50	9	9	
50-60	12	10	
60-70	26	13	
>70	14	15	
Total	71	54	

Table II shows that age group 30-40 years had 10 males, 7 females, 40-50 years had 9 males and 9 females, 50-60 years had 12 males and 10 females, 60-70 years had 26 males and 13 females and >70 years had 14 males and 15 females. The difference was non- significant (P<0.05).

Graph II Age wise distribution of patients

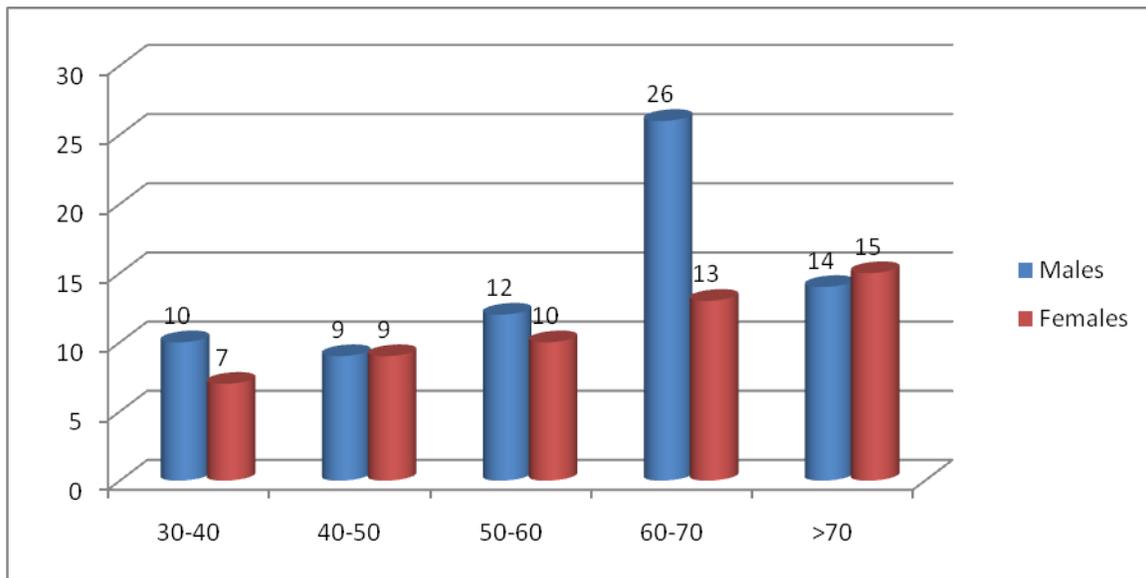
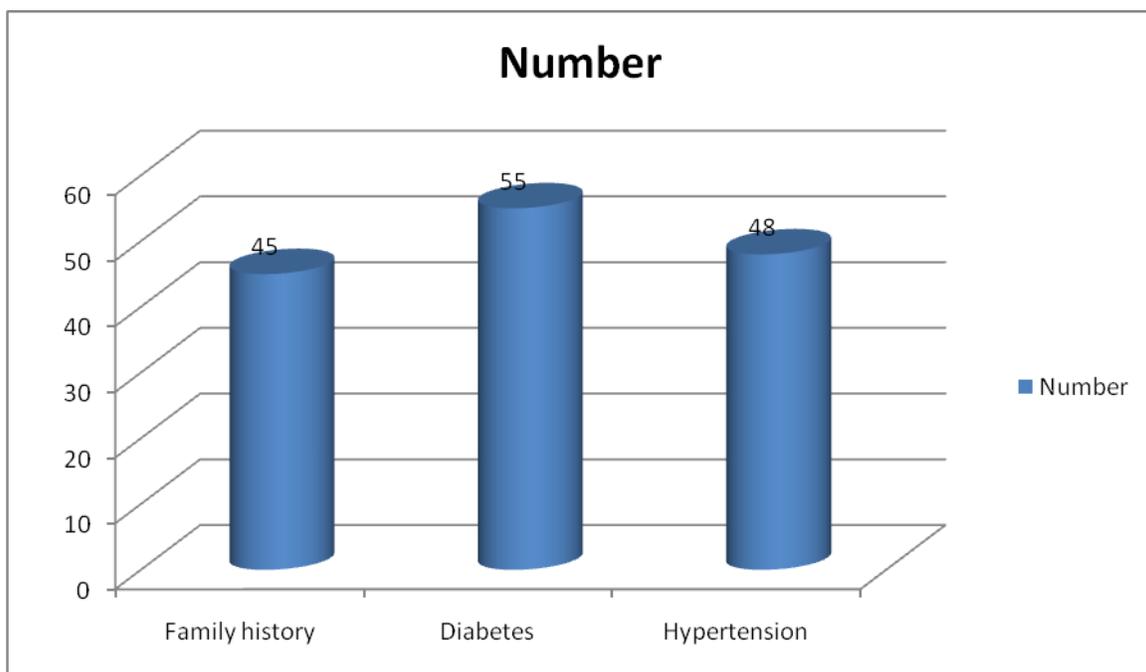


Table III Risk factors of cataract

Risk factors	Number	P value
Family history	45	0.78
Diabetes	55	
Hypertension	48	

Table III, graph III shows that risk factors for cataract was family history in 45, diabetes in 55 and hypertension in 48. The difference was non-significant ($P < 0.05$).

Graph III Risk factors of cataract



DISCUSSION

Cataracts may be partial or complete, stationary or progressive, or hard or soft. The main types of age-related cataracts are nuclear sclerosis, cortical, and posterior subcapsular. Nuclear sclerosis is the most common type of cataract, and involves the central or 'nuclear' part of the lens.⁶ This eventually becomes hard, or 'sclerotic', due to condensation on the lens nucleus and the deposition of brown pigment within the lens. In its advanced stages it is called a brunescant cataract.⁷ This type of cataract can present with a shift to nearsightedness, causing problems with distance vision though reading is less affected.⁸ The present study was conducted to assess the cases of cataract in adults.

In present study, out of 125 patients, males were 71 and females were 54. Age group 30-40 years had 10 males, 7 females, 40-50 years had 9 males and 9 females, 50-60 years had 12 males and 10 females, 60-70 years had 26 males and 13 females and >70 years had 14 males and 15 females.

It has been observed that trauma causes swelling, thickening, and whitening of the lens fibers. While the swelling normally resolves with time, the white color may remain. In severe blunt trauma, or in injuries that penetrate the eye, the capsule in which the lens sits can be damaged. Ultraviolet light, specifically UVB, has been shown to cause cataracts, and some evidence indicates sunglasses worn at an early age can slow its development in later life.⁹

We found that risk factors for cataract were family history in 45, diabetes in 55 and hypertension in 48. Tsai et al¹⁰ found that there were 56,510 diabetes patients included in the study. IRs of cataract were 20.4 per 1000 person-years (py) in patients with diabetes and 10.8 (95% CI 10.5–11.2) per 1000 py in the general population. IRs increased considerably around the age of 80 years and with a concomitant diagnosis of macular edema. The incidence rate ratio (IRR) was highest in patients of the age group of 45–54 years. In the nested case-control study, they identified 5800 patients with cataract. Risk of cataract increased with increasing diabetes duration.

Diabetic patients also have a higher risk of complications after phacoemulsification cataract surgery compared to nondiabetics. It has been shown that the intracellular accumulation of sorbitol leads to osmotic changes resulting in hydropic lens fibers that degenerate and form sugar cataracts. In the lens, sorbitol is produced faster than it is converted to fructose by the enzyme sorbitol dehydrogenase. In addition, the polar character of sorbitol prevents its intracellular removal through diffusion. It has been observed that cataract is quite common in patients with hypertension. The systolic hypertension leads to ocular hypertension and ultimately cataract may occur.¹¹

CONCLUSION

Authors found diabetes, hypertension and positive family history as risk factors for cataract.

REFERENCES

1. Chatterjee A, Milton RC, Thyle S. Prevalence and aetiology of cataract in Punjab. *British Journal of Ophthalmology* 1982; 66(1):35–42.
2. Bachani D, Murthy GVS, Sanjeev KG. Rapid Assessment of cataract blindness in India. *Indian Journal of Public Health* 2000; 44(3):82-88.
3. Nirmalan PK, Krishnadas R, Ramakrishnan R, Thulasiraj RD, Katz J, Tielsch JM et al. Lens opacities in a rural population of Southern India: The Aravind Comprehensive Eye Study. *Investigative Ophthalmology and Visual Science*. 2003; 44(11):4639-43.
4. Nathan Congdon. Prevalence of Cataract and Pseudophakia/Aphakia among adults in the United States. *Archives of Ophthalmology* 2004;122(4):487-494.
5. Limburg H, Vaidyathan K, Pampatavar KN. Cataract blindness on the rise? Results of a door-to-door examination in Mohadi. *Indian J Ophthalmology* 1996; 44(4):241–4.
6. Pascolini D, Mariotti SP. Global estimates of visual impairment: 2010. *Br J Ophthalmol*. 2012;96:614–618.
7. Khanna RC, Murthy GVS, Giridhar P, et al. Cataract, visual impairment and long-term mortality in a rural cohort in India: The Andhra Pradesh Eye Disease Study. *PLoS One*. 2013.8: 78002.
8. Leske MC, Connell MS, Wu SY, Hyman L, Schachat A. Prevalence of Lens Opacities in the Barbados Eye Study. *Archives of Ophthalmology* 1997; 115(1):105-11.
9. Broman AT, Hafiz G, Muñoz B, Rodriguez J, Snyder R, Klein R et al. Cataract and Barriers to Cataract Surgery in a US Hispanic Population. *Arch Ophthalmol*. 2005; 123(9):1231-6.
10. Tsai SY, Hsu WM, Cheng CY, Liu JH, Chou P. Epidemiologic study of age-related cataracts among an elderly Chinese population in Shih-Pai, Taiwan. *Ophthalmology* 2003; 110(6):1089-95.
11. Rabiou MM. Cataract blindness and barriers to uptake of cataract surgery in a rural community of Northern Nigeria. *British Journal of Ophthalmology* 2001; 85(7):776-780.