

The Prevalence of Age Related Cataract in the Asian Community in Leicester: A Community Based Study

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Leicester

Summary

A community based ophthalmic survey has been carried out in the city of Leicester. Samples of Asians and Caucasians aged 40 years and over were randomly selected from the patients of four general practitioners and invited to have an ophthalmic examination. After adjustment for age, the prevalence rate of age-related cataract was significantly higher in the Asians when compared to the Caucasians. Age-related cataract was found to develop earlier in the Asians. A strict vegetarian diet was found to be a significant risk factor for age-related cataract in the Asian Community in Leicester.

Many epidemiological studies have shown that the prevalence of age-related cataract tends to be higher in the Indian subcontinent than it is in Europe or the USA.¹⁻⁴ Thompson⁵ has reported on the results of a hospital based survey of all new cataracts seen at the eye clinics of Leicester Royal Infirmary over a period of two and a half years. He found that over the age of 45 years, the demand incidence of age-related cataract was five times higher in the city's Asian community when compared to the Caucasians. In order to verify this hospital based observation, we have carried out a community based survey in the City of Leicester.

Leicester is a multicultural city with a population of approximately, 300,000 of whom about one quarter are of Asian decent. About 12% of the city's population originated in the Indian subcontinent and another 12% came from the East African countries e.g. Uganda and Kenya. The East Africans are mostly Gujaratis whose forefathers migrated to Africa from the state of Gujarat in India during British Raj.⁶

The objectives of this paper are to report on the prevalence of the age-related cataract in the Asian Community of Leicester and to investigate possible risk factors associated with the disease.

Methods

Samples of people aged 40 years and over were randomly selected from the patient lists of four inner-city general practitioners. The lists were made available to us by the Family

Table I. Risk factors for Age-Related Cataract Considered in the Survey.

Age
Sex
Ethnic Origin
Racial Subgroup
History of Smoking
Alcohol Consumption
Dietary Habits
History of Medication
Medical History
Remembered Episodes of Severe Diarrhoea

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Table II. *The Response Rate in the Survey*

	ASIANS	CAUCASIANS
FPC List	168	126
Moved	53	6
Died	0	1
Invited for Examination	115	119
Attended	86	71
Response Rate	74%	60%

FPC: Family Practitioner Committee. The original sample also included 6 West Indians

Practitioner Committee and were then checked at the general practitioner's surgeries. Two of the general practitioners share a practice with a total list size of about two and a half thousand, most of whom are of Asian origin. The other two share a practice of about the same size in which most of the individuals are Caucasian. The Asians and the Caucasians, who have been listed in these two joint practices live in the inner-city and belong to the poor socio-economic status.

A sample of 300 people aged 40 years and over were randomly chosen, with half being taken from each of the two joint practices. The patients selected were invited to attend special eye clinics which were set up at the general practitioners' surgeries and the Leicester Royal Infirmary. Those attending the clinics were examined by an ophthalmologist and an ophthalmic optician. A questionnaire on possible risk factors for cataract was completed for each attender and information was collected on all of the factors listed in Table I. This was followed by an ophthalmic examination which comprised visual acuity for near and distance, refraction, slit-lamp biomicroscopy, applanation tonometry and fundus examination with direct and indirect ophthalmoscopes after pupillary dilation.

For the purpose of this survey, age-related cataract was defined according to criteria given in the Framingham Eye Study.⁷

Age-related cataract was said to be present when the best corrected visual acuity was 6/9 or worse in the affected eye and this was attributable to lens opacities. Subjects with aphakia or pseudophakia of age-related origin were included but all cataracts that could be ascribed to congenital or secondary causes were excluded. The examination for cataract was carried out after mydriasis by direct ophthalmoscopy and direct and retroillumination with the slit-lamp.

Prevalence rates were compared using the chi-square test or Fisher's exact test. The risk factors were examined using a binomial model with a linear effect to adjust for age.

Results

The response rate for the survey is set out in Table II. Of the original sample of 300 people selected from the Family Practitioner Committee lists, 59 had moved out of the area and one had died. The remaining group consisted of 115 Asians, 119 Caucasians and 6 Afro-Caribbeans. The response rate was 74% in the Asian group and 60% in the Caucasian group. The prevalence rates for age-related cataract are given in Table III. Figure 1 represents the age-adjusted prevalence of senile cataract in Asians and Caucasians as estimated by Logistic Regression. No cases of cataract were found in Caucasians aged under 60 years, although 24% of Asians in this age group had signs of age-related cataract. This difference was statistically significant [$P = 0.001$]. In those aged over 59 years, the prevalence was 73% in the Asians and 41% in the Caucasians and the difference was significant [$P = 0.01$]. The potential risk factors were analysed to see if they would explain the differences in prevalence rates. Three measures of a vegetarian diet were all found to be significantly related to the prevalence of cataract among Asians, after adjustment for age. Eating no meat, poultry or fish, and eating no eggs was found to be significant.

Table III. *The Prevalence Rate for Age-Related Cataract by Age and Ethnic Origin.*

Age (years)	ASIANS		CAUCASIANS	
	Number	Prevalence	Number	Prevalence
40-59	37	24%	30	0%
60+	49	73%	41	41%

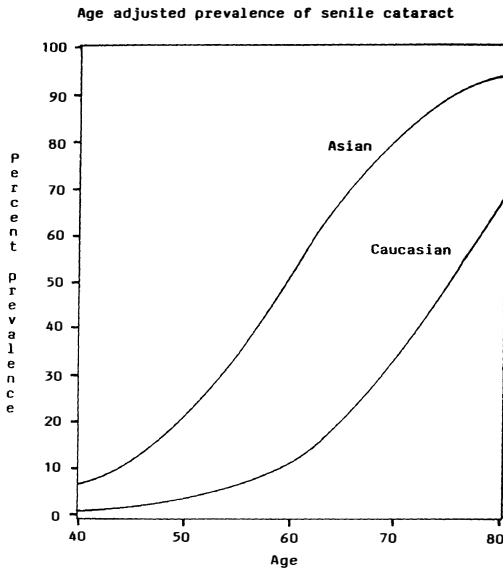


Fig. 1.

The significance levels were $P = 0.005$, $P = 0.03$ and $P = 0.01$ respectively [Table IV]. Clearly these factors are not independent and their effects could not be measured in the Caucasians due to the rarity of vegetarianism. None of the other potential risk factors had a significant effect on the prevalence of cataract after adjustment for age.

Discussion

This population-based study indicates that there is a significantly higher prevalence of age-related cataract in the Asians living in Britain. Our findings are similar to the results of a population-based study reported from India.³

The fact that not a single case of cataract was observed in the Caucasians aged under 60 years, while the prevalence in the Asians was 24%, suggests an earlier onset of the disease in Asians and is consistent with the hospital-based survey of Thompson.⁵

Table IV. Association of Diet as a Risk Factor in Asians With Age-Related Cataract

VARIABLES	SIGNIFICANCE [P]
Eating no meat or poultry	0.005
Eating no fish	0.03
Eating no eggs	0.01

The finding that a strict vegetarian diet is a risk factor for age-related cataract is consistent with the suggestion made by Bhatnagar *et al.*⁸ that an inadequate protein intake may be a risk factor. Their findings were based on a study in Southern India. Another population-based study from the Punjab area of India also reported an association between cataract and low frequency of current use of protein foods.³

However, it is equally possible that a vegetarian diet is merely acting as a marker for some underlying risk factor. Rates of vegetarianism vary greatly within the Asian community, particularly with age, sex and racial sub-group.

The association between age-related cataract and remembered episodes of dehydration crisis from severe diarrhoea has been observed in one recent Indian survey and not in another.⁹⁻¹⁰ We could find no such association within this community.

The community survey is to continue and these risk factors will be considered again when a larger sample size is available.

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