



Socioeconomic Status and Refractive Error

A Author's Affiliation

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Objective: to find out the relationship between refractive errors and overall socioeconomic status in people and also between individual elements of socioeconomic status (income, education, occupation etc).

Methods: A total of 150 patients, male 87 (58%), female 63 (42%) from low, middle and high socioeconomic status population were examined for refractive status. Data about different elements of socioeconomic status of these patients was obtained and analyzed for association between refractive errors and socioeconomic status overall as well as among individual components of both variables.

Results: Myopia was more frequent among high socioeconomic status population while hyperopia and astigmatism were common in low and middle socioeconomic status. Adults with higher levels of education, near work related occupations, and higher income were more likely to have myopic refractions.

Key words: Myelinated nerve fibers, neovascularization, retinal vascular abnormalities, telangiectasis, vitreous hemorrhage, axial myopia, branch artery and vein occlusion.



Introduction:

Socioeconomic status (SES) is a relative measure of combined work experience of a person or a family showing its social and economic position as compared with others. In order to estimate SES, many factors e.g. income, profession and educational status are taken into account. Combined household income, education of the main earning person, and occupation are considered while calculating a family's SES, whereas an individual's own attributes are assessed for assessing individual SES.¹

Visual impairment is significantly associated with increasing age and individual SES measures such as lesser education, less income, and inferior occupational status. It is also associated significantly with personal as well as family's and immediate community's SES.²

Refractive error is the most common eye disorder and indeed the main reason of visual impairment worldwide is uncorrected refractive errors. Globally, after cataract, uncorrected and under-corrected refractive errors are the second most important cause of blindness. Even in economically developed countries, this is considered as the leading cause of visual impairment. Visual impairment from uncorrected refractive errors can result in short- and long-term socio-economic effects in people of all ages, genders and ethnic considerations. These effects include but are not limited to lost opportunities for better education and employment, economic loss for individuals, families and communities and, of course, poor quality of life.³

Extreme poverty is thought to affect almost 50% of the world's population as more than 3 billion people throughout the world thrive on USD\$ 2 or less per day while over one billion people live daily on USD\$ 1 or less. Poverty is often one of the most important determining factors in the causation of disabilities, including blindness and visual impairment.⁴

According to WHO, people living in the poorest countries of the world contribute to almost 90 per cent of the global visual impairment.^{5,6} A study indicated that people belonging to the lowest socioeconomic echelons are bound to have increased prevalence of blindness as compared to those from the higher strata.⁷

Concerns about poverty in Pakistan are being felt recently, even though it is not considered among the poorest nations. In spite of the fact that the middle class has grown in Pakistan to 35 million, nearly one quarter of the population can still be classified as poor.⁸

The latest survey about blindness and visual impairment in Pakistan was undertaken in 2002-2004.

According to this survey, the prevalence of blindness in Pakistan is 0.9%. Three percent of this can be attributed to uncorrected refractive error. Hence with a population of almost 150 million, this figure was thought to be more than 40,000 people at that time.⁹ It would be much higher (around 54,000) with current estimates.

This study aims to find out whether socioeconomic status has any association with refractive errors and how socioeconomic status affects different persons in managing refractive errors.

Aims and Objective:

The objectives of my study were

1. To determine different types of refractive error in people with different socioeconomic status.
2. To find out the relationship between basic elements (income, education, occupation) of socioeconomic status and refractive error.

Methodology:

It was a descriptive/ cross sectional study with 150 people from low, middle and high socioeconomic status. The participants gave written consent to participate in the survey. Visual acuity of each individual was checked, pinhole and refraction was done to confirm the refractive status. All those who had some refractive error were considered eligible for participation

Results:

Income	Myopia	Hyperopia	Astigmatism
High	36	10	4
Middle	22	16	12
Low	11	19	20

The results of this study showed that 72% people were myopic among high-income population while hyperopia was 20% and astigmatism was 8%. In middle-income population, myopia was 44%, hyperopia was 32% and astigmatism was 24%. In low-income population, 22% people were myopic, 38% were hyperopic and 40% were astigmatic. The results were statistically highly significant with Chi square test showing a p-value 0.0000.

In relation to education, refractive errors were more commonly found in well-educated population.

Education	Myopia	Hyperopia	Astigmatism
Illiterates	9	26	11
Upto matric	17	11	19
Inter to bachelor	14	4	5
Master+	29	2	3

Among all people, myopia was more common among the highly educated people whereas hyperopia was common among less educated group. This association was highly significant with $p = 0.0000$

Occupation	Myopia	Hyperopia	Astigmatism
Govt/ semi govt	16	18	16
Labourer	6	9	11
Student	38	0	2
Business	11	9	0
None	0	7	7

Myopia and hyperopia were commonly seen in government employees. Astigmatic refractions (42%) were found more among labourers. 55% businesspersons were myopic and 45% were hyperopic.

It is concluded, therefore that, adults with greater education, near work related occupation and higher income were more likely to have myopic refractions.

Discussion

The Baltimore Eye Survey, designed to find out the prevalence of visual impairment and burden of ocular disease and association with socioeconomic and other risk factors, identified association of socioeconomic status as an important determinant of visual impairment.¹⁰

Socioeconomic factors that are probable markers of limited access to health care services are also associated with uncorrected refractive error. These data suggest that

education programs and interventions to improve access to eye care could significantly decrease the burden of visual loss among these strata.¹¹

Another international study concluded that adults with higher income, higher education and occupations requiring prolonged near work are more likely to have myopic refractions. The refractive associations of higher education, better occupation, and increased income are largely explained by increase in axial length.¹²

Visual impairment due to myopia among schoolchildren coming from upper-middle socioeconomic of urban background is higher as compared to that in rural population.¹³

In the current study, data regarding socioeconomic status and refractive error from 150 patients from different socioeconomic strata were included. The results of this study revealed more myopia in high socioeconomic status including high income, high education, students and persons with long near working hours.

The study correlates well with international study as there is significant association of basic elements of socioeconomic status with development of different types of refractive error and myopia was more frequent among high socioeconomic status and near work related activities.

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