SHORT REPORT

Correlates of myopia in students of Bahauddin Zakariya University, Multan

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Abstract

The present study was conducted to determine the prevalence of myopia in young students of Bahaudin Zakariya University, Multan. A total sample of 620 students of both gender (male=295; female=325) was collected during 2014. The data was divided in two breeding pattern groups, five groups on account of age at myopia onset and different family size. Out of 620 subjects, 150 had myopia (male=85; female=65). The overall prevalence of myopia was 24.19%. The myopia prevalence was apparently higher in males 28.8% as compared to females 20%. It was observed that myopia was more in age group 21 (37.33%) and less in age group 18 (2.67%). Myopia was found to be higher in inbreeding group (cousin marriage) 56.67% when compared with out-breeding group 43.33% and was found significantly (P< 0.05) more 69.33% in family size of 6-9 as compared 5 (5.33%) respectively.

Keywords: Prevalence of myopia, Age, Income, Family Size, Multan.

Introduction

Myopia is a common cause of vision loss, in which the eye fails to see distant objects clearly and it affects a large proportion of the population worldwide, irrespective of age, sex and ethnicity.[1] Currently 2.3 billion people have refractive errors globally; out of which 1.8 billion have access to diagnostic facilities and affordable refractive correction, therefore approximately 500 million people, mostly in underdeveloped nations are left with uncorrected refractive errors causing blindness and visual impairment.[2]

The prevalence of myopia is much higher among East Asian countries from 50% in Chinese children to 70%, and 84% in Singapore, Taiwan and Hong Kong respectively. Lower rates have been reported in South Asia including Pakistan.[1] Myopia affects 36.5% population in Pakistan and 11.4% of the blindness is reported due to uncorrected refractive errors.[3] Genetic and environmental factors contribute to the development of myopia such as long time spent on reading and writing work and less time spent on outdoor activities. Several studies have found a definite correlation between higher educational level or higher academic achievements and higher prevalence of myopia.[4]

The literature survey indicated that work on the prevalence of myopia with respect to different parameters has not been carried out in southern areas of Punjab, Pakistan. The major aims of the present study was to find out the prevalence of myopia and its relationship with gender, age, breeding pattern and family size in the students of Bahauddin Zakariya University, Multan.

Methods and Results

This was a cross-sectional study on myopia and the effects of different parameters on it among University students in Punjab province, Pakistan. Ethical approval was obtained from the Ethics Committee of the University. Students were recruited from Bahauddin Zakariya University (BZU), located in the Multan district of Southern region of Punjab. BZ University is a multidisciplinary university with a wide range of undergraduate, graduate and post graduate degree programmes across a vast range of disciplines, including Agriculture, Engineering, Veterinary Sciences, Basic Sciences, Economics, Management, Literature and Art, Laws, and Education. It has eight faculties, over 40,000 enrolled students, among which there are 21700 undergraduates and approximately 18300 postgraduates.

A total of 620 students enrolled in BS (4 year) and MS/M.Phil. programme in science faculty of both sexes were approached by us and the information about various social parameters was recorded during October to December, 2014. All students present on the day of data collection were ≥18 years and who gave informed consent was included in the study. Foreigner students and the ones diagnosed with other ocular diseases such as amblyopia, squint or cataract were excluded. The survey was completed by the help of a qualified optometrist. The distant visual acuity of each eye was measured using Snellen's E-chart at 6 m with standard lighting. An automatic refractometer (Topcon RM-A7000;

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Topcon Co., Tokyo, Japan) was used to obtain a measurement of the refractive error without cycloplegia, and the average value of three repetitions was recorded.

Parameters used were gender, age, breeding pattern and family size. All the required information was ascertained from an interview with the students having myopia. Two types of ages were ascertained; 1). Present age and 2). Age at myopia onset. On the basis of present age the sample was divided in six groups, 18, 19, 20, 21, 22, 23 and on account of age at myopia onset the sample was divided in five groups, 5, 10, 15, 20, 25. Breeding pattern of their parents was ascertained and on this basis the sample was categorized in two groups i.e. inbreeding and out-breeding. This data was classified in three groups with different family size, 5, 6-9 and 10.

The results are mainly expressed as percentages. The data was analyzed statistically by routine statistical tests for the calculation of percentage. The comparison of various percentages for different parameters were executed by Chi-square test and P-values < 0.05 were considered statistically significant.

The overall prevalence of myopia was 24.19%. There was a higher prevalence of myopia in males 28.81% than in females 20%, (P > 0.05). The results regarding the different age groups showed prevalence of myopia was 2.67, 4.67, 23.33, 37.33, 24 and 8% in age groups 18, 19, 20, 21, 22 and 23years respectively. The prevalence of myopia was found highest in age group 21 and lowest in age group 18. It was found that the prevalence of myopia was significantly different in different age groups (χ^2=85.56; DF=5; P 0.05). The results regarding the age at onset of myopia showed significant (χ^2 = 86. 2; DF = 4; P 0.05) prevalence of myopia was 2, 30, 36.67, 30 and 1.33% in age groups ≤5, ≤10, ≤15, ≤20 and ≤25 respectively. The prevalence of myopia was found highest in age group ≤15 and lowest in age group ≤25. The prevalence of myopia apparently showed higher prevalence 56.67% in inbreeding group as compared to out-breeding group 43.33% but the difference was non-significant in both groups (χ^2 = 2.66; DF = 1; P > 0.05). The prevalence of myopia was 5.33, 69.33, and 25.33% in family size groups 5, 6-9 and ≥10 respectively. The prevalence of myopia was found highest in family size group 6-9 and lowest in family size group ≤5. Myopia was significantly different in different family size groups (χ^2 = 34.27; DF = 2; P < 0.05).

Discussion

During the present study the overall prevalence of myopia was 24.19% among students from different academic and socioeconomic backgrounds in B.Z. University. The present findings are in agreement with previous study in US 25% and Western Europe 26%.[5] This result is higher than similar reported studies in Pakistan 8.9%[6] and 21.9%,[7] in Malaysia 7.7%,[8] and in Iran 3.5%.[9]

These variations may be explained by the different diagnostic criteria used by different authors, racial or ethnic variations in the prevalence of refractive errors, different lifestyles or living conditions. Perhaps a high level of prolonged near work and less time outdoors is the main reason. Recent studies presented robust support to the importance of time spent outdoors on the incidence of myopia.[10]

The difference could be due to either continued myopia progression or selection of more academic and more myopic students for postgraduate studies.[2]

The present study indicated that male (28.8%) and female (20%) had non-significantly different prevalence of myopia. Our findings are comparable with the earlier work in KPK province, Pakistan.[7]

It was found that maximum prevalence of myopia was in the individuals who are 21 years of age. Kempen[5] has shown that myopia develops at all ages but the prevalence of myopia was significantly higher after the age of fourteen.

The world wide reports showed that myopia is rare before school age, gradually rises during school life and reaches its highest level of prevalence during the years of most intense study at the university.[6,7]

According to the results of present study, myopia was more prevalent in inbreeding group as compared to out-breeding group. This finding supports the previous reports,[3] which have shown that myopia in parents may influence the genesis of myopia in their offspring and children with myopic parents are more likely to be myopic. There is tendency for myopia to run in families, children have about a 30 percent chance of developing myopia with one myopic parent and a 55 percent chance with two.[3]

The prevalence of myopia was found highest in family size group 6-9 and lowest in family size group 5. The literature survey indicated that work on the prevalence of myopia with respect to family size has not been carried out, so comparable data for this parameter is not available.

Many investigations have been carried out during the last 150 years to detect factors, which cause myopia. A factor that has been awarded particular attention in addition to hereditary factors is the influence of the environment, especially the amount of close work on the refractive state

of the eye.[4] Many theories were proposed to explain the appearance and progression of myopia. But the two most important theories are: 1) The biological theory of myopia or heredity theory and 2) The use-abuse theory of myopia or close work theory.[4] The biological hypothesis of myopia views myopia as the result of genetically determined characteristics of eye tissues, whereas the use-abuse theory views myopia as the result of regular use of the eye at a close to focal length, near work. The use-abuse theory means that myopia is preventable whereas the biological theory does not.[5]

In conclusion, the results of the present study revealed that multiple factors probably combine to cause myopia. We suggest that myopia is partly inherited and partly environmental. An individual's genetics, together with their exposure and susceptibility to environmental factors, probably all have an effect on the structure of the eye. When both parents are nearsighted, their children have a greater than average chance of developing myopia.

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