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INCIDENCE OF MYOPIA IN SCHOOL GOING CHILDREN IN RAHIM YAR KHAN

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ABSTRACT… Background: Myopia is becoming a major health problem all over the world.. **Objectives:** To assess the incidence of myopia among school children and to determine the association of genetics, nutrition and close work to myopia. **Design:** Prospective study. **Setting:** In Rahim Yar Khan district. **Period:** From Feb 2006 to June 2006. **Material and Methods:** We conducted a cross sectional survey among school children of 8-15 years age. There was 300 children in this study from two school. They were checked for visual acquity and nutritional status after taking a complete personal and family history. Any student detected to have myopia was then brought to eye outdoor for further specialized check up and evaluation. **Results:** A total 57 students (19%) were found to have myopia in school going children in Rahim yar Khan between ages 10-15 years. The genetic factor was present in 91% of myopes ($P<0.001$). The average amount of near work after school in myopes was considerably more than the emmetropes $P<0.05$ for study and $P<0.005$ for recreational books. Regarding nutritional status, 30% myopes were mainourished whereas similar percentage of emmetropes was malnourished. **Conclusion:** In our study heredity was closely associated with myopia. The children in both groups (the myopes and emmetropes) did almost equal amount of near work for their studies but myopes spent more time in reading for pleasure than emmetropes who took more pleasure in out door sports activities. The nutritional status of children was not associated with incidence of myopia in our study.

Key words: Myopia, School Children, Genetics, Environment.

INTRODUCTION

Myopia is a refractive error in which straights rays from distant objects are focused in front of the retina and the object can not be seen clearly[1]. In recent years uncorrected refractive errors are the leading visual problems in the world affecting an average of about 30% (3-84%) of people[2]. Both genetics and environment have been implicated in the etiology of myopia[3].

The urban/suburban areas of industrialized states have a significantly higher incidence of myopia indicating an environmental factor[4]. Increased intra-ocular tension produced by near work causes elongation of eyeball due to softer coats of eye in young child e.g. keratoconus and produces difficulty in accommodation for near vision[5].

Physiological myopia develops as the eyeball grows. So it starts in childhood and may worsen during the teens. Pathological myopia affects 1-2% of general population and can cause blindness[6,7].

Symptoms of myopia include headache and tired eyes and even squint in younger children[5]. High myopia, leading to retinal detachment is the fourth most common cause of myopia[8]. Poor eyesight may impair school performance and decrease children's chance to reach their professional potential in later life[9].

Prevention of refractive error with better reading habits and correction of refractive errors is simple and effective with low cost spectacles[10].

The main purpose of our study was to assess the incidence of myopia among school going children of Rahim Yar Khan. We also wanted to determine the association of genetics, nutrition and close eye work to myopia.

SUBJECT AND METHODS

The subjects for the study were 300 children from two school in RYK. After obtaining a formal consent, the medical and ophthalmic history of the students was taken. Family history of myopia was determined by a questionnaire to parents, asking whether glasses were worm, for what purpose and at what age they were first prescribed. Each parent was classified as myopic if he or she wore glasses only for distant viewing, or if glasses were first prescribed to them before the age of sixteen. The socioeconomic history was also taken. Children's near work was assessed by asking how many hours per week work consumed outside the school in following activities. Reading or working for school assignment reading for pleasure, watching television playing video games on computer, engaging in outdoor and sports.

Presence of anemia, condition of skin and the height and built of students was checked to assess the nutritional status.

The average age±SD of the sample was 13.7±1.8 years (range 10-15 years).

Visual acuity was tested by Snellens's chart to pick up the refractive error in the school. Detailed eye examination of myopic children was carried out in eye out door by slit lamp, fundoscope and retinoscope according to the recommendations of WHO[11]. Myopia was defined as at least -0.75D[12].

RESULTS

Of the 300 children in the sample 57 (19%) were myopes and 243 (81%) were emmetropes (Table-I) Survey results from history report accounted for an average 21 hours of near work per week outside the school. On average children spent nearly as much time studying as they did watching television or engaging in sports activities. Reading for pleasure occupied less than half the number of hours that children spent in studying. Myopes spent more time in reading for pleasure than emmetropes. Parents with myopia tended to have children with myopia ($P<0.001$). Of the children in families with two parents with myopia 33% had myopia compared with 20% of the children in families in which only one parent was myopic and 5.3% of the children in families with no parents having myopia (Table II).

Table-I. Sours spent per week in various activities			
Activity	**All subjects N=300**	**Myopes N=57**	**Emetropes N=243**
Studying in school	9.4±5.7	11.2±7.2 P<0.05	8.9±5.2
Reading for pleasure	4.4±4.5	5.8±4.8 P<0.005	4.1±46
Watching TV/ computer	8.3±5.9	9.2±68	8.3±5.7
Sports	9.3±6.4	7.4±6.7 P<0.005	9.7±6.2

Table-II. Proportion of children with and without myopia as a function of number of parents with myopia		
Parents with myopia n=84	**Children with myopia n=57**	**Children without myopia n=243**
One parent (n= 141)	5.3% n=5	94.7% n=79
Two parent (n=75)	19.9% n=27	81.1% n=114
	33.3% n=25	66.6% n=50
X^2 2=21.0, P=0.001		

DISCUSSION

Myopia is a world wide health problem. Keeping in view the possibility of prevention and easy correction of refractive error, we decided to explore the risk factors. Several studies have documented an association between myopia and higher level of children's near work[13]. An equally strong case can be made for the view that refractive error is determined genetically[14]. To date genetic loci have been associated with pathological myopia but not with juvenile myopia[7]. To reconcile genetic and environmental evidence, we can say that there is a genetic susceptibility to the effects of environment[13].

In this study both heredity (P<0.001) and near work (P<0.05 & < 0.005 for academic study and recreational near work respectively) were significantly associated with myopia, with heredity being the more important factor. Children of parents without myopia did as much near work as children of parents with myopia. This is consistent with other international studies on this topic[15].

Individual components of near work had different effects. The strongest associations between myopia and near work activities were studying and reading for pleasure.

CONCLUSION

We concluded from our cross sectional data that both heredity and near work are associated with the development of myopia but heredity is by far the more important factor. Nutritional deficiency was not significant to affect the refraction of students and was equally distributed among myopes and emmetropes.

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WE JUDGE OURSELVES BY WHAT WE FEEL CAPABLE OF DOING, WHILE OTHERS JUDGE US WHAT WE HAVE ALREADY DONE.

Longfellow