Incidence of Myopia in Relation to Close Work at Indus Medical College Hospital, Tando Mohammad Khan

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Abstract

Incidence of Myopia in Relation to Close work at Indus Medical College Hospital, Tando Mohammad Khan

Purpose: To evaluate the incidence of myopia in relation with close near work particularly in those children involved in using small screen tablets and mobile phones.

Material and methods: This study was conducted between January 2016 to June 2016 to know the incidence of myopic refractive error in children between 1 to 12 years in outpatient department of Indus medical college hospital and particularly the effect of close work like using tablets and mobile phones upon these children. We included 453 children who were diagnosed as myopic and having astigmatism, most of the children 322(71.08%) were using tablets and mobile while 131 (28.91%) were not involve in using mobile and tablets. 197 (43.48%) were boys while remaining 256(56.51%) were girls. They were divided into different age groups i.e. 60 (13.24%) children, were in age group A, majority of children 230(50.77%) belonged to group B, 80 (17.66%) were in age group C, 50 (11.03%) in group D and 33(7.28%) were in age group E. All of the patients in groups A to C and those non co-operative from group D and E were undergone cycloplegic refraction.

Results: Out of 453 children 203(44.81%) found to have myopia of up to -3.0D, 87(19.20%) have myopia of up to -2.0D, 67(14.79%) have myopia of up to -4.0D and 96(21.19%) having myopia of -1.0D. Majority of patients i.e. 301(66.44%) having astigmatism of up to -1D, 83(18.32%) have astigmatism of up to -2.0D, 52(11.47%) were having astigmatism of up to -3.0D and 17(3.75%) having astigmatism of up to -4.0D. Majority of patients (though female ratio higher than male ratio) were having myopic astigmatism of up to -1.0D, in the age group B i.e. between ages of 3 to 5 years and were involved in using mobiles and tablets.

Conclusion: Myopia is the more prevalent refractive error all over the world. In our study it is more prevalent in children between the ages 2 to 5 years of age particularly involved in close near work like apart from studying they were using mobiles and tablets particularly small screen for longer time. So better to use large screen avoid reading in dim light, do not use these small screens in lying position. Parents must take care while allowing the children to use mobiles and tablets screens must not be less than 12 inches in size better to allow them computers (desk top) rather than these small screens.

Keywords: Khan NA; Khan AA; Memon JI; Incidence of myopia in relation to close work at indus medical college hospital; Tando- Mohammad Khan

Introduction

Uncorrected refractive errors are a common cause of preventable blindness worldwide [1] and myopia is the result of complex hereditary and environmental factors, [2] most prevalent refractive error [3] defined as near sightedness caused by an incongruity between the power of the optical elements of the eye and its axial length. The object image is projected in front of the retina, and corrective lenses are necessary to displace the image backward, thus producing a clear retinal image. Although the causes of myopia are unclear, evidence supports both genetic and environmental components, among which are higher amounts of near work [4,5] years of education [6] and intelligence[7]. The world-wide urban rural patterns derived from both incidence and prevalence data are consistent with the near work hypothesis that increased reading and computer use may be a risk factor for myopia [5]. Researchers point to rigorous schooling system and the long hours children spend studying as being responsible for the high rates of myopia in Asia, rates that may be on the increase [8,9]. As myopia has onset and progression in childhood, it is important to focus research on these age groups.
Material and Methods

This study was conducted between January 2016 to June 2016 at Indus Medical College Hospital to know the incidence of myopic refractive error in children between 1 to 12 years and particularly to know the effect of using tablets and mobile phones upon these children. We included 453 children who were diagnosed as myopic and having astigmatism, most of the children 322 (71.08%) were using tablets and mobile while 131 (28.91%) were not involve in using mobile and tablets, (Table 1). 197 (43.48%) were boys while remaining 256 (56.51%) were girls, (Table 2). They were divided into different age groups i.e. 60 (13.24%) children were in age group A, majority of children 230 (50.77%) belonged to group B, 80 (17.66%) were in age group C, 50 (11.03%) in group D and 33 (7.28%) were in age group E, (Table 3). All of the patients in groups A to C and those non co-operative from group D and E were under gone cycloplegic refraction.

Table 1

<table>
<thead>
<tr>
<th>Total No. of Patients Diagnosed as Myopic</th>
<th>Using Mobile Phones and Tablets</th>
<th>Not Using Mobile Phones and Tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td>453</td>
<td>322 (71.08%)</td>
<td>131 (28.91%)</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Total No. of Patients</th>
<th>No. of Boys</th>
<th>No. of Girls</th>
</tr>
</thead>
<tbody>
<tr>
<td>453</td>
<td>197 (43.48%)</td>
<td>256 (56.51%)</td>
</tr>
</tbody>
</table>

Table 3

<table>
<thead>
<tr>
<th>Groups</th>
<th>Age in Years</th>
<th>No. of Patients with %</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1-2 yrs</td>
<td>60(-13.24%)</td>
</tr>
<tr>
<td>B</td>
<td>3-5 yrs</td>
<td>230 (50.77%)</td>
</tr>
<tr>
<td>C</td>
<td>6-8 yrs</td>
<td>80(-17.66%)</td>
</tr>
<tr>
<td>D</td>
<td>9-10 yrs</td>
<td>50(-11.03%)</td>
</tr>
<tr>
<td>E</td>
<td>11-12 yrs</td>
<td>33(-7.28%)</td>
</tr>
</tbody>
</table>

Results

Out of 453 children 203 (44.81%) found to have myopia of up to -3.0D, 87 (19.20%) have myopia of up to -2.0D, 67 (14.79%) have myopia of up to -4.0D and 96 (21.19%) having myopia of -1.0D (Table 4). Majority of patients i.e. 301 (66.44%) having astigmatism of up to -1.0D, 83 (18.32%) have astigmatism of up to -2.0D, 52 (11.47%) were having astigmatism of up to -3.0D and 17 (3.75%) having astigmatism of up to -4.0D (Table 5).

Table 4

<table>
<thead>
<tr>
<th>Range of Myopia</th>
<th>Upto-3.0D</th>
<th>Upto-2.0D</th>
<th>Upto-4.0D</th>
<th>Upto-1.0D</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Patients</td>
<td>203 (44.81%)</td>
<td>87 (19.20%)</td>
<td>67 (14.79%)</td>
<td>96 (21.19%)</td>
</tr>
</tbody>
</table>

Table 5

<table>
<thead>
<tr>
<th>Range of Astigmatism</th>
<th>Upto -1.0D</th>
<th>Upto -2.0D</th>
<th>Upto -3.0D</th>
<th>Upto -4.0D</th>
</tr>
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</tr>
</tbody>
</table>

Discussion

In our study we included only patients between ages 1 to 12 years, were involved in close near work for long time particularly spending more time on mobile phones and tablets apart from their study time. We found that out of 453 myopic patients the highest rate of myopia, 44.81% was in the age group B (3-5yrs) and particularly these children were involved in using mobile phone and tablets for longer time, in a study done in 2011 at Dow University Hospital Karachi Pakistan by Rasheed et al. [10] shows rate of myopia was 26.6% while a multicenter study done in China, Chile and Nepal that shows the prevalence rates of myopia were16.2%, 5.8% and 0.3% in China.

Majority of patients (though female ratio higher than male ratio) were having myopic astigmatism of up to -3.0D, in the age group B i.e. between ages of 3 to 5 years and were involved in using mobile phones and tablets.
is higher in the city than in the country side. One possible explanation for these different rates could be that school children in the city spend more time reading and writing outside of school compared with children in the countryside. Myopic children in both the city and the countryside spent more time reading and writing compared with non myopic children. This increased near-work activity may contribute to the prevalence of myopia [15]. So the above studies prove same as ours that the time spent for close near work is directly related to the increase in prevalence of myopia with only change that children of this era are using mobile phones and tablets rather than only studying.

Conclusion

Myopia is the more prevalent refractive error all over the world in our study it is more prevalent in children between the ages 2 to 5 years of age particularly involved in close near work like, apart from studying they were using mobiles and tablets particularly small screen for longer time. So better to use large screen avoid reading in dim light, do not use these small screens in lying position. Parents must take care while allowing the children to use mobiles and tablets, screens must not be less than 12 inches in size better to allow them computers (desk top) rather than these small screens.

References


