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Opinion

Effect of Watching Video on Mobile on Astigmatism in Children

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India has over Eight billion mobile users, of which at least 300 million have access to smart phones with internet and video play capabilities. One of the use (which rather is a misuse) of mobile devices is where kids are subjected to or are habituated by the parents or their attendants in watching videos or playing video games on mobile devices. For the last 2 to 3 years, the availability of cheap and fast internet services has increased the impact of this use further.

Much is being talked about the radiation effect of computers and mobile devices on entire human body, including eyes. Most of these studies are focussed on the carcinogenic effect on the cell or the patho-physiological effect on brain cell to alter behaviour. Several reports have been published on the topic of computer vision syndrome. There are reports on the effect of near work on progression of myopia. According to earlier statistical studies (Hirsh 1952), in USA about 1.6% children have some degree of myopia when entering school, and the figure increases to as much as 14.3% at the age of 14 years. The corresponding increase in China is from 1.78% in 3-year-olds to 52.2% in 10-year-olds. Earlier it was a common perception that progression of myopia stabilizes by the age of 21 years, but in recent years the progression has been noticed even in late twenties and thirties.

Prevalence and regression of astigmatism in children: There are various studies suggesting prevalence of astigmatism in infants. Gwiazda., *et al*. 1984, found that about 55% of infants up to the age of 5 months have more than 1D astigmatism and 10% of these have cylinder of 3 D or more. Atkinson., *et al*. 1980 reported that almost all children up to 3 months are at least 1D astigmatic, with the number subsequently decreasing to adult level by the age of 18 months. Some other studies have reported that 40% of children of below 3 months have astigmatism of 1 D or more and this reduces to 4% by the age of 36 months. Mutti., *et al.* 2004 attributed this reduction of astigmatism to decrease in toricity of cornea and the anterior lens. According to Frilling., *et al*. 2004, this reshaping of cornea is apparently part of normal eye maturation. Karesh,1994 concluded that most of the changes in cornea occur at the age 1 to 3 years when the corneal diameters and elasticity attains adult size.

But recently in our routine clinics, the number of children, particularly 3 to 6 years (where there has been least possibility of their ability to explain the complaints and symptoms), with vision related problem has increased significantly. During the last year itself, the percentage of this age group has increased five times. This increase can be attributed to the increasing awareness of parents and/or increasing eye related symptoms in children or to the policy of School Education bodies making recording of visual status in the student's diary mandatory or increasing prevalence of refractive error.

The author happens to be with a partner group in such a program of vision screening in several pre-school and school-going children. In addition to the clinical data on vision, refractive error and ocular movements, we recorded the environmental and other factors like performance of child in near work/colouring, period of watching video son mobile/tablet, time spent in outdoor activities and refractive status of parents. The data recorded on visual status and refractive error, particularly on astigmatism, was much higher than the previous recorded studies in India. It was observed that 6% of the children were suffering with reduced vision due to refractive error. Of these 20% were myopic, 5% hyperopic and 75% were astigmatic. Himanto Nath Hazarika., *et al.* 2017 reported data from north-eastern India was: myopic 34%, hyperopic 11%, and astigmatic 55% in age group 7 to 15 years.

Let us examine the reason of this hike in percentage of astigmatism in this age group. If we look at the total volume or percentage of the prevalence of astigmatism in this age group (4.5%), it is marginally higher than the previous data of the area and other international studies (4% as per Mutti., *et al*. 2004). This sudden increase in number of this age group's patients in India may be because of the precipitation or persistence of the existing refractive error - particularly astigmatism and related complaints. This precipitation or persistence may be due to excessive watching of videos on mobile (more than 2 hours per day during past 6 months) and/or reduced outdoor activities (less than one hour per day during past 6 months). Their high accommodating and glaring effect may have adversely affected the corneal/eye maturation and emmetropisation (Friling., *et al*. 2004 and Mutti., *et al*. 2004). The bottom line is that mobile viewing acts as precipitating factor for existing astigmatism in children of this age group and does not let the eye emmetropise due to over accommodation. So, we recommend that watching video on mobile should be avoided in the children in general and below 6 years in particular. Teachers and parents of these children may be informed about the ill effects of mobile watching and advantage of outdoor activities for normal development of vision in children. The parents in general having refractive error in particular should be advised for eye check-up of their child after the birth and then every year, to timely detect the vision problems [1].

Bibliography

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