EDITORIAL

eOftalmo

Effects of online education on students' eye health during the Covid-19 pandemic

Efeitos da educação online na saúde ocular dos estudantes durante a pandemia da Covid-19

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"Life cannot be saved for tomorrow.
It always happens in the present."
Rubem Alves

Globally, the rates of new cases and deaths from the coronavirus disease 2019 (COVID-19) pandemic continue to rise, with nearly 4 million new cases and 60,000 new deaths recorded. Approximately 53.7 million COVID-19 cases and 1.3 million deaths were confirmed and reported to the World Health Organization[1] until November 15, 2020. According to the United Nations Educational, Scientific and Cultural Organization, as part of broader measures to curb the spread of COVID-19, since February 2020, 191 countries have taken steps to implement the closure of educational institutions across the country, including nurseries, schools, vocational training colleges, and universities. During this period, approximately 1.58 billion students were away from schools, representing over 90% of the total students enrolled worldwide-an unprecedented situation in the history of education[2]. An important consequence of home confinement over children's eye health may have a significant impact on the overall development and/or worsening of myopia[3]. "Quarantine myopia," manifested earlier in the pediatric population, may put the vision of these children at risk[3] in the future. Increased academic pressure and decreased time spent outdoors are important risk factors for the development of myopia[4-8]. Adequate exposure of children to sunlight, for at least 1 h per day during the pandemic, can be achieved with effective occupation of spaces around the house such as the terrace, balcony, and garden, which have very high lighting levels, even in shaded environments compared with indoor environments[9]. Therefore, a post-pandemic ophthalmological surveillance program for children with myopia involving decision making based on demographic and clinical characteristics, risk factors, and individual preference should be considered to control the progression of myopia[3].

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Universities were also closed as part of social isolation measures to flatten the COVID-19 span curve and classroom teaching was also replaced by *online* education. During the pandemic, *online* education may be contributing both to reducing the transmission rate of the virus and to producing negative effects on students' eye health[10] . Evaluations of eye health and asthenopia or eye fatigue related to online education were conducted in 402 university students, with a mean age of 20.26 years[10]. The study showed that the eye health of the university students during the COVID-19 pandemic was negatively affected by *online* education. In other words, asthenopia or eye fatigue increased due to worsening of eye health impairment by *online* education[10]. The repercussions of online teaching on students' eye health may have been intensified by the excessive use of devices with digital screens, used without adequate pauses, manifested as part of the digital asthenopia spectrum[11].

The ophthalmological examination of the students should include in addition to measuring the refractive error under cycloplegia, vergence accommodation measures, plus evaluations of extrinsic ocular motility, lacrimal film, and ergonomics related to the use of electronic devices[12]. Students should be instructed to follow the 20–20–20 rule, that is, they should take a 20-s break and focus the eyes on objects at least 20 ft (6 m) away from their devices every 20 min. Then, they should blink voluntarily and completely as much as they can to reduce the symptoms of asthenopia and dryness of the eyes[13]. Accommodative dysfunctions, including accommodative spasm (pseudomyopia) and acute esotropia have been reported in the literature due to excessive use of electronic devices[14]. Proper sleep hygiene is also essential for maintaining eye health, and for this, students should be educated in relation to the web applications based on *Family Link* (by Google) that can be installed on digital devices to monitor and restrict the screen time and set pauses and sleep time[12] as an alternative to wearing blue light-blocking glasses[15] .

The eye health of all people, but particularly of children, is of paramount importance, especially during these times of social isolation when we use the digital world more often, almost constantly and with an important functional and affective role[16,17]. It is the collective responsibility of all health professionals, parents, teachers, and stakeholders to create a safe visual environment for children during and after the COVID-19 pandemic. There is no doubt that it is necessary to build a national eye health policy with the aim of delaying the onset and progression of myopia in Brazilian elementary school students as soon as possible[18]. These programs should provide students with sunlight exposure during outdoor activities for 10–14 h per week and also restrict close range visual tasks at very short distances and those longer than 2 h daily, especially using a smartphone, tablet, or computer. They will need to acknowledge that the prevalence of myopia and high myopia is increasing throughout the world and also among us and that the bioenvironmental factors are playing the most important role in this increase. Therefore, campaigns focusing on eye health education should emphasize primarily on environmental and behavioral changes in our students. They should consider that even partial results in preventing and/or delaying the progression of myopia will represent a significant reduction in the number of people with high myopia and irreversible vision loss[18] in the future.

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