



# The Association Between Electronic Learning and Myopia Progression Among School-Age Children During the Coronavirus Disease 2019

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Dear Editor,

The coronavirus disease 2019 (COVID-19) pandemic has globally pushed many education systems to reflect on alternative educational methods such as remote electronic learning (e-learning) modes (e.g., computers, smartphones, tablets, and televisions) to reduce learning disruptions and to carry on appropriate functioning of educational tasks (1-4). However, these new learning approaches may have consequential behavioral and health implications for youth, especially school-age children through re-shaping daily physical and learning behaviors (4-6). Since the effects of e-learning devices and resources have not been properly investigated, this will be of a great concern for children (6).

Increased online and offline e-learning involvement with digital screens will consequently result in reduction in outdoor activities (1-4). Therefore, individuals are exposed to adverse risks for myopia development (1-4) as insufficient time spent outdoor has been proved as an environmental risk factor for myopia progression (4,6-8). In addition, increased duration and intensity of near-work activities have been illustrated to be additional environmental risk factors for myopia progression (6,8-10) and this is going to be part of e-learning protocols (4,6). Therefore, home quarantine

during the COVID-19 pandemic will indirectly lead to the development of the myopic crisis further (1-4,8). This is basically due to the point that children in quarantine become most often occupied with digital devices at home (4,6).

Changes in daily physical and learning behaviors are chiefly vital for young children whose sensory functions are going through critical development (4,6) and their refractive conditions are changing and thus they are more sensitive to environmental changes than older ages (6,8,11). Accordingly, the home quarantine will affect more on young children (4,11,12).

Since myopia onset is becoming progressively more prevalent among young children and in urban regions, (4,6) this makes the issue more distressing (6). To present the reader with the worst scenario, it is unfortunate to know the earlier children become myopic, the more likely they develop high myopia, and the worse the prognosis (6).

Data collected from 3405 school-age children attending primary, lower-secondary, and upper-secondary schools are showing how digital online learning has led to considerable myopia progression as a result of the COVID-19 pandemic on youths (4). One in four school-age children in this study did not perform any outdoor exercise during the COVID-19 school closures (4). One in ten school-age children in this

**How to cite this article:** Nouraeinejad A. The Association Between Electronic Learning and Myopia Progression Among School-Age Children During the Coronavirus Disease 2019. *Beyoglu Eye J* 2022; 7(2): 154-155.

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**Submitted Date:** February 01, 2022 **Accepted Date:** March 09, 2022 **Available Online Date:** May 27, 2022

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study also complained that indoor lighting condition is either too dim or too bright at home (4). Considering the association between insufficient time spent outdoor (4,6-8) and poor lighting conditions (4,6) with a higher likelihood of worsening vision status, this can critically have an effect on children's vision development (4,6). If corrective vision interventions cannot be afforded, this will produce an even bigger problem (4,6).

These findings highlight the less noticeable vision consequences of the COVID-19 pandemic and thereby calling for proper policies to deal with this emerging public health challenge while watching other crises within (1-3,6,11-13).

In conclusion, the potential vision health risks imposed by new norms in learning arrangements during the ongoing COVID-19 pandemic are adding to an already global vision crisis and if it is not taken seriously, it is going to lead to the crisis within the crisis (11-13).

#### Disclosures

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

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