Focus on Subspecialties, News Articles, Ophthalmology

Conjunctivitis, myopia among consequences of COVID-19 in children
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Attending to children with COVID-19 and containing the spread of disease is a daily concern for pediatricians. It is important to be aware of the direct and indirect effects of the SARS-CoV-2 virus on the ocular health and visual function of children.

Transmission via the eye

In the earliest months of the pandemic, scientists and public health officials looked to Wuhan, China to learn about systemic manifestations and epidemiology of transmission of the SARS-CoV-2 virus. Availability of molecular testing coupled with mandatory hospitalization and tracking of infected patients led to recognition of the highly contagious but varied manifestations of the infection.

Children presenting with a COVID-19-related upper respiratory infection occasionally had itchy, irritated eyes with conjunctivitis that lasted several days but usually resolved without sequelae. Similar to other viruses, the ocular manifestations could precede, be concurrent or follow respiratory and systemic manifestations of the disease (Ma N, et al. JAMA Ophthalmol. 2020;138:1079-1086, https://bit.ly/2Pquv5u). No specific features of the conjunctivitis are unique to the SARS-CoV-2 virus.

Droplet or airborne transmission of the disease through contact with the conjunctiva was recognized early in the pandemic. As a result, goggles were mandatory for all individuals caring for COVID-19 patients. Today, face shields and eye protection are required for all individuals caring for patients undergoing aerosolizing procedures.

Ocular transmission of the virus from an asymptomatic individual, especially a child, is a theoretic possibility. However, no epidemiologic studies have been conducted to investigate this mode of transmission.

Wearing spectacles or goggles while caring for patients may minimize conjunctival exposure and decrease inadvertent transmission by touching the eyes with hands that may be carrying the virus.
Eyes locked in

School closures and cessation of social activities have had the greatest impact on the visual health of children. Home-based school and the associated increase in time spent indoors have led to a marked growth in screen time. Focusing on near targets, as children do when using a screen, requires accommodation. Prolonged accommodation can lead to blurred vision, headaches, eyestrain and fatigue. It also has been shown that individuals blink less during near work, which can lead to dry eyes, exacerbating the symptoms described above.

Prolonged exposure to “blue light” emitted from computer screens has been proposed as a cause of eyestrain, and the internet and television are filled with advertisements for “blue blocker” glasses to prevent eyestrain. A well-designed study, however, demonstrated that these glasses do not alleviate symptoms of eyestrain (Singh S, et al. *Am J Ophthalmol.* Feb. 12, 2021, [https://doi.org/10.1016/j.ajo.2021.02.010](https://doi.org/10.1016/j.ajo.2021.02.010)).

The most significant ocular consequence of COVID-19 affecting children will be the increased incidence of myopia resulting from increased screen time and decreased exposure to sunlight due to less time spent outdoors.

In a well-designed study involving over 123,000 school-age children, researchers in China found that the prevalence of myopia increased 1.2 to 3.2 times following six months of enforced home schooling and restriction of outdoor activities. Children ages 6-8 years were most affected by the restrictions (Wang J, et al. *JAMA Ophthalmol.* 2021:139:293-300, [https://bit.ly/3lKXP2l](https://bit.ly/3lKXP2l)).

The long-term effect of increased screen time and restriction of outdoor physical activity will have physical, mental and emotional consequences for children. Parents and physicians should advocate for periodic breaks from the screen throughout the day and limited extracurricular screen time for the reasons noted above and those known long before the COVID-19 pandemic.

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**Resources**

- Information for parents on myopia from HealthyChildren.org