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Myopia Magnitude before, during, and after COVID-19 in children aged 3 to 17 years

Purpose

The purpose of this study was to investigate the change of myopia magnitude before, during, and after COVID-19 pandemic. In addition, myopia magnitude over the last 11 years (from 2014 to 2024) was reported.

Methods

Medical records from 2014 to 2024 in a primary eye clinic in Chicago, Illinois Eye Institute, were reviewed. Myopia was defined as the spherical equivalent (SE) ≤ -0.50 D in the right eye. A total of 51,880 medical records of myopic children aged 3 to 18 years were qualified for this study. To determine the effect of COVID-19 on myopia magnitude, myopia magnitude in two years before (year of 2018 and 2019), during (year of 2020 and 2021) and after COVID-19 (year of 2022 and 2024) were compared using One-way ANOVA. $P < 0.05$ was considered statistically significant.

Results

There were 3430 children with myopia in 2014 with an average myopia magnitude of -2.42 ± 2.32 D, which increased to -3.02 ± 2.67 D in 2024 ($n=4,505$). The mean myopia magnitude was -2.59 ± 2.35 D, -2.84 ± 2.56 D, and -2.93 ± 2.57 D before, during, and after COVID-19 with a statistically significant difference ($P < 0.0001$). Post-hoc analysis with Bonferroni correction revealed that myopia magnitude during COVID-19 was statistically significantly higher than that before COVID-19 ($P < 0.0001$). In addition, myopia magnitude after COVID-19 was also significantly higher than that before COVID-19 ($P < 0.0001$). However, there was no significant difference in myopia magnitude during and after COVID-19 ($P = 0.10$).

Conclusion

Our study found that the COVID-19 pandemic significantly impacted myopia in children aged 3 to 18 years with a higher myopia magnitude during and after COVID-19 pandemic compared to that before the COVID-19 pandemic.

Biography

Dr. Yi Pang is affiliated with the Illinois College of Optometry, USA. His research interests are focused on vision science, optometry, and ocular health. He contributes to advancing understanding in eye care and vision-related research through academic and scientific activities.