Impact of the COVID-19 pandemic on the current models of myopia prediction

Dear Editor,

Myopia as a global public health issue and 50% of the world's population becoming myopic by 2050 have become stronger messages for Myopia advocacy ever since the prediction was made.[1] With the COVID-19 pandemic altering lifestyles across ages, every public health issue is now seen under the magnifying lens of the implications the home confinement has brought into the natural history of the disease under the limelight.

At this juncture, Myopia prediction tools are being widely explored, advocated, and utilized by clinicians, especially as a means for educating parents regarding myopia control options. However, researchers have warned against using tools based on averaged values and smaller sample sizes as there is a potential risk of inaccurately predicting the progression, or myopia control, which can be achieved with the chosen treatment option. With respect to growth charts-based myopia projection, which utilized multi-ethnic datasets,[2] it is suggested to consider axial length jumps greater than 10 percentiles between 6 and 9 years of age.

Based on the recent ARVO abstract by the Singapore Cohort Study of the Risk Factors for Myopia (SCORM),[3] annual myopia progression may not be a standalone factor to predict long-term or even subsequent progression. This has questioned the way clinicians look at Myopia prediction models as most clinicians initiate myopia control strategies based on the rate of progression. There exists considerable variability in the rate of myopia progression among children depending on the age of onset, rate of progression, parental history of myopia, and other environmental risk factors.[4] All these studies point out to the factor that myopia progression in an individual is dynamic and the existing prediction models and algorithms need constant updating based on age, and ethnicity-specific data, with a preference toward multifactorial large sample size-based models.

Myopia prevalence in India based on a meta-analysis-based estimate also correlated with the 50% global prediction expected by 2050. This study averaged the 5-year time trends to predictions for the upcoming three decades across all age groups, with an estimated prevalence of 48.14% in 2050.[5]

Given the current understanding regarding the complexity of myopia progression, how annual progression may not correlate with subsequent progression, and the increased prevalence rates affected by the COVID-19 pandemic, it is likely that these predictions are potentially underestimating the expected prevalence. Looking at current intervention strategies for Myopia, spending time outdoors has shown to be the safest strategy in reducing the incidence of myopia based on various population-based and interventional studies.[6] However, outdoor activity is the factor that has been significantly impacted by the COVID-19 home confinements. With certain countries like India undergoing extended lockdown and continuing online education for almost a second year in a row, it is time to relook at the prediction models. Data from other parts of the world have shown a significant increase in myopic spherical equivalent refraction, rates of myopia progression, and increased odds of myopic progression symptoms.[7-10]

Using the model to predict prevalence estimates for Indian children proposed by Priscilla J. and Verkicharla P. (2021),[5] it would be interesting to input the hike in annual prevalence post-COVID-19 and assess the impact of this hike on long term myopia prediction.

This is the time for public health strategies to be more active than ever before in countries where virtual education is being offered for an extended period of time, with restricted access to health care and travel restrictions in place. This is the time for all stakeholders to bring in more unified efforts toward advocacy in bringing policy change at state and national levels. It is equally important to consider factors that could further increase the risk of myopia progression, such as extended home confinement, significant changes in lifestyle, and an increase in early-onset myopia. This also re-emphasizes the need to relook at the existing prediction models and tools, and to be aggressive with efforts toward implementing public health policies to curb the myopia epidemic.

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Conflicts of interest

There are no conflicts of interest.

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