

Letters to the Editor

Prevalence and Time Trends in Myopia Among Children and Adolescents

Results of the German KiGGS Study

by Prof. Dr. med. Alexander K. Schuster, MSc, Clara Kuchenbäcker, Dr. med. Heike Elflein, Prof. Dr. med. Norbert Pfeiffer, Dr. phil. Laura Krause, Dr. med. Franziska Prütz, MPH, and Prof. Dr. med. Michael S. Urschitz, MSc in issue 50/2020

Approach Not Very Valid

The article draws attention to myopia as a risk factor for eye diseases in Germany—that is, in a society that is increasingly urban with digitalized education (1). To a large extent, the trend is behavioral: continuous close-up work activities and too little daylight in childhood are the most important triggers. Reliable data on incidence and prevalence are desirable, but the survey approach in the KiGGS study is not very valid if one considers that the parents’ self-reporting about their own or their child’s vision problems can be unreliable. Farsightedness and near-sightedness (myopia) are regularly confused, as I have observed in my office hours for many years. To quantify this uncertainty, it is advantageous to compare the statements of the parents with the actual corrective values of their child’s glasses, at least in a random sample, and to determine the error rate from this. This is the only way to detect whether significant changes have occurred in a later survey with respect to the first survey, or to determine which conclusions can be drawn given the methodological uncertainties.

The usefulness of the follow-up study from 2014 to 2017 must therefore be questioned.

In Reply:

We thank Dr. Barry for his interest in our article (1). We agree that the approach of the KiGGS study by the Robert Koch Institute to ascertain refractive errors by self-disclosure has its methodological limits. We have also explained this in detail in the section on the study limitations. For example, we would have liked to conduct the above-mentioned validation of the parents’ information using refraction measurements to determine the error rate. Unfortunately, this was not possible, as it was not provided for in the data collection (which had already been completed). However, we observed that parents were somewhat more likely to give no information about their child’s refractive errors in the 2003–2006 baseline survey than in the 2014–2017 follow-up survey; this observation is mentioned in the results of our article. Overall, our results are consistent with studies of Caucasian children in other countries. A meta-analysis showed that the prevalence of myopia in white European children has either a marginal decline or is stable (2), which is why we consider our result to be plausible.

We support the recommendation of 1 to 2 hours of daylight exposure per day in childhood. This has been shown to be preventative for the development and progression of myopia (3) and should be integrated into everyday life. A recent study in China also showed that the lockdown, with strict stay-at-home orders, led to a higher proportion of myopic children aged 6 to 8 years (4), underscoring the importance of being outdoors and showing

At most, this gives an indication that hardly anything has improved since 2003–2006 to the period under review. To bring about a change in this trend, pediatricians should cooperate with kindergartens, as these can best reach parents of preschool-age children and convey the recommendation that children should receive one to two hours of daylight per day.

This further supports other development goals, be it motor, social, or cognitive. While staying outdoors is primarily free, pediatricians and ophthalmologists should be well paid for their educational work. It would be promising to examine the influence of preschool programs on the incidence of myopia and to evaluate it from a health economic perspective, provided that the methodology is valid.

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Reference

- Schuster AK, Krause L, Kuchenbäcker C, Prütz F, Elflein HM, Pfeiffer N, Urschitz MS: Prevalence and time trends in myopia among children and adolescents—results of the German KiGGS study. *Dtsch Arztebl Int* 2020; 117: 855–60.

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the first possible consequences of lockdowns on the development of myopia. We fully agree with the statement that development of motor, social, and cognitive skills are additionally promoted by being outdoors. Sufficient information about limiting screen time and the necessity of being outdoors will only be possible through the interdisciplinary cooperation of ophthalmologists and pediatricians and should be scientifically evaluated.

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References

- Schuster AK, Krause L, Kuchenbäcker C, et al.: Prevalence and time trends in myopia among children and adolescents—results of the German KiGGS study. *Dtsch Arztebl Int* 2020; 117: 855–60.
- Rudnicka AR, Kapetanakis VV, Wathern AK, et al.: Global variations and time trends in the prevalence of childhood myopia, a systematic review and quantitative meta-analysis: implications for aetiology and early prevention. *Br J Ophthalmol* 2016; 100: 882–90.
- Rose KA, Morgan IG, Ip J, et al.: Outdoor activity reduces the prevalence of myopia in children. *Ophthalmol* 2008; 115: 1279–85.
- Wang J, Li Y, Musch, DC, et al.: Progression of myopia in school-aged children after COVID-19 home confinement. *JAMA Ophthalmol* Published online January 14, 2021. doi:10.1001/jamaophthalmol.2020.6239

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Conflict of interest statement

The authors of the contributions declare that no conflict of interest exists.