Vitamin D May Reduce the Prevalence of Myopia in Korean Adolescents

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While easily corrected by glasses, contact lenses, or refractive surgery, myopia is anything but ordinary. The elongated myopic eye is at higher risk for eye disease, such as cataract, glaucoma, and retinal detachment. Nationwide surveys show an increasing prevalence, with the best estimates now at 33% in the United States1 and even higher rates in East Asian countries. Myopia has a strong genetic component, but recent research from around the world has identified an environmental influence that might modify this genetic risk. Surprisingly, this factor is not reduced time spent reading and studying. Rather, more time outdoors has a protective effect on the risk of developing myopia.

Choi et al.2 put the high prevalence of myopia in Korea (80.1% in their sample) together with the high prevalence of vitamin D deficiency in Korean adolescents (between 50% and 90% depending on season) to test the hypothesis that lower levels of circulating 25-hydroxyvitamin D (25(OH)D) might be associated with myopia. Their data came from over 2000 teenagers participating in the Korea National Health and Nutrition Examination Survey. Adjusted for factors such as area of residence, parental income, dietary factors, and smoking, myopia had a small but significant association with lower levels of circulating 25(OH)D. The model $R^2$ was low at 0.004 and the slope for the relationship was a modest 0.03 diopters (D) less myopia per nanogram increase in circulating 25(OH)D. However, when analyzed by categories, the largest effect was a decrease by half in the odds of being in the highly myopic group if the child was in the highest vitamin D tertile.

The association may be small, but a connection between vitamin D and myopia suggests a modifiable factor that may reduce myopia’s increasing prevalence. Besides hinting at novel therapeutic potential, this research will stimulate future study of what underlying physiology might connect this systemic factor with an ocular outcome.

References

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