Efficacy of contrast management spectacle lenses in North American and Chinese children

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Purpose

To evaluate myopia control efficacy of contrast management spectacle lenses in North American and Chinese children.

Methods

Two multicenter randomized controlled clinical trials evaluating Diffusion Optics Technology (DOT) spectacle lenses with similar study protocol were selected for analysis. The first was a 4-year clinical trial held in North America (NCT03623074) that recruited myopic children aged 6 to 10 years, of which 75% were Caucasian and 20% were Black or African American. The second was a 2-year clinical trial run in China (NCT05562622) that recruited myopic children aged 6 to 13 years, of which 100% were Chinese. Meta-analysis was performed to derive pooled treatment effect estimates for axial length (AL) and cycloplegic Spherical Equivalent Refraction (cSER).

Results

Although the two study populations (n =174 North America, n =128 China) were well-matched in terms of age, sex and cSER (all $p>0.05$), baseline AL was significantly longer in the Chinese study ($p<0.05$).

Compared to control, AL and cSER progression were slower with DOT lenses in both studies, with an absolute reduction (mean ± SE) of -0.15 ± 0.03 mm, 0.34 ± 0.07 D in North American children and -0.29 ± 0.04 mm, 0.54 ± 0.09 D in Chinese children (all $p<0.001$). Meta-analysis yielded pooled treatment effects of -0.20 ± 0.02 mm (95% CI: -0.25 to -0.15 mm, p<0.0001) and 0.42 ± 0.06 D (95% CI: 0.31 to 0.52 D, p<0.0001).

Conclusion

DOT spectacle lenses significantly slowed myopia progression and axial elongation across both clinical trials evaluated at one-year, demonstrating DOT lenses can significantly slow the progression of myopia in children from diverse populations.