

# Real-world effectiveness of Diffusion Optics Technology (DOT) spectacle lenses for myopia control in Chinese children

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## Purpose

Diffusion Optics Technology™ (DOT) spectacle lenses are designed to slow myopia progression by modulating retinal contrast. The purpose of this study was to evaluate myopia progression observed in Chinese children wearing Diffusion Optics Technology (DOT) spectacle lenses in a real-world clinical population for 12 months.

## Method

In this retrospective observational data collection, clinical records from 4 locations were reviewed to identify children who were prescribed with DOT spectacle lenses in China between June 2022 and May 2023 who had not received other myopia control treatment. Data was collected at three time points: at DOT lens dispensing (baseline), 6-months and 12-months after DOT spectacle lens wear. Changes from baseline in manifest spherical equivalent refraction (mSER) and axial length (AL) progression were analyzed at 6 and 12 months of DOT spectacle lens wear. To adjust for between-person variability in follow-up times, the observed change in each outcome measure was standardized to 6-and 12-month changes from baseline. For comparison, age matched untreated myopic eye data from the Singapore Cohort Study of the Risk Factors for Myopia (SCORM) was used as a virtual control.

## Results

A total of 147 unique patient records were identified and included for analyses. Mean age was 10.01 years at baseline (range 5 to 16 years), male n=76, 51.7%. Baseline mean mSER  $\pm$  SD was  $-2.54 \pm 1.52$  D (range  $-0.50$  to  $-6.88$  D) and mean AL was  $24.79 \pm 0.93$  mm (range 21.63 to 28.20 mm). Changes in both mSER and AL at 6 and 12 months were not significant ( $p > 0.4$ ). After 6-months of DOT spectacle lens wear, mean progression was  $0.02 \pm 0.17$  D in mSER and  $0.00 \pm 0.17$  mm in AL. After 12-months mean progression was  $-0.04 \pm 0.29$  D in mSER and  $0.04 \pm 0.17$  mm in AL. mSER progression was limited to  $-0.25$  D or less in 96.6% of children after 6 months and 87.3% after 12 months of wear.

SCORM age-matched untreated myopic eye 1-year growth data predicted mean annual axial elongation of 0.25 mm. Comparing to SCORM data, DOT lenses slowed AL progression by 84% (0.21 mm). The observed 0.04 mm AL elongation in DOT lens wearers was negligible and slightly less than the age-matched emmetropic eye growth (considered physiological eye growth) predicted by SCORM data (0.09 mm).

## Conclusion

Real world use of DOT spectacle lenses demonstrate that contrast modulation spectacles successfully slowed the progression of myopia compared to modelled untreated myopic children. These real-world results demonstrate DOT spectacle lenses effectively slow myopia progression in clinical practice.

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