

Two-year real-world effectiveness of myopia control contrast modulation spectacle lenses in a Canadian practice.

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Purpose

To evaluate the 2-year effectiveness of myopia control spectacle lenses Diffusion Optics Technology (DOT) with contrast modulation to slow myopia progression in Asian Canadian children by age group in a real-world clinical setting.

Methods

This retrospective study reviewed clinical records from a Canadian independent practice with myopic children ages 6 to 10 years who had worn DOT spectacle lenses for at least 2-year.

Myopia progression was determined using binocular average of manifest Spherical Equivalent Refraction (mSER) in Diopters and axial length (AL) measurements in mm at baseline, 1-year and 2-year for the full cohort and by age group (Y-young: age 6-7, O-older: age 8-10 at the time of dispensing. Annual progression rates were approximated for each individual by dividing the observed 24-month change from baseline by the actual elapsed follow-up time expressed in years and tested for statistical significance using independent t-test.

Results

The total sample comprised data for 47 children with 2-year follow-up [53% males; mean age $\pm$ SD 7.8 $\pm$ 1.5; 23 (49%) Y and 24 (51%) O]. Baseline mSER -2.40 $\pm$ 1.27D and cyl -0.53 $\pm$ 0.65, similar for the Y and O ($p>0.50$). Mean AL $\pm$ SD was shorter for the Y (23.92 $\pm$ 0.83 v 24.48 $\pm$ 0.71, $p=0.02$).

As expected with age, the annual progression rate was significant for AL (0.17mm, $p=0.002$) but not for mSER (-0.23D, $p=0.69$). Data is summarized in the table below.

	All (6-10)	Young (Age 6-7)	Older (Age 8-10)	Diff Y vs O
Axial Length change from BL (mean± SD) in mm				
1 year	0.13 ± 0.14	0.19 ± 0.14	0.08 ± 0.12	p= 0.0058
2 year	0.36 ± 0.25	0.47 ± 0.26	0.26 ± 0.20	p= 0.0032
mSER (mean± SD) change from BL in D				
1 year	-0.22 ± 0.30	-0.24 ± 0.25	-0.20 ± 0.35	p=0.66
2 year	-0.49 ± 0.46	-0.51 ± 0.44	-0.47 ± 0.49	p=0.77

Proportion of subjects with stable refraction (0.50D or less) at 2 year was 52% for the younger group and 62% for the older group.

Compared to published data (COMET, SCORM, HK) for myopia progression, DOT lens wear in this practice slows refractive progression by at least half if not more.

Conclusion

These 2-year real-world results demonstrate the efficacy of myopia control spectacle lenses in children age 6-10 years old and specifically younger children, age 6 and 7 years old, who have the highest unmet need due to faster progression and limited available treatment options.