Subjective experience in children wearing Diffusion Optics Technology™ compared with single vision spectacle lenses

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Purpose

Patient reported outcomes are important in helping practitioners understand and communicate expectations for myopia control. This investigation was to quantify subject experience when wearing Diffusion Optics Technology™(DOT) contrast modulation spectacle lenses compared to single vision (SV) after 2 years.

Methods

172 data was analyzed from a study in China (NCT05562622) at 5 sites involving myopic Chinese children, aged 6-13 who completed 2-year visit and randomly wear DOT or SV in a 2:1 ratio. There were no statistically significant differences between SV and DOT for age, sex, refraction, or axial length at baseline. Average daily wearing time was >12 hours. The questionnaire consisted of 6 statements rated on a 5-point Likert scale (strongly disagree=1, strongly agree=5). Five were derived from Pediatric Refractive Error Profile 2(PREP2) for distance and near vision clarity, appearance (*I like how I look with my spectacles*), satisfaction (*I like to wear my spectacles*), overall impression (*I love my spectacles*)—and one study-specific item on night vision. Per PREP2 scoring (Walline 2007; Andersen 2013), responses were converted to 0–100 scale, where 100 was the most favorable result. Mean scores were compared between arms using Welch's t-test with 95% confidence intervals (CI); rating response distributions were compared using chi-square tests.

Results

After 2 years, rating distributions did not differ significantly between arms (all $p \geq 0.05$) with most respondents either agreed or were neutral that they see well at distance, near and at night, they like how they look, like to wear, and love the spectacles (≥91% across all 6 items).

Observed mean differences (ΔM) between DOT and SV were not significant (range −2.3 to +4.5), distance vision (DOT 82.5; SV 79.2, ΔM +3.4, 95% CI −2.6 to +9.4,p=0.27), near vision (DOT 82.3, SV 84.4, ΔM −2.1, 95% CI −9.0 to +4.4,p=0.50), and night vision (DOT 74.8, SV 77.1, ΔM −2.3, 95% CI −8.5 to +4.1,p=0.49). Appearance, satisfaction, and overall

impression ratings were likewise similar for both. All differences were slight (range −2.3 to +4.5) with no meaningful differences, appearance (DOT 81.9, SV 80.7, ΔM +1.2, 95% CI−5.1 to +7.4,p=0.71), satisfaction (DOT 70.3, SV 67.7, ΔM +2.6, 95% CI −5.5 to +11.0,p=0.55), and overall impression (DOT 75.8, SV 71.3, ΔM +4.5, 95% CI −3.4 to +12.1,p=0.32). Positive ratings for DOT and SV analyzed for both proportion of responses and mean scores for vision were consistent with visual acuity (VA) measurements for distance and near VA (0.00 logMAR).

Conclusion

DOT spectacle lenses are well accepted by children, just like SV, and are rated highly for important aspects of spectacles wear (vision, appearance, satisfaction).