

Preliminary results and adaptability to the Defocus Incorporated Multiple Segments spectacle lenses among pre-myopic children of preschool age

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Poster #A14

PURPOSE

- ❖ To investigate the adaptability of the photochromic Defocus Incorporated Multiple Segments (PDIMS) spectacle lenses in pre-myopic children
- ❖ To evaluate preliminary results of parameters associated with myopia in this patient group

METHODS

- ❖ Children aged 5-6y between November 2023 to February 2024, diagnosed with pre-myopia (cycloplegic refraction ranging from $\leq +0.75$ to > -0.50 diopters) were enrolled.
- ❖ Following the baseline visit, eligible participants were prescribed photochromic DIMS spectacle lenses with 0.00D.
- ❖ Participants and their caregivers were instructed to ensure the children wear PDIMS spectacle lenses full-time (≥ 10 hours).
- ❖ At the one-week follow-up visit, participants completed a questionnaire about:
 - ❖ Visual complaints
 - ❖ Acceptability
 - ❖ Adaptability to the DIMS spectacle lenses.
- ❖ Compliance of PDIMS spectacle lens wear and information on myopia-related lifestyle habits were gathered through follow-up questionnaires.
- ❖ Cycloplegic refraction (Spherical Equivalent Refraction, SER), axial length (AL), and central choroidal thickness (CCT) were evaluated at three-month follow-up intervals. Statistical analysis is performed by paired t- test.

RESULTS

- ❖ 24 pre-myopic children, mean age 5.4 ± 0.59 years, with a M:F ratio of 11:13. (Table 1)
- ❖ Ratio of parental myopia was 16:7:1 for none, one parent, and both parents, respectively (Table 1)
- ❖ All children had a distance and near visual acuity of 20/20 at the baseline visit.
- ❖ After one week of PDIMS spectacle lens wear, 16.7% of participants reported mild inconvenience to daily activities (Figure 1)
- ❖ Visual strain and discomfort reported by the same 8.3% of participants. 8.3% of participants reported the need for a lens position adjustment (Figure 1)

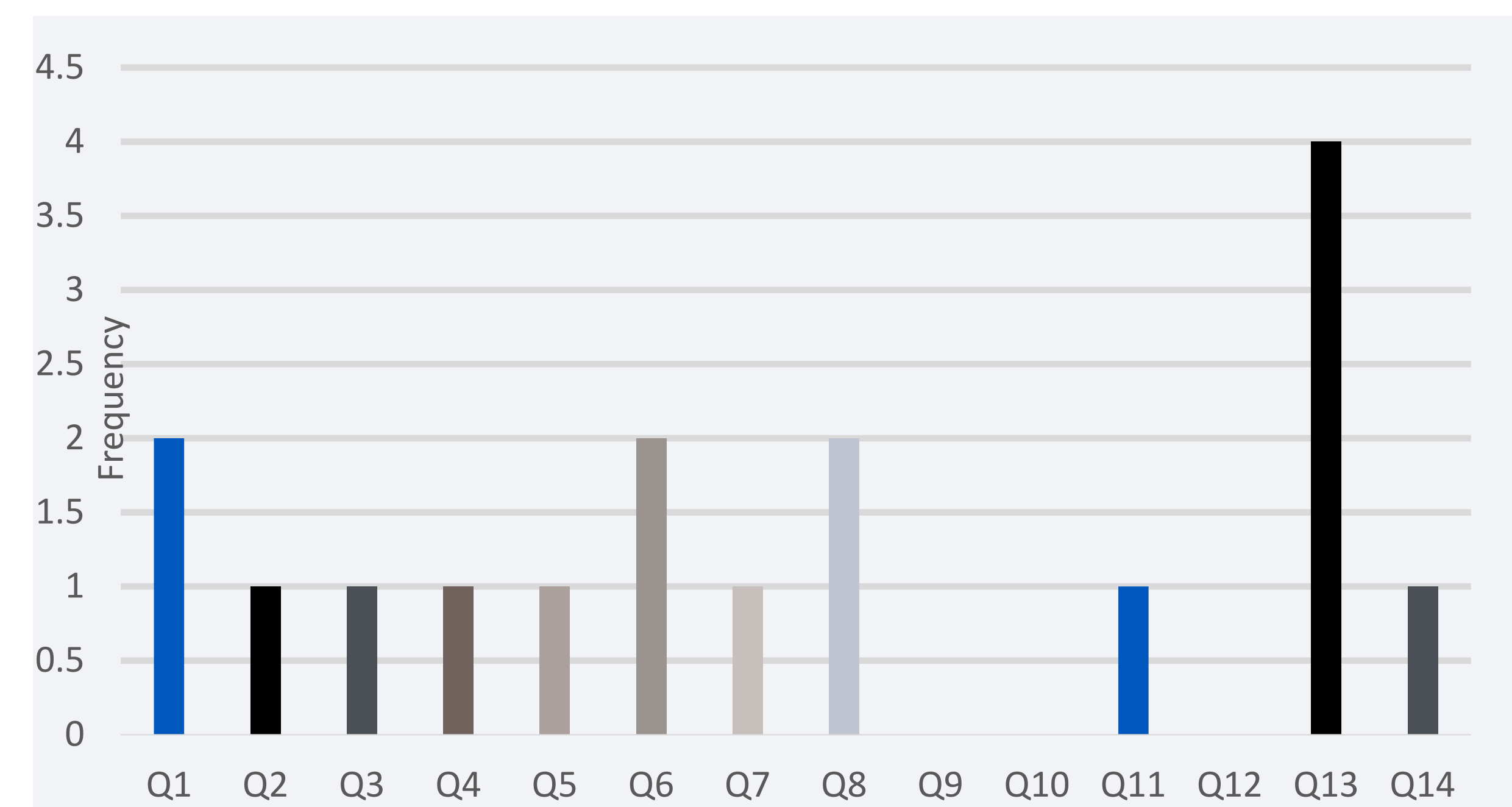
RESULTS

- ❖ All parents agreed to continue having their children wear PDIMS spectacle lenses.
- ❖ After 6 months:
 - The mean SER changed from $+0.38 \pm 0.32$ to $+0.54 \pm 0.37$ D, resulting in a refraction change of $+0.28$ D/y ($p=0.02$)
 - The mean AL increased from 22.48 ± 0.61 to 22.58 ± 0.64 mm ($p<0.001$)
 - The mean central choroidal thickness increased from 351.3 ± 55.9 to 369.2 ± 50.7 μm ($p=0.017$)

Table 1: Baseline Characteristics

Parameters	Result
Age (mean)	5.4 ± 0.59
Sex (number)	
Male	11
Female	13
Side of eye (number)	
Right eye	16
Left eye	8
Spherical equivalent (mean)	0.38 ± 0.32
Parental myopia (number)	
Both	16
One	7
None	1
AXL (mean)	22.48 ± 0.61
Near VA with DIMS (mean)	0.995 ± 0.02

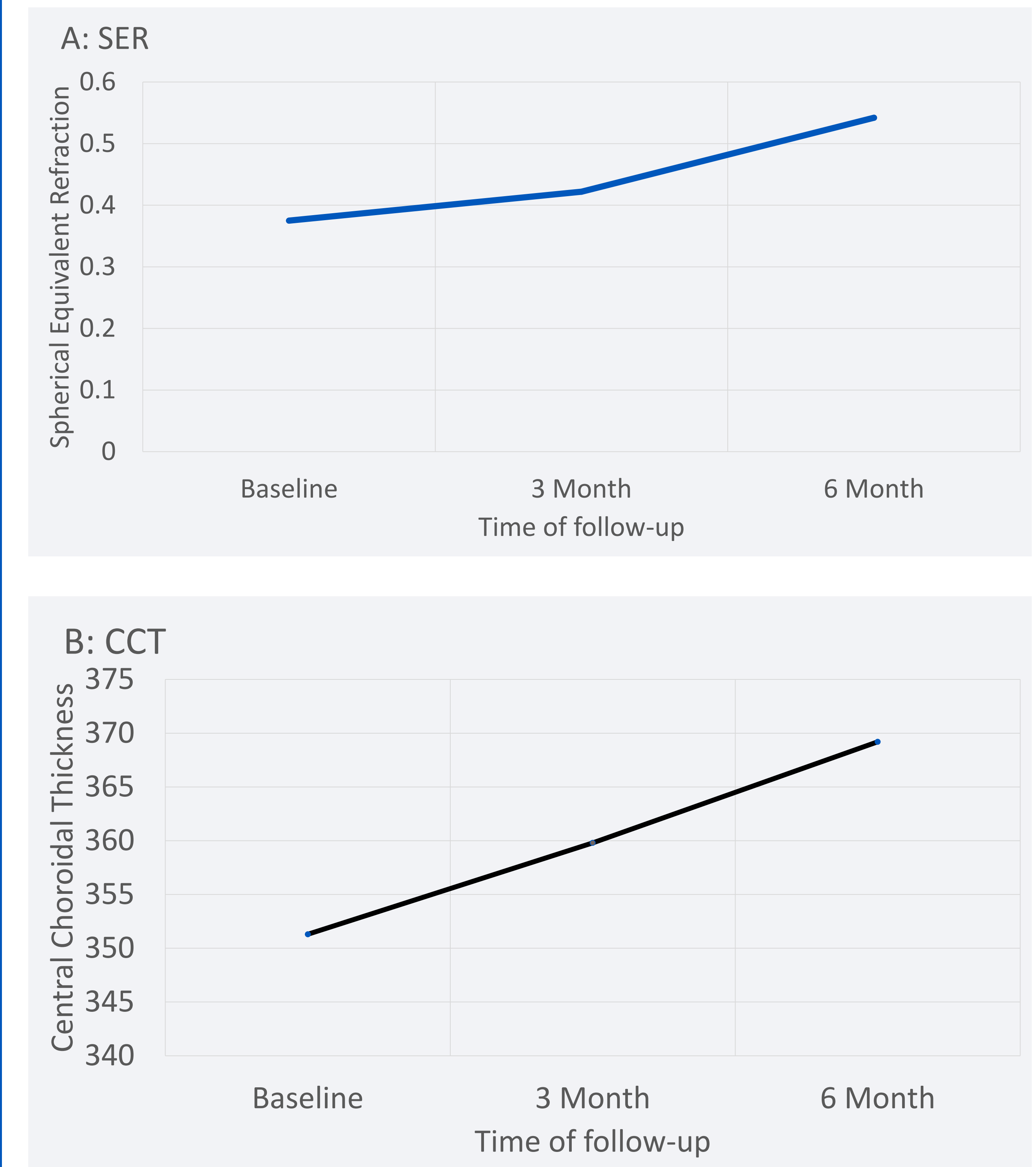
Figure 1: Frequency of Visual Complaints



Q1: Visual strain; Q2: Headache; Q3: Dizziness; Q4: Diplopia; Q5: Nausea; Q6: Photophobia; Q7: Blurry; Q8: Necessity of lens position adjustment; Q9: Darkness; Q10: Change of color; Q11: Visual shadow; Q12: Size change in vision; Q13: Inconvenience of daily activities at home; Q14: Inconvenience of daily activities at school

RESULTS

Figure 2: Change in Spherical Equivalent Refraction (SER, A) & Central Choroidal Thickness (CCT, B) over 6 months



- ❖ Preschool-aged pre-myopic children report good adaptability to PDIMS spectacle lenses.
- ❖ Visual complaints were minimal and of mild severity. The preliminary results for change in SER, AL and CCT are promising. Further research is underway to explore the effectiveness of PDIMS spectacle lenses in managing myopic progression in pre-myopic pre-school children.



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