Study of Methods of Myopia Intervention

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PURPOSE
This study looked at the effectiveness of selected myopia correction methods as a tool in controlling myopia progression:
- rigid gas permeable contact lenses (RGP)
- soft conventional contact lenses (SCL)
- traditional single vision spectacle lenses (SV)
- overnight wear of orthokeratology (OK) contact lenses

RGP are custom-made lenses worn in the day for vision correction. SCL group are subjects wearing custom-designed conventional soft lenses (non-disposable) and SV group are wearers of single vision multi-coated spectacle lenses. OK lenses are semi-rigid lens designed to reshape the cornea surface and are worn overnight for myopia correction.

METHODS
Data was obtained from a database of an optometric practice (Stan Isaacs) that included Chinese children in the age group of 7 to 14 years. This age group was selected as myopia progression was noted to be the most rapid from previous literature. Two year data from 20 subjects (40 eyes) of each group were retrieved. The amount of myopia progression over a period of 2 years was recorded and compared (Figure 1). Myopia was recorded as spherical equivalent (SE), together with best corrected visual acuity.

RESULTS
Data showed that subjects wearing OK lenses had the least change in myopia (SE) over the two year period. Only 2/20 subjects measured a slight increase in myopia. Myopia progression was highest in SV lens wearing group where all subjects showed a change in myopia (Figure 2). Mean change was -1.43 D (±0.76D) for SV lens wearers which was also significantly higher than that of overnight OK lenses group -0.03D (±0.12D) (p<0.0001, Figure 3). Subjects wearing RGP or SCLs showed no significant change in myopia over 2 years (RGP: -1.00D (±0.86D), SCL lens wear: 0.74D (±0.56D). This change was less than that seen in SV lens wearing subjects and more than that of OK lens wearing subjects (p<0.0005).

DISCUSSION
Overnight OK lens wear provides a method of myopia control as well as myopia correction that allows the wearer freedom from glasses and contact lenses during the day.

The CRAYON study (Walline et al) and LORIC study (Cho et al) showed that overnight OK lens wear slowed myopia progression (axial elongation) more effectively than other methods of myopia control. The results from this study, albeit a slightly different study model and on a smaller scale, had reflected similar findings. We found that overnight OK lens wear is most effective in controlling myopia progression in children aged 7-14 year old when compared to traditional contact lens and spectacle wear.

REFERENCES
5. Bartels D, Wilcox PE. Controlling Astigmatism and Nearsightedness in Developing Youth.