

Advances in myopia control strategies for children

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Abstract

Myopia has long been a global threat to public health. Timely interventions are likely to reduce the risk of vision-threatening complications. There are both established and rapidly evolving therapeutic approaches to slow myopia progression and/or delay its onset. The effective methods for slowing myopia progression include atropine eye-drops, defocus incorporated multiple segments (DIMS) spectacle lenses, spectacle lenses with highly aspherical lenslets target (HALT), diffusion optics technology (DOT) spectacle lenses, red light therapy (RLT), multifocal soft contact lenses and orthokeratology. Among these, 0.05% atropine, HALT lenses, RLT and +3.00 peripheral addition soft contact lenses yield over 60% reduction in myopia progression, whereas DIMS, DOT and MiSight contact lenses demonstrate at least 50% myopia control efficacy. 0.05% atropine demonstrates a more optimal balance of efficacy and safety than 0.01%. The efficacy of 0.01% atropine has not been consistent and requires further validation across diverse ethnicities. Combining atropine 0.01% with orthokeratology or DIMS spectacles yields better outcomes than using these interventions as monotherapies. Increased outdoor time is an effective public health strategy for myopia prevention while recent studies suggest that 0.05% low-concentration atropine and RLT therapy have promising potential as clinical myopia prevention interventions for high-risk groups. Myopia control spectacle lenses, being the least invasive, are safe for long-term use. However, when considering other approaches, it is essential to ensure proper instruction and regular follow-ups to maintain safety and monitor any potential complications. Ultimately, significant advances have been made in myopia control strategies, many of which have shown meaningful clinical outcomes. However, regular use and adequate safety monitoring over extended durations are imperative to foster confidence that can only come from extensive clinical experience.

Keywords: Child health (paediatrics); Epidemiology; Optics and Refraction.