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Comparing outcomes of adjustable spectacles and conventional refraction methods among mongolian children in a service-delivery program

Abstract:

Objective: To compare the vision and refractive power outcomes of self-refraction with adjustable spectacles vs non-cycloplegic refraction by an ophthalmologist among Mongolian school-aged children in a large service-delivery program.

Design: Cross-sectional study

Setting: One urban and three rural schools in Mongolia.

Participants: A total of 4,144 children aged 8-17 years old, with presenting visual acuity ≤6/12 in either eye due to uncorrected or under-corrected refractive error.

Interventions: All participants underwent at least one of three refractive modalities without cycloplegia: self-refraction supervised by a trained school physician, self-refraction supervised by an ophthalmologist, or subjective refraction by an ophthalmologist. The main analyses focus on children undergoing all three modalities.Main Outcome Measures: Proportions achieving target visual acuity (VA, defined as 6/9 or better in the better-seeing eye).

Results: Among 4,144 school-aged children (mean age: 12.6 ± 2.63 years), 65.3% were girls and 34.7% were boys. The mean spherical equivalent refractive power in the better-seeing eye was -1.25 D (SD: 1.25 D). A total of 1,074 children (25.9%) underwent all three refraction modalities. The proportion of participants achieving a VA of 6/9 or better in the better-seeing was significantly higher for subjective refraction by an ophthalmologist (93.6%,P<0.001) compared to ophthalmologist-supervised self-refraction (80.8%, P<0.001), and school physician-supervised self-refraction (77.6%, P<0.001). In multivariable logistic regression models, older age (OR 0.87, 95% CI - 0.13, p < 0.001), female sex (OR 0.75, 95% CI -0.29, p = 0.004), lower cylindrical refractive power (OR 0.75, 95%, CI -0.29, p < 0.001) and self-refraction supervised by an ophthalmologist were independently associated with lower risk of failing to achieve target VA.

Conclusions: Among a large cohort of children in this low-resource setting, results with self-refraction were worse than with traditional refraction by an ophthalmologist, but some 80% of children could still achieve good results

Biography

Laura Haller, ranked 1st in her class with a 4.0 GPA, is a dedicated and compassionate medical student with a strong commitment to serving others. Before medical school, she worked as the lead ophthalmic technician in ocular oncology at Columbia University Irving Medical Center, gaining extensive experience in complex eye disease management. She has served thousands in Harlem, New York through vision screenings and glasses delivery programs and has participated in medical missions to Nicaragua which reinforced her commitment to global healthcare. Outside of medicine, she has a background as an international professional dancer and is an accomplished marathon runner.