Distinguishing True Deficits from Crowding Effects: A Prospective Study on Errors in Visual Acuity Testing

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Purpose:

Visual crowding, refractive errors and reduced ganglion cell layer thickness have a major effect on visual tasks like reading. This research tries to unveil the relationship between these factors. **Method:**

This prospective study assessed visual acuity in 15 subjects (7 males, 8 females; mean age 27.07 ± 4.96 years) using three types of LED visual acuity charts: full chart, single row, and single optotype. Mistakes made while reading each chart were recorded. Refraction and ganglion cell layer (GCL) depth measurements were also performed. Statistical significance was set at $p < 0.05$.

Results:

Thirty eyes were evaluated, showing varied astigmatism types and a mean spherical equivalent of -1.02D ± 0.85. Significant differences in unaided visual acuity and error rates across chart types ($p = 0.002$) correlated with ganglion cell layer depth.

Conclusion:

Mistakes were more in case higher refractive error. Crowding was also found to be an essential aspect of refractive error and GCL depth. Using of charts and optotypes call for more sensitivity. Crowding must not be ignored as just a mistake.

Key Words:

Visual Crowding, Visual Acuity, GCL depth, Refractive error