

## OBJECTIVE METHODS OF REFRACTION EXAMINATION

Petriman Daniela

*Department of Optometry-Ophthalmology*

*Chisinau, Republic of Moldova*

**Introduction:** Retinoscopy is an important method for the objective assessment of refraction, widely used for diagnosing vision disorders such as hyperopia, myopia, and astigmatism. Accurate refraction measurement is particularly important in children and school-age individuals, where the use of cycloplegia plays a key role in correct diagnosis. Studies show significant differences between retinoscopy with and without cycloplegia, especially in younger children.

**Objective of the Study:** To evaluate the difference between the results of retinoscopy with and without cycloplegia in children, and to analyze the influence of age, refractive errors, and wearing glasses on these results.

**Materials and Method:** Observational studies, cohort studies, and review articles were selected from recognized databases, such as PubMed, focusing on publications from the year 2019. The study included 128 children, divided into 4 age groups: 6-7, 8-9, 10-12, and 12-13 years. Each child underwent retinoscopy with cycloplegia (1% cyclopentolate) and without it. Accommodation was assessed using dynamic retinoscopy before applying cycloplegia.

**Results:** A statistically significant difference was found between the spherical values of retinoscopy with and without cycloplegia. The difference decreased with the age of the children, but retinoscopy with cycloplegia revealed greater hyperopia compared to non-cycloplegic results in all age groups. The difference was more pronounced in children with high hyperopia ( $\geq +2.50D$ ). The cylindrical component showed no significant differences between retinoscopy with and without cycloplegia. Non-cycloplegic retinoscopy with a result of  $\geq +1.50D$  was sensitive (87%) and specific (96%) in identifying clinically significant hyperopia ( $\geq +2.50D$ ).

**Conclusion:** Retinoscopy with cycloplegia reveals significantly greater hyperopia compared to retinoscopy without cycloplegia in children aged 6 to 13. This difference is particularly pronounced in children with high hyperopia and is independent of wearing glasses or accommodation. Cycloplegia does not affect the cylindrical component but is necessary for accurately determining full refractive error in children, especially in cases of high hyperopia.