

## **RISE OF THE MACHINES?**

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### **PURPOSE**

To compare the ability to detect refractive anomalies in children using automated refraction versus retinoscopic cycloplegic refraction.

### **METHODS**

Pediatric population from hospital pediatric unit and from pediatric community clinic were included. All children underwent a complete ophthalmic examination. Children were randomly assigned to one of two pediatric optometrists which performed a manual cycloplegic refraction using retinoscopy and automated cycloplegic refraction using handheld autorefractometer Retinomax5 (Right MFG co. LTD) device. Data was recorded in patients' files and included sphere, astigmatism, axis for each eye and for manual and automated refraction, glasses use, and cooperation of the child.

### **RESULTS**

A total of 213 children were included. Mean age was 6.2 years old. Sphere values were different between retinoscopy and retinomax in ages up to 5 years old (retinoscopy  $2.38 \pm 1.83$  D, retinomax  $2.71 \pm 2.41$ ,  $p < 0.001$ ) and in children older than 5 (retinoscopy  $1.65 \pm 3.35$  D, retinomax  $1.92 \pm 3.23$ ,  $p < 0.001$ ). Astigmatism was different between in both age groups (up to 5: retinoscopy  $-0.59 \pm 0.92$ , retinomax  $-1.16 \pm 1.40$ ,  $p < 0.001$ ) (older than 5: retinoscopy  $-0.63 \pm 0.96$ , retinomax  $-0.73 \pm 0.76$ ,  $p < 0.001$ ). Axis was statistically different between retinoscopy and retinomax in both age groups, but not clinically significant. Good compliance was 94.1% in ages bigger than 5 years old and 76% in 5 years old and younger ( $p < 0.001$ ).

### **CONCLUSION**

Automated devices such as Retinomax may be used for screening in children older than 5 years old. However, in all age groups, even with good compliance, it may not be accurate enough for treatment and decision making.

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