

ASSOCIATION BETWEEN ANTHROPOMETRIC MEASUREMENTS OF THE LOWER FACE AND OCULAR BIOMETRIC PARAMETERS IN CHILDREN

*Ante Prpic¹, Maja Malenica Ravlic², Jelena Skunca Herman², Lana Knezevic²,
Ivan Sabol³, Zoran Vatauvuk² and Renata Ivekovic²*

¹General Hospital Dr Ivo Pedišić, Sisak, Croatia; ²University Hospital Center Sestre Milosrdnice, Zagreb, Croatia; ³Ruder Boskovic Institute, Zagreb, Croatia

Background: Facial anthropometry and ocular biometry are important for understanding craniofacial and ocular growth during childhood. While previous studies have examined the relationship between general body measurements and ocular biometry, the association between lower facial anthropometric dimensions and ocular biometric parameters remains insufficiently investigated.

Objective: To assess the relationship between anthropometric measurements of the lower face and ocular biometric parameters, particularly axial eye length, which is associated with myopia development.

Subjects and methods: The study included 112 school-aged children divided into four age groups. Anthropometric measurements were obtained using digital callipers and photogrammetric analysis, while ocular biometric parameters were measured with the IOLMaster 700.

Results: Several anthropometric and biometric parameters showed significant age-related changes. Male participants exhibited significantly greater lower facial height ($p=0.0074$) than females. They also had higher values of axial eye length, anterior chamber depth, and horizontal corneal diameter. Significant positive correlations were found between axial eye length and lower facial height, mandibular height, mouth height, facial width, facial height, and maxillary and mandibular depth. The strongest correlation was observed with lower facial height ($r=0.305$; $p=0.0011$). Anterior chamber depth was also positively correlated with lower facial height, mandibular height, and mouth height, with the highest correlation again observed for lower facial height ($r=0.287$; $p=0.0021$).

Conclusions: The findings provide reference data on facial and ocular growth and suggest a relationship between lower facial dimensions and ocular biometry. These results may contribute to improved monitoring of craniofacial and ocular development and support the early identification of children at risk of myopia.

Keywords: Anthropometry; Face; Eye biometry; Children; Myopia.