

Gender- and age-related changes in three dimensional facial profiles of healthy Northern Sudanese persons

Claudia Dolci¹, Luca Pisoni¹, Claudia L.P. Ferreira¹, Aler D. Fuentes², Fadil Elamin³

¹Dept. Biomedical Sciences for Health, Università degli Studi di Milano, Milano, Italy

²Faculty of Dentistry, Universidad de Chile, Chile

³Khartoum Centre for Research and Medical Training, Khartoum, Sudan

The study aimed to provide quantitative information about gender-related normative data and growth changes between childhood and young adulthood in the soft tissue facial profiles of Northern Sudanese individuals.

The three dimensional coordinates of 50 landmarks on the facial soft tissues were obtained using a hand-held laser scanner in 654 healthy Northern Sudanese subjects (327 males and 327 females) aged 4-30 years. The subjects were divided into 8 non-overlapping age groups [1]. From selected landmarks, 15 facial angles were calculated and averaged for gender and age: upper, middle, and lower facial, and mandibular corpus convexities in the horizontal plane; relative position of the exocanthia and nasion; facial convexity in the sagittal plane; midfacial to mandibular plane, nasal convexity, nasolabial, mentolabial, interlabial, maxillary prominence, and left and right gonial angles. Comparisons were performed by factorial analysis of variance.

On average men had larger facial and mandibular corpus convexities in the horizontal plane than women (ANOVA, $p < 0.01$); on the contrary, no gender differences were found for facial convexities in the sagittal plane. Gender significantly influenced also the relative position of exocanthia and nasion, the maxillary prominence angle and the gonial angles ($p < 0.01$). All analysed measurements were influenced by age ($p < 0.001$): nasal convexity and interlabial angle increased from childhood to young adulthood, while mentolabial and gonial angles, horizontal facial convexity and sagittal facial convexity including the nose decreased as a function of age. No consistent age-related patterns were found for the other evaluated angles.

Data collected in the current study can be used as a database for the quantitative description of facial profiles in Northern Sudanese subjects during normal growth and development.

Reference

[1] Sforza et al (2014) Three-dimensional facial distances of Northern Sudanese persons from childhood to young adulthood. *J. Craniomaxillofacial Surg* 42: e318-e326.

Keywords

Anthropometry, face, soft-tissues, facial profile, three-dimensional.