

The face in Down's syndrome: indices of overall size and harmony in Sudanese vs Italian subjects

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The study aimed to provide quantitative information about the facial soft-tissues of Italian and Northern Sudanese subjects with Down's syndrome (DS) by using summary anthropometric measurements representative of facial size and harmony.

The 3D coordinates of soft-tissue facial landmarks were obtained by a computerized digitizer in 54 Italian subjects with DS (20 females, 34 males, aged 13-52 years), in 64 Northern Sudanese subjects with DS (18 females, 46 males, aged 5-34 years), in 578 healthy Italian, and 653 healthy Northern Sudanese reference subjects, matched for sex and age. From the landmarks, 16 facial dimensions were calculated. Data from subjects with DS were compared to those collected in reference individuals by computing z-scores. Two summary anthropometric measurements for quantifying craniofacial variations were obtained: the mean z-score (an index of overall facial size), and its standard deviation, or the craniofacial variability index (an index of facial harmony) [1]. In subjects with DS, facial size was significantly smaller, and craniofacial variability was significantly larger than in normal individuals; 93% of Italian and 81% of Northern Sudanese subjects with DS had one or both values outside the normal interval. Overall, Italian subjects with DS differed more from the norm than Northern Sudanese ones. In the Northern Sudanese subjects, the mean z-scores and the CVI decreased significantly with age. The facial soft-tissue structures of subjects with DS differed from those of normal controls of the same age, sex and ethnic group: a reduced facial size was coupled with a global anomalous relationship between individual measurements. The alterations in soft-tissue facial dimensions were different in the two ethnic groups and partially influenced by age.

Reference

- [1] Sforza et al. (2012) Anthropometric indices of facial features in Down's syndrome subjects. In: V.R. Preedy (ed.), *Handbook of Anthropometry: Physical Measures of Human Form in Health and Disease*. Springer Science+Business Media; pp. 1603-1618.

Keywords

Anthropometry, Down's syndrome, face, soft-tissues, three-dimensional, ethnic differences.