

## Investigation of lip and mouth features in healthy young adults through three-dimensional anthropometric analysis

Carletto M., Aitken E., Roncelli B., Garagiola U.

Department of Biomedical, Surgical and Dental Sciences, University of Milan.

Head: Prof. Muti Paola Cornelia Maria

School of Orthodontics. Head: Alberto Caprioglio.

Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico di Milano

### Aim:

This study seeks to analyze the three-dimensional morphometric features of the mouth of healthy young adults, focusing specifically on the lips' area, volume, and thickness.

### Materials and methods:

The study sample included 21 subjects (12 males and 9 females), aged between 21 to 34 years.

The inclusion criteria included white Caucasians with Angle class I occlusion and an overjet < 5mm. Subjects with a history of craniofacial trauma, congenital anomalies, surgeries or dental treatments like prosthetic or conservative restorations on their anterior teeth were excluded from participation. Impressions of both the extra-oral (cutaneous) and intra-oral (mucosal) surfaces of the lips were taken and reproduced in dental stone. Precise locations on established horizontal and vertical axes were digitized using an electromechanical digitizer (Microscribe G2, Immersion Corporation, USA). The casts underwent further analysis using Rhinoceros 3.0 software for 3D solid modeling, and details were refined with NURBS (Non-Uniform Rational B-Spline) curves based on individual landmarks.

Detailed data on the vermilion surface area, lip volume, and thickness were systematically collected. To identify potential differences between genders, the researchers utilized Student's t-test for statistical comparison.

### Results and conclusions:

While the vermilion area of the upper and lower lips tended to be larger in men compared to women, the difference was not statistically significant. However, the volume of both upper and lower lips was significantly greater in men (upper lip:  $p=0.037$ ; lower lip:  $p=0.007$ ). Furthermore, women tended to have smaller mean lip thickness ( $p=0.002$ ). This research underscores the sexual dimorphism in labial features, particularly noting significant variations in lip volume and thickness between genders. Additional research will delve into examining age-related variations and evaluating the impacts of orthodontic, plastic, and maxillofacial surgical interventions.

### References:

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3. Ferrario et al. *J Anat* 2000;196:415-423