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GLOBAL TRENDS IN SCIENCE AND EDUCATION



**PROCEEDINGS OF VII INTERNATIONAL
SCIENTIFIC AND PRACTICAL CONFERENCE
JULY 28-30, 2025**

**KYIV
2025**

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Proceedings of VII International Scientific and Practical Conference

Kyiv, Ukraine

28-30 July 2025

Kyiv, Ukraine

2025

MEDICAL SCIENCES

PERCENTILE RANGE OF CEPHALOMETRIC PARAMETERS ACCORDING TO THE COGS METHOD, WHICH CHARACTERIZE THE PROFILE OF THE SOFT TISSUES OF THE FACE DEPENDING ON THE TYPES OF FACES IN UKRAINIAN YOUNG MEN AND YOUNG WOMEN WITH AN ORTHOGNATHIC BITE

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Introductions. Orthodontic pathology is a common phenomenon among different age groups, and its prevalence remains significant in many populations. According to research, deviations in the structure of the dentofacial apparatus occur in 60-80 % of the population, which indicates the need for their early diagnosis and correction. Analysis of orthodontic pathology allows you to identify the main risk factors, among which the features of craniofacial morphology occupy a significant place [5]. A study of the prevalence of anomalies of the dentofacial apparatus among dental students in Iraq found that 23.6 % of them had various occlusion anomalies, which further confirms the relevance of the problem [6].

Cephalometric analysis is an important method for studying the morphological characteristics of the face, as it allows you to objectively assess craniofacial parameters, determine their deviations and establish the relationship between the soft tissue profile and bone structures of the skull. It is especially important to study cephalometric parameters depending on gender and facial type, as they can vary significantly. Studies have shown that the dimensions of the dental arches and telerradiometry parameters have close correlations, which is important for the diagnosis and prognosis of orthodontic treatment [7]. Determining the percentile range of these

parameters among Ukrainian young men (YM) and young women (YW) with orthognathic occlusion will allow to clarify the normative indicators for this population, which is important for clinical practice.

Aim. In Ukrainian YM and YW with orthognathic bite, to establish the limits of the percentile range of cephalometric parameters using the COGS method, which characterize the structure, profile of facial soft tissues, and the position and shape of the lips depending on the facial types.

Materials and methods. According to the COGS method [4], cephalometric analysis of lateral cephalometric radiographs was performed in 46 YM and 72 YW with orthognathic occlusion using the OnyxCeph³™ software, version 3DPro, from Image Instruments GmbH, Germany.

For the convenience of clinical use of metric characteristics used in the COGS methodology, we used the distribution of teleradiographic indicators proposed by Dmitriev M. O. [1, 2, 3], according to which the indicators that characterize the structure of the soft facial profile (Fig. 1), the shape of the facial profile and the position and shape of the lips (Fig. 2, 3) belong to the third group.

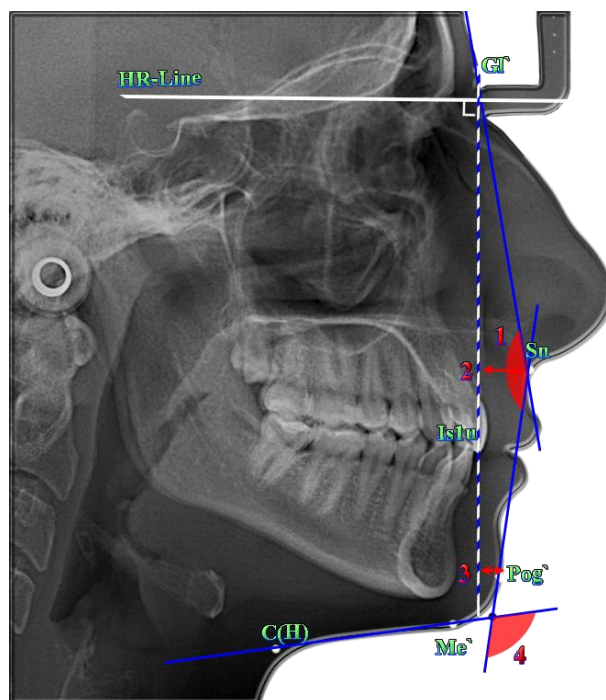


Fig. 1. Indicators of the soft facial profile structures according to the COGS method, characterizing the shape of the facial profile: 1 – angle Gl'-Sn-Pog'; 2 – distance Gl'-Sn; 3 – distance Gl'-Pog'; 4 – angle Sn-Gn'-C.

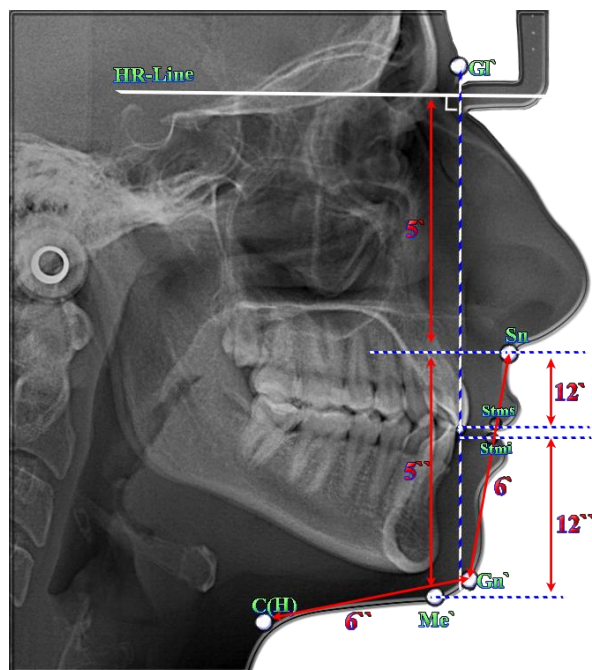


Fig. 2. Calculated indicators of the soft facial profile structures using the COGS method, characterizing the shape of the facial profile: 5 – ratio $G1'-Sn(5')/Sn-Me'(5'')$; 6 – ratio $Sn-Gn'(6')/C-Gn'(6'')$; and the position and shape of the lips: 12 – ratio $Sn-Stms(12')/Stmi-Me'(12'')$.

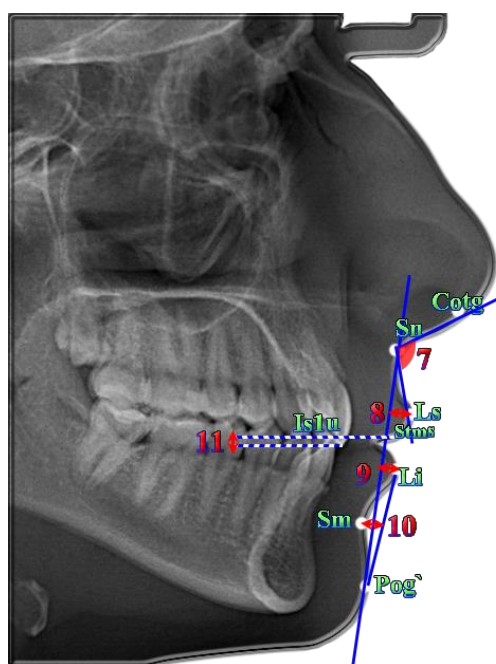


Fig. 3. Indicators of the soft facial profile structures according to the COGS method, characterizing the position and shape of the lips: 7 – angle $Cotg-Sn-Ls$; 8 – distance $Ls-(Sn-Pog')$; 9 – distance $Li-(Sn-Pog')$; 10 – distance $Sm-(Li-Pog')$; 11 – distance $Stms-I$.

The determination of the facial type was carried out in accordance with the

values of the Garson morphological index.

The limits of the percentile range of the obtained indicators were determined in the licensed package “Statistica 6.0”.

Results and discussion. As a result of the conducted studies in YM and YW with orthognathic bite with different types of faces, the limits of the percentile range of the magnitude of linear, angular measurements and ratios of indicators of the structure of the soft facial profile, the shape of the facial profile and the position and shape of the lips were established:

- the magnitude of the angle $Gl'-Sn-Pog'$ – in YM and YW with a very wide face type, respectively $10.0 - 11.0^\circ$ and $6.0 - 13.0^\circ$; in YM and YW with a wide face type, respectively $9.0 - 19.0^\circ$ and $8.0 - 15.0^\circ$; in YM and YW with an average face type, respectively $7.0 - 16.0^\circ$ and $11.0 - 17.0^\circ$; in YM and YW with a narrow face type, respectively $4.5 - 15.5^\circ$ and $10.0 - 16.5^\circ$;

- the value of the distance $Gl'-Sn$ – in YM and YW with a very wide face type, respectively $5.0 - 14.0$ mm and $4.0 - 7.0$ mm; in YM and YW with a wide face type, respectively $4.0 - 11.0$ mm and $2.0 - 7.0$ mm; in YM and YW with an average face type, respectively $3.0 - 9.0$ mm and $1.0 - 6.0$ mm; in YM and YW with a narrow face type, respectively $2.5 - 8.0$ mm and $4.0 - 8.5$ mm;

- the value of the distance $Gl'-Pog'$ – in YM and YW with a very wide face type, respectively $4.0 - 11.0$ mm and $-2.0 - 6.0$ mm; in YM and YW with a wide face type, respectively $-6.0 - 7.0$ mm and $-5.0 - 2.0$ mm; in YM and YW with an average face type, respectively $-6.0 - 5.0$ mm and $-10.0 - -1.0$ mm; in YM and YW with a narrow face type, respectively $-4.5 - 4.0$ mm and $-5.5 - 2.0$ mm;

- the value of the $Sn-Gn'-C$ angle – in YM and YW with a very wide face type, respectively $111.0 - 113.0^\circ$ and $97.0 - 110.0^\circ$; in YM and YW with a wide face type, respectively $108.0 - 118.0^\circ$ and $99.0 - 112.0^\circ$; in YM and YW with an average face type, respectively $101.0 - 114.0^\circ$ and $97.0 - 112.0^\circ$; in YM and YW with a narrow face type, respectively $104.5 - 113.0^\circ$ and $103.0 - 112.0^\circ$;

- the value of the $Gl'-Sn/Sn-Me'$ ratio – in YM and YW with a very wide face type, respectively $89.0 - 103.0\%$ and $95.0 - 108.0\%$; in YM and YW with a

wide face type, respectively 91.0 – 101.0 % and 94.0 – 108.0 %; in YM and YW with an average face type, respectively 96.0 – 105.0 % and 92.0 – 109.0 %; in YM and YW with a narrow face type, respectively 101.0 – 111.0 % and 103.0 – 115.0 %;

- the value of the Sn-Gn'/C-Gn' ratio – in YM and YW with a very wide face type, respectively 97.0 – 120.0 % and 94.0 – 110.0 %; in YM and YW with a wide face type, respectively 101.0 – 136.0 % and 98.0 – 124.0 %; in YM and YW with an average face type, respectively 107.0 – 144.0 % and 103.0 – 138.0 %; in YM and YW with a narrow face type, respectively 103.0 – 113.0 % and 113.0 – 128.0 %;

- the value of the Sn-Stms/Stmi-Me' ratio – in YM and YW with a very wide face type, respectively 43.0 – 49.0 % and 40.0 – 47.0 %; in YM and YW with a wide face type, respectively 44.0 – 51.0 % and 44.0 – 53.0 %; in YM and YW with an average face type, respectively 39.0 – 45.0 % and 43.0 – 49.0 %; in YM and YW with a narrow face type, respectively 41.5 – 47.0 % and 42.5 – 49.5 %;

- the value of the angle Cotg-Sn-Ls – in YM and YW with a very wide face type, respectively 104.0 – 110.0 ° and 99.0 – 111.0 °; in YM and YW with a wide face type, respectively 97.0 – 114.0 ° and 100.0 – 113.0 °; in YM and YW with an average face type, respectively 94.0 – 114.0 ° and 106.0 – 118.0 °; in YM and YW with a narrow face type, respectively 94.0 – 107.5 ° and 104.0 – 118.0 °;

- the value of the distance Ls-(Sn-Pog') – in YM and YW with a very wide face type, respectively 3.0 – 4.0 mm and 1.0 – 4.0 mm; in YM and YW with a wide face type, respectively 2.0 – 5.0 mm and 2.0 – 4.0 mm; in YM and YW with an average face type, respectively 2.0 – 4.0 mm and 1.0 – 3.0 mm; in YM and YW with a narrow face type, respectively 3.0 – 5.0 mm and 2.0 – 3.5 mm;

- the value of the Li-(Sn-Pog') distance – in YM and YW with a very wide face type, respectively 0 – 3.0 mm and -1.0 – 3.0 mm; in YM and YW with a wide face type, respectively 0 – 4.0 mm and 1.0 – 3.0 mm; in YM and YW with an average face type, respectively 1.0 – 3.0 mm and 1.0 – 4.0 mm; in YM and YW with a narrow face type, respectively 1.0 – 3.0 mm and 1.0 – 3.0 mm;

- the value of the distance Sm-(Li-Pog') – in YM and YW with a very wide face type, respectively -7.0 – -5.0 mm and -6.0 – -4.0 mm; in YM and YW with a wide

face type, respectively -7.0 – -5.0 mm and -5.0 – -4.0 mm; in YM and YW with an average face type, respectively -6.0 – -5.0 mm and -5.0 – -4.0 mm; in YM and YW with a narrow face type, respectively -7.0 – -5.0 mm and -6.0 – -5.0 mm;

- the value of the distance Stms-I – in YM and YW with a very wide face type, respectively 1.0 – 2.0 mm and 2.0 – 3.0 mm; in YM and YW with a wide face type, 1.0 – 3.0 mm and 2.0 – 3.0 mm, respectively; in YM and YW with a medium face type, 2.0 – 4.0 mm and 2.0 – 4.0 mm, respectively; in YM and YW with a narrow face type, 2.0 – 3.5 mm and 1.5 – 3.0 mm, respectively.

Conclusions. In Ukrainian YM and YW with orthognathic bite with very wide, wide, medium and narrow facial types, the limits of the percentile range of cephalometric parameters by the COGS method were established, which characterize the structure, profile of the soft tissues of the face and the position and shape of the lips. By facial type, pronounced differences were established only for the Sn-Gn'/H-Gn' ratios in YW and Gl'-Sn/Sn-Me' in YM; and pronounced differences were established only for the Gl'-Sn and Sm-(Li-Pog') distances.

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