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Original article

Cephalometric norms among a sample of Yamani adults

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ABSTRACT

Background: Cephalometric norms are decisive in diagnosis and treatment planning which differ in morphological feature among different ethnic and racial group. The aim of this study was to establish the cephalometric standards for skeletal and dental relationships for Yemeni population.

Material and methods: One hundred ninety-four Yemeni university students (105 females and 89 males) aged 18–25 years, were selected from dental students in Sana'a. All participants had Class I occlusion with normal growth, facial symmetry, and no previous orthodontic, orthopedic or maxillofacial surgery treatment. A Lateral cephalometric X-ray film was taken from each selected students. Each film was traced and analyzed according to Harvold's Cephalometric Analysis.

Results: Statistical significant differences were reported among genders in the skeletal sagittal relations; SNB, ANB, SNPg and SNBa angles, whereas, SNA angle showed no significant differences. The skeletal vertical inclination also showed statistical significant differences in ML-NL, NL-NSL, ML-NSL and Gn-tgo-Ar variables.

Yemeni males had statistically significant higher upper and lower facial height than female and no significant difference between genders in the dental relationship variable except for the I-NB line which is statistically higher in female.

Conclusion: The results of Yemeni cephalometric features showed ethnic differences in skeletal and dento alveolar relationship, sympathetic of the dento facial pattern of each population will ensure better results of treatment in ascertain optimal facial harmony.

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1. Introduction

Cephalometric norms had been used to determine the location and the severity of any existing dento facial discrepancies and subsequently to evaluate the changes that accompany orthodontic treatment. If the normal pattern and its range of variation could be described, then the abnormal one could be judged by comparison [1,2].

Normal cephalometric features had been established among different races and populations worldwide. It is essential to compare a patient's cephalometric findings with the norms for his or her ethnic values, while considering his or her treatment goals and needs to provide a better and accurate

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diagnostic evaluation and treatment. Differences in the dentofacial relationships of various ethnic groups have been observed by many investigators, and as a result, number of standards have been developed for various racial and ethnic groups [3–10].

Most of Arabic countries had studied there norms [6–13]. To our knowledge no data available about Yemeni population concerning cephalometric features of skeletal and dental variables. Therefore this study will attempt to establish the skeletal and dental cephalometric standard features of Yemeni which are essential in orthodontic diagnosis and treatment planning.

2. Materials and methods

This study had been carried out in Sana'a at three faculties of dentistry. A letter of ethical clearance to conduct the study was obtained from the Dean Faculty of Dentistry, Sana'a University to the Al-Salam and Science and Technology University, I addition a letter of consent was obtained from all participants after explaining the nature and purpose of the research.

Primary screening was done for all dental students in the three universities 1585 students' age 18 to 25 years old. First the aims of the study were explained in the lecture rooms prior to the clinical examination. Students who fulfill the inclusion criteria; normal occlusion with balanced facial profile, full permanent dentition (except for the third molars), Class I molar, incisor and canine relationship, normal overjet and overbite, normal transversal occlusion, well aligned or crowded teeth not more than 2 mm and no previous history of orthodontic treatment were registered. Later on, the selected students were called for X-ray taken according a schedule made with the X-ray center. On the day of X-ray taking, each participant had signed the consent form and worn the Lead apron for protection. The radiographic unit was Pax-flex3D.

Each cephalometric film was placed with the profile to the right on X-ray illuminator box. The tracings were performed on standard acetate paper in a dark room using illuminator box. All radiographs were traced by the main investigator manually; Hard and soft tissue were located on the tracing paper using 0.5 sharp pencil (Figs. 1 and 2).

Cephalometric reference points (Fig. 1):

1. *N - Nasion*: The anterior point of the intersection between the nasal and frontal bones.
2. *S - Sella*: The midpoint of the sella turcica cavity.
3. *Ba - Basion:* The lowest point on the anterior margin of the foramen magnum, at the base of the clivus.
4. *Sp - anterior nasal spine:* The tip of the anterior nasal spine
5. *Point A:* The innermost point on the contour of the premaxilla between the anterior nasal spine and the incisor tooth (referred to as subspinale or subnasale).
6. *Pm - Pterygomaxillare:* The intersection of the posterior contour of the maxilla with the contour of the soft and hard palate
7. *is - incision superius:* The midpoint of the incisive edge of the mean maxillary central incisor.

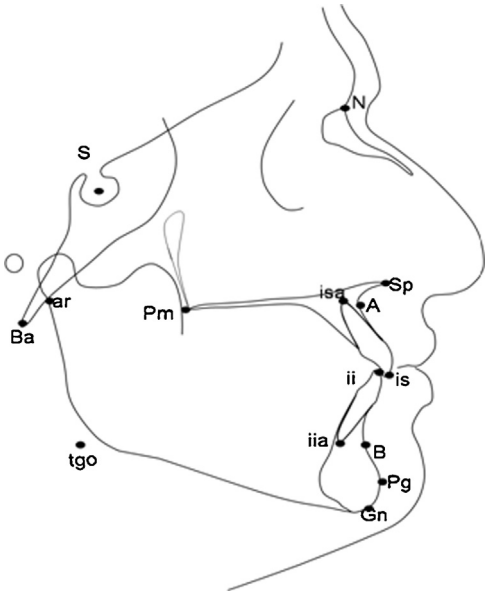

Fig. 1 – Illustrate the hard tissue cephalometric landmarks.

8. *isa - apical point of the maxillary incisor:* The most apical point of the mean maxillary central incisor.
9. *Point B:* The innermost point on the contour of the mandible between the incisor tooth and the bony chin (referred to as supramentale).
10. *Pg - Pogonion*: The most anterior point on the contour of the chin.
11. *Gn - Gnathion*: The center of the inferior point on the mandibular symphysis.
12. *ii - incision inferius*: The midpoint of the incisive edge of the mean mandibular central incisor.

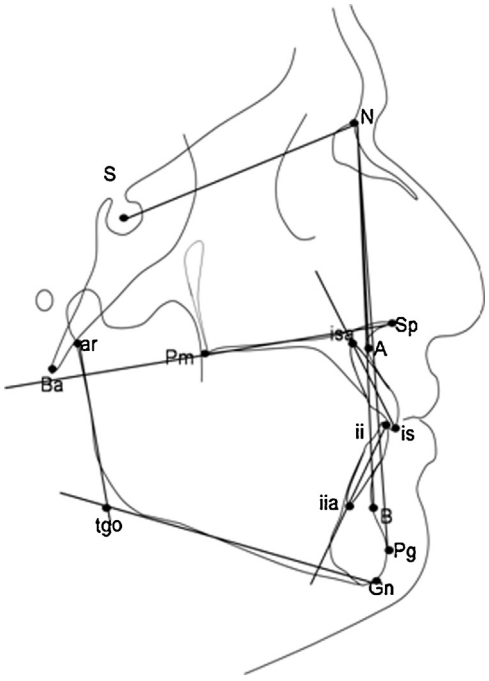

Fig. 2 – Illustrate the cephalometric lines and angles.

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