



The Cephalometric Norms of Various Ethnicities and their Significance

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Evaluating the Cephalometric characteristics of the craniofacial structure is very useful in planning orthodontic treatment, which becomes even better by taking into consideration the facial and cephalometric morphology of the patient's ethnic group. For over 50 years, cephalometric norms have been included within orthodontics. A number of scientists have conducted cephalometric analyses and suggested norms accordingly such as Steiner [1], Jarabak [2], Downs [3], Ricketts [4], Sassouni [5]. However, most of the Cephalometric norms available concern Caucasians, while other ethnic groups are often ignored.

Significantly, some variances between different ethnic groups' dentofacial relationships have been detected, which encouraged researchers to develop standards for different races and ethnicities. So far, the cephalometric norms of Arab people have been the concern of very few researchers. For example, Bishara, *et al* [6]. developed cephalometric norms concerning male and female teenagers from Egypt and drew a comparison between and a matched Iowa teenager sample. A strong similarity between the two samples was found regarding the whole facial morphology. Similarly, Hamdan and Rock [7] studied cephalometric standards of Jordanians. They made a comparison between the cephalometric norms they developed for the Jordanian population studied and the Eastman standards and concluded that the Jordanian sample has a shorter lower face and proclined upper and lower incisors compared to the British sample.

Although facial skeleton and its soft tissues drape are effective factors in the overall facial balance, the majority of the available studies focus on determining the teeth position based on the

skeletal structure. Nonetheless, scarce research considered the soft tissue as an element in the profile assessment including Ricketts esthetic plane [4], Holdaway analysis [8] and Burstone's soft tissue analysis [9].

Moreover, the last ten years witnessed an increase in the importance of facial and dental esthetics. In fact, a paradigm shift has taken place in the field of orthodontics where esthetics became central, particularly regarding the soft tissues surrounding the mouth. However, facial esthetics is a subjective issue because harmonized and balanced facial components are not always attractive. Holdaway [10] stated that patients should be given the optimum balance and harmony of the facial components because it is crucial to the psychological and social development and self-image of young people.

The facial variances among different ethnic groups such as Caucasian [11], Mexican American [12], Chinese [13-15], Japanese [16-20], Korean [21,22], and Turkish [23] have been the subject of some studies. However, there is a paucity of studies attempted to develop soft tissue cephalometric norms for some ethnic groups in the Middle East, although facial esthetics is as important to these groups as to western ethnicities. In fact, history is abundant with beauty recipes and human being related to all cultures have made many attempts to be more beautiful and attractive [24]. Currently, many young people around the globe undergo orthodontic treatment and orthognathic surgeries to become more beautiful and attractive. Therefore, developing hard and soft tissue cephalometric norms for all ethnic groups is a necessity at present as treatment plans are arranged according to these norms [25].

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