

# The Difference in Cephalometric Characteristics of Class II Division 1 between Chinese and Yemeni Population.

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## ABSTRACT

**Background:** There are many differences between ethnics, specially between Asian and other ethnics these differences mostly return to the size of nose and thickness of chin, that can affect on the orthodontic treatment. **Methods:** 75 lateral cephalometric radiographs of skeletal class II division 1 subjects younger than 18 including 35 Yemeni (20male, 15female) and 40 Chinese (20male 20female), with ANB angle more than 4°, younger than 18 years old. **Results:** SNA and SNB angles showed a significant difference ( $P < 0.05$ ), and highly significant difference in YAXIS ( $P < 0.01$ ). **Conclusion:** More protrusion of maxilla and less retrognathic mandible in Chinese population than Yemeni population.

**Keywords:** Cephalometric, Class II, Yemen population

## INTRODUCTION

In 1931, Broadbent introduced Bolton –braodbend cephalometer for growth study,<sup>[1]</sup> in the same year Hofrath published his technique with some differences from that of Broadbent,<sup>[2]</sup> in 1937 Broadbent applied his technique on the growth study.<sup>[3]</sup>

Objectives of cephalometric analysis are: to knowing the problem that the patient has, to compare between one person with other person and the person condition after and before treatment, classify certain description in to certain groups and keep all this information to use in the research and for parent.<sup>[4]</sup>

Many attempts have been made to determine the normal value of the hard and soft tissue as Down 1948,<sup>[5]</sup> Steiner 1953,<sup>[6]</sup> Tweed 1954,<sup>[7]</sup> Marrisfield 1966,<sup>[8]</sup> Holdaway 1983, 1984.<sup>[9,10]</sup>

## MATERIALS AND METHODS

The sample implied 75 lateral cephalometric radiographs of skeletal class II division 1 subjects younger than 18 including 35 Yemeni (20male,

15female) and 40 Chinese (20male, 20female). Yemeni subjects were randomly selected from different private clinics in Yemen. While Chinese subjects were randomly collected as well from Tongji Hospital in Wuhan city.

The subjects were to be with ANB angle more than 4°, younger than 18 years old without any history of trauma, maxillofacial surgery or orthodontics, the landmark, angles, and linear measurements in this study was executed manually on the acetate papers with 0.5 pencil. Statistical analysis was then performed using computer package IBM SPSS Statistics v24

The land mark traced on the cephalometric radiographs

**Sella:** the point representing the midpoint of the pituitary fossa or sella turcica. It is a constructed point.

**Nasion:** most anterior point in the mid-way between the frontal and nasal bones on the frontonasal suture.

**Orbitale:** lowest point on inferior bony margin of the orbit.

**Point A:** deepest point in the midline between anterior nasal spine and the crest of the maxillary alveolar process.

**Point B:** deepest point in the midline between the alveolar crest of the mandible and the mental process.

**Pogonion:** most anterior point of the bony chin in the median plane.

### The Angles

**SNA:** Sella-Nasion- point A angle.

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**SNB:** Sella-Nasion- Point B angle.  
Y axis angle is the angle formed by intersection of sell-gnathion line with FH.

difference ( $P < 0.05$ ) between Chinese and Yemeni subjects in terms of SNA and SNB angles and highly significant difference in YAXIS ( $P < 0.01$ ). Chinese subjects appeared to have more protrusive maxilla and more protrusive mandible versus Yemenis, while ANB assessment exposed no significant difference ( $P > 0.05$ ) [Table 1].

**RESULTS**

The statistical analysis on protrusive maxilla and protrusive mandible showed a significant

**Table 1: Statistic analysis comparison between Chinese and Yemeni groups.**

Variable	Chinese N=40		Yemeni N=35		T value	P value
	MeanSD	SD	Mean	SD		
Angles degree						
SNA	81.2250	3.49533	78.9500	3.47297	2.920	.005
SNB	75.5125	3.49264	73.1750	3.35420	3.053	.003
ANB	5.7750	1.38189	5.7875	1.65981	-.037	.971
YAXIS	65.6500	3.44220	60.8250	4.12085	5.683	.000

**DISCUSSION**

In this study, the SNA was found to be higher in Chinese than Yemeni, however, both were within the normal range of class I indicating well position of maxilla and In similar studies,<sup>[11-14]</sup> Harris et al. (1972) and Pancherz et al.<sup>[15]</sup> (1997) found a small SNA angle (maxillary retrusion) in Class II groups,<sup>[16]</sup> which was in disagreement with previous study indicated maxillary protrusion as stated by Blair, (1954) and Emad A. A. Al-Khateeb a and Susan N. Al-Khateeb b(2009) who found that class II division I characterized by protrusion of maxilla.<sup>[17,18]</sup> Indicating a retrognathic mandible in population for both Chinese and Yemeni, the results of SNB, displayed a lower rates in Yemeni (73.17) than Chinese (75.5) in which mean more retrognathic in Yemenis than in Chinese, these results were in agreement with previous studies.<sup>[14,18-23]</sup>

Y Axis presented highly significant difference between Chinese and Yemeni as shown in table , based on mean values, Y Axis was higher in Chinese than in Yemenis indicating more vertical growth vector in Chinese, this finding is in accordance with Drelich (1948).<sup>[24]</sup>

**CONCLUSION**

Well position of maxilla in population for both Chinese and Yemeni, with more protrusion of maxilla in Chinese population than Yemeni population, while the mandible was more retrognathic with vertical growth in Yemeni population than Chinese population.

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