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Comparison of Wits Appraisal in Males and Females in Class 1 Malocclusion Patients

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INTRODUCTION:

The introduction of cephalometrics in the diagnosis and treatment planning with the help of anthropometric techniques marked a new age of innovation in the field of Orthodontics. These analyses that were developed and introduced were used to measure skeletal, dental, and soft tissue patterns. A special emphasis was aimed to evaluate the relationship of the mandible to maxilla. Different methods were developed to determine the skeletal anteroposterior jaw relationship, such as Sella-Nasion-A point (SNA), Sella-Nasion-B point (SNB), and A point-Nasion-B point (ANB) angles; point A and pogonion distances to Nasion perpendicular (to Frankfort Horizontal plane (FH), distance between points A and B projected onto FH, and the FH to AB plane angle(1). One of the commonly used and the simplest measurement is the ANB angle. However, studies have shown that the ANB angle can be altered even though the inter-maxillary relationships were unchanged. Different factors have been suggested, including age, spatial position of N point, the upward or downward rotation of the jaw or the SN line, the SN plane change in relation to the occlusal plane, and the degree of facial prognathism.](2) To eliminate the influence of these factors, another diagnostic aid was introduced, which was originally described by Jenkins in 1955 and later adapted and modified by Jacobson in 1975, and was referred to as "Wits" appraisal (named after the University of the Witwatersrand, South Africa). Jacobson drew a perpendicular line on the lateral cephalometric head film tracing from points A and B on the maxilla and the mandible, respectively, to the occlusal plane.(3) The occlusal plane was defined as the line drawn through the overlap of the mesiobuccal cusps of the first molars and the buccal cusps of the first premolars. This measurement was less affected by variation in craniofacial physiognomy. (4)The distance between the points of contact of the perpendicular lines on the occlusal plane (AO=A point to occlusal plane and BO=B point to occlusal plane) served as an indicator of skeletal anteroposterior relationship.(5) He found that for adult males, point BO was approximately 1 mm ahead of point AO, mean was −1.2 mm, with standard deviation (SD) of ±1.9 (range, −2 to 4 mm). In adult females, points AO and BO generally coincided, with a mean of −0.1 mm and SD of ±1.8 (range, −4.5 to 1.5 mm). Therefore, in skeletal class-II jaw relationship, point BO would be located behind point AO (a positive reading), whereas in skeletal class-III jaw relationship, the Wits reading would be negative, that is, point BO being forward of point A.(6) Several studies have been conducted to compare the wits appraisal among different races and also among men and women.

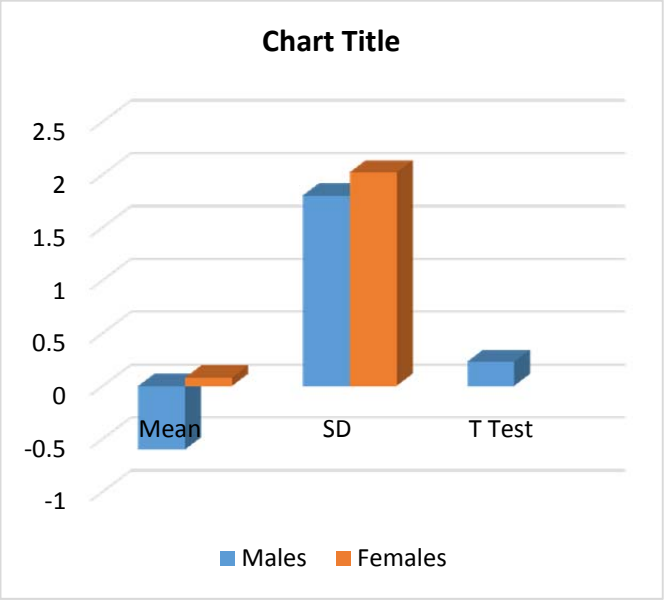
MATERIALS AND METHODS:

The sample consisted of the Lateral Cephalogram of 50 patients who had come for orthodontic treatment at Saveetha dental college. Out of which 25 patients were males and the other 25 were females. Only patients within the age group of 16 to 26 were included in the study. Selection criteria included patients with angles class 1 malocclusion with no gross facial deformities. The cephalograms were taken in Normal Head Position. The values of the Wits appraisal was measured in the cephalogram. And it was analysed to assess the significance of the values in class 1 malocclusion.

RESULTS:

The mean Wits analyses value for males was found to be -0.6. And for females it was 0.08. The standard deviation value for males was found to be 1.8. For females the standard deviation was found to be 2.02. The paired T Test value was calculated as 0.2282, which is not Significant.

	Males	Females
Mean	-0.6	0.08
SD	1.8	2.02
T Test	0.2282	



DISCUSSION:

Cephalometric information is of utmost importance in the correct diagnosis and proper treatment planning of orthodontic cases. Incorrect diagnosis will lead to an inappropriate treatment plan and hence, untoward results that will cause dissatisfaction for the patients or their parents.(7) Most commonly used measurement for the anteroposterior jaw relationship is the ANB angle. This angle is based on a cranial reference plane in relation to points A and B (maxilla and mandible, respectively).(8) However, a number of reports showed that the ANB angle is not consistent even when the inter-maxillary relationships are unchanged. Several factors were suggested to affect this angle, such as age, spatial position of N point, the upward or downward rotation of the jaw or the SN line, SN plane change in relation to Orthodontic diagnosis and treatment planning are largely driven by cephalometric information.(9) The Wits appraisal was introduced to prevent such errors. It provided adequate anteroposterior measurement for skeletal disharmony of the jaw because the reference plane used is neither a cranial nor an extra-cranial plane, but it is a common plane to both dentures, the occlusal plane. However, this plane was observed to be concave in many subjects.(10) Therefore, Jacobson recommended that the most suitable and convenient method of standardizing the plane of occlusion was to join the midpoint of overlap of the mesiobuccal cusps of the first molars and the buccal cusps of the first premolars (functional occlusal lane). Since Wits values were shown not to be affected by age, it was critical to evaluate other variables such as gender, which may affect the normal skeletal, dental, and soft tissues characteristics of an individual.(11) Therefore, identifying the normal features of a specific gender, is considered important for proper diagnosis and treatment planning, and hence, the need for gender and ethnicity specific norms.

CONCLUSION:

There is no significant difference in the wits appraisal between the two genders.

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