

# **Arch dimensions and tooth size ratio in Saudi subjects with Class II, Division 1 malocclusion**

Thesis

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## **Abstract**

The aims of the present study were (1) to measure arch width and tooth size ratios in Saudi subjects with Class II, Division 1 malocclusion, (2) to compare arch width and tooth size ratio between males and females, and (3) to compare arch width and tooth size ratio between normal occlusion and Class II, Division 1 malocclusion in Saudi subjects. The current study consisted of study models of sixty subjects (30 males and 30 females), aged 13 to 20 years. All subjects had Class II, Division 1 malocclusion. An electronic digital caliper was used to measure the arch width and the individual mesiodistal tooth width of all maxillary and mandibular permanent teeth except second and third molars. Descriptive statistics, Pearson's correlation coefficient and independent t-test were used for data analysis. The result obtained showed that the means of the maxillary intermolar width I, the maxillary intermolar width II, and the maxillary intercanine width were  $49.63 \pm 3.07$ ,  $44.85 \pm 2.84$ , and  $33.41 \pm 2.28$  respectively. The means of the mandibular intermolar width I, the mandibular intermolar width II, and the mandibular intercanine width were  $43.99 \pm 2.69$ ,  $40.41 \pm 2.53$ , and  $26.26 \pm 1.72$  respectively. The anterior ratio and the overall ratio in Saudi subjects with Class II, Division 1 malocclusion were  $77.65 \pm 2.79$  and  $91.93 \pm 2.08$  respectively. The arch widths and the tooth size ratios were larger in males than that of females. The results also showed that the arch widths were slightly smaller in Class II, Division 1 malocclusion compared to Class I normal occlusion. Significant difference was observed only in the maxillary intermolar width II. There were no significant differences in the anterior ratio and the overall ratio between

Saudi subjects with Class II, Division 1, and Saudi subjects with Class I normal occlusion, and Bolton's results. Knowledge of arch width and tooth size ratio that is associated with Class II, Division 1 malocclusion is helpful in determining orthodontic treatment goals and likely post-treatment sequelae for this malocclusion.