

**KORELASI ANTARA BENTUK LENGKUNG MAKSILA DAN MANDIBULA
DENGAN RASIO UKURAN GIGI PADA ANALISIS BOLTON**

Pada Pasien Maloklusi *Angle* Kelas I, Kelas II dan Kelas III Rumah Sakit Gigi dan
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ABSTRAK

Latar Belakang: Dalam tulisan ini, dijelaskan rasio ukuran gigi maksila dan mandibular yang proporsional dan bentuk lengkung adalah antara aspek penting yang menentukan diagnosis dan macam perawatan ortodonti pada pasien maloklusi. Pengukuran rasio ukuran gigi dan bentuk lengkung mudah dilakukan dengan menggunakan studi model pra-perawatan. Dengan ini, hubungan antara bentuk lengkung dan rasio ukuran gigi mampu memberi gambaran pendahuluan tentang macam perawatan pada pasien maloklusi. **Tujuan:** Untuk mempelajari tentang korelasi antara bentuk lengkung maksila dan mandibula dengan rasio ukuran pada analisis Bolton gigi pada pasien maloklusi *Angle* kelas I, kelas II dan kelas III. **Bahan dan Metoda Penelitian:** Sejumlah 135 model studi telah dipilih dengan mengikut kriteria inklusi dan dibagikan dengan 3 kelompok maloklusi menurut *Angle* yaitu kelas I, kelas II dan kelas III. Penelitian ini dilakukan dengan cara menganalisa data yang diambil dari pengukuran rasio gigi maksila dan mandibular dengan menggunakan rumusan analisis Bolton. Bentuk lengkung dikategorikan sebagai *ovoid*, *square* dan *tapered* dengan menggunakan rumusan matematika dengan mengukur lebar dan tinggi interkaninus, interpremolar dan intermolar dengan menggunakan *vernier caliper digital* dengan tingkat ketelitian 0.01mm (*Gauge Block* No.020048). **Hasil:** Secara keseluruhan hasil penelitian menunjukkan tidak korelasi antara antara bentuk lengkung dan rasio ukuran gigi dengan menggunakan analisis Bolton. **Kesimpulan:** Rasio ukuran gigi tidak dipengaruhi oleh bentuk lengkung yang sangat bervariasi dan individualistik tetapi dimensi lengkung dapat memberi gambaran tentang diskrepansi ukuran gigi melalui analisis *Bolton* yang dapat membantu dalam menentukan macam perawatan.

Kata Kunci: Maloklusi *Angle* kelas I, kelas II dan kelas III, bentuk lengkung, rasio ukuran gigi, analisis *Bolton*

**CORRELATION OF MAXILLARY AND MANDIBULAR ARCHFORM WITH
TOOTH SIZE RATIO USING BOLTON ANALYSIS**

*(Among patients with Angle's malocclusion class I, class II and class III at Universitas
Airlangga Orthodontic Specialist Clinic)*

Abstract

Background: Analysis of study model has been used for three dimensional evaluation in maxillary and mandibular archform with the relationship of occlusal which can be calculated using few analysis using arch length, archform dimension and mesiodistal tooth size. Malocclusion can be detected if there is discrepancy or surplus of tooth material either in maxillary archform or mandibular archform. According to Bolton (1962), tooth size ratio estimation is crucial for treatment planning in orthodontics because it can retrieve an ideal proportion of interarch tooth material .. Archform is one of the important component that has to take into account in orthodontic treatment planning since it's highly can relapse after an orthodontic treatment. So based on the explanation above, relationship between archform and tooth size ratio using Bolton analysis need to be evaluated so this could help to determine extraction or non-extraction treatment. **Objective :** To determine the correlation of maxillary and mandibular archform with tooth size ratio using Bolton analysis among patients with Angle's malocclusion of class I, class II and class III in Javanese population. **Method:** Total of 135 study models were selected using inclusion criteria and distributed into 3 major types of Angle's malocclusion. Mesiodistal width of all 12 teeth were measured using digital Vernier caliper with 0.01 least count (Gauge Block No.020048) in both maxillary and mandibular arch. The measurement were used to calculate Bolton's anterior and overall ratio. Archform dimension which are width and depth of intercanine , interpremolar and intermolar were calculated based on anatomy landmark on study model using Vernier caliper with 0.01 least count (Gauge Block No.020048). Archform was classified into ovoid, square and tapered using mathematical formula: $(CD/MD)/(CW/MW)$. **Result:** No significant correlation correlation of maxillary and mandibular archform with tooth size ratio using Bolton analysis among patients with Angle's malocclusion of class I, class II and class III in Javanese population. **Conclusion:** No correlation was found between maxillary and mandibular archform and tooth size ratio using Bolton analysis among patients with Angle's malocclusion of class I, class II and class III. Tooth size and archform found was varied among different population and effects by genetic and environmental factors.

Keywords : Maxillary and mandibular Archform, tooth size ratio, Bolton analysis, Angle's malocclusion of class I, class II and class III.