

**UNIVERSITI TEKNOLOGI MARA**

**DEVELOPMENT OF  
BIMAXILLARY DENTAL  
PROCLINATION INDEX THROUGH  
DENTAL CAST ANALYSIS**

**RUQOYYAH MUSLIMAT BINTI OTHMAN**

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## ABSTRACT

The severity of bimaxillary proclination (bimax) cannot be objectively assessed because there's no index to ration treatment. This study aimed to identify the prevalence of bimaxillary protrusion/proclination among orthodontic patients attending postgraduate orthodontic clinic at Faculty of Dentistry, Universiti Teknologi MARA and to categorise the severity and develop an index specific for bimaxillary proclination. The first part of the preliminary study was performed to obtain prevalence data of bimaxillary protrusion in general in which 100 profile photographs were chosen from postgraduate orthodontic residents patient's list. They were analysed for its bimaxillary protrusion features by 2 operators at 2 occasions. In the second part of the preliminary study, 259 (first occasion) and 40 (second occasion) of profile and intraoral photographs were analysed by five assessors for skeletal and dental Class I bimax. Subsequently, 160 study casts of bimaxillary proclination cases were selected. All study casts were number coded. The features of bimaxillary proclination comprising of upper and lower incisors inclination and overbite measurement were evaluated and its severity graded into 4 main categories of B1, B2, B3 and B4 in the initial stage of Bimaxillary Dental Proclination (BDP) Index development. Subdivision were introduced into the index to indicate the inclination towards different malocclusions (ie: B1, B2/II, B2/III, B3/II, B3/III, B4/II, B4/III). Calibration exercises of the study casts were completed by 4 assessors to test for inter-rater agreement. After 2 weeks interval, 2 assessors rescored the study casts to test for intra-rater agreement. BDP Index was then tested among 4 orthodontists and 10 postgraduate orthodontic students after BDP index was further simplified into B1, B2(II), B2 (III), B3(II) and B3(III). Statistical analysis using SPSS (version 23) and Stata (version 13) was used to obtain kappa score to assess the agreement among assessors. It was found that, 31-37% were considered to show bimaxillary protrusive profile. Whilst the prevalence of skeletal and dental Class I bimax ranging from 28%-33% and 38%- 40% respectively. Calibration and validation of BDP index scoring among 4 assessors showed good inter-rater agreement with the score of 0.73 and during index testing, inter-rater agreement showed moderate agreement (0.45). Therefore, BDP index can be considered to be applied for bimax populations with fine tunings and recalibration of the index.

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