UNIVERSITI TEKNOLOGI MARA

DEVELOPMENT OF INDEX OF MIXED DENTITION MALOCCLUSION

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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Postgraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Early diagnosis and appropriate treatment are among the crucial components of comprehensive dental health care. Lack of data on the prevalence of malocclusion in the mixed dentition stage children underestimates the severity of malocclusion that can benefit from interceptive orthodontic. This research aims to determine the prevalence of malocclusion, and orthodontic treatment need amongst multi-ethnic Malaysian primary school children, and subsequently to develop and to test the validity and reliability of Index of Mixed Dentition Malocclusion (IMDM). It is a cross-sectional study with stratified random sampling based on the main ethnic composition. Clinical examinations were carried out, and study models were fabricated. The data collection was conducted at seven national primary schools in Sungai Buloh, Selangor. A total of 413 subjects (9-11 years old) were included in this study, and the data were analysed accordingly. The development of IMDM was carried out at the Universiti Teknologi MARA, Malaysia, with face and content validity being assessed using qualitative and quantitative methods. For the qualitative method, the IMDM draft was presented at two scientific meetings, whilst for the qualitative method, the face and content validity were determined according to the Content Validity Index (CVI) which comprised of item-level content validity index (I-CVI) and scale-level content validity index (S-CVI/Ave). Twelve assessors involved in assessing the face validity, while 8 panels of expert responsible in assessing content validity of IMDM draft. The validated IMDM was then undergoing validity testing, and the agreement was analysed using Fleiss Cohen Kappa test. Results show that the prevalence of malocclusion was high (76.0%) with the Class II predominating, while Class III was the least. There was no statistically significant difference between occlusal status to gender and ethnicity ($p>0.05$). Crowding was found to be the most predominant occlusal discrepancy (54.0%). Despite the high percentage of malocclusion, there was a low orthodontic treatment need as shown by the cumulative percentage of IOTN (DHC) grade 4 and 5 (30.5%). The Chinese ethnicity showed a significantly higher prevalence of definite need for orthodontic treatment compared to the other ethnicities with adjusted **$p=0.0007$**. On the other hand, early loss of deciduous second molar was frequently found in the Malay ethnicity **($p=0.01$)**. The qualitative validity of IMDM revealed that the IMDM draft required amendments. After modifying the IMDM draft, the amended IMDM showed an acceptable level of face and content validity with S-CVI/Ave: 0.87 and 0.86, respectively and excellent levels for both inter and intra-examiner reliability (Kappa = 1.00). In conclusion, this study provides information on the prevalence of malocclusion among Malaysian children, with subsequent development of validated and reliable Index of Mixed Dentition Malocclusion (IMDM).

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