

UNIVERSITI TEKNOLOGI MARA

**DESIGN AND DEVELOPMENT OF A
MOUTH SPACER FOR
DENTAL SURGERY APPLICATIONS**

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of the requirements for the degree of
Master of Science

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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 result of my own work, unless 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 Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.


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ABSTRACT

Most of patients have difficulty to hold his/her mouth open for a period of time during dental procedures due to jaw and muscle fatigue. Therefore, mouth spacer were used to help keep the mouth open wide enough for the dentist to perform the required procedures. However, the commonly used mouth spacer could cause a number of internal mouth and gums injury. Eventhough some devices have been designed for same purpose but some tend to be unnecessarily complicated while others tend to be difficult to operate. Hence, there is a need for an improved of mouth spacer to hold the patient's mouth open without compromising patient's comfort and psychological feelings and also limit the tongue movement to avoid it impeding the dentist's view inside patient's mouth during dental procedures. Therefore, the purpose of this study is to design and develop a combination of mouth spacer and tongue depressor to maximize access inside patients' mouth. Targeted age group is in the range of 18-40 years old who mostly dealing with dental care treatment. Determining maximum mouth opening for targeted age group of Malaysian conducted and validated with previous reported data was included. For design concept development, CATIA V5R18 software, Rapid Prototyping machine (RPM) and utilization of Pugh Method were used for idea and concept generation, product presentation and concept evaluation. In facts, the simulation of Finite Element Analysis, FEA was conducted on the product design to evaluated product credibility in provide wide field of dental operation for Asian user. Moreover, this exploration study could lead to the development of an efficient, easy-to-use, and user's friendly device as compared to conventional devices.

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