

UNIVERSITI TEKNOLOGI MARA

**CORRELATION BETWEEN
MOLAR-INCISOR
HYPOMINERALIZATION, STRESS
AND FAMILY FUNCTIONING IN 7-9
YEARS OLD CHILDREN IN
FUJAIRAH, UNITED ARAB
EMIRATES**

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ABSTRACT

Molar-Incisor Hypomineralization (MIH) is a common dental developmental anomaly characterized by weakened structure of the enamel. Teeth with MIH tend to be weaker and more susceptible to caries and breakage. As a result of this compromised structure of enamel, pediatric patients suffer from a series of problems found to have negative impact not only on the oral cavity, but also on oral health-related quality of life (OHRQoL). Unfortunately, the etiology of MIH has not been understood. Several factors were suggested, yet evidence is still weak to have a solid and clear understanding of the phenomenon. Thus, this study aims to assess the prevalence of MIH in children of the city of Fujairah, United Arab Emirates and to study the effect of stressful events during amelogenesis (during pregnancy and 0-6 years of child's life) on the tendency of children to have MIH, and how the quality of family functioning may positively or negatively interfere to alternate the stressful events' outcomes on having MIH. A total of 162 children between the ages of 7 and 9 years were included in this retrospective study, as were their respective parents. The children were examined for MIH following Ghanim et al (2015) guidelines. Meanwhile, questionnaires centering on stress and family functioning were given to the parents. Statistical analysis was performed using the Mann–Whitney U test and independent samples T-test. The study found that MIH prevalence was 38.9% in the sample. No significant differences were found between genders with higher cases among females, but differences were statistically significant between age groups 8 and 9 years old ($p < 0.05$). Most of the lesions were mild (62%). Lower right first permanent molars had the highest occurrences and severity of MIH lesions. A significant correlation between stress as a contributing factor and MIH was found; children with higher stress scores had higher occurrences of MIH. On the contrary, family functioning quality was not found to have a direct correlation with MIH. MIH prevalence was high in the city of Fujairah, UAE. Stress is correlated to MIH and is potentially one of the main causal factors that contribute to the development of the defect. More studies utilizing the standardized criteria are required for valid comparisons. Further research on the etiology of MIH is also needed.

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CHAPTER ONE

INTRODUCTION

Molar-Incisor Hypomineralization is considered to be one of the most common dental defects; with a prevalence ranging from 2.4% to 46.6% (Dourado et al., 2021; Saitoh & Shintani, 2021). This developmental dental anomaly affects the enamel; the outermost layer of the crown, which manifests as a weakened structure. This defect develops in the early stages of amelogenesis, which refers to the developmental process of the enamel, during which, and for unknown reasons, this process can be disrupted resulting in a poorly constructed structure. The formed enamel presents itself in differing variants; it may be as mild as a slight enamel discoloration or it may manifest as a complete enamel breakdown; the pathogenesis of the defect has yet to be definitively established (Ghanim et al., 2017).

Teeth with MIH have a tendency to be weaker and have a higher susceptibility of developing caries, as well as being more prone to breakage. Areas of the enamel affected by MIH were found to be of poorer quality due to reduced mineral content and less robust physical properties. (Lu et al., 2008). The affected enamel inevitably fails to withstand masticatory forces exerted upon it and eventually breaks down. On the other hand, the same poor-in-minerals structure is highly porous (Lu et al., 2008), attracting more plaque and subsequent cariogenic activities.

In severe cases of MIH where weakened enamel structure breaks down, affected tooth becomes a constant source of discomfort for the child. Exposed dentinal tubules underneath the broken enamel leads to dental hypersensitivity which causes the affected individual to experience unpleasant reactions to hot and cold foods and drinks. The affected child deliberately avoids certain foods and beverages to evade triggering the unpleasant sensations; in severe cases, the child may entirely avoid the act of biting and chewing on the affected side. The previously mentioned act has the potential of being detrimental to the child's health as the foods and drinks avoided could be essential for growth and development. Problems do not stop here. The broken enamel creates a cavity that facilitates