

Prevalence of Molar-Incisor Hypomineralization in South Texas

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Introduction

Molar-Incisor Hypomineralization (MIH) is defined as lack of mineralization of systemic origin of 1-4 permanent first molars, frequently associated with affected incisors (3). Clinically, it appears as a hypomineralized lesion of enamel that has a distinct border. Teeth can be affected at variable severity and can vary in color ranging from white, yellow or brown discoloration (4,5). The reported prevalence of MIH vary considerably worldwide, ranging from 2.8% in China to 40.2% in Brazil, no data is available from of the United States (1,2,3).

The aim of this study was to determine the prevalence of MIH in the permanent dentition of children aged 6 to 14 years old in South Texas. To our knowledge, this is the first report on the prevalence of MIH in the United States. The second objective of this study was to analyze the distribution pattern of hypomineralized teeth between different genders, ethnicity and locations, and to specify the more commonly affected permanent teeth.

Clinical appearance of enamel hypomineralization according to the European Academy of Pediatric Dentistry (EAPD) criteria (6).



Materials and Methods

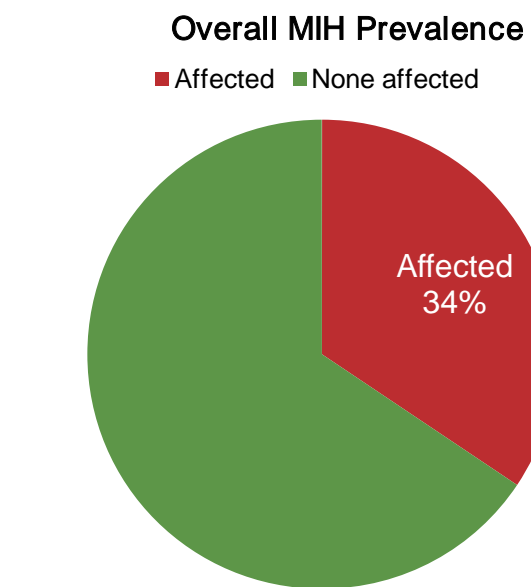
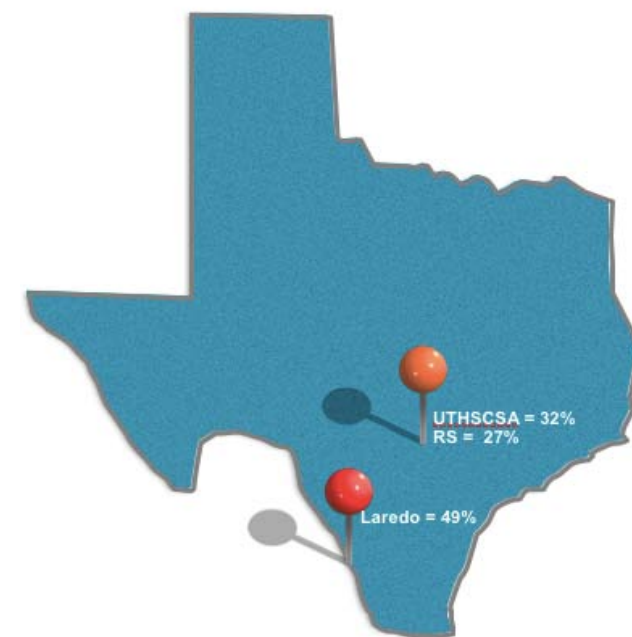
Preliminary data from a larger research project is reported. The research protocol was approved by Institutional Review Board (IRB). In a cross-sectional design, patients receiving their initial or semiannual comprehensive dental examination were invited to the study. All participating dentists were trained and calibrated for diagnosing MIH.

Pediatric patients were recruited from dental practices through the South Texas Oral Health Network (STOHN) and three clinics affiliated with the Pediatric Dentistry Postgraduate program at University of Texas Health Science Center at San Antonio (UTHSCSA). Inclusion criteria for the study were 6-14 years old children with minimum of 1-12 permanent molars and/or incisors erupted. Exclusion criteria were absence of erupted and/or partially erupted permanent first molar or incisor at the time of examination and enamel defects caused by dental fluorosis, amelogenesis imperfecta, dentinogenesis imperfecta, tetracycline, local infection or trauma.

Demographic information and possible risk factors for hypomineralized enamel were obtained using a survey. Permanent first molars and incisors were evaluated and tooth surfaces were scored according to EAPD criteria. The criteria categorizes defects according to its severity; a clearly demarcated opacity at the occlusal or buccal part of the crown of more than 1 mm will be classified as a score 1. The score will increase depending on the severity of the affected enamel to a score 4 which is defined as missing teeth that were extracted because of severe breakdown of MIH as documented in the patient's record (6).

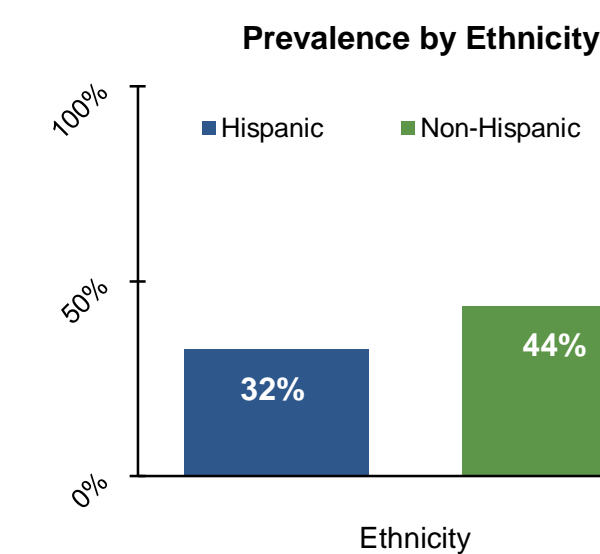
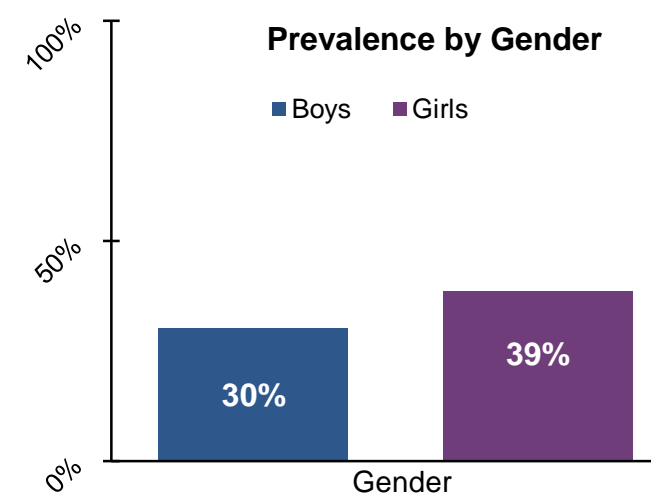
Results

Data was analyzed by examining the frequencies, percentages at 95% confidence intervals. Out of 346 investigated children, 119 children were diagnosed with MIH. The overall prevalence of MIH on permanent molars and incisors was 34.4% in the study population.



MIH was the highest at clinics at Laredo (n=22; 48.9%), followed by STOHN (n=28; 48.3%), UTHSCSA (n=22; 32.4%) and lowest at Ricardo Salinas dental clinic (n=47; 26.9%).

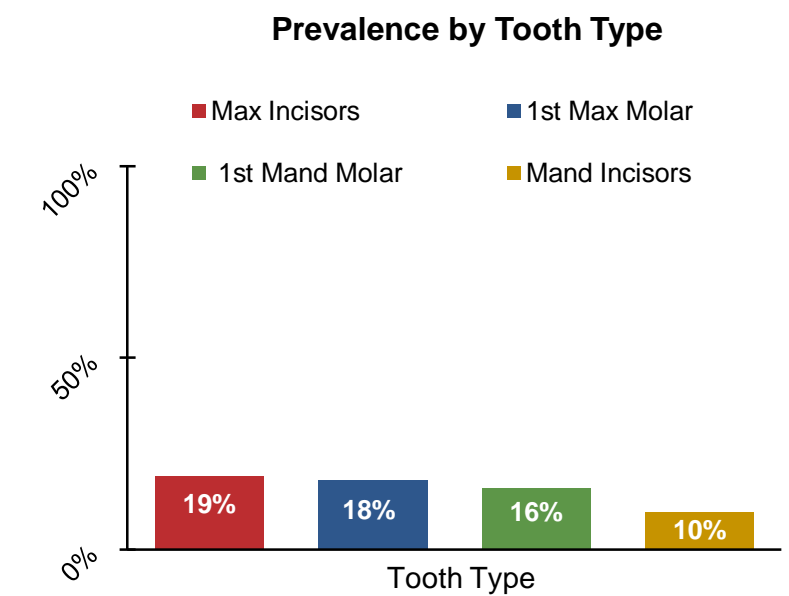
The study sample consisted of 179 (51.7%) females and 167 (48.3%) males. The frequency of MIH affected females and males was 69 and 50 respectively. Therefore, 38.5% females and 29.9% males were affected respectively. The incidence in females was not significantly higher than in males at p<0.05.



Hispanics were represented at 84% (n=251) and Non-Hispanics at 15.6% (n=39). Demineralization in Non-Hispanics (43.6%) is not significantly higher than in Hispanics (32.0%)

Results

The tooth type distribution patterns of MIH were maxillary permanent incisors (n=59; 19.2%) most affected teeth, followed by first maxillary permanent molars (n=63; 18.6%), mandibular molars (n=55; 16%) and lower incisors were least affected at (n=33; 9.8%).



Conclusion

- The prevalence of MIH in South Texas children is 34.4%. and it is comparable but at the higher end of the range reported in similar studies in other countries.
- The most frequently MIH affected teeth were upper permanent incisors (19.2%) vs. lower incisors (9.8%). Upper first permanent molars were more affected (18.6%) than lower permanent first molars (16.0%).
- More research and epidemiological studies are needed to determine the prevalence from other regions of the US.

A

B

C

Clinical appearance of MIH in 8 years old male patient: (A)-Moderate yellow opacities on right maxillary FPM (MB cusp) and on the left maxillary FPM (lingual surface). (B)- Moderate yellow opacities on the lower four permanent incisors and atypical resin restoration on lower PFM. (C)-Moderate yellow opacities on maxillary and mandibular permanent incisors (incisal edges), and atypical restorations on lower PFM.

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