

ORIGINAL RESEARCH

Prevalence of molar incisor hypomineralization in the school going children

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Received Date: 23 August, 2024

Accepted Date: 25 September, 2024

ABSTRACT

Background: The complex interplay between genetic and environmental factors throughout the early stages of tooth creation leads to developmental issues with teeth. Molar hypomineralization (MH) is another variation of enamel flaws that affects just four permanent first molars (FPMs) and does not impact permanent incisors. The present study was conducted to assess molar incisor hypomineralization prevalence in the school children.

Materials & Methods: 1200 children aged 8-14 years of both genders were screened for the prevalence of MIH according to European Academy of Paediatric Dentistry (EAPD) 2003 diagnostic criteria and severity for MIH was examined using Wetzel and Reckel scale.

Results: Out of 1200 children, 580 were boys and 620 were girls. MIH severity found to be 0 in 1080, 1 in 48 and 2 in 72 children. The prevalence was 10%. The difference was significant ($P < 0.05$). Age group 8-10 years had 35 and 11-14 years had 85 children with MIH. The difference was significant ($P < 0.05$).

Conclusion: The prevalence rate of molar incisor hypomineralization in 8-14 years old schoolchildren was 10%. It was high in 10-14 years age group.

Keywords: Children, permanent incisors, molar incisor hypomineralization

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Introduction

The complex interplay between genetic and environmental factors throughout the early stages of tooth creation leads to developmental issues with teeth.¹ Enamel is a special kind of hard tissue that does not alter throughout life, therefore any abnormality in its growth would cause irreversible damage. Damage to the tooth that occurs during the maturation phase results in quantitative inadequacies, while damage that occurs during the secretory stage creates qualitative enamel faults.²

Molar hypomineralization (MH) is another variation of enamel flaws that affects just four permanent first molars (FPMs) and does not impact permanent incisors.³ There is a specific pattern of enamel defects that affects both molars and incisors. MIH was described as "hypomineralization of one to four permanent first molars (FPMs) systemic origin, often associated with affected incisors."⁴ Numerous

etiological factors have been proposed, including altered environmental conditions, hypoxia that affects ameloblasts, respiratory disorders, high fever-prone childhood illnesses, low birth weight, disruptions in the metabolism of calcium and phosphate, the use of antibiotics, and prolonged breastfeeding exposure to dioxine.⁵ MIH in the developmental stage presents with a number of clinically significant symptoms.⁶ Teeth typically exhibit high responsiveness to heat and cold shortly after eruption. Furthermore, they have a very high risk of tooth decay.⁷ Managing a young child's lack of cooperation, preparing cavities because the demineralized and unaffected enamel borders are often diffuse, achieving anesthesia due to subclinical inflammation of the pulpal cells caused by the porosity of the enamel, and managing repeated marginal breakdown of the restorations due to the altered prismatic morphology in the porous enamel that affects the bonding can all be difficult when

treating teeth with MIH.⁷ In the end, this suggests that regular restorative therapy is required. Consequently, MIH imposes a significant burden on the broader population as well as the individual.⁸The present study was conducted to assess molar incisor hypomineralization prevalence in the school children.

Materials & Methods

The present study consisted of 1200 school going children aged 8-14 years of both genders. All parents

gave their written consent for participation of their children in the study.

Data such as name, age, gender etc. was recorded. The European Academy of Paediatric Dentistry (EAPD) 2003 diagnostic criteria were used to screen children for the prevalence of MIH, and the Wetzel and Reckel scale was used to assess the severity of MIH. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

Results

Table: I Distribution of patients

Total- 1200		
Gender	Boys	Girls
Number	580	620

Table I shows that out of 1200 children, 580 were boys and 620 were girls.

Table: II Determination of severity of molar incisor hypomineralization

Molar incisor hypomineralization	Number	P value
0	1080	0.01
1	48	
2	72	

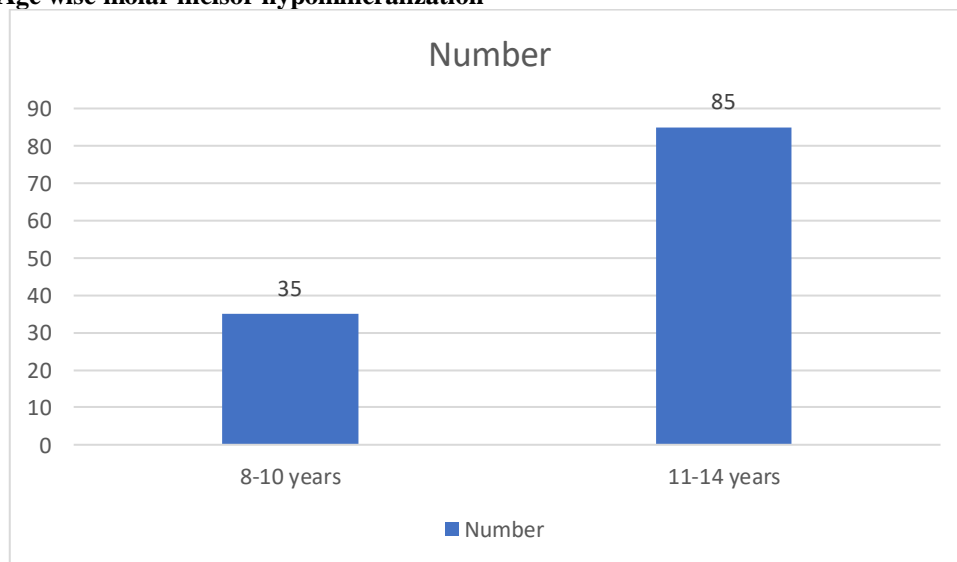
Table II shows that MIH severity found to be 0 in 1080, 1 in 48 and 2 in 72 children. The prevalence was 10%. The difference was significant (P < 0.05).

Table: III Age wise molar incisor hypomineralization

Age group (years)	Number	P value
8-10	35	0.01
11-14	85	

Table III, graph I shows that age group 8-10 years had 35 and 11-14 years had 85 children with MIH. The difference was significant (P < 0.05).

Graph: I Age wise molar incisor hypomineralization



Discussion

Hypoplasia (quantitative defects) and hypomineralization (qualitative errors) in the development of tooth enamel are common in both primary and permanent dentition.^{9,10} It has been discovered that the dental clinic's permanent molars and incisors have an idiopathic deficiency as opposed

to a fluorotic one. Molar Incisor Hypomineralization (MIH) has been proposed as a systemic etiology disease to detect these hypomineralizations.^{11,12} MIH results from ameloblast malfunction at the late stage of mineralization during amelogenesis, which is characterized by a qualitative enamel deficiency. This change results in damaged enamel that is noticeably

higher in protein, which increases porosity, and lower in mineral content, which reduces hardness.^{13,14} The present study was conducted to assess molar incisor hypomineralization prevalence in the school children. We found that out of 1200 children, 580 were boys and 620 were girls. Parikh et al¹⁵ investigated the prevalence and clinical characteristics of MIH in children residing in a western region of India. Prevalence of MIH was 9.2% in the examined population. Males and females were equally affected. Among 12 index teeth involved in the examination, the most commonly affected were in descending order 46, 36, 16, 11 [FDI] and the least 42, 32, and 22. 17.4% of the cases revealed only molars involved, the remaining 72.6% having both molars and incisors affected; all four first permanent molars showed in 23% of the cases while no cases of only affected incisors were found. Of the MIH teeth 77.3% revealed mild defects and 22.7% severe defects. All incisors were mildly affected, as compared with only 67.1% of the molars, the remaining 32.9% being severely affected. As age increased, a statistically significant larger total number and severity level of affected teeth were recorded.

We found that MIH severity found to be 0 in 1080, 1 in 48 and 2 in 72 children. Khan et al¹⁶ determined the prevalence, pattern, and severity of MIH in 8-12-year-old school children. A prevalence of 3.96% (91/2300) for MIH was reported without any gender predilection. Molar hypomineralization showed a prevalence of 1.3% (29/2300) whereas the prevalence for hypomineralization of second primary molars was 1.4% (22/1620). The most common type of defect was type 2 and most of the affected teeth were of grade I. Mandibular molars were more commonly affected compared to the maxillary molars.

We found that age group 8-10 years had 35 and 11-14 years had 85 children with MIH. The prevalence of molar incisor hypomineralization (MIH) in school children aged 8 to 14 was assessed by Ravichandra et al.¹⁷ 2,250 kids in all, ranging in age from 8 to 14, were chosen at random from various schools. The prevalence of MIH was found to be 2.1%, with a higher proportion of mildly severe cases and no sex preference. According to Mittal et al¹⁸, 6.31% of the population has this condition. Permanent incisors (1.19 ± 1.614 /subjects) were less frequently affected than FPMs (2.83 ± 0.874 /subject). With 85% of individuals showing white/creamy opacity without post-eruptive breakdown (PEB), this lesion was the most prevalent. Of the participants, 44% showed the MH phenotype and 56% the M + IH phenotype. In the M + IH phenotype, there was a tendency toward increased severity.

Conclusion

Authors found that the prevalence rate of molar incisor hypomineralization in 8-14 years old school children was 10%. It was high in 10-14 years age group.

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