

Molar incisor hypomineralization incidence among 6–11-year-old schoolchildren of two rural community of Jaipur, India

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Abstract

Background: External conditions affecting the growing enamel, combined with a genetic susceptibility, cause molar incisor hypomineralization (MIH). It happens when the activity of ameloblasts is disrupted during the later stages of amelogenesis, leading onto deficient enamel. Clinically, the damaged enamel shows as white to brown defined opacities.

Aim: The aim of the study is to find out MIH incidence among 6–11-year-old schoolchildren of two rural community of Jaipur, India.

Settings and Design: Among two rural areas of Jaipur, a cross-sectional epidemiological study was undertaken in school kids aged 6–11 years.

Materials and Methods: The 1st permanent molar and incisors were tested for MIH using the diagnostic criteria established by the European Academy of Paediatric Dentistry in 2003.

Results: A total of 490 children aged 6–11 years were evaluated, with MIH being discovered in 30 of them. There were 20 girls and 10 boys among the children that were impacted.

Conclusion: MIH was found in the permanent dentition of 6.12% of schoolchildren in the two villages. Only a small percentage of MIH-affected youngsters have sought dental therapy. To minimize the problem, sufficient awareness and organized preventive and restorative initiatives are essential.

Introduction

External conditions affecting the growing enamel, combined with a genetic susceptibility, cause molar incisor hypomineralization (MIH). It occurs when the activity of ameloblasts is disrupted during the later stages of amelogenesis, leading onto deficient enamel. Clinically, the damaged enamel shows as white to brown defined opacities. In 2001, Weerheijm *et al.* coined the term MIH. Even though the enamel is firm, students reported discomfort and sensitivity on the teeth that have been affected when brushing. MIH is linked to the sudden emergence of cavities in emerging permanent 1st molars.^[1] MIH thought to be produced by disruption of first maturation phases of amelogenesis, resulting in defined opacification. These opacification are higher in carbon and lower in Ca and PO in MIH. Hypomineralized enamel has a higher density than normal enamel portion. Enamel

of MIH-affected molars is lesser than in unaffected sound areas. Enamel deficiencies are most likely caused by a change in the Ca-phosphate balance or a lack of oxygen availability to ameloblasts as a result of these causes. The present study is to find out the MIH incidence among 6–11-year-old schoolchildren of two rural community (Basna and Toda Meena) of Jaipur, India.

Aim

The aim of the study is to find out MIH incidence among 6–11-year-old schoolchildren of two rural community of Jaipur, India.

Materials and Methods

Between January 2020 and February 2020, a cross-sectional epidemiological study was undertaken on a random sample of normal healthy elementary pupils aged 6–11 years in two

villages in Jaipur city, Rajasthan, India: Toda Meena (120 boys and 280 girls) and Basna (46 boys and 44 girls). Data needed for the research were carried out during the Jaipur Dental College's school dental camp program. The school's director granted permission for oral exam of the students. Each participating child's parents signed a written consent form. The oral examination was performed using a sterile mouth mirror and a blunt probe in natural light. Criteria for scoring MIH were according to the European Academy of Paediatric Dentistry. All the surfaces of incisors and permanent first molars were used. SPSS version 20 was used to analyze the data. Fisher's exact test was used to compare the groups as the sample size was smaller.

Inclusion criteria

- Kids 6–11 years old
- Kids whose parents/guardians consented to take part in the study for various treatment procedures
- One of the permanent 1st molars which are affected could be taken for the study.



Figure 1: yellow/brown opacification.



Figure 2: white/creamy opacification.

Exclusion criteria

- Kids with fluorosis and other white spot lesions apart from MIH were excluded from the study
- Kids wearing orthodontic appliances and fixed space maintainers.

Discussion

According to this study, the prevalence of MIH among schoolchildren in two villages of Jaipur city was 6.12%. The differences in prevalence rates between studies in different locations could be due to differences in race, age demographic, and criteria of diagnosis used. The age range of 6–11 years was chosen because at this age, as the first molars might have been erupted. According to the findings of this study, MIH has no gender preference, which is consistent with the findings of other authors. The varied degrees of MIH in incisors and 1st molars suggest that every one of these teeth is sensitive to developmental disruptions in different ways.

In the current investigation, delineated opacities were the most common kind of MIH, with yellow/brown opacification [Figure 1] being more prevalent than white/creamy opacification [Figure 2]. The yellow/brown opacities are said to have more hypomineralized tissue porous structure and poorer enamel, putting them at a higher risk of post-eruptive collapse.^[2] Mandibular 1st molars were shown to be substantially more affected than maxillary molars with hypomineralized flaws in the current investigation.

Results

MIH was detected in 30 of the 490 children tested. Out of the kids 10 were boys, while the remaining 20 children were girls. MIH was found to be prevalent in 6.12% of the sample. Table 1 summarizes the patterns of MIH distribution and prevalence. Girls were more likely to have solely incisor involvement, while males were more likely to have both molar and incisor involvements. The

Table 1: Distribution and prevalence of MIH by gender

Distribution	Boys	Girls	Total
Only incisor	2	9	11
Only molars	5	6	11
Molars and incisors	3	5	8
Total MIH	10	20	30
Total non-MIH	156	304	460

The Fisher's exact test statistic value is 1. The result is not significant at $P < 0.05$. MIH: Molar incisor hypomineralization

Fisher's exact test statistic value is 1. The result is not significant at $P < 0.05$.

Conclusion

MIH was reported to be present in 6.12% of elementary schoolchildren in two villages in Jaipur city. Mandibular tooth is the most affected. There was no gender predilection for the faulty enamel, which was more prone to collapse and cavities as it grew older. To find out the incidence and cause of MIH in different regions of Jaipur, more research is needed.

References

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