

Prevalence Of Molar Incisor Hypomineralization Among Pediatric Dental Patients Visiting A University Dental Hospital-A Cross Sectional Study

Research Article

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Abstract

Molar incisor hypomineralisation (MIH) is a common developmental condition resulting in the developmental enamel defects in first permanent molar and permanent incisors. It appears at the eruption of these teeth. One of the four permanent molars and often incisor could also be affected. Early diagnosis is mandatory since, rapid breakdown of the tooth structure may occur which leads to acute symptoms and complicated treatment. MIH ranges from 2.4%-40.2% worldwide. However very limited data is available from India. This study is done to determine the prevalence of molar incisor hypomineralization among children aged between 7-12 years old. Total of 1435 children out of which 1366 children didn't have dental caries/hypoplasia, 500 children had DC 14 children were diagnosed with MIH. The prevalence of MIH was 1.02% in 7-12 years child population in Chennai. There is a need for proper planned and preventive and restoration program about increasing prevalence of MIH.

Keywords: Demarcated Opacities; First Permanent Incisors; First Permanent Molar; Hypomineralisation; Post Eruptive Break-down.

Introduction

Dental enamel has got some properties which makes it unique tissue. It is called as the hardest tissue in our body and has a very high inorganic matter, mainly hydroxyapatite. The ameloblast which is the building block of enamel has a limited reparative capacity. So, disturbances occurring during the mineralisation of enamel will remain as a permanent marks. Any defects in dental hard tissue or enamel quality are important in understanding the evolution, function, origin and relation to etiological factor behind developmental disturbances occurring during the mineralisation of enamel will remain as a permanent marks. Any defects in dental hard tissues or enamel quality are important in understanding the evolution, function, origin and relation to etiological factor behind developmental disturbances and also about environmental factors. This will be useful in research field of biology, anthropol-

ogy, archaeology and others [2, 4].

Molar incisor hypomineralisation (MIH) is a common developmental condition resulting in the developmental enamel defects in first permanent molar and permanent incisors. It appears at the eruption of these teeth. One of the four permanent molars and often incisor could also be affected. Early diagnosis is mandatory since, rapid breakdown of the tooth structure may occur which leads to acute symptoms and complicated treatment [20].

Since the early 1970's dentist have reported a developmental defect which is primary located in the first molars and incisors in the permanent dentition. Some of the typical feature of the defect include severe enamel surface breakdown, areas of demarcated hypomineralization enamel varying from opacity. One of the first extensive studies on the prevalence of demarcated opacities in

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first permanent molars and incisors were reported by Koch et al, in 1987. It was defined by weerheijm et al, in 2001. It is also called hypomineration permanent first molar (PFMS), idiopathic enamel hypomineralization, non fluoride hypomineralisation, demineralised PFM and cheese molars. The vulnerability of MIH include rapid caries development, early enamel loss, soft structure and sensitivity [16]. MIH is recognised as a global dental problem and epidemiological reports from all over the world are continuously published [13]. One condition which affects the primary dentition is early childhood caries [25]. For the treatment of children with early childhood caries numerous restorative and endodontic therapy has come into play for, faster treatment the use rotary files in primary teeth is an added backbone in the field of paediatric endodontics [8, 9, 14, 15, 17, 19]. Dentists must have an idea regarding normal anatomy. various types of problems arising in a child's oral cavity such as ranula and traumatic conditions [3, 18, 22]. Parents must give importance to their physical and normal health without neglecting [11].

The global prevalence of MIH ranged from 2.4% to 40.2% majority of the studies that reported MIH were from european countries with a prevalence range of 3/6% to 37.5%. Prevalence in middle and south east asia countries 9.25-20.2%. The prevalence data from India were scant and reported a prevalence of 6.31% to 9.46% [1]. The prevalence is about 40% in Denmark and Brazil [24, 26]. 5% of children are affected in swedish population with server MIH. It has been reported that children with aMIH have ten times more dental problems when compared to children with healthy molars [12].

To address the fact that no study exists regarding the prevalence of MIH among 7-12 years old children. The aim of our study is to find out the prevalence of MIH among 7-12 year old children.

Materials And Methods

Study design and study setting

The study is a cross sectional study, the data was collected by reviewing 86,000 patient june 2019-March 2020.

Ethical approval

The ethical approval for the research (SDC/SIHEC/2020/DI-ASDATA/0619-0320) was issued by the ethical committee of Saveetha Dental college, Saveetha Institute of medical and Technical science, Saveetha University, Chennai.

Participants

All patients aged 7 to 12 years were selected in the study who attended the department of preventive and pediatric dentistry were induced in the study.

Inclusive Criteria

- Patient aged from 7-12 years
- Patient with permanent first molar
- Patient with permanent incisors
- Non syndromic

Exclusion Criteria

- Patient with amelogenesis imperfecta, dentinogenesis imperfecta.
- Patient with white spot lesion
- Tetracycline stains
- Erosion, Fluorosis, Turner's tooth
- Orthodontic treatment

Study size

The total sample size n=1435

Statistical Analysis

The data was collected from patient reports in hospitals, The obtained data was entered in microsoft excel 2012. Then exported to statistical package for social science for windows (version 20.0. SPSS Inc., Chicago III, USA) and all subjected to statistical analysis. Chi square test was employed with a level of significance set at P 0.05.

Results And Discussion

In our study the Correlation of age and hypoplasia of incisors, cross tabulation of age and hypoplasia of molars. Figure 1: Distribution of Incisors status according to age of the patient. Total of 378 children aged 7 years, in which 351 didn't have any dental caries or hypoplasia (24.4%), 27 patients had dental caries (1.88%) and no one had hypoplasia. Total of 348 children aged 8 years old, in which 335 didn't have any dental caries (23.4%), 12 patients had dental caries (0.84%) and 1 patient had hypoplasia (0.07%). Total of 261 children aged 9 years, in which 248 didn't have any dental caries (17.28%), 9 patients had dental caries (0.84%) and 4 patients had hypoplasia (0.28%). Total of 205 children aged 10 years, in which 196 didn't have any dental caries or hypoplasia (13.66%), 8 patients had dental caries (0.28%) and 1 patient had hypoplasia (0.07%). Total of 166 children aged 11 years, in which 161 didn't have any dental caries or hypoplasia (11.22%), 3 patients had dental caries (0.14%) and 2 patients had hypoplasia (0.14%). Total of 77 children aged 12 years, in which 75 didn't have any dental caries or hypoplasia (5.23%), 2 patients had dental caries (0.14%) and no one had hypoplasia (0.14%). Figure 2-Distribution of molar status according to age of the patient. Total of 378 children aged 7 years, in which 275 didn't have any dental caries or hypoplasia (19.14%), 103 patients had dental caries (7.17%) and no one had hypoplasia. Total of 378 children aged 8 years, in which 243 didn't have any dental caries or hypoplasia (16.91%), 105 patients had dental caries (7.24%) and no one had hypoplasia. Total of 261 children aged 9 years, in which 167 didn't have any dental caries or hypoplasia (11.62%), 91 patients had dental caries (6.12%) and 4 patients had hypoplasia (0.49%). Total of 205 children aged 10 years, in which 155 didn't have any dental caries or hypoplasia (10.79%), 50 patients had dental caries (3.49%) and 0.07% patient had hypoplasia. Total of 166 children aged 11 years, in which 101 didn't have any dental caries or hypoplasia (7.24%), 62 patients had dental caries (4.18%) and 0.14% patients had hypoplasia. Total of 77 children aged 12 years, in which 48 didn't have any dental caries or hypoplasia (3.34%), 28 patients had dental caries (1.95%) and 2 patients had hypoplasia (0.14%). between gender and hypoplasia of incisor. 618 female patients, out of which 591 patient have healthy dental status, 24 patients had dental caries

Figure 1. The bar graph shows the distribution of Incisors status according to age of the patient. X-axis represents the age of the patients involved in the study and the Y-axis shows the total number of patients. Healthy teeth are represented by blue, Dental Caries by Green. The prevalence of MIH (violet) is found to be high in 9 Year olds (0.28%) which is high, when compared to prevalence in other age groups.

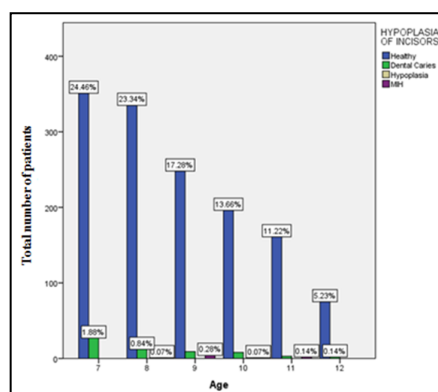
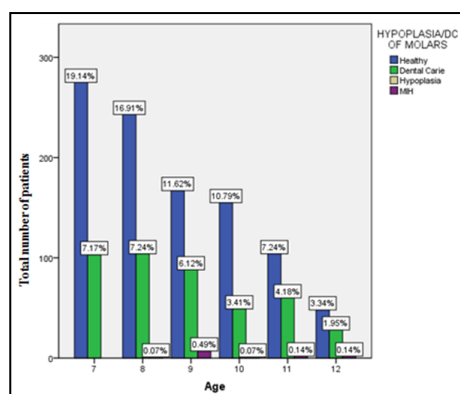


Figure 2. This bar graph shows association between molar status and age of the patients. X-axis shows the age of the patients in the study and Y-axis shows the number of patients. The prevalence of MIH in 9 years old patients is found to be 0.49% when compared to other age groups. Chi-square test was done and the association between age and dental status of molar was found to be statistically not significant. P value was 0.127 (>0.05).



and 3 patients had hypoplasia of incisors. 816 male patients out of which 744 patients had healthy dental status, 37 patient had dental caries, 5 patients had hypoplasia. Correlation between gender and hypoplasia of molars. Total of 618 female patients out of which 429 had healthy dental status, 190 had dental caries and 1 patient had hypoplasia of incisor. 816 male patients out of which 562 had healthy dental status, 249 had dental caries and 5 patients had hypoplasia.

The study recruited children aged 9-12 years for the assessment of MIH. Garg, N et al, stated that at this age group most of the children would have four first permanent molars erupted and the majority of the incisors [6]. In our study, the prevalence of MIH was 1.02% among 7-12 year old children. Which is not correlated to the study conducted in India [10]. Which a prevalence rate of 13.12% among 9-12 years old. In a study conducted in Northern Italy prevalence of MIH was 13.17% among 7.3-8.3 years [21]. Sulaiman Mohammed Allazzam et al in Jeddah, Saudi Arabia. the prevalence of MIH was 8.6% among 8-12 year old children [1]. H.T Ajay Rao in Mangalore Karnataka among 6-12 years old children it was found to be 17.2% [6]. Among children of age 11-16 years of a city in Karnataka, Davangere was 8.9%. According to the study conducted in Chennai by Savitha Deepthi Yannam et al [27] among 8-12 years was found to be 9.7%. The difference in MIH prevalence seen in various parts of the world may be due to the heterogeneity in the ethnic and age group being studied and retrospective nature of the studies conducted. In the present study

the MIH was found higher in a year old when compared to the other age group, Whereas in a study conducted by Savitha 12 year old children were found to have more prevalence [27] and also in [21]. To prevent the child from the worse condition of the issue it is in the hand of the dentist and the family members to teach the child proper brushing technique and the use of fluoridated water in their area where the government comes into action [5, 7, 23].

Conclusion

With the limitation of our study, the overall prevalence of MIH in the study was 1.02%. 9 year old children were affected more when compared to the other age group of children.

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