Poster Presentations

Presented on 16 November, 2024

24. Do We Need to Improve Our Teaching of Dental Traumatology?

Rona Leith, Brian Maloney, Anne C O'Connell
Department of Public and Child Dental Health, Dublin Dental University Hospital, University of Dublin, Trinity College, Dublin 2, Ireland, Ireland

Background: General dentists are at the forefront of managing Traumatic Dental Injuries (TDIs), so they are expected to be prepared, well informed and confident. The aim of this study was to evaluate the knowledge of Irish dentists regarding management of TDIs and compare responses across different age groups.
Method: Following ethical approval, a previously validated self-administered questionnaire was distributed electronically to Irish dentists between January and March 2024. Socio-demographic characteristics of the sample were collected and questions related to trauma resources. In addition, scenarios for TDI management were asked according to the IADT guidelines.
Results: The response rate was 17%. A total of 245 general dentists completed the survey. The majority (84%) did their undergraduate training in Ireland and 20% were below the age of 35. Dentists aged.
Conclusions: Improvements in TDI management are required across all age groups. There is a need for continuing professional development including case-based learning, even for new graduates.

25. MIH- Prevalence and Mineralization

Avraham Maatuk, Uri Zilberman
Barzilai Medical University Center

Prevalence and Features of Hypomineralized Enamel in Molar-Incisor Hypomineralization: Insights from Two Case Studies in Israel
Aim: to investigate the prevalence and characteristics of hypomineralized enamel in molar-incisor hypomineralization (MIH) among Jewish and Arab children in different regions of Israel, along with proposing a sequential management approach.
Methods: Arab and Jewish children aged 6-10 and 10-16 years were examined for MIH prevalence. Statistical analyses were conducted on the collected data.
Results:
• The prevalence of MIH was 17.1% among Jewish children and 18% among Arab children.
• MIH prevalence was higher in the younger age group (6-10 years) compared to the older age group (10-16 years).
• MIH prevalence is increasing in the Israeli population, akin to trends observed in Brazil.
• In the younger age group, demarcated opacities were the most common finding (63-90%), while in the older age group, atypical restorations with amalgam or composites were prevalent.
Conclusion: The findings underscore the growing burden of MIH among Israeli children, with significant differences observed between age groups and ethnicities. These insights highlight the need for tailored management strategies to address this dental condition effectively.
Mineralization Analysis of Enamel in Deciduous and Permanent Molars Affected by Hypomineralization: Insights from a Comparative Study.
Aim: to evaluate the mineralization status of enamel in deciduous and permanent molars affected by hypomineralization (MIH and DMH) using chemical analysis and energy dispersive X-ray spectrometer (EDS) techniques.
Methods: Mandibular first deciduous molars and first permanent molars extracted during routine dental procedures were analyzed. EDS was used for chemical analyses, with the gingival third of the enamel serving as a control.
Results:
• In both deciduous and permanent molars, higher degrees of hypomineralization correlated with lower levels of calcium and phosphate.

• These findings underscore the importance of considering mineralization status when planning restorative interventions in affected areas.
Conclusion: The study highlights the distinct mineralization patterns observed in deciduous and permanent molars affected by hypomineralization. Understanding these differences is crucial for implementing appropriate treatment strategies aimed at restoring enamel integrity effectively.

26. Prevalence of Hypomineralised Second Primary Molars (HSPM) and Molar Incisor Hypomineralization (MIH) in Children: A Pilot Survey Among Pediatric Dentists in Northern Italy
Alessandra Majorana, Alessandra Bordanzi, Francesca Amadori, Federica Moroni, Elena Bardellini
Pediatric Dentistry, University of Brescia, Italy

Purpose: The aim of this study was to collect prevalence data of HSPM and MIH among dental practitioners in Northern Italy, and to have an insight on their awareness of this condition.
Methods: A cross-sectional pilot study was conducted as a structured online questionnaire through Google Forms. The survey consisted of 10 single-choice questions regarding the prevalence of opacities affecting molars and index of HPSM and MIH, in caries-free children aged 4-8 years treated by local dentists, defined by percentage categories.
Results: 315 dentists participated to the survey (31.5% response rate). Most participants (59%) reported the prevalence of HSPM in 1-25% of patients, while 18% of respondents observed no opacity in any of the patients. MIH was observed in HSPM patients in 1-25% and 25-50% of cases, as reported by 44% and 31% of respondents, respectively. In non-HSPM patients, MIH was observed in 1-25% children (74% of respondents).
Conclusion: Despite some limitations, the results of this pilot survey indicate substantial agreement with other HSPM and MIH prevalence data reported in the literature. The co-occurrence rate of HSPM and MIH defects support the hypothesis of a possible role of HSPM as a predictor of MIH. A strong need emerged to increase awareness of such defects to achieve early diagnosis and prompt management of these patients, and to promote the use of standardized diagnostic protocols to obtain more accurate epidemiologic data.

27. An Exploration of Transillumination Versus Reflected Light Techniques for Assessing Resin Infiltration in MIH Lesions - A Preliminary Clinical Investigation on Permanent Anterior Teeth
Omar Marouane[1], Susanne Effenberger[2]
[1]*Oralys Dental Clinic, Tunisia*
[2]*Department of Conservative Dentistry and Periodontology, Ludwig-Maximilians University of Munich, Germany*

Objectives: This study aimed to compare the effectiveness of transillumination and reflected light methods in monitoring the progression of resin infiltration of molar incisor hypomineralisation (MIH) lesions on permanent anterior teeth.
Methods: Twenty demarcated MIH lesions with heterogeneous lesion body appearance, categorized as Type 2, were selected for this study. Following the removal of the lesion surface layer using a tapered diamond finishing bur, the lesions underwent etching and application of ethanol. The progression of lesion infiltration was monitored using both transillumination (n = 7) and reflected light conditions (n = 13). Images were captured at three stages: just before infiltrant (Icon; DMG) application (T0), during the infiltration process (Tx), and when infiltration had ceased progressing or when opacity disappearance was clinically apparent (Tmax). Surface-area measurements of the opacity and infiltrated area were calculated, and the infiltration proportion (IPx) was determined for both methods to monitor infiltration progression.
Results: Lesions monitored using transillumination exhibited a significantly higher mean infiltration proportion compared to lesions monitored using reflected light (Student`s t-test; p 0.01).
Conclusion: In conclusion, our study highlights the superiority of transillumination over reflected light for monitoring resin infiltration progression in MIH lesions on permanent anterior teeth. This method allows a higher infiltrated area that contributes to achieving better esthetic results.By doing so, clinicians can enhance patient care and outcomes, leading to improved overall management of MIH lesions.

28. Molar-Incisor Hypomineralization and Hypomineralized Second Primary Molars: Comparative Study

Daniela Arroz Silveira, Marta Martins Coelho, Inês Cardoso Martins, Paula Faria Marques
Pediatric Dentistry Department, Faculty of Dental Medicine - University of Lisbon, Portugal

Background/Aim: Molar Incisor Hypomineralization (MIH) is a defect in the mineralization of first permanent molars (FPM), often associated with the permanent incisors. Clinically, this defect is characterized by alterations in the structural, mechanical, and chemical properties of the teeth. The deciduous second molars (DSM) may also be involved since the development of these teeth occurs at the same time as FPM and incisors.
The aim of this study was to evaluate and compare the changes that occur in the crystalline structure of the hypomineralized enamel of FPM and DSM, using Raman Spectroscopy (RS).
Method: The study sample consisted of two hypomineralized and one healthy DSM and three hypomineralized and one healthy FPM. After extraction and consent, the crowns of the hypomineralized teeth were sectioned to obtain 6 independent enamel opacities for each type of tooth (DSM and FPM). The specimens were analyzed using RS to determine the depolarization ratio. Statistical analysis was carried out using SPSS.
Results: When comparing the variable under study between the hypomineralized enamel of DSM and FPM, no statistically significant differences were observed. Both hypomineralized DSM and FPM showed a much higher depolarization ratio when compared to their respective healthy counterparts. Both differences were statistically significant.
Conclusion: The literature indicates that there is an increase in the depolarization ratio in the presence of enamel with a disorganized arrangement of the hydroxyapatite crystalline structure, a characteristic observed in hypomineralized enamel. This finding is supported by the results of this study. The values obtained for DSM and FPM were similar, reinforcing the hypothesis that the changes occurring in the enamel of hypomineralized teeth in both dentitions are identical, and that therapeutic approaches may be valid in both cases. These results suggest a common etiology for both conditions, reinforcing the theory that hypomineralization of DSM may be predictive of MIH.

29. Prevalence and Characteristics of Hypomineralised Second Primary Molars in a Sample of Irish 4-6-Year-Olds - Preliminary Findings from a Cross Sectional Study

Daithi McGrory, Rona Leith, Anne C O'Connell
Pediatric Dentistry, Dublin Dental University Hospital, Trinity College Dublin, Ireland

Background: Hypomineralised second primary molars (HSPM) is a qualitative defect in enamel formation resulting in various clinical presentations from demarcated opacities to post-eruptive breakdown (PEB) and atypical caries progression. HPSM has a pooled prevalence of 6.8% globally, however it is unreported in an Irish population.
Aims: To evaluate the prevalence and defect characteristics of HSPM in a sample of 4–6-year-old Irish children in the Dublin area.
Methods: Ethical approval gained from Trinity College Dublin (Ref 190403).
A cross sectional study was completed for a sample of children attending primary schools (n=5) in County Dublin, Ireland. All children were screened in a school setting using the MIH/HSPM diagnostic criteria. Five examiners were trained and calibrated (intra-examiner and inter-examiner scores kappa 0.80).
Results: A total of 320 children were screened and included in the study: 174 (55%) male and 143 (45%) female. The average age was 5.4 (+/-SD 0.67) years. The prevalence of HSPM on a child level was 23.12% (n=74) and on a tooth level 10.78% (n=138). The number of upper second primary molars (SPMs) (n=70) with HSPM was similar to that of lower SPM (n=68). Thirty eight children (51%) had one affected SPM (n=38), and seven 9.45% had four affected teeth. The most common defects recorded were white/cream demarcated opacities (54%; n=79), followed by atypical caries (20%; n=29), yellow-brown opacities (8.2%; n=12), and PEB (4%; n=6), with most having mild (1/3 tooth surface) extension patterns (n=79).
Conclusion: The prevalence of HSPM in a sample of Irish population was 23.12%, higher than that reported in a recent systematic review on global prevalence, despite having similar sample size to previous studies. Continued investigation of HSPM on a broader sample is required to determine the true HSPM prevalence of the population.

30. Insights Into the Impact of Dentine Hypersensitivity in Children with Molar Incisor Hypersensitivity

Joana Monteiro, Fiona Gilchrist, Helen Rodd
Academic Unit of Oral Health and Development, University of Sheffield, UK

Background: Children with MIH can experience severe dentine hypersensitivity (DH) which may impact negatively on many aspects of their emotions. social and functional wellbeing. To date, diagnostic and measurement tools for DH have largely been adapted from adult research and may not be appropriate for children with enamel defects. There is, therefore, a real need to better understand the context of MIH-related DH from the child's perspective.
Aim: To gain greater insight into how children with MIH experience and understand DH in the context of their everyday lives.
Method: Following ethical approval, audio-recorded, semi-structured interviews were conducted with children with MIH, aged between 6- and 16-years-old attending a British Dental Hospital. Iterative thematic analysis was undertaken, guided by the model proposed by Wilson and Cleary, until no new themes emerged.
Results: Seventeen children were included (10 girls and 7 boys) with mean age of 9 years and 7 months. All children had severe MIH, according to EAPD criteria (Ghanim et al., 2015), with the number of affected teeth ranging between one and ten. Five themes and 16 sub-themes were identified, including: DH description, DH triggers, impact of DH, response to DH and dental management of DH. Dentine hypersensitivity was commonly experienced on exposure to cold and hot foods/drinks and cold air. Children used a rich vocabulary often resorting to emotional words, comparisons, and facial expressions to describe DH and its impact. Adaptations to DH included distraction, avoidance and problem solving. Finally, children discussed the difficulties of dental treatment, including communication with the dentist and also helpful interventions.
Conclusion: Children with MIH described their experiences of DH, highlighting its considerable impact on their daily activities and the strategies they developed to cope with it. Data from this study will now inform the development of a DH-specific measurement tool for this patient group.

31. Maternal Prenatal Factors in the Etiology of Molar-Incisor Hypomineralization: Systematic Review

Ana Paula Norton, Beatriz Coutinho, José António Pereira
Faculdade de Medicina Dentária Da Universidade Do Porto, Portugal

Background/Aim: Molar incisor hypomineralization (MIH) affects one or more permanent first molars and incisors. These exhibit opacities in the enamel, while the rest of the teeth remain intact. MIH is caused by an incomplete mineralization of the enamel matrix, triggered by a disturbance in the ameloblasts during the final phase of amelogenesis. Insufficient mineralization makes the enamel more porous and fragile, exhibiting properties inferior to healthy enamel, more likely to wear out and fractures.
Despite all studies, its etiology is not yet fully understood. MIH is a multifactorial disease, resulting from the influence of systemic and environmental factors on the enamel maturation process. Studies suggest that prenatal, perinatal, and postnatal factors are involved.
The aim of this project is to identify the potential etiological association of MIH with prenatal events in children.
Method: This article was conducted in accordance with the PRISMA checklist, using PubMed database. Combinations with the Boolean connector `AND` and the following keywords were used: `molar incisor hypomineralization,` `etiology`, `causes`, `maternal factors`, `prenatal factors.' Articles, published between 2010 and 2023, written in Portuguese, English and Spanish were included. As well as studies that provide data on Molar Incisor Hypomineralization in children and establish a relationship between exposure to certain factors during pregnancy and the development of the disease. Isolated case reports that do not offer relevant data and those unrelated to the established goal, were excluded.
Results: Maternal exposure to prenatal factors, such as gestational diabetes, antibiotic administration, fever, hypoxia, and hypocalcemia, induces changes in the pH of the enamel matrix, preventing mineral deposition.
Conclusion: Mothers with health problems or medical complications during pregnancy face an increased risk of having children with MIH.

32. Preliminary Evaluation of Molar Incisor Hypomineralization Frequency in Patients with Cleft Lip and Palate

Esra Ok, Muesser Ahu Yilmaz
Department of Pediatric Dentistry, Marmara University, School of Dentistry, Turkiye

Background/Aim: Molar Incisor Hypomineralization (MIH) is characterized by systemic hypomineralization affecting the enamel and dentin of incisors and first molars. The frequency of dental anomalies is higher in children with cleft lip and palate compared to those without. This study aims to determine the incidence of Molar Incisor Hypomineralization in CLP patients.
Method: Ethics committee approval was obtained and intraoral examination was performed from 158 cleft lip and palate patients aged 6-19 years. Personal questions regarding demographic data were registered and the records were completed. The type of cleft lip and palate, presence of fistula, systemic disease are questioned. The presence of MIH is defined according to the European Academy of Pediatric Dentistry 2021 MIH guideline. Chi-square and Fisher exact text were used for statistical analysis ($p<0.005$).
Results: The study included 68 (43.03%) female patients and 90 (56.97%) male patients with cleft lip and palate (N=158). Molar incisor hypomineralization was observed in 21(13.29%) out of 158 patients. There is no statistical significant differences between the presence of cleft lip ($p=0.671$), cleft palate ($p=0.577$),fistula ($p=0.773$) and the occurrence of MIH in patient. A statistically significant relationship between cleft type and MIH was not found ($p=0.773$).
Conclusion: Although enamel hypomineralization and related oral health issues are very common in patients with cleft lip and palate, the prevalence of MIH was found to be low. However, our study was conducted with a small patient group, so further research with a larger population is recommended.
Keywords: Molar Incisor Hypomineralization, Cleft Lip/Palata

33. Combination of a Newly Calcium Booster and a Fluoride Silicon-Rich Toothpaste for Fast Relief of MIH-Hypersensitivity: A Promising Treatment

Marco Aurelio Paschoal[1], Gabriele Andrade-Maia[1], Fabiano Vieira Vilhena[2]
[1]*Department of Pediatric Dentistry, Federal University of Minas Gerais, Brazil*
[2]*Trials Research and Development, Brazil*

An alternative dentifrice for dentin remineralization is Dentalclean Daily Regenerating Gel (Dentalclean, Londrina, PR, Brazil), which, according to the same manufacturer, can be associated with a regenerating booster component (Dentalclean, Londrina, PR, Brazil) (REFIX® technology).
The latter material uses the technology of calcium nanoparticles associated with phosphate salts, serving as a carrier for calcium to permeate dental tissues that may increase the efficacy of the remineralizing agents. Both systems can enhance the action of 1450 ppm sodium fluoride compared with other commercial toothpastes. Such a property would provide the sealing of dentinal tubules, as well as remineralization and inhibition of dentin demineralization. However, studies on these products are scarce in the literature. No previous studies have reported the use of the association of both technologies. Thus, the present study aimed to report three clinical cases of children between 6 - 12 years old diagnosed with severe sensitivity MIH-teeth. Three patients with severe MIH and hypersensitivity underwent a desensitization protocol.
Prior to treatment, a sensitivity test using an air jet on each tooth`s cervical area was performed, along with a visual analog scale (VAS) for discomfort scoring. A professional applied the booster with a Robinson brush and/or massaging the area for 2 minutes. After professional use, the patients used the toothpaste and booster in combination for 15 days. The booster was applied to the sensitive teeth 1x a day under the supervision of caregivers. Subsequent measurement tests, including the air jet stimulus and VAS scale, were conducted, revealing improved hypersensitivity in all patients.
Immediate relief was observed, but treatment`s effectiveness hinged on patient adherence. Notably, all patients resumed consuming cold liquids.

34. Non-Invasive Aesthetic Improvement of Incisors Affected by Molar Incisor Hypomineralization

Maya Popova, Doreen Ackers, Marisa Maffei, Natalie Stinton, Gayatri Malik
Pediatric Dentistry, Geisinger Medical Center, USA

Molar Incisor Hypomineralization (MIH) affects at least one first permanent molar and/or permanent incisor(s). The affected teeth have qualitative enamel defects due to reduced mineral concentration and significant increase of protein content in the hypomineralized areas.

The exact origin of this enamel defect is still unknown; however, an increasing number of studies suggest possible synergetic effect between genetic/epigenetic and systemic factors. In severely affected teeth, prominent discoloration is often accompanied by compromised enamel integrity. In mild to moderate lesions there are noticeably creamy white to yellow/brown demarcated opacities that alter the enamel translucency presenting aesthetic concern in patients of all ages. There are different treatment options employed with success to address the aesthetic appearance of the MIH-affected incisors. However, many of them are either invasive or irreversible, and therefore not recommended for children.

Our aim is to provide a non-invasive treatment option for aesthetic improvement of MIH-affected incisors in a young patient using a commercially available product MI paste manufactured by GC America. We are presenting a case of a 10-year-old female patient who was diagnosed with MIH due to well-demarcated white and yellow/brown stains on her first permanent molars and anterior teeth. The patient has recently become very conscious of the poor aesthetics on her incisors, affecting her self-esteem. The treatment plan involved custom fitted trays with MI Paste being placed on her teeth during in-office and at home treatments. The patient received a total of eight in-office treatments in 6 months. Her cooperation was of high importance. Notable improvement started to appear around two months into the treatment. The patient was satisfied with the outcome.

Multiple digital photographs were taken during each appointment to document progress. There have been no changes in the aesthetic outcome 16 months after the completion of the treatment.

35. Molar Incisor Hypomineralization: Prevalence and Etiological Factors in Central Pennsylvania

Gayatri Malik[1], Maya Popova[1], Katie Frank[2]
[1]*Oral Medicine and Maxillofacial Surgery, Geisinger Medical Center, USA*
[2]*Biostatistics Core, Geisinger Medical Center, USA*

Molar incisor hypomineralization (MIH) is a developmental enamel defect involving at least one first permanent molar and sometimes permanent incisors. Prevalence of MIH ranges from 2.8% to 44% in different literature. In this study, we explore the etiology and prevalence of MIH in the pediatric population served by a tertiary medical center in Pennsylvania.

Retrospective chart review evaluated 564 patient records with reported enamel defects between 2011 and 2021. Of the 564 patients, 106 patients (18.8%) aged 6-20 years were diagnosed with MIH according to the European Academy of Pediatric Dentistry criteria. Electronic medical records provided insight into demographics, medical history, hospitalizations, antibiotic use, and pregnancy-related data for MIH patients, and compared to a control group from the same data set.

The medical files of 106 patients with MIH were evaluated and compared to a control group consisting of the same number of patients but without MIH or any other enamel defects. No significant differences were noted in most demographics and medical history variables. However, compared to the control group, patients with MIH were more likely to be diagnosed with asthma: 18% of cases vs. 8.5% of controls ($p = 0.043$). In addition, the analysis showed that the control group tended to have a greater number of antibiotics courses prescribed before the first birthday. However, this finding was not clinically significant as the median and the interquartile range were identical for both groups, case and control. For each group, the distribution of this variable only differed meaningfully at the upper extreme (i.e., in percentiles greater than the upper quartile).

Overall, MIH was not significantly associated with antibiotic use or childhood illnesses, except asthma, during the first five years of life.

36. Prevalence of Molar Incisor Hypomineralisation in Mexican School Children

Maria Rivera[1,2], Luis Karakowsky[3], Carlo Medina[2,4], David Manton[1,5]
[1]*Center for Dentistry and Oral Hygiene, University Medical Center Groningen, Netherlands*
[2]*Academic Area of Dentistry, Autonomous University of Hidalgo, Mexico*
[3]*Paediatric Dentistry, Technological University of Mexico, Mexico*
[4]*Advanced Studies and Research Center in Dentistry "Dr. Keisaburo Miyata", Autonomous University of the State of Mexico, Mexico*
[5]*Academic Center for Dentistry Amsterdam, University of Amsterdam and Vrije Universiteit Amsterdam, The Netherlands*

Introduction: Molar incisor hypomineralization (MIH) is a developmental defect of decreased enamel mineral density, involving at least one permanent first molar and frequently, permanent incisors. The defects are demarcated, ranging from isolated, white, yellowish and/or brown lesions to post-eruptive breakdown, with various clinical consequences.
Aim: To determine the prevalence and distribution of MIH in Mexican schoolchildren aged 6-13 years from Pachuca, Mexico.
Materials and Methods: A cross-sectional study was carried out in 665 participants, selected randomly from 8 public schools in the city of Pachuca, Mexico. A dentist (MRP) trained and standardized in the MIH-criteria of the European Academy of Pediatric Dentistry performed the clinical oral examinations to detect the presence and absence of MIH, the dependent variable. The independent variables were age and sex. Analysis was performed using non-parametric tests using Stata.
Results: The average age was 9.14 ± 1.81 years and 51.5 % were female. The prevalence of MIH was 12.1% (95%CI 9.5 – 14.5%). The average age of schoolchildren with MIH was 9.48 ± 1.77 years, and without MIH was 9.10± 1.81 (Mann-Whitney test, p = 0.0755). The prevalence of MIH was 12.3% and 11.8% in females and males, respectively (df= 1, Chi square 0.0415, p = 0.839). Amongst children with MIH, the mean total number of affected teeth was 3.58 ± 2.08; the mean number of affected first permanent molars was 2.46 ± 1.15 and 1.11 ± 1.47 for incisors (Wilcoxon test. p 0.0001).
Conclusions: The prevalence of MIH (12.1%) was like that reported previously for Mexican children (14.0%), molars were the most affected comparing with incisors. No statistically significant differences in the prevalence of MIH were observed for age or sex.

37. Taurodontism and MIH: Is There Any Evidence for an Association Between These Two Dental Anomalies?

Helen Rodd[1], Hani Nazzal[3], Greig Taylor[2], Susan Parekh[4], David Drysdale[4]
[1]*Unit of Oral Health, Dentistry and Society, University of Sheffield, UK*
[2]*School of Dental Sciences, Newcastle University, UK*
[3]*Hamad Dental Centre, Hamad Medical Corporation, and College of Dental Medicine, Qatar, University, Qatar*
[4]*Unit of Paediatric Dentistry,, University College London, UK*

Background: There has been growing interest in the potential co-existence of certain dental anomalies (notably hypodontia) in children with molar incisor hypomineralisation (MIH). Although taurodontism is well recognised in patients with inherited enamel conditions (amelogenesis imperfecta) there is scant information to suggest any association with MIH.
Aim: This study sought to compare the prevalence of taurodontism in children with and without MIH in a British population.
Method: This was a case-control study, conducted in three UK dental hospitals, as part of a wider international investigation. Following ethical approval, participants aged 7-16 years with a pre-existing panoral radiograph, were subdivided into either an MIH group or a comparison (non-MIH) group. Following training and calibration, one investigator (HA) applied a commonly used biometric technique for measuring taurodontism (Seow and Lai, 1989) to calculate the crown/body:root ratio of the first lower permanent molars (LFPMs) of all participants. Teeth were categorised as: normal (crown/body:root ratio1.1); hypodont (crown/body:root ratio of 1.1-1.29); mesodont (crown/body:root ratio of 1.30-2.00); hyperdont (crown/body:root ratio 2.00), or not assessable (due to immature root development, indeterminate crown morphology or unclear radiographs). Descriptive analyses were performed, and a chi-squared test was used for comparative analyses (p0.05).

Results: Seventy-eight participants (MIH group=52; comparison group=26) were included in the analysis. Children had a mean age of 10.6 years (SD=2.49; range=7.7-16.9), 69% were White British and there was an equal sex distribution. Of the 81 LFPMs subject to analysis, 93% (n=75) were of normal crown:root morphology and 7% (n=6) were hypodont. There was no statistically significant difference in the prevalence of hypodont teeth between the MIH and comparison group (p=0.51)
Conclusion: Taurodontism was not a presenting feature in children with MIH. However, further analyses with a larger and more ethnically diverse population is currently underway to provide more conclusive evidence for this speculative association.

39. The Prevalence of Molar Incisor Hypomineralization in Hungarian Children Population
Rózsa Noémi, Éva Mlinkó, Anna Moldován, László Reichel, Dóra Zsófia Nagy
Department of Pediatric Dentistry and Orthodontics, Semmelweis University, Hungary

Aim: Molar Incisor Hypomineralization (MIH) syndrome has a wide variety prevalence range globally, and it is continuously rising. The aim of our research is to assess the MIH prevalence data and the growing tendency through two following cross-sectional survey in Budapest, Hungary.
Method: Patients arrived at the Semmelweis University Department of Pediatric Dentistry and Orthodontics for dental examinations between 2014-2016 and secondly in 2022. Inclusion criteria was patients between 7-12 years of age without chronic disease and the diagnoses was based on EAPD diagnostic criteria. Patients were examined by the same individual in each survey to ensure standardized testing. The research protocol was approved by the Medical Research Council (Internal code: 85/215).
Results: In 2014-2016 our cross-sectional survey included 573 patients; 290 girls and 283 boys with male:female MIH ratio 1:1,7. Total prevalence was 4,72%. In the second survey, in 2022, 309 schoolchildren were examined, 159 boys and 145 girls. 14 MIH patients were detected, with male: female MIH ratio 1:0,4. The prevalence of MIH was 4,6%.
Conclusion: Global prevalence data are highly variable, ranging from almost 2% up to 40%. Variability seems to differ by region and due to different criteria, examination protocols and lack of standardized calibration processes. The MIH prevalence found in this study was lower compared to other countries and the literature reported rise in prevalence was not attributed in our region.

40. The Prevalence of Pre-Eruptive Non-Carious Pathology in Children Living in Belarus
Natallia Shakavets, Alexander Yatsuk, Klaudia Gorbacheva
Postgraduate in Pediatric Dentistry, Department of Comprehensive Dental Clinics, University Department of Pediatric Dentistry, Belarusian State Medical University, Belarus

Aims: The aim of investigation was to determine the structure of non-carious lesions of hard dental tissues that occur during follicular development in 8-year-old and 12-year-old children in Minsk.
The dental examination was carried out in accordance with WHO methods and EAPD recommendations (2015).
Methods: There were examined, 504 children [253 boys and 251 girls] age 8 years and 488 children [246 boys and 242 girls] age 12 years old from Minsk to determine the prevalence of non-caries pathology. No fewer than 50 children of each age group from each of the nine administrative-territorial districts of Minsk were examined. The results were analyzed statistically (Pearson`s chi-squared test). Regional Ethics Committee approval and parental informed consents were obtained.
Results: In the group of 8-year-old children the prevalence of molar incisor hypomineralization was 13.10±1.50% [n=66] of first permanent molars and incisors, 0.99±0.44% [n=5] for hypomineralization of second primary molars, and 10.71±1.38% [n=54] for other hypomineralization defects (non-MIH/HSPM). Turner's tooth was diagnosed in 6 children, with a prevalence of 1.19±0.48%, prenatal hypoplasia in 1 child [0.20±0.20%], and hypoplasia in 1 child [0.20±0.20%]. Unspecified mottled enamel was diagnosed in 77 [15.28±1.60%] children. Some of the children had more than one non-caries pathology.
In the group of 12-year-old children molar incisor hypomineralization was diagnosed in 54 [11.07±1.42%] children. Hypomineralization defect of second permanent molars was diagnosed in 28 [5.74±1.05%] children. Other hypomineralisation defects were diagnosed in 50 [10.25±1.37%] children. Only 3 [0.61±0.35%] children had hypoplasia, but 181[37.09±2.19%] had unspecified mottled teeth, and 9 [1.84±0.61%] had Turner's tooth.

Conclusion: Molar incisor hypomineralization and unspecified mottled enamel non-carious pathology in school children in Minsk. It is necessary to perform further investigations to explore the role of possible etiological factors.

41. Prevalence and Severity of Molar-Incisor Hypomineralisation in the Masovian Region (Poland)

Sara Shamsa-Nieckula, Dorota Olczak-Kowalczyk
Department of Pediatric Dentistry, Medical University of Warsaw, Poland

Introduction: Molar-incisor hypomineralisation (MIH) occurs globally in 14.20% of the population. In Poland, MIH has been reported in 6.43% of children from the Pomeranian Region and in 6.20% of children from the Silesian Region. The aim of this study was to assess the prevalence and severity of MIH in the Masovian Region.
Material and Methods: A dental examination of 8- and 12-year-old children residing in and attending primary schools in rural and urban areas of Masovian Region, whose parents gave informed consent for their child`s participation in the study, was conducted. The schools were randomly selected. Teeth status was assessed based on the EAPD classification of MIH disorders. The DMFT index for first permanent molars was calculated, as well as the percentages of patients/teeth with DMFT0. Statistical analysis of the obtained results was performed. The approval of the Bioethics Committee KB/220/2016 was obtained.
Results: Consent for the study was obtained from 1524 parents. 1177 children were included in the study (53.4% girls, 50.7% from urban areas). Finally, 676 8-year-old children and 501 12-year-old children participated in the study. MIH was found in 96 (8.15%) children, including 51 (7.54%) younger children, where the severe form occurred in 27.45% of cases, and 45 (8.98%) older children, where the severe form appeared in 46.67%. The prevalence of caries was statistically significantly higher in patients with MIH regardless of age, gender or place of residence. Pain and tooth sensitivity were reported by 28.2% of the subjects, and posteruptive enamel breakdown was found in 24.3%.
Conclusions: MIH occurs in the Polish population, but the prevalence is lower compared to most countries in the world. The severe form was observed more often in older children, indicating the necessity of early diagnosis of these disorders already in the early period of dentition replacement.

42. Long-Term Maintenance of Teeth with a Severe Form of Molar-Incisor Hypomineralisation: A Case Report

Sara Shamsa-Nieckula, Dorota Olczak-Kowalczyk
Department of Pediatric Dentistry, Medical University of Warsaw, Poland

Introduction: In patients with molar-incisor hypomineralisation (MIH), the enamel is susceptible to mechanical damage and there is a high risk of caries. The result of delayed diagnosis and preventive or therapeutic intervention can be extensive destruction of the teeth.
Case report: The 8-year patient presented to the Department of Pediatric Dentistry in Medical University of Warsaw. The orthopantomogram showed the absence of the buds of all second premolars, uncompleted root development of permanent first molars and cavities in the hard tissues of the teeth. Based on the clinical examination, all first permanent molars were qualified for conservative treatment, but tooth 46 was with a high risk of endodontic treatment due to the cavity extending into the pulp chamber. The patient was referred for orthodontic consultation due to hypodontia, distoocclusion and dental abnormalities. Therefore, indirect pulp capping in tooth 46 was performed. Due to the extent of the cavity, a prefabricated steel crown was used. During the two-year follow-up period, partial loss of the applied materials and no caries were observed in teeth 16, 26 and 36, which were replaced with permanent fillings using composite material. The steel crown had complete retention and marginal tightness, and no periapical tissue lesions were observed. Orthodontic treatment with fixed braces was carried out. The patient maintained very good oral hygiene. The hard tissues of the permanent first molars and their vitality were preserved. The root development of the tooth 46 and the other teeth was completed. The steel crown was removed after 6 years, the cavity was completely prepared and a direct composite overlay was made.
Summary: In cases of extensive hypomineralisation lesions, especially with associated hypersensitivity and post-eruptive enamel breakdown complicated by caries and requiring tissue reconstruction, the using of prefabricated steel crowns is beneficial. It allows for long-term maintenance of teeth with MIH.

43. Third Permanent Molar Distribution Patterns in Children With MIH: A Preliminary Exploration

Greig Taylor[1], Hanni Nazzal[3], Hoor Alrashed[2], Parekh Susan[4], Drysdale David[4], Helen Rodd[2]
[1]*Newcastle University, UK*
[2]*The University of Sheffield, UK*
[3]*Hamad Medical Corporation, Qatar*
[4]*University College London, UK*

Background: Radiographic evidence of developing third permanent molars (TPMs) is pivotal to decision-making when considering extraction of first permanent molars of uncertain prognosis, especially in children with molar incisor hypomineralisation (MIH). However, little data exists regarding TPM prevalence in this patient group.
Aim: This study sought to compare the presence of TPMs in children with and without MIH in a British population.
Method: This was a case-control study, conducted in three UK dental hospitals, as part of a wider international investigation. Following ethical approval, participants aged 7-16 years with a pre-existing panoramic radiograph, were subdivided into either an MIH group or a comparison (non-MIH) group. Investigators (GT, DD, and HR) were trained and calibrated for assessment of MIH and dental anomalies. Children underwent a clinical examination of MIH using an established index. Panoramic radiographs were assessed for the presence of TPMs.
Results: Seventy-eight participants (MIH=52; non-MIH=26) were included, 69% were White British and there was an equal sex distribution. MIH-children had a mean age of 10.5 years (SD=2.57; range=7.7-16.9) and non-MIH children had a mean age of 10.9 years (SD=2.35; range=7.8-16.9). Children with MIH had a median of 2 TPMs compared to 4 TPMs found for the non-MIH group. TPM prevalence data for MIH children were as follows: 36.5% had no TPMs; 3.8% had one; 15.4% had two; 11.5% had three and 32.7% had four. Findings for children without MIH differed considerably: 26.9% had no TPMs; 11.5% had one; 3.8% had two; 0% had three and 57.7% had four. This difference frequency distribution was found to be significantly different between the two groups (p=0.045. chi-square test).
Conclusion: There appear to be clinically relevant differences in the presence and distribution pattern of TPMs in children with MIH. Further analysis, with a larger and more ethnically diverse population, is undoubtedly warranted.

44. Indirect Overlay Restoration in Children with MIH with Digital Workflow: Two Case Reports

Ugur Tokay[1], Halenur Altan[2]
[1]*Pediatric Dentistry, Ozel Premiumdent Oral Health Center, Turkiye*
[2]*Pediatric Dentistry, Necmettin Erbakan University, Turkiye*

Aim: Molar incisor hypomineralization (MIH) is limited and qualitative defects of enamel origin affecting one of multiple molars with or without incisor retention. We aim to present the indirect restoration procedure with digital workflow performed in children with MIH teeth.
Case Reports: Two 9-year-old patients presented with MIH, exhibiting profund caries with crown destruction in affected teeth, percussion was negative, pain was negative, and sensitivity was positive by clinical examination. In addition, in radiographic examination, the periapical pathology was negative. It was decided to proceed with an indirect restoration approach with digital workflow to preserve the remaining tooth structure and restore functionality and aesthetics. First session, the teeth were prepared for digital impressions (rubber-dam applying, caries removing, dentin immediate sealing). After taking digital impressions, indirect overlay restoration (Voco Grandio) was produced with CAD-CAM system. In the second session, the blocks were cemented. The indirect restorations are asymptomatic at 2 years follow-up.
Conclusion: Indirect restorations are a viable and effective treatment option for managing severe crown damage in children with MIH. in recent years, the clinical use of indirect restorations in children with MIH has been reported to increase. More studies are needed on the clinical applications of these restorations in pediatric dentistry.

45. 3.5-Year Outcomes of Randomized Controlled Trial: Survival of Atraumatic Restorative Treatment (ART) Restorations with and without Silver Diamine Fluoride in Cavitated Molar Incisor Hypomineralization (MIH)

Tengku Nurfarhana Nadirah Tengku Hamzah, Nicholas Thong Li Jie
Department of Paediatric Dentistry and Orthodontics, Faculty of Dentistry, Universiti Malaya, Malaysia

Background/Aim: Clinicians have increasingly recognized the synergistic benefits of employing Silver Diamine Fluoride (SDF) followed by High Viscosity Glass Ionomer Cement (HVGIC) in the SMART technique for treating hypersensitivity and post-eruptive breakdown from cavitated Molar Incisor Hypomineralization (MIH) in young children. This study compared the survival of Atraumatic Restorative Treatment (ART) and Silver Modified ART (SMART) with and without papain-based gel on cavitated MIH-affected molars at 3.5 years.
Methods: Between 2019 to 2020, 63 MIH-affected molars in 38 children were randomized into three treatment groups; Atraumatic Restorative Treatment (ART) and Silver Modified ART (SMART) with and without papain-based gel. The survival rate was assessed at 6-month intervals for up to 42 months after the interventions. The Kaplan-Meier method was used for survival analysis, and the Cox regression method was used to determine the impact of various factors on the survival rate, with a significance level of 5%.
Results: A total of 38 MIH-affected molars in 23 children (76.6%) returned for a 3.5-year follow-up. The mean survival time for ART, SMART without papain-based gel, and SMART with papain-based gel were 33.4, 41.5, and 43.1 months, respectively with not statistically significant (p0.05). The cumulative mean survival rates of ART and SMART without and with papain-based gel were 55.6%, 73.3%, and 87.1% respectively. There was no significant difference in tooth and patient-related factors on the survival rate (p0.05).
Conclusions: Within the limitation of this study, SMART with papain-based gel exhibited the longest mean survival time and the highest survival rate. SMART with or without enamel deproteinizing can be used as an early treatment option for cavitated MIH molars to prevent further deterioration and minimize the risk of pulpal inflammation and hypersensitivity.

46. The Prevalence of Developmental Defects of Enamel in Patients Undergoing Renal Replacement Therapy

Alesia Zhylevich, Natallia Shakavets
Paediatric Dentistry, Belarusian State Medical University, Belarus

Aim: To assess the prevalence of developmental defects of enamel in patients undergoing renal replacement therapy (RRT).
Method: The study included 55 patients undergoing RRT: 3 on dialysis and 55 after kidney transplantation; the number of children was 37 with a median age of 13.8 [10.9; 15.5] years and 21 young adults median aged 23.3 [23.0; 23.7]. To evaluate the presence of defects in enamel MDDE (simplified) was used. Code 1 – focal opacities of white or yellow color, with a clear border, the surface of the teeth is smooth; code 2 – diffuse opacities, heterogeneous, the surface is smooth; code 3 – enamel hypoplasia in the form of furrows or pits (the result of tissue loss).
Results: Enamel development defects were detected in 62.1% of the examined patients, the median number of teeth with defects was 12 [6; 18]: with code 1 – 3 [2; 4], with code 2 – 10 [4; 15], and with code 3 – 4 [2; 7].
Conclusion: Developmental defects of enamel are commonly seen in patients undergoing RRT.

47. MIH/SPMH: is it a Novel Developmental Phenomenon? Prevalence in the Archeological Site of Dor, Israel

Uri Zilberman[1,2]
[1]*Pediatric Dentistry, Barzilai Medical University Center Affiliated to Ben Gurion University, Israel,*
[2]*Pediatric Dentistry, Barzilai Medical University Center, Israel*

In Israel the prevalence of MIH is almost 18%. At the young age group (6-10Y) the prevalence was higher by 2-3% in comparison with the old age group (10-16Y). At the archeological site of Dor (16-mid 19th centuries), 140 skulls were excavated. We examined 104 skulls with at least one permanent first molar and/or one second primary second molar. MH or SPMH were determined according to EAPD criteria.
Results: MH was observed in one skull SPMH in another. Hypoplasia of the second primary molars was observed in one skull.
Discussion: 56% of the skulls examined were of children that dyed before the age of 10 years, probably due to childhood diseases or malnutrition. At Dor site only 2% of MH/SPMH were observed in comparison to today's prevalence of almost every fifth child. So, the developmental hypomineralization of molars is a recent phenomenon, and the prevalence is increasing. The published etiology of MIH/SPMH included childhood diseases, antibiotic use, and lack of minerals. Based on the findings from Dor, where more than 50% of the skulls were of young children with only 2% of hypomineralization, it may be postulated that these etiological factors may not be true.