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SHORT COMMUNICATION

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Current perspectives on management approaches for molar incisor hypomineralization: preliminary findings from the National Dental Practice-Based Research Network

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Abstract

The purpose of this study is to assess approaches used by National Dental Practice-Based Research Network dentists when they encounter newly erupted molars with molar incisor hypomineralization (MIH). This is a cross-sectional survey-based study where a brief questionnaire ("Quick Poll") was administered to explore three early management areas of molars affected with MIH: (1) regularity of informing parents about these enamel defect; (2) frequency of using silver diamine fluoride (SDF) to treat hypomineralized molars, and (3) identifying which approaches dentists use when hypomineralized molars present at a non-carious early stage of enamel breakdown. Three-fourths (75%) of respondents would always inform patients of molar defects. There was no consensus about using SDF to manage hypomineralized molars; 26% said that they would never use SDF. There was substantial variation in recommendations for managing non-carious hypomineralized molars: 40% recommended routine preventive visits with topical fluoride application, and only 1% recommended restorations. Although Network dentists would routinely inform patients of MIH, they exhibited little consensus about how best to manage it.

Keywords

Molar incisor hypomineralization; Management; Treatment; National Dental Practice-Based Research Network

1. Introduction

Managing permanent first molars with demarcated opacities suggestive of molar incisor hypomineralization (MIH) has been an ongoing challenge for clinicians. These teeth have a higher susceptibility to both dental caries [1] and progressive physical disintegration [2]; and affected children face behavioral and pain control issues during their operative management [3]. Treating these teeth with fissure sealants and glass ionomer restorations has been a common way to manage affected molars that are partially erupted, hypersensitive, or exhibiting post-eruptive enamel breakdown [4]. However, fissure sealants and glass ionomer restorations may have higher failure rates compared with invasive restorative procedures for these molars [5, 6]. Deciding how to manage these molars that have inherently compromised enamel structure can be complex, especially given the patient's young age, larger pulps, and challenges with adequately isolating these teeth during conscientious treatment. Paralleling the well-established efficacy of Silver Diamine Fluoride (SDF) in controlling caries and dentinal hypersensitivity [7], a recent clinical study has reported similar efficacy of SDF in controlling hypersensitivity in hypomineralized molars, but with a limited caries preventive effect when not combined with glass ionomer as part of the Silver Modified Atraumatic Restorative Treatment (SMART) technique [8]. In moderate to severe hypomineralized molars, SMART restorations, combined with regular preventive care, effectively reduced hypersensitivity and maintained restoration integrity over one year [9].

Because primary prevention of MIH is not yet possible, early identification of this condition and research into interventions that improve clinical outcomes are currently the most feasible approaches to management [10]. However, little is known about how clinicians approach the management of molars with MIH [11]. Recent studies have investigated preventive strategies for hypomineralized molars [12], but none have specifically focused on the use of preventive interventions for newly erupted molars with MIH.

Considering this state of knowledge from the literature, a brief preliminary questionnaire ("Quick Poll") was conducted in the National Dental Practice-Based Research Network (Network) to understand current approaches used by Network dental practitioners for MIH. The Network comprises a diverse group of "real-world" clinicians in active community-

based practice [13, 14]. The aim of this study was to assess the approaches used by members of the Network when they encounter patients with newly erupted molars that have characteristics of MIH.

2. Study design and methods

This is a cross-sectional survey-based (Quick Poll) design involving dental practitioners who are members of the Network in the United States. Typically, licensed dentists who are members of the Network participate in Quick Polls on clinical questions/practices. The Quick Polls have a maximum of 5 questions, and demographic information about participants is not collected. Quick Polls are conducted as a simple, low-cost means to engage Network members in clinical topics of interest, with an expectation that findings will inform the design of subsequent, rigorously designed, full-scale questionnaires or clinical studies. Initially, the Quick Poll was posted as a newsletter feature on 21 September 2023, which was sent to 6973 Network members who clicked/opened the Quick Poll 60 times. The Quick Poll was also posted on social media accounts (LinkedIn, Facebook, and Instagram) on 26 September 2023, which received 223 impressions and 6 clicks/opens. An invitation was also sent to all members of the network (6953 Network members) in the network's monthly newsletter on 05 October 2023, which had 3229 views and 158 clicks. Finally, another follow-up invitation was sent on the 13 October 2023. Overall, the Quick Poll was opened 995 times and viewed by 224 different Network members. The data were collected through Constant Contact®, a digital and email marketing platform. The Quick Poll can be answered by anyone who has access to the survey link. However, from our experience conducting past Quick Polls, the Network's members are the respondents.

The study was approved by the University of Alabama at Birmingham Institutional Review Board. Fig. 1 illustrates the flowchart of the study.

The Quick Poll consisted of three questions, two of which included clinical scenarios accompanied by photographs. The first question displayed three different clinical illustrations of young, newly erupting permanent first molars with various degrees of severity of MIH and enamel breakdown in one case (Fig. 2).

The first question inquired whether dental practitioners would inform parents about the underlying enamel defects and the increased risk of breakdown and cavitation. The second question inquired about the frequency of SDF use on molars affected by hypomineralization and whether practitioners would consider using SDF even without pre-existing caries or hypersensitivity in the affected molars. The third question asked about the practitioner's management recommendation for a clinical case that involved a caries-free patient with MIH, where the newly erupting lower permanent first molar had a demarcated defect with a minimal degree of breakdown of enamel on the occlusal surface (Fig. 3). Descriptive statistics were used to present the results.

3. Results

One hundred and sixty-three (163) members of the network completed the Quick Poll.

Distributions of responses are shown in Table 1. In response to the first inquiry, most respondents stated that they would inform parents about the underlying enamel defect and the higher risk of cavitation and breakdown: 75% and 20% of practitioners responded "always" and "most of the time", respectively.

When queried about the use of SDF, half of the practitioners stated that they would consider using SDF with the presence of caries and/or hypersensitivity, while about one-fifth stated that they would never consider using SDF on hypomineralized molars.

Inquiring about the management of hypomineralized molars that exhibit early signs of enamel disintegration in a caries-free patient (Fig. 3), the highest percentage of respondents (40%) elected routine preventive visits with topical fluoride application and prophylaxis. Slightly more than one-third (32%) chose sealants as the most likely management strategy. Only 23.9% of the respondents opted for a minimally invasive restoration with or without SDF, and fewer dentists chose restoration or a crown (1.8%).

4. Discussion

These findings provide preliminary data about the overall perspectives of practitioners regarding early management of hypomineralized first permanent molars, with an overall consensus to inform parents about the underlying enamel defect and

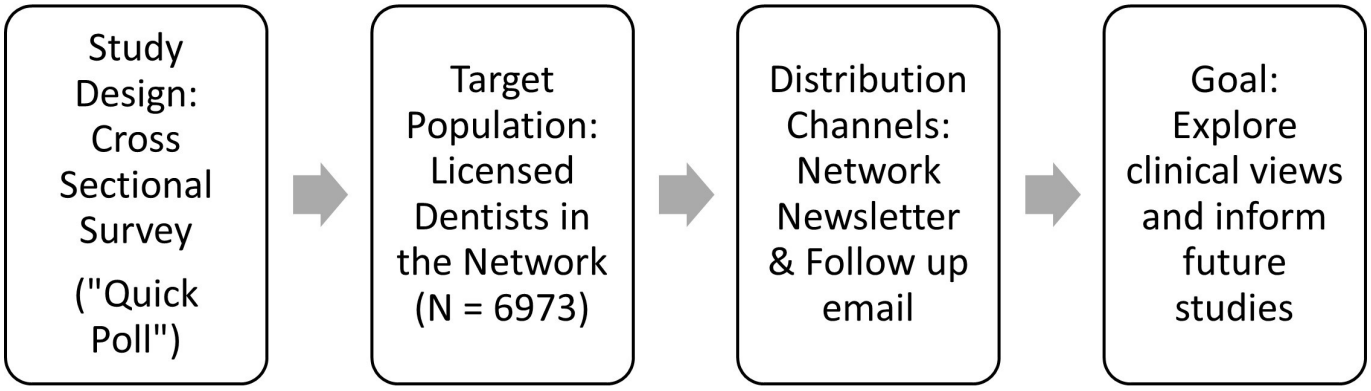

FIGURE 1. Flowchart of the study.

FIGURE 2. Clinical illustrations included in the first question of the Quick Poll survey. Participants were asked about the frequency of informing parents about the underlying enamel defects and the increased risk of breakdown and cavitation.

FIGURE 3. Clinical illustration included in the third question of the Quick Poll survey. Tooth #30 shows demarcated opacity and breakdown suggestive of molar hypomineralization. Participants were asked about their recommended management approach.

TABLE 1. Breakdown of responses to the Quick Poll questions.

"Quick Poll" Questions	Answer	Frequency (n = 163)	Percentage
Question 1: For the cases above, would you talk with parents about the enamel defects and the increased risk of breakdown and cavitation?			
	Always	123	75.5
	Most of the time	33	20.2
	Sometimes	6	3.7
	Never	1	0.6
Question 2: Which of the following best describes when you would consider Silver Diamine Fluoride (SDF) placement on molars affected by MIH?			
	Always	8	4.9
	Most of the time	30	18.4
	Only when they have signs/symptoms as caries or hypersensitivity	82	50.3
	Never	43	26.4
Question 3: Tooth #30 shows demarcated opacity and breakdown suggestive of MIH. Clinical and radiographic examinations show that the patient is caries-free. For this case management, which of the following would you most likely recommend?			
	Routine preventive visits with topical fluoride application and prophylaxis	65	40.0
	Fissure sealants	52	31.9
	Minimally invasive restoration with/without SDF	39	23.9
	Restoration or crown	3	1.8
	Extraction	0	0
	Refer to pediatric dentist or academic center	4	2.5

Fig. 1 was included with question 1, and Fig. 3 accompanied question 3 of the Quick Poll survey.
MIH: molar incisor hypomineralization.

its associated clinical consequences. However, there is a clear lack of agreement about the use of non-invasive interventions, such as sealants and SDF. Half of the respondents would consider SDF application on molars affected by hypomineralization in the presence of signs and symptoms, such as hypersensitivity or caries. Discordance was also evident with managing affected young molars displaying disintegration of enamel, with less than one-fourth of respondents agreeing on a minimally invasive restorative approach, and most (70%) opting for routine preventive recall visits and sealant. Although the question explicitly depicted a newly erupting first permanent molar with minimal, non-carious occlusal post-eruptive enamel breakdown (PEB), the respondents' choice of observation and/or sealants is not consistent with established MIH guidelines. PEB warrants restoration, commonly a short-term, highly viscous glass-ionomer restoration, whereas fissure sealants are reserved for mild cases without PEB [15]. The proportion of respondents selecting non-restorative options indicates variability in practice and potential knowledge gaps for erupting hypomineralized molars.

The role of parents and caregivers in establishing informed consent for a preventive approach to MIH was not addressed in this Quick Poll. However, most of the relevant literature has focused on parents' perceptions of tooth appearance and oral health-related quality of life [16], with limited inquiry into the effectiveness of early communication with parents about the condition, and its possible consequences.

The use of SDF in managing molars with hypomineralization defects remains debatable. Recent clinical data indicate that SDF alone or within SMART protocols reduces hypersensitivity in hypomineralized molars [8, 17]. The cautious use of SDF among Network practitioners may be influenced by the potential permanent discoloration effect associated with SDF intervention. However, some data have shown that parents have very agreeable attitudes when SDF is suggested as an intervention on hypomineralized permanent first molars, but might be otherwise challenged by the taste acceptability of SDF [12]. Whether these were the reasons for not considering SDF is unclear and should be investigated in future studies.

There was no agreement among respondents about the management of MIH and the initial disintegration of enamel. This might be expected, given that a recent one-year randomized clinical trial using glass ionomer sealants on hypomineralized permanent first molars concluded that these sealants have the potential to prevent dental caries, but have no similar protective effects against post-eruptive breakdown (PEB) of hypomineralized molars [18]. Nevertheless, the Quick Poll survey did not explore the type of sealants endorsed by respondents nor management after PEB was evident, thus limiting our ability to draw conclusions about this aspect of potential management.

A limitation of the current study is that it did not include respondents' demographic and practice characteristics. Also, we are unable to compare the findings of this poll to other findings in the literature [19] because of fundamental differences in

the content of these surveys. Unlike the core of clinical cases in this Quick Poll, the cited surveys did not include appraisal of young newly erupting molars with hypomineralization defects. In alignment with recent guidelines [4], most general practitioners in these previous surveys opted for prevention, fissure sealants, and active monitoring only in cases with mild MIH (no evidence of clinical disintegration), in contrast to the results from the Quick Poll.

5. Conclusions

Considering the limitations of the present study, it has been shown that there was a strong consensus among Network practitioners about informing parents about newly erupting molars with MIH, yet with a lack of agreement about how best to manage them.

ABBREVIATIONS

MIH, Molar Incisor Hypomineralization; SDF, Silver Diamine Fluoride; PEB, Post-eruptive breakdown; SMART, Silver Modified Atraumatic Restorative Treatment.

AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are publicly available at nationaldentalpbrn.org.

AUTHOR CONTRIBUTIONS

ATA—conceived and designed the research study; wrote the initial draft of the manuscript. VA and DA—helped with the design of the Quick Poll survey questions. JCC and GHG—provided help and advice on data collection, management, and analysis. GHG—helped with the initial editing of the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study involving human participants was reviewed and approved by the University of Alabama at Birmingham Institutional Review Board (Number: IRB-040903006) and informed consent to participate was provided by participants. Consent for publication of images included in this report was obtained from parents or legal guardians.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

REFERENCES

[1] Grossi JA, Cabral RN, Leal SC. Caries experience in children with and without molar-incisor hypomineralisation: a case-control study. Caries Research. 2017; 51: 419–424.

[2] Weerheijm KL. Molar incisor hypomineralisation (MIH). European Journal of Paediatric Dentistry. 2003; 4: 114–120.

[3] Jälevik B, Klingberg GA. Dental treatment, dental fear and behaviour management problems in children with severe enamel hypomineralization of their permanent first molars. International Journal of Paediatric Dentistry. 2002; 12: 24–32.

[4] Lygidakis NA, Garot E, Somani C, Taylor GD, Rouas P, Wong FSL. Best clinical practice guidance for clinicians dealing with children presenting with molar-incisor-hypomineralisation (MIH): an updated European Academy of Paediatric Dentistry policy document. European Archives of Paediatric Dentistry. 2022; 23: 3–21.

[5] Elhennawy K, Schwendicke F. Managing molar-incisor hypomineralization: a systematic review. Journal of Dentistry. 2016; 55: 16–24.

[6] Linner T, Khazaei Y, Bücher K, Pfisterer J, Hickel R, Kühnisch J. Comparison of four different treatment strategies in teeth with molar-incisor hypomineralization-related enamel breakdown—a retrospective cohort study. International Journal of Paediatric Dentistry. 2020; 30: 597–606.

[7] Mungur A, Chen H, Shahid S, Baysan A. A systematic review on the effect of silver diamine fluoride for management of dental caries in permanent teeth. Clinical and Experimental Dental Research. 2023; 9: 375–387.

[8] Erbas Unverdi G, Ballikaya E, Cehreli ZC. Clinical comparison of silver diamine fluoride (SDF) or silver-modified atraumatic restorative technique (SMART) on hypomineralised permanent molars with initial carious lesions: 3-year results of a prospective, randomised trial. Journal of Dentistry. 2024; 147: 105098.

[9] Saad AE, Alhosainy AY, Abdellatif AM. "Evaluation of Silver Diamine Fluoride Modified Atraumatic Restorative Treatment (SMART) on hypomineralized first permanent molar"—a randomized controlled clinical study. BMC Oral Health. 2024; 24: 1182.

[10] Hubbard MJ. Molar hypomineralization. The Journal of the American Dental Association. 2018; 149: 329–330.

[11] Somani C, Taylor GD, Garot E, Rouas P, Lygidakis NA, Wong FSL. An update of treatment modalities in children and adolescents with teeth affected by molar incisor hypomineralisation (MIH): a systematic review. European Archives of Paediatric Dentistry. 2022; 23: 39–64.

[12] Al-Nerabieah Z, AlKhouli M, Dashash M. Parental satisfaction and acceptance of silver diamine fluoride treatment for molar incisor hypomineralisation in pediatric dentistry: a cross-sectional study. Scientific Reports. 2024; 14: 4544.

[13] Gilbert GH, Fellows JL, Allareddy V, Cochran DL, Cunha-Cruz J, Gordan VV, *et al*. Structure, function, and productivity from the National Dental Practice-Based Research Network. Journal of Clinical and Translational Science. 2022; 6: e87.

[14] Cunha-Cruz J, Gilbert GH, Allareddy V, Cochran DL, Fellows J, Kopycka-Kedzierawski DT, *et al*. Characteristics of dentists in the National Dental Practice-Based Research Network. Journal of Dentistry. 2023; 137: 104653.

[15] American Academy of Pediatric Dentistry. Molar-incisor hypomineralization. The Reference Manual of Pediatric Dentistry (pp. 444–451). American Academy of Pediatric Dentistry: Chicago, IL. 2024.

[16] Leal SC, Oliveira TRM, Ribeiro APD. Do parents and children perceive molar-incisor hypomineralization as an oral health problem? International Journal of Paediatric Dentistry. 2017; 27: 372–379.
[17] Ballikaya E, Ünverdi GE, Cehreli ZC. Management of initial carious lesions of hypomineralized molars (MIH) with silver diamine fluoride or silver-modified atraumatic restorative treatment (SMART): 1-year results of a prospective, randomized clinical trial. Clinical Oral Investigations. 2022; 26: 2197–2205.
[18] Schraverus MS, Olegário IC, Bonifácio CC, González APR, Pedroza M, Hesse D. Glass ionomer sealants can prevent dental caries but cannot prevent posteruptive breakdown on molars affected by molar incisor hypomineralization: one-year results of a randomized clinical trial. Caries Research. 2021; 55: 301–309.
[19] Taylor GD, Pearce KF, Vernazza CR. Management of compromised first permanent molars in children: cross-sectional analysis of attitudes of UK general dental practitioners and specialists in paediatric dentistry. International Journal of Paediatric Dentistry. 2019; 29: 267–280.

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