

INPLASY PROTOCOL

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None declared.

Qualitative analysis of treatment patterns on Incisors Hypomineralization in permanent teeth – A Systematic Review

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Review question / Objective: This study's aim was to perform a systematic review to answer the focused question: What are the treatment patterns on Incisor Hypomineralization in permanent teeth?

Eligibility criteria: Studies will be selected according to the PICOS criteria (Participant, intervention, comparator, outcomes, and study design) outlined in the referred sections. No restriction of country, publication status, setting or language will be applied. On studies involving another disease or comparing different types of enamel defects related to trauma and hereditary, like fluorosis or amelogenesis imperfecta on permanent teeth, the data related to Incisor Hypomineralization was included and all other data were excluded. Finally, studies for treatment in primary dentition were excluded.

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 April 2023 and was last updated on 24 April 2023 (registration number INPLASY202340044).

INTRODUCTION

Review question / Objective: This study's aim was to perform a systematic review to answer the focused question: What are the treatment patterns on Incisor Hypomineralization in permanent teeth?

Rationale: Hypomineralization of enamel is defined as a qualitative enamel defect caused by a disturbance during initial

calcification and/or maturation. The most common diagnostic finding is the presence of affected molars by age 6 years, but primary and permanent second molars can also be affected alone or together, as well as primary and permanent incisors. The incisors are less affected and presents slightly different characteristics, without predisposition to enamel fractures and sensitivity when compared to molars. Usually, Patients with incisor involvement

have dissatisfaction related to aesthetics, they are often ashamed to smile. Treatment options are diverse, and management of Incisor Hypomineralization can be challenging due to the different presentations of the disease combined with a broad spectrum of treatment modalities. Different techniques are available such as composites, crowns, veneers, microabrasion, whitening, remineralizing agents and infiltration technique. Therefore, it is recognized that Incisor Hypomineralization is a clinical concern worldwide and more guidance is needed in terms of treatments and protocols. Specifically in the case of the incisors, as they play a fundamental role in the aesthetics of the patient's smile, more and more patients request treatment to solve these defects.

Condition being studied: Treatment patterns on Incisor Hypomineralization.

METHODS

Search strategy: 1) EMBASE (Molar Incisor Hypomineralization OR MIH OR Dental Enamel Hypoplasia (Mesh) OR Tooth demineralization/therapy (Mesh) (((((((((Randomized controlled trial [Publication Type]) OR controlled clinical trial [Publication Type]) OR randomized [Title/Abstract]) OR placebo [Title/Abstract]) OR randomly [Title/Abstract]) OR trial [Title])) OR "Clinical Trials as Topic"[Mesh:NoExp])) NOT ((animals[MeSH Terms]) NOT humans[MeSH Terms. 2) Cochrane Central Register of Controlled Trials (via Ovid): ((molar incisor hypomineral*.mp. OR mih.mp. OR dental enamel hypopla*.mp. OR ((tooth or teeth or dental or enamel) adj3 demineral*).mp.) AND (randomized controlled trial.pt. OR controlled clinical trial.pt. OR random*. ti, ab, kw. OR placebo. ti,ab,kw. OR trial.ti. OR clinical trials as topic/)) NOT (exp Animals/ NOT exp Humans/). 3) MEDLINE via PubMed (Molar Incisor Hypomineralization OR MIH OR Dental Enamel Hypoplasia (Mesh) OR Tooth demineralization/therapy (Mesh) (((((((((Randomized controlled trial [Publication Type]) OR controlled clinical trial [Publication Type]) OR randomized

[Title/Abstract]) OR placebo [Title/Abstract]) OR randomly [Title/Abstract]) OR trial [Title])) OR "Clinical Trials as Topic"[Mesh:NoExp])) NOT ((animals[MeSH Terms]) NOT humans[MeSH Terms.

4) Scopus ((TITLE-ABS-KEY (randomized AND controlled AND trial). OR. TITLE-ABS-KEY (controlled AND clinical AND trial) OR TITLE-ABS-KEY (randomized) OR TITLE-ABS-KEY (randomized) OR TITLE-ABS-KEY (randomised) OR TITLE-ABS-KEY (randomised AND controlled AND trial))) AND (TITLE- vvvABS-KEY (molar AND incisor AND hypomineralization) OR. TITLE-ABS-KEY (dental AND enamel AND hypoplasia) OR TITLE-ABS-KEY (tooth AND. demineralization)))

5) Web of Science ((ALL=(Molar Incisor Hypomineralization)) OR ALL=(Dental Enamel Hypoplasia)) OR ALL=(Tooth demineralization) AND (((ALL=(Randomized controlled trial)) OR ALL=(controlled clinical trial)) OR ALL=(randomi*)) OR AB=(randomly) OR ALL=(Randomised controlled trial).

Participant or population: We are including clinical studies investigating treatments for Incisor Hypomineralization on permanent dentition in Children from 6 to 15 years old. No restrictions regarding gender, or ethnicity is being applied.

Intervention: Evaluate and compare treatments patterns on Incisor Hypomineralization.

Comparator: In this systematic review each Incisor treatment will be compared to each other. There was no reference as an ideal treatment. On studies involving another disease or comparing different types of enamel defects related to trauma and hereditary, like fluorosis or amelogenesis imperfecta on permanent teeth, the data related to Incisor Hypomineralization was included and all other data were excluded. Finally, studies for treatment in primary dentition were excluded.

Study designs to be included: We will include only randomized controlled trials (RCTs).

Eligibility criteria: Studies will be selected according to the PICOS criteria (Participant, intervention, comparator, outcomes, and study design) outlined in the referred sections. No restriction of country, publication status, setting or language will be applied. On studies involving another disease or comparing different types of enamel defects related to trauma and hereditary, like fluorosis or amelogenesis imperfecta on permanent teeth, the data related to Incisor Hypomineralization was included and all other data were excluded. Finally, studies for treatment in primary dentition were excluded.

Information sources: We will search the following electronic bibliographic databases: EMBASE, MEDLINE via PubMed, and Cochrane Central Register of Controlled Trials (CENTRAL). We will use the PICOS strategy for research question construction and evidence search. The reference lists of the articles identified will be cross-checked. Furthermore, and studies from the 'grey literature' will be screened through the following trial registry platform: ClinicalTrials.gov (www.clinicaltrials.gov). A comprehensive manual search will be done in the relevant journals of Dentistry: European Journal of Paediatric Dentistry, International Journal of Paediatric Dentistry, Pediatric Dentistry, Caries Research, Dental Materials and Operative Dentistry. We will contact study correspondent authors to clarify any doubts. Finally, the reference lists of the included studies will be checked to identify additional potential primary studies.

Main outcome(s): The main outcomes will be: aesthetic, hypersensitivity and caries.

Data management: Two review authors will independently search the databases and, upon retrieving study titles and abstracts, identify RCTs to be screened for final selection. The review authors will independently screen the full texts of these included RCTs. Any discrepancies will be solved by discussion. The references will be imported into EndNote X9 software (Thompson Reuters, Philadelphia, PA, USA) where duplicates will be automatically

removed. The quantitative analysis will be performed using R software version 3.6.2 or if available a later version. In case of network meta-analyses, we will use a frequentist methods (netmeta package) for the Mac OS X computer system.

Quality assessment / Risk of bias analysis: Two review authors will independently assess the risk of bias. Any discrepancies will be solved by discussion. Study quality in terms of sequence generation, allocation concealment, blinding, the completeness of outcome data, selective reporting and other biases will be assessed with the Cochrane Collaboration risk of bias tool.

Strategy of data synthesis: A narrative synthesis will be presented to summarize the findings and characteristics of the included studies. Initially, the studies will be qualitatively analyzed, compared, and discussed based on the risk of bias of each study. If possible, a pairwise meta-analysis for direct evidence and a network meta-analysis for direct and indirect evidence of eligible comparisons will be accomplished.

Subgroup analysis: None planned.

Sensitivity analysis: None planned.

Language restriction: No language restriction will be imposed.

Country(ies) involved: USA and Brazil.

Keywords: Incisor Hypomineralization MIH Treatment Permanent teeth Systematic Review.

Dissemination plans: The results of this systematic review will be disseminated through peer reviewed journal.

Contributions of each author:

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