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ANTIBIOTIC PASTES USED IN ENDODONTIC TREATMENT OF DECIDUOUS TEETH: A SCOPE REVIEW PROTOCOL

PASTAS ANTIBIÓTICAS UTILIZADAS NO TRATAMENTO ENDODÔNTICO DE DENTES DECÍDUOS: UM PROTOCOLO DE REVISÃO DE ESCOPO

Rodrigo Franklin de Barros[1] ORCID: 0009-0001-3140-7976
José Lima Silva Júnior[1] ORCID: 0000-0002-8009-0389
Ramon Targino Firmino[2] ORCID: 0000-0001-5581-0658
Luíza Jordânia Serafim Araújo[1] ORCID: 0000-0002-2580-1280
Ana Flavia Granville-Garcia[1] ORCID: 0000-0002-6054-8372

[1] State University of Paraíba, Department of Dentistry, Paraíba, PB, Brazil
[2] Federal University of Campina Grande, Academic Unit of Biological Sciences, Paraíba, PB, Brazil

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RESUMO

Objetivo: Mapear as evidências sobre pastas antibióticas empregadas no tratamento endodôntico de dentes decíduos. **Método:** Protocolo conduzido a partir da metodologia Joanna Briggs Institute (JBI), com utilização da extensão do checklist PRISMA-ScR. Serão incluídas revisões sistemáticas que investiguem a eficácia das pastas antibióticas no tratamento endodôntico de dentes decíduos. A busca será conduzida nas bases de dados MEDLINE via PubMed, Embase, Web of Science, Scopus, Cochrane, e nos sites de literatura cinzenta Open Access Theses and Dissertations, MedNar e Google Scholar. Três revisores independentes realizarão a seleção utilizando o software Rayyan, com divergências sendo resolvidas por um quarto revisor. A extração e a síntese dos dados seguirão um formulário. Os resultados serão apresentados em tabelas contendo informações com a data de publicação, autores, população do estudo, agente antibiótico, objetivo da pesquisa, métodos utilizados e conclusões. O protocolo está registrado na plataforma Open Science Framework: osf.io/eugka.

Descritores: Endodontia; Dente Decíduo; Antibacterianos.

ABSTRACT

Objective: To map the evidences on antibiotic pastes employed in endodontic treatment of deciduous teeth**. Method:** A protocol based on the Joanna Briggs Institute (JBI) methodology, using the extension of the PRISMA-SCR CHECKLIST. Systematic reviews will be included to investigate the effectiveness of antibiotic pastes in endodontic treatment of deciduous teeth. The search will be conducted in MEDLINE databases via PubMed, Embase, Web of Science, Scopus, Cochrane, and on the gray literature websites Open Access Theses and Dissertations, MedNar and Google Scholar. Three independent reviewers will make the selection using Rayyan software, with divergences being resolved by a fourth reviewer. Data extraction and synthesis will follow a form. The results will be presented in tables containing information with the date of publication, authors, study population, antibiotic agent, objective of the research, methods used and conclusions. The protocol is registered in the Open Science Framework Platform: osf.io/eugka.

Descriptors: Endodontics; Decide tooth; Antibacterials.

Corresponding author:
José Lima Silva Júnior
Email: joselimasilvajr@gmail.com

Publisher:
Escola de Enfermagem Aurora de Afonso Costa – UFF
Rua Dr. Celestino, 74 – Centro, CEP: 24020-091 – Niterói, RJ, Brazil
Journal email: objn.cme@id.uff.br

INTRODUCTION

Deciduous teeth remain in the oral cavity for a limited period; however they have an indispensable role in chewing, phonation, articulation, occlusion, and aesthetics[1]. However, situations such as untreated advanced carious lesion and some types of trauma lead to pulpal involvement, sometimes requiring endodontic treatments.

The choice for endodontic treatment in deciduous teeth with pulp involvement is intended to preserve the tooth until its exfoliation[2]. Thus, antibiotic pastes are indicated to treat pulp and periapical pathological changes, with the aim of eliminating microorganisms and preventing/treating infections[3].

Among the forms of endodontic treatment, pulpotomy stands out for maintaining the integrity and vitality of the root pulp, removing only part of the pulp tissue[4]. In turn, pulpectomy consists of the total removal of the pulp tissue, using manual or mechanized instruments, followed by irrigation and filling of the root canals with antimicrobial agents[5].

The most appropriate antimicrobial agent for deciduous teeth needs to be biocompatible, have low toxicity, be easy to manipulate, be resorbable and present radiopacity[6]. In addition, it must have adequate sealing properties, with good adhesion to the walls of the root canals, reabsorption capacity proportional to the rizolysis of the deciduous teeth and be harmless to the permanent germ[7].

There are several pastes to perform endodontic treatment, however there is no consensus on the best in deciduous teeth. Some examples, such as Guedes Pinto paste, based on iodoform, is effective in the treatment of pulpectomies and pulpotomies, having great antimicrobial activity[8]. The antibiotic paste CTZ, composed of chloramphenicol, tetracycline and zinc oxide, with eugenol as a vehicle, promotes excellent clinical and radiographic results[9]. In addition, other types of pastes are calcium hydroxide and double antibiotic (metronidazole/ciprofloxacin), which are efficient in cases of dental trauma[10].

Endodontic treatment in deciduous teeth has demonstrated success and significant clinical evidence, in a previous study with pulpotomies in molars and the use of antibiotic pastes, among them, formocresol, biodentine and endo repair, which showed a high rate of clinical success[11].

Preliminary research was conducted in academic databases such as MEDLINE, Web of Science, Scopus and Embase, as well as Google Scholar. Until November 2023, scope reviews were not identified that broadly address the antibiotic pastes used in endodontic treatment of deciduous teeth.

The objective of this research will be to map the evidences on antibiotic pastes employed in endodontic treatment of deciduous teeth. In addition, it seeks to examine the main clinical conclusions and recommendations derived from these evidences, providing a comprehensive understanding of the current scenario of these therapeutic interventions.

Preparing a review protocol before starting research is a fundamental practice to ensure the quality and integrity of the study. In scope and systematic reviews, the protocol is responsible for defining the objectives and detailing each step of the review process, which facilitates the rigorous and organized conduct of the research[12].

METHOD

This scope review will adopt the methodology recommended by the Joanna Briggs Institute (JBI) for scope reviews[13]. The wording will follow the guidelines of Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-SCR). The prior research protocol for this review was registered in the Open Science Framework (OSF) and is available for access through DOI 10.17605/OSF.IO/EUGKA (osf.io/eugka).

Inclusion criteria

The review will cover studies with deciduous teeth, including participants who are children. The central concept of this analysis is the antibiotic agents used in endodontic treatments, and may present in the form of paste or oils. A specific context will not be established, allowing a broad review of the existing literature on the subject, covering different regions and scenarios.

Regarding sources of evidence, systematic reviews will be considered.

Search strategy

The search strategy will consider primary sources of published and unpublished evidence (gray literature or difficult to locate). The search strategy will be built in three stages: i) In the first stage, the research will be conducted in the databases MEDLINE (accessed through PubMed) and EMBASE, with the main objective of locating publications pertinent to the subject. This phase will involve the analysis of keywords present in the titles and abstracts of the articles considered relevant, as well as the application of the terms MeSH and Emtree to improve and refine the complete search strategy. ii) In the second stage, using the identified keywords and indexing terms, a new search will be conducted in all databases. Additional research on gray literature and unpublished studies will also be conducted. iii) In the third stage, in search of additional sources, the research will include the verification of bibliographies of the articles included from the full text.

The sources of information include electronic databasis (MEDLINE via PubMed, Embase, Web of Science, Scopus, Cochrane), gray literature websites (Open Access Theses and Dissertations, MedNar and Google Scholar). Figure 1 illustrates the research strategy adopted for the MEDLINE database via PubMed. The specific strategies applied in each database are detailed and registered in the Open Science Framework platform, accessible by the link osf.io/eugka.

Sources of evidence

After retrieving references, the documents will be imported to Rayyan (https://rayyan.ai), where duplicates will be removed. A pilot test will be conducted with the entire team, using a set of 25 documents to ensure clarity and consistency in the application of inclusion and exclusion criteria during the screening of titles and abstracts. After at least 75% of agreement, three independent reviewers will evaluate the titles and abstracts in relation to the inclusion criteria, using the Rayyan tool. Any potentially relevant sources will be recovered in full. In a subsequent step, at least three indepen-

Search strategy	The research will be conducted based on the population of deciduous teeth and the concept of endodontic paste. These terms will be expanded using MeSH, Emtree, and Synonyms, and later combined using the Boolean operator "AND"	
Database	**Search strategy**	**Search results**
MEDLINE via PubMed [All Fields]	("Tooth, Deciduous"[Mesh] OR ((Deciduous OR Primary OR Milk OR Baby OR Temporary) AND (Dentition OR Tooth OR Molar OR Premolar OR Canine OR Incisor))) AND (((Endodontic OR Intracanal OR (Root canal)) AND (Medicament OR Antibacterial)) OR ((Paste OR Ointment) AND (Antibacterial OR Antibiotic OR Endodontic OR Intracanal OR (Root canal) OR (Calcium hydroxide) OR Chloramphenicol OR Eugenol OR Formocresol OR Gentamicin OR Iodoform OR Metronidazole OR (Mineral Trioxide Aggregate) OR Minocycline OR Neomycin OR (Camphorated Paramonochlorophenol) OR Rifamycin OR Tetracycline OR (Triamcinolone Acetonide) OR Tricresol-formalin OR (Zinc Oxide) OR Herbal OR Natural)))	

Figure 1 - Search strategy in PubMed. Campina Grande, PB, Brazil, 2024

dent reviewers will analyze in detail the full content of the preliminary selected articles, in view of the established inclusion criteria. Reasons for excluding full-text articles that do not meet eligibility criteria will be recorded and reported in a supplementary document. Any disagreements that arise between reviewers throughout the process stages will be addressed through debates or, if necessary, with the participation of an extra reviewer. The complete communication of the research findings and the stages of inclusion of the studies will be carried out in the final scope review, which will be demonstrated through the PRISMA flowchart.

Data extraction

Data extraction from the articles included in the scope review will be performed by three independent reviewers, using the preliminary data extraction tool (Figure 2).

Variables	**Categories**
Author, date of publication	
Title	
Objective of the study	
Age of participants	
Number of participants	
Quantity of articles included in the qualitative synthesis	
Antibiotic formulation - control	
Antibiotic formulation - intervention	
Type of treatment	Pulpectomy
	Pulpotomy
Follow-up time	
Conclusion and recommendation of the author	

Figure 2 - Data extraction form. Campina Grande, PB, Brazil, 2024

The authors will perform data collection covering the following variables: Author, Date of publication, Title, Study objective, Participant age, number of participants, number of articles included in qualitative synthesis, antibiotic formulation used as control, antibiotic formulation used as intervention, follow-up time, conclusion and recommendation of the author (Figure 2). Any differences that arise between reviewers will be resolved by discussion or, if necessary, by including a fourth reviewer. To obtain missing or additional data, the authors of the articles will be contacted as needed. The initial outline of the instrument for data extraction may be subjected to adjustments and improvements, if necessary, throughout the data extraction phase of the selected studies. Any changes made will be meticulously reported in the scope review manuscript.

Presentation of the results

The extracted data will be organized into tables aligned with the research questions and objectives of this scope review. Where appropriate, figures, tables and graphs will be used.

CONFLICT OF INTERESTS

The authors have declared that there is no conflict of interests.

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AUTHORSHIP CONTRIBUTIONS

Project design: Barros RF, Júnior JLS, Firmino RT, Araújo LJS, Granville-Garcia AF

Data collection: Barros RF, Júnior JLS, Araújo LJS

Data analysis and interpretation: Barros RF, Júnior JLS, Firmino RT, Araújo LJS, Granville-Garcia AF

Writing and/or critical review of the intellectual content: Barros RF, Júnior JLS, Firmino RT, Araújo LJS, Granville-Garcia AF

Final approval of the version to be published: Barros RF, Júnior JLS, Firmino RT, Araújo LJS, Granville-Garcia AF

Responsibility for the text in ensuring the accuracy and completeness of any part of the paper: Barros RF, Júnior JLS, Firmino RT, Araújo LJS, Granville-Garcia AF