

Efficacy of orthopedic and orthodontic treatments in anterior open bite in mixed dentition. A systematic review

INPLASY2024100037

doi: 10.37766/inplasy2024.10.0037

Received: 9 October 2024

Published: 9 October 2024

Berrú, M; Campoverde, C.

Corresponding author:

María José Berrú Medina

berrum73@est.ucacue.edu.ec

Author Affiliation:

Universidad Católica de Cuenca.

ADMINISTRATIVE INFORMATION**Support** - Self-financing.**Review Stage at time of this submission** - Preliminary searches.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY2024100037**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 9 October 2024 and was last updated on 9 October 2024.**INTRODUCTION**

Review question / Objective What is the success rate or efficacy of orthopedic and orthodontic treatment of anterior open bite in mixed dentition?

Rationale Anterior open bite occurs when there is no vertical overlap of the upper and lower incisors. The etiology is multifactorial and includes: oral habits, unfavorable growth patterns, enlarged lymphatic tissue with mouth breathing.

Several treatments have been proposed to correct this malocclusion, but the interventions are not supported by solid scientific evidence. This malocclusion can impair speech, swallowing, chewing and esthetics. Various treatments have been used to correct anterior open bite.

Because of the variety of theories about the cause, a wide variety of treatments have been recommended to correct open bite by either eliminating the cause or correcting dentofacial changes, with the goal of improving mastication, respiratory function, and swallowing. However, some studies have reported high relapse rates.

Despite the existence of an extensive literature on anterior open bite, interventions are not supported by strong scientific evidence. There is a need to investigate the literature on anterior open bite due to the variety of treatments available. And to determine if there is an association between open bite, respiratory pattern, sleep disordered breathing and snoring due to critical systemic disorders that can occur when these conditions are present.

It is therefore essential to perform a systematic search of the current literature to determine the efficacy of orthodontic and orthopedic treatments in mixed dentition, since there is no solid bibliographic support for the treatment of these malocclusions.

Condition being studied Despite the existence of an extensive literature on anterior open bite, interventions are not supported by solid scientific evidence. There is a need to investigate the literature on anterior open bite due to the variety of treatments available. And to determine if there is an association between open bite, respiratory pattern, sleep disordered breathing and snoring

due to critical systemic disorders that can occur when these diseases are present.

A study carried out in Bogota in 4,724 children aged 5 to 17 years, detected open anterior bite in 9% of the cases and with greater frequency in the deciduous and early mixed dentitions. In Mexico, Ramirez and collaborators reported a prevalence of 38% in children aged 3 to 6 years, in 67 patients with ages ranging from 5 to 19 years, they detected 16.3% of open bite in the anterior area, and the groups where it was most observed were from 5 to 8 years of age.

Open bite is difficult to treat and has a prognosis ranging from good to terrible depending on its etiology and severity, and recurrence can reach 25% of treated cases. Some authors express the doubts raised by open bites and urge to determine whether or not orthodontists are capable of treating them with a certain guarantee of success and stable correction.

METHODS

Search strategy A systematic search of the information will be carried out in three digital databases; Scopus, PubMed, Web of Science, through the health sciences descriptors in English MeSH and Boolean operators AND, OR, the information should respond to a clinical question based on the question PICO.

Participant or population Patients with open bite.

Intervention Fixed and removable appliances.

Comparator Fixed or removable orthopedic appliances and fixed orthodontic appliances.

Study designs to be included - Qualitative, prospective, cohort and retrospective randomized and non-randomized clinical trials.- Clinical cases- Observational studies.

Eligibility criteria - Articles from the last 5 years, due to the existence of a previous systematic review of the year 2018

- Articles in English, Spanish, and Portuguese
- Articles published in digital databases: Scopus, PubMed, Web of Science.

Information sources

- Articles from the last 5 years, due to the existence of a previous systematic review of the year 2018

- Articles in English, Spanish, and Portuguese
- Articles published in digital databases: Scopus, PubMed, Web of Science.

- Randomized and non-randomized qualitative, prospective, cohort and retrospective clinical trials.
- Clinical cases
- Observational studies.

Main outcome(s) It is therefore essential to carry out a systematic search of the current literature in order to determine the efficacy of orthodontic and orthopedic treatments in mixed dentition, in addition to the fact that through this research we hope to answer the clinical question.

Quality assessment / Risk of bias analysis Rob 2 Cochrane Collaboration tool for assessing risk of bias.

Strategy of data synthesis IBM SPSS Statistics and excel.

Subgroup analysis Two groups will be examined: fixed or removable orthopedic appliances and orthodontic treatment with either conventional or self-ligating orthodontics. Among the groups that will be analyzed are habit control appliances for lingual interposition with lingual grid, Frankel, Simões Network or SN, Bimler, modified Planas, orthodontic treatment with micro-screws, treatment with intermaxillary elastics, premolar extractions, anterior intrusion and anterior extrusion.

Sensitivity analysis The sensitivity of each study will be analyzed by assessing the p-value or statistical significance, in addition to the comparison of cephalometric values.

Country(ies) involved Ecuador.

Keywords Functional orthopedics, anterior open bite, micro-screws, success.

Contributions of each author

Author 1 - María José Berrú Medina - Bibliographic research and writing of the article.

Email: berrum73@est.ucacue.edu.ec

Author 2 - Cristian Hernán Campoverde Torres - Review of the wording and the information found.

Email: ocampoverdet@ucacue.edu.ec