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CLINICAL EFFICACY AND SAFETY OF ANTHROPOSOPHIC THERAPIES IN DENTISTRY: A SYSTEMATIC REVIEW

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Abstract

Integrative and complementary practices have been incorporated into healthcare in Brazil, including approaches applied to dentistry. Among them, anthroposophic dentistry is presenting increasing clinical interest, although its evidence base remains poorly established. To evaluate the clinical efficacy and safety of anthroposophic therapies applied to dental patients. This systematic review followed the recommendations of the PRISMA 2020. It included clinical studies employing anthroposophic interventions in dentistry compared to conventional treatments, other integrative practices, or placebo. PubMed, Embase, Scopus, Web of Science, SciELO, and LILACS databases were searched, as well as the gray literature (ProQuest), without any restriction on date or language. Two independent reviewers performed study selection, data extraction, and methodological quality assessment using Joanna Briggs Institute tools. The review identified 7,988 records. After screening and full-text reading, no studies met the eligibility criteria. The main reasons for exclusion included the absence of an anthroposophic intervention applied to dentistry, inadequate design, or outcomes inconsistent with the research question. No studies evaluating the clinical efficacy or safety of anthroposophic therapies in dentistry were found. The lack of evidence demonstrates a significant gap in this field, underscoring the urgent need for well-designed primary studies that support the use of these practices based on scientific rigor.

Keywords: Anthroposophy. Anthroposophic medicine. Complementary therapies. Dentistry. Forensic Dentistry. Systematic review.

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1. Introduction

Integrative practices have become increasingly popular in Brazil and have been incorporated into policies of the Unified Health System (National Policy on Integrative and Complementary Practices in the Unified Health System (SUS) 2006). They are included in the National List of Health Actions and Services (Approves the National List of Health Actions and Services 2012) and comprise approaches such as traditional Chinese medicine, homeopathy, medicinal plants, thermalism, and anthroposophic medicine, reflecting the growing recognition of complementary health practices.

In dentistry, these practices are used by dental surgeons as complementary care strategies within expanded models of care (Simoes 2020). In Brazil, anthroposophic dentistry was formally recognized by the Federal Council of Dentistry through Resolution CFO-165/2015. This approach is grounded in a systemic conception of the human being, integrating physical, emotional, social, and spiritual dimensions to promote oral health (Federal Council of Dentistry 2015). Its foundations derive from the anthroposophy proposed by Rudolf Steiner (1861–1925). In the early 20th century, Steiner developed anthroposophic medicine in collaboration with Ita Wegman. This approach explains human beings through four dimensions: the physical body, the etheric body, the astral body, and self-consciousness. These dimensions are articulated in the understanding of health and disease processes (Steiner 2010). Although Steiner did not establish a specific dental branch, his principles influenced the development of anthroposophic dentistry. This practice attributes meanings to the teeth and orofacial structures related to formative forces and human individuality (Galitesi et al. 2012).

From a salutogenic perspective, oral health is understood as an integrated expression of bodily, emotional, and biographical dimensions. Accordingly, the anamnesis is expanded to incorporate emotional, social, and contextual elements, placing the patient's biography at the center of the diagnostic process (Galitesi et al. 2012; Federal Council of Dentistry 2015). Interventions may include dynamized drugs, external therapies, and artistic resources, guided by phenomenological references and qualitative observation methods inspired by Goetheanism (Federal Council of Dentistry 2015).

Despite regulatory recognition and growing interest in integrative dentistry, the scientific literature reveals critical gaps in evidence regarding the clinical efficacy and safety of anthroposophic interventions in dentistry. Methodologically rigorous studies are therefore essential to support evidence-based practice and ensure the safe, responsible integration of these approaches into healthcare systems.

Additionally, the contemporary context is marked by the accelerated circulation of heterogeneous information, often lacking scientific validation (Ferreira et al. 2023). This scenario was exacerbated during the COVID-19 pandemic by the spread of disinformation and unverifiable content (Souza et al. 2024). These conditions underscore the need to ground the use of integrative practices in consistent scientific evidence. Such rigor is indispensable for ensuring patient safety and maintaining the credibility of integrative approaches in dentistry. Therefore, this systematic review evaluated the available evidence on the clinical efficacy and safety of anthroposophic therapies applied to dental treatment compared to conventional interventions, other integrative practices, or placebo.

2. Material and Methods

Protocol Registration

The protocol for this systematic review was developed in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) guidelines (Shamseer et al. 2015) and registered in the Open Science Framework (OSF) database under ID: [https://doi.org/10.17605/OSF.IO/3MYGA]. The study was conducted in accordance with the methodological recommendations of the JBI Evidence Synthesis Manual. The final report structure was based on the PRISMA 2020 Statement (Page et al. 2021).

Research Question

The guiding question was developed using the PICO framework to systematically identify evidence on the clinical efficacy and safety of the proposed interventions. The research question was: "In adult dental patients, what is the clinical efficacy of anthroposophic therapies compared with conventional treatments, other integrative practices, or placebo in resolving clinical conditions?" The PICO acronym components are presented in Table 1.

The primary outcomes were clinical efficacy, assessed by any measure demonstrating therapeutic benefit, improvement of signs and symptoms, or measurable clinical outcomes. Secondary outcomes included adverse effects, impact on patient experience (pain, anxiety, and quality of life), and clinical applicability parameters.

Table 1. Description of the PICO strategy components.

Component	Description
Population (P)	Adult patients of both sexes submitted to any medical or surgical dental care modality.
Intervention (I)	Therapies based on anthroposophic dentistry or its synonyms, administered systemically or locally, employed as a primary or complementary (adjuvant) approach.
Comparator (C)	Control groups submitted to conventional dental treatment (gold standard), placebo, sham (simulation), no intervention, or other Integrative and Complementary Health Practices.
Outcome (O)	Clinical efficacy parameters (e.g., pain reduction, anxiety control, tissue repair acceleration, inflammation reduction) and safety (occurrence of adverse events).

Eligibility Criteria

Inclusion criteria: this review included clinical studies from the primary or gray literature that evaluated the use of anthroposophic therapies in dental care, with no restrictions on language, year, or publication status.

Exclusion criteria: observational studies and documents not featured as original scientific research were excluded. This included narrative reviews, non-systematic reviews, protocols, case reports, editorials, opinions, book chapters, and institutional materials without methodological rigor. *In vitro* studies, animal models, and studies that mentioned anthroposophic dentistry only indirectly were also excluded.

Sources of Information

Electronic searches were conducted in PubMed, Scopus, Web of Science, Embase, LILACS/BBO, and SciELO bibliographic databases. Additionally, gray literature sources were investigated in the ProQuest and Open Access Theses and Dissertations (OATD) platforms to mitigate publication biases and ensure broad literature coverage.

Search Strategies

Searches were conducted on November 2, 2025. Strategies were individually tailored to the syntax rules and specificities of each database using a combination of controlled descriptors (MeSH and DeCS) and free terms. Terms were refined and cross-referenced using the Boolean operators AND and OR and proximity operators to increase the sensitivity and accuracy of study retrieval (Table 2).

The retrieved records were exported to EndNote Web™ software (Clarivate Analytics, Philadelphia, PA, USA), where duplicates were automatically removed. References sourced from OATD and ProQuest were

organized in Microsoft Word™ 2019 (Microsoft Corp., Redmond, WA, USA) for manual duplicate removal. Next, manual verification was performed. Subsequent screening was performed on the Rayyan QCRI (Qatar Computing Research Institute, Doha, Qatar). Two independent (blinded) reviewers conducted the selection in two steps. Initially, titles and summaries were evaluated. Next, full-text readings of potentially eligible studies were planned. Any discrepancies would be resolved by consensus.

The reference lists of the included articles were manually verified to expand study retrieval and identify articles not captured in the primary electronic search. The references selected in this stage went through the same eligibility assessment process, ensuring methodological uniformity and mitigating the risk of losing evidence relevant to the investigated topic. Linguistic biases were minimized using DeepL Translate for publications in the authors' non-native languages.

Table 2. Detailed search strategies, keywords (MeSH/DeCS), and Boolean operators applied in electronic databases.

Database	Search Strategies (November 2025)
Bibliographic Databases	
MEDLINE (via PubMed) http://www.ncbi.nlm.nih.gov/pubmed	#1 "Odontology" OR "Dentistry" OR "Dentist" OR "Oral" OR "Mouth" #2 "Anthroposophy" OR "Complementary Therapies" OR "Unconventional Therapy" OR "Alternative Therapies" OR "Uncommon Therapy"
Embase https://www.embase.com	('odontology' OR 'dentistry' OR 'dentist' OR 'oral' OR 'mouth') AND ('anthroposophy' OR 'complementary therapies' OR 'unconventional therapy' OR 'alternative therapies' OR 'uncommon therapy') AND [embase]/lim
LILACS/BBO http://pesquisa.bvsalud.org/	("Odontology" OR "Dentistry" OR "Dentist" OR "Oral" OR "Mouth") AND ("Anthroposophy" OR "Complementary Therapies" OR "Unconventional Therapy" OR "Alternative Therapies" OR "Uncommon Therapy") AND db:("LILACS" OR "BBO") AND instance:"lilacsplus"
SciELO https://scielo.org/	("Odontology" OR "Dentistry" OR "Dentist" OR "Oral" OR "Mouth") AND ("Anthroposophy" OR "Complementary Therapies" OR "Unconventional Therapy" OR "Alternative Therapies" OR "Uncommon Therapy")
Bibliographic and Citation Databases	
Scopus http://www.scopus.com/	#1 "Odontology" OR "Dentistry" OR "Dentist" OR "Oral" OR "Mouth" #2 "Anthroposophy" OR "Complementary Therapies" OR "Unconventional Therapy" OR "Alternative Therapies" OR "Uncommon Therapy"
Web of Science http://apps.webofknowledge.com/	#1 "Odontology" OR "Dentistry" OR "Dentist" OR "Oral" OR "Mouth" #2 "Anthroposophy" OR "Complementary Therapies" OR "Unconventional Therapy" OR "Alternative Therapies" OR "Uncommon Therapy"
Gray literature	
ProQuest https://www.proquest.com (Theses and Dissertations)	("Odontology" OR "Dentistry" OR "Dentist" OR "Oral" OR "Mouth") AND ("Anthroposophy" OR "Complementary Therapies" OR "Unconventional Therapy" OR "Alternative Therapies" OR "Uncommon Therapy")
OATD	("Odontology" OR "Dentistry" OR "Dentist" OR "Oral" OR "Mouth") AND ("Anthroposophy" OR "Complementary Therapies" OR "Unconventional Therapy" OR "Alternative Therapies" OR "Uncommon Therapy")

2.7 Data Extraction Process (Planned)

The planned process is described as recommended by the PRISMA Statement (Item 10). However, it was not executed due to the absence of eligible studies:

Two reviewers would extract the data independently using a standardized pilot form.

The preset data items for extraction (PRISMA Item 11) included:

1. Identification: Author, year, country, and study design;

2. Participants: Sample size, age, sex, and underlying medical condition;
3. Intervention: Anthroposophic therapy details (type, dosage, frequency);
4. Comparator: Control or placebo group details;
5. Outcomes: Clinical efficacy metrics and adverse events.

However, the data could not be extracted because no studies met the inclusion criteria.

Risk of Bias Assessment (Planned)

Two reviewers should have assessed the methodological quality independently (PRISMA Item 12).

- The use of the Cochrane Risk of Bias (RoB 2) tool was planned for randomized clinical trials.
- The use of the Risk of Bias in Non-randomized Studies - of Interventions (ROBINS-I) tool was planned for non-randomized intervention studies.
- The absence of included studies hindered the application of such instruments, the classification of the risk of bias, or the assessment of the methodological reliability of the evidence.

Measures of Effect (Planned)

The protocol established metrics specific to the nature of the analyzed variables. The planned effect measure for assessing continuous outcomes was the Mean Difference (MD), accompanied by the respective 95% Confidence Interval (CI). The use of the Relative Risk (RR) or Odds Ratio (OR) was planned for analyzing dichotomous outcomes.

Synthesis Methods (Planned)

The synthesis strategy predicted data pooling by intervention type and outcome. A meta-analysis (quantitative synthesis) using the random-effects model was planned, conditioned on the existence of sufficient clinical and statistical homogeneity. It should be evaluated using the I^2 test. However, narrative syntheses, meta-analyses, or overlapping assessments could not be performed due to the absence of eligible studies.

Certainty of Evidence Assessment (Planned)

The certainty of the body of evidence would be assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach, considering the domains of risk of bias, inconsistency, indirect evidence, inaccuracy, and publication bias (PRISMA Item 15). However, due to the nullity of retrieved studies, the grading of evidence was impaired.

3. Results

Study Selection Results

The search strategy applied to electronic databases initially identified 7,988 records. The deduplication process automatically removed 1,888 records, and 759 were removed manually. Then, 5,341 studies remained for the screening step (Figure 1).

At this stage, the titles were read, resulting in the exclusion of 5,339 records that did not align with the proposed theme. Consequently, two entries were selected for detailed eligibility assessment (full-text reading). After careful analysis, none of these studies fully met the pre-established inclusion criteria. The reason for exclusion in this final step was “incorrect study type” (narrative reviews), which did not meet the eligibility criteria of the review. More specifically, one entry was a narrative review of integrative practices in dentistry in general, addressing anthroposophic dentistry as one among other practices recognized by the Brazilian Federal Council of Dentistry (CFO); however, it does not provide empirical data or a specific

evaluation of the clinical effectiveness of this approach. The second entry was published by the Anthroposophical Society in Brazil as a descriptive and conceptual text on anthroposophic dentistry and, as it does not meet the methodological criteria of scientific research, it was classified as institutional dissemination literature. The bibliographic references of both entries were examined and led to no additional inclusions.

Finally, no studies were included for data extraction and qualitative or quantitative synthesis.

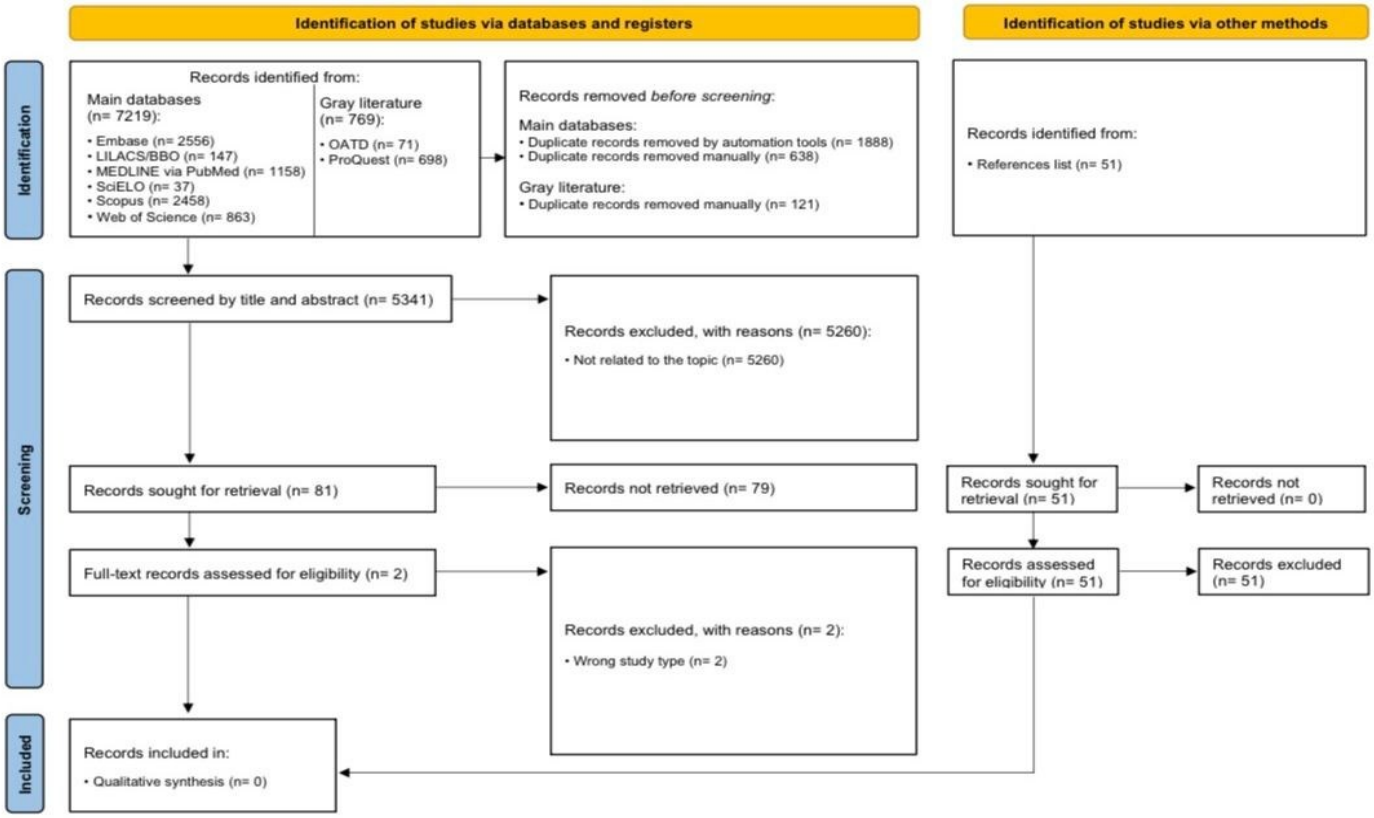

Figure 1. The PRISMA Diagram presents the detailed selection flowchart.

Characteristics of Studies

No primary studies met the eligibility criteria for inclusion in this systematic review. Hence, it was impossible to describe population demographic characteristics, intervention protocols, or measured outcomes.

Risk of Bias in Studies

Methodological quality and risk of bias could not be formally assessed using the RoB 2 and ROBINS-I tools, as planned. The absence of included studies precludes any judgment on the internal or external validity of existing evidence on the subject.

Results of Individual Studies

Due to the lack of eligible clinical studies, no raw or tabulated data were obtained for presenting the individual results of each study.

Synthesis Results

Synthesizing the data, whether narrative or quantitative (meta-analysis), became unfeasible. Consequently, it was impossible to estimate effect sizes, calculate confidence intervals, or assess statistical heterogeneity for the investigated clinical efficacy and safety outcomes.

Certainty of Evidence

The Grading of Recommendations Assessment, Development, and Evaluation (GRADE) system could not be applied to classify the certainty of the body of evidence. Therefore, there is no evidence base for formulating robust clinical recommendations or practice guidelines based on this review.

4. Discussion

This systematic review aimed to evaluate the level of available scientific evidence on the application of anthroposophic dentistry in dental care. The comprehensive search across multiple databases yielded no eligible studies, characterizing an empty review. Although this outcome may be interpreted as limiting, it evidences a substantial literature gap and reinforces the need for rigorous investigation into this therapeutic approach (Aromataris et al. 2020; Gray 2021).

The absence of evidence does not equal the evidence of absence, as extensively discussed in the field of evidence-based medicine (Alderson 2004; Howick 2011). However, the lack of controlled clinical trials, comparative designs, and methodologically rigorous studies implies the inexistence of current robust scientific support to recommend anthroposophic dentistry as an effective or safe practice. That is particularly true for public health services that require interventions evaluated under recognized biomedical standards (Sackett et al. 1996).

Part of this scarcity of evidence stems from the epistemological structure of anthroposophic medicine, substantiated by Rudolf Steiner. Its expanded conception of human beings, including ethereal, astral, and spiritual dimensions, often proves incompatible with traditional experimental models, making it difficult to apply controlled trials and objectively measure outcomes (Kienle et al. 2013; Aromataris et al. 2020). International reviews reinforce this scenario. Studies on anthroposophy in chronic pain or pediatric conditions, such as pseudocroup, often present low methodological rigor, lack of control groups, and high heterogeneity, making reliable conclusions unfeasible (Schwermer et al. 2018; Ploesser and Martin 2023).

Ethical and regulatory challenges exist beyond the methodological gaps. Resolution CFO-165/2015 acknowledges anthroposophic dentistry as an integrative practice, while the Code of Dental Ethics establishes that only techniques with scientific proof can be applied (Federal Council of Dentistry, 2015; Federal Council of Dentistry 2012). Considering the lack of valid studies identified in this review, a paradox emerges: a practice that is institutionally regulated, but devoid of empirical validation, in disagreement with fundamental principles of science, such as reproducibility and falsifiability (Popper 2005; Nosek at al. 2022).

This scenario becomes even more delicate when verifying the risk that the normative legitimation of practices without evidence opens precedents to incorporating pseudoscientific approaches in dentistry. This has been demonstrated in analyses on dental biodecoding and other practices without peer review (Feres and Feres 2023; Barrière et al. 2023) The low professional adherence (only 36 dentists qualified in anthroposophical dentistry in Brazil) reinforces that its institutional inclusion occurs without proportional scientific production to justify such recognition.

Recommendations from international agencies, such as the World Health Organization (WHO 2022), add that integrative practices can be incorporated into health systems, provided they are supported by evidence of effectiveness and safety. The lack of primary studies identified in this review indicates that this requirement has not been met in the field of anthroposophic dentistry.

The main limitation of this study is the lack of eligible articles, making comparative analyses, quantitative syntheses, and the application of tools such as RoB 2, ROBINS-I, or GRADE impossible. Another limitation is the potential terminological variability used by authors in the field, which cannot be fully excluded, although it is mitigated by broad search strategies. The review strictly followed PRISMA and JBI

guidelines. It included multiple databases, gray literature, and a pre-registration procedure. This ensured high methodological sensitivity. This gives robustness to the central finding: the absence of studies does not result from search failures, but rather from a real literature gap.

The present study demonstrated a lack of high-level evidence supporting integrative practices in scientific literature. From another perspective, it suggests that information sources on this topic remain largely restricted to grey literature, as these practices are not formally disseminated through peer-reviewed research articles. This requires caution, since such literature does not undergo the same level of critical appraisal by specialized audiences or the expert review processes typically required by scientific journals. From a practical standpoint, the current findings indicate that there is no reliable or robust evidence to justify the practices proposed and performed within the field of anthroposophic dentistry. Future investigations should prioritize the development of controlled clinical trials, comparative studies, and replicable research designs capable of evaluating the efficacy, safety, and clinical applicability of anthroposophic dentistry. Adapted protocols that reconcile its philosophical foundations with the methodological demands of contemporary science may help broaden its legitimacy. Moreover, it is essential that academic institutions promote systematic research on this and other integrative practices in order to prevent the dissemination of unvalidated approaches and to ensure patient safety.

5. Conclusions

The present systematic review identified an evident gap in the global scientific literature regarding the application of anthroposophic therapies in dentistry. The absence of robust clinical trials precludes any evidence of the efficacy, effectiveness, or safety of these interventions for treating dental conditions. Given the lack of evidence supporting clinical benefits and the uncertainty regarding potential risks or adverse effects, the use of anthroposophic therapies is not recommended in routine dental practice (gold standard). At the current stage of knowledge, their implementation lacks scientific support and should not replace established conventional approaches, as this may compromise the principles of beneficence and non-maleficence.

Hence, anthroposophic dentistry remains experimental. Controlled, randomized, and methodologically rigorous clinical trials are required to reconsider the clinical viability of this practice in the future. These studies should assess efficacy and safety in comparison with established allopathic treatments.

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Conflicts of Interest: The authors declare no conflicts of interest.

Ethical Aspects and Protocol Registration:
Protocol and Ethical Considerations The protocol for this systematic review was developed following the PRISMA-P guidelines and is registered on the Open Science Framework (DOI: 10.17605/OSF.IO/3MYGA), as part of the broader project available at https://osf.io/pcyrw. The study uses secondary public data, thus requiring no formal ethical approval.

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