REVIEW ARTICLE

Evaluation of Spin in Abstracts of Randomized Controlled Trials Published in Pediatric Dentistry Journals

Arun Kumar Patnana[1], Cheranjeevi Jayam[2], Neeraj Kumar[3], Satya Narain[4], Mohit Galani[5], Pravin Kumar[6]

Abstract

Aim and background: The term "spin" in biomedical journals refers to reporting strategies that misinterpret actual results and mislead readers toward viewing a drug or treatment in a more favorable or less favorable manner. The study aimed to evaluate the presence of spin in abstracts of randomized controlled trials (RCTs) published in PubMed-indexed pediatric dentistry journals.

Methods: The study was conducted in the Department of Dentistry at a tertiary care hospital from April to June 2023. Randomized controlled trials published in PubMed-indexed pediatric dentistry journals from January 2010 to December 2022 were included. A literature search was performed by two independent reviewers according to predefined inclusion and exclusion criteria. The abstracts of the included articles were evaluated to identify spin. The method described by Boutron et al. was followed to define and identify spin. Data summary statistics of the included studies were calculated using Google Sheets.

Results: The initial search in PubMed resulted in 3,566 articles. According to the eligibility criteria, 327 articles were included and analyzed for spin in the abstracts. A total of 10 out of 327 (3%) articles showed spin in the abstracts. Randomized controlled trials evaluating pulpotomy as an intervention exhibited the most spin. The majority of abstracts with spin showed a discrepancy in the presentation of results and the conclusion section.

Conclusion: The presence of spin is evident in 3% of PubMed-indexed Pediatric Dentistry journals published from 2010 to 2022.

Clinical significance: Clinicians should be careful when implying the observations of abstracts of RCTs to the clinical scenario, considering the presence of spin.

Keywords: Pediatric dentistry, PubMed, Pulpotomy, Randomized controlled trial, Spin.

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Introduction

Pediatric dentistry as a specialty has been reformed widely owing to research on materialistic and technological advancements in recent years.[1] The research published should be of high quality to generate the guidelines for clinical decision-making in this evidence-based dentistry era.[2] In the evidence pyramid, systematic reviews and meta-analyses (SRMAs) have the highest place, followed by randomized controlled trials (RCTs).[3] Researchers in the medical or dental specialty are encouraged to follow high ethical standards when conducting a good quality clinical trial.[4] The reported study results should follow the predefined primary and secondary endpoints. However, it was observed that the researchers often deviate from reporting the observed results in the abstracts of a scientific paper.[5] Any alteration in the presentation of actual study results in the abstract may result in spin and thus alter the clinical decision-making.[6,7]

Spin in the RCTs of a few medical journals was reported in the literature.[8–10] However, no such attempt was made in the dental specialty journals. Therefore, the present study was planned to evaluate spin in the RCTs of PubMed-indexed Pediatric Dentistry journals. The primary aim of the study was to discern and classify abstracts featuring spin associated with diverse interventions in Pediatric Dentistry. The secondary objective was to discern various forms of spin in the abstracts of RCTs published in Pediatric Dentistry journals.

Methodology

A literature search for randomized controlled trials (RCTs) published in English from 2010 to 2022 in PubMed-indexed pediatric dentistry journals was conducted. The pediatric dentistry journals searched included Pediatric Dentistry (AAPD), International Journal of Pediatric Dentistry, European Archives of Pediatric Dentistry, European Journal of Pediatric Dentistry, Journal of Clinical Pediatric Dentistry, International Journal of Clinical Pediatric Dentistry, Journal of the Indian Society for Pediatric and Preventive Dentistry, and Pediatric Dental Journal. The key terms and their combinations used for the literature search were as follows: Pediatric Dentistry AND Randomized Controlled Trials, Pedodontics AND Randomized Controlled Trials,

[1,4,5]Department of Dentistry, All India Institute of Medical Sciences, Rajkot, Gujarat, India

[2]Department of Dentistry, All India Institute of Medical Sciences, Mangalagiri, Andhra Pradesh, India

[3]Department of Pediatric Dentistry, Postgraduate Institute of Child Health, Noida, Uttar Pradesh, India

[6]Department of Dentistry, All India Institute of Medical Sciences, Jodhpur, Rajasthan, India

Corresponding Author: Arun Kumar Patnana, Department of Dentistry, All India Institute of Medical Sciences, Rajkot, Gujarat, India, Phone: +91 9966117228, e-mail: arun0550@gmail.com

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Deciduous Teeth AND Randomized Controlled Trials, Primary Teeth AND Randomized Controlled Trials, ISSN 0164-1263 AND Randomized Controlled Trials, ISSN 1365-263X AND Randomized Controlled Trials, ISSN 1996-9805 AND Randomized Controlled Trials, ISSN 2035-648X AND Randomized Controlled Trials, ISSN 0974-7052 AND Randomized Controlled Trials, ISSN 1557-5268 AND Randomized Controlled Trials, ISSN 0970-4388 AND Randomized Controlled Trials, and ISSN 0917-2394 AND Randomized Controlled Trials. Clinical trials other than RCTs and RCTs without adequate information regarding results and conclusions in the abstract were excluded from the study.

Two investigators separately searched for possible inclusion of articles. Initially, titles were screened, and later, the abstracts were evaluated for possible inclusion. Any discrepancy in the selection of articles was resolved by a third investigator. The data from abstracts of the included articles was extracted using a pilot-tested Google Form. The article details such as title, journal, experimental arm, comparator arm, the primary objective, and the statistical analysis of the primary objective were extracted from each included abstract.

The method described by Boutron et al. was followed to define and identify the spin in the included articles.[7,11] Available training modules for identification of spin and extraction of data were utilized by the investigators during the study period.[6,11] The presence of spin was confirmed if the investigators reported calculations of statistical significance in the results section but interpreted as statistically nonsignificant or claimed benefit from any intervention/treatment despite nonsignificant results or any deviation from the presentation of results of the primary endpoint or considering the significance within-group analyses/subgroup analyses. The presence of spin is evaluated only for the primary endpoint in the abstract. If the authors failed to mention the primary endpoint, the objective that was first mentioned in the abstract was considered as the primary endpoint. Two reviewers evaluated the presence of spin in the abstracts separately, and any discrepancy was resolved by the third reviewer. Data summary statistics, such as percentages of the included studies, were calculated using Google Sheets.

Results

An initial search identified a total of 3,566 articles, and after the removal of duplicate articles and articles for other reasons, 432 articles were selected for screening the abstracts. After a critical evaluation of abstracts 105 articles were excluded, and 327 articles were included for evaluating the spin in the abstracts (Fig. 1).

Of the 327 articles included for evaluation of spin, 10 (3%) articles have shown the spin. The presence of spin as per the intervention is presented in Figure 2. RCTs evaluating different treatments/materials for pulpotomy have presented the most spin (3 out of 10). A maximum of the articles presented a discrepancy in the presentation of results and conclusion in the abstracts (6 out of 10), followed by the presentation of nonsignificant results as significant (Fig. 3). None of the included articles presented the subgroup analysis or within-group comparison of the primary endpoint in the abstracts.

Discussion

In this evidence-based era, researchers, authors, clinicians, and students usually refer to medical/dental journals available online for any scientific query.[12,13] However, many scientific journals come with huge subscription fees, and the access to full-text articles is very limited. In such a scenario, researchers and students may utilize the freely available content of abstracts on major databases like PubMed.[14] The observations of the study results presented in the abstract should be clear and transparent.[15] Favoring any specific intervention or treatment or medicament, irrespective of nonsignificant results, may mislead the readers or clinicians. It was also reported that the decisions of the editors do depend on the observations presented in the abstract alone.[8,16] Thus, researchers and authors have an ethical obligation towards the presentation

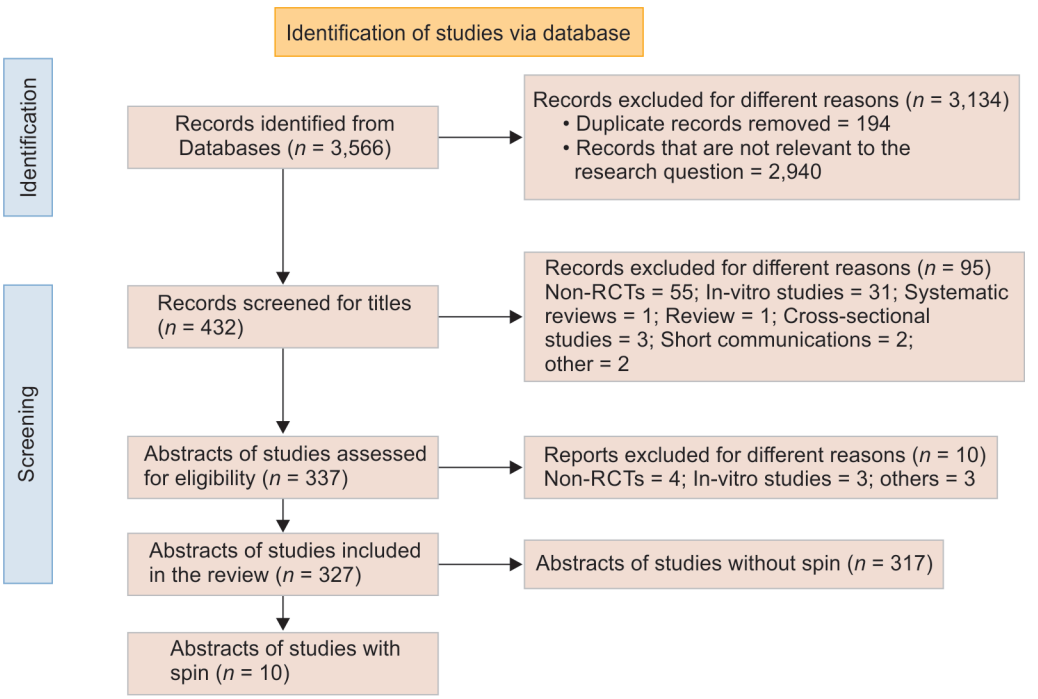

Fig. 1: Selection of articles based on the predefined inclusion and exclusion criteria

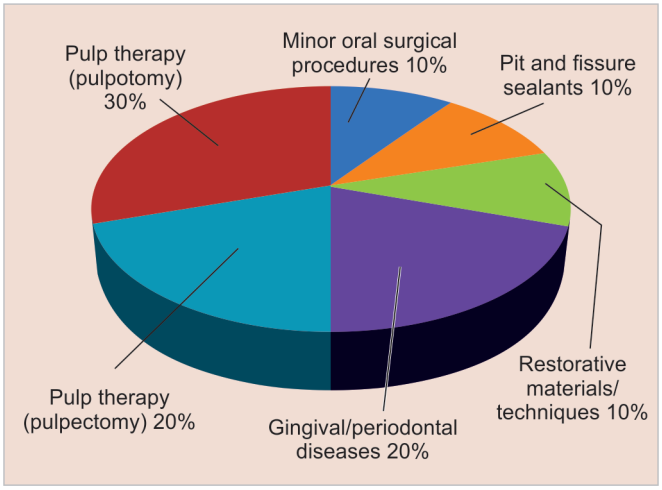

Fig. 2: The presence of spin in the RCTs as per the intervention

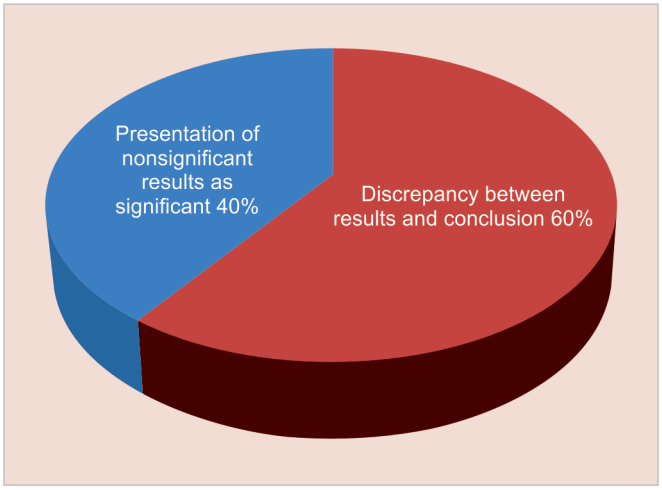

Fig. 3: Manifestation of different types of spin in the abstracts of RCTs is as follows

of authentic study results in the abstracts.[17] Any alterations in the presentation of actual study results may result in spin in the abstracts.

There are possibilities that the clinical decisions may be affected by the articles published with spin.[10] However, no literature was found that evaluates the association of spin in abstracts and affected clinical decision-making in Pediatric Dentistry. This was the first attempt in the literature to evaluate the spin in Pediatric Dentistry journals. The presence of spin in the pediatric dental specialty could be due to two major reasons. One includes the authors may be more enthusiastic to show the success of new dental materials in the market or to prove the effectiveness of any new dental treatment/intervention or material for clinical use. Thus, clinicians or researchers should be careful when reading or referring to the scientific content published in easily accessible abstracts online.

The assessment of spin is a relatively recent development within the scientific community, and only a handful of medical specialties have undergone similar evaluations within their respective fields.[8,9,11] An attempt was made to compare the percentage of spin observed in Pediatric Dentistry journals to the previously published Medical journals that evaluate spin. Interestingly, it was observed that the Pediatric Dentistry journals found only 3% of abstracts with spin when compared to the Psychiatry (56%),[8] obesity (48.9%),[11] and oncology (37.1%)[9] journals. The observation of 3% of spin in abstracts is relatively low when compared to other journals. The difference in the presentation of spin between Pediatric Dentistry journals and other medical journals could be because of variations in the methodology employed. In the present study, full-text articles were not referred to, funding information was not considered, and the trial registries were also not verified to confirm the primary endpoint of the protocol before the start of the study.

The presence of spin is more evident in the RCTs published on the topic of pulpotomy in primary teeth, followed by the topics of pulpectomy and gingival or periodontal diseases. The effectiveness of various interventions or new treatment modalities or the efficacy of novel pulpotomy materials has been under research in Pediatric Dentistry.[18] The enthusiasm of authors to prove the success of novel treatments or materials in the pulpotomy of primary teeth could be the possible reason for the presentation of spin in the abstracts. An attempt was also made to evaluate the type of spin observed in the Pediatric Dentistry journals. The majority (60%) of the RCTs presented a discrepancy in the presentation of results and conclusion section in the abstracts. In simple terms, the authors presented the actual results in the results section, but the conclusions were modified to fit their requirements/necessities.

Prevention of presentation of spin in RCTs of Pediatric Dentistry journals is an achievable task. The prevention is a two-step process that should be taken up by the authors in the first stage and by the reviewers/editors in the second stage. Authors of the scientific papers should refer to the "Consolidated Standards of Reporting Trials (CONSORT) for Abstracts guidelines" for presenting the abstracts for RCTs.[19] Spin can also be prevented by the authors by strictly following the preregistered trial protocol accurately and minimizing the deviation from protocol.[20,21] In the second stage, the presentation of spin can be prevented at the reviewer stage, where the reviewers should identify the presence of spin by critical evaluation of the abstract and manuscript.

The inclusion of all PubMed indexed Pediatric Dentistry journals for evaluation of spin in abstracts is one of the strengths of the present study. Previously published medical articles that evaluate the spin in their respective specialty included only a few key/high-impact factor journals for evaluation of spin. However, in the present study, no such restriction was followed, and all PubMed indexed Pediatric Dentistry journals were included and evaluated. In addition, in the present study, RCTs published over a period of 12 years (2010–2022) were included to increase the spectrum of data collection and analysis. The duration for article inclusion was decided based on the publication of updated CONSORT guidelines.[22] Though the authors made sincere efforts to include a wide spectrum of journals over a long duration to strengthen the study, referring to the full texts of articles, cross-checking the funding support and trial registries could have strengthened the study more and should have yielded reliable results. In addition, the study results cannot be generalized to the non-English language and non-PubMed indexed Pediatric Dentistry journals.

Conclusion

The presence of spin was evident in 3% of abstracts of PubMed indexed Pediatric Dentistry journals published from 2010 to 2022. RCTs evaluating the pulpotomy techniques/materials have shown the maximum number of articles with spin, and the majority of the

abstracts with spin showed a discrepancy between the presentation of results and conclusion.

Clinical Significance

Clinicians should be careful when implying the observations of abstracts of RCTs to the clinical scenario, considering the presence of spin. Strictly following the "CONSORT for Abstracts" guidelines by authors and critical review of the manuscripts by reviewers may reduce the publication of spin in Pediatric Dentistry journals.

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