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Dental management in children with autism spectrum disorder: a systematic review

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Abstract

Introduction: In the context of autism spectrum disorder (ASD), this condition represents a complex neurodevelopmental disorder in children and adults. Anxiety and fear of dental treatment are frequently observed in children with ASD, manifesting through difficult behaviors and uncooperative reactions during treatment. **Objective:** It was to develop a concise systematic review study to highlight the main clinical approaches to dental care in autistic children. **Methods:** The systematic review rules of the PRISMA Platform were followed. The search was conducted from December 2025 to January 2026 across the Web of Science, Scopus, Embase, PubMed, ScienceDirect, SciELO, and Google Scholar databases. The quality of the studies was assessed using the GRADE instrument, and the risk of bias was evaluated according to the Cochrane instrument. **Results and Conclusion:** According to the GRADE instrument, most studies presented homogeneous results, with X^2 = 79.5% > 50%. A total of 80 articles were found and submitted for eligibility analysis, with 09 final studies selected to compose the results of this systematic review. Considering the Cochrane tool for risk of bias, the overall assessment resulted in 05 studies with a high risk of bias and 12 studies that did not meet GRADE and AMSTAR-2 standards. It was concluded that children with autism spectrum disorder face unique challenges in maintaining oral health due to sensory sensitivities, communication difficulties, and behavioral barriers. Culturally adapted dental visual aids have demonstrated effectiveness in modifying behavioral patterns in children diagnosed with autism spectrum disorder during dental appointments. Furthermore, it is necessary for children with ASD to undergo a pre-operative psychological evaluation to investigate parental expectations and cooperation and to determine if appropriate dental treatment should be initiated.

Keywords: Autism spectrum disorder. Neurodevelopmental disorder. Children. Anxiety. Dental care.

Introduction

In the context of autism spectrum disorder (ASD), this condition represents a complex neurodevelopmental disorder in children and adults [1,2]. Anxiety and fear of dental treatment are frequently observed in children with ASD, manifesting through difficult behaviors and uncooperative reactions during treatment. These behaviors include hyperactivity, impulsivity, anger, self-stimulatory behaviors, self-harming behaviors, and disruptive behaviors, which make dental treatment more difficult [3-9].

In this context, dental care and oral health of children with these disorders require special procedures and adaptations due to poor oral hygiene and severe dental diseases in this population [10]. The oral hygiene status of children with ASD is associated with risk indicators that impact the emergence of new caries [11]. It has been shown that autistic children frequently

exhibit uncooperative behaviors, such as crying or physical aggression, during dental appointments. One of the reasons that can lead to poorer oral health is anxiety regarding dental examinations and oral hygiene status in the population with ASD [12-14].

In this respect, the objective of oral behavior management in pediatric dentistry is to communicate and demonstrate dental treatment procedures, making it necessary to formulate more adapted and specific strategies to improve the success rate of dental treatment in children with ASD [15-17]. The use of visual pedagogy is an effective practice to improve cooperative behavior in children with ASD, effectively reducing dental anxiety through peer video modeling or different types of stimuli and interventions on electronic screens [18].

Some authors have analyzed pain, behavior, and sensory discomfort in a regular dental environment and in a sensorially adapted dental environment between children with ASD and typically developing children during dental treatment [19]. Thus, another author demonstrated that this perception regarding the care of autistic individuals can be effective in reducing anxiety and inducing relaxation [20].

In light of this, the present study developed a concise systematic review to highlight the main clinical approaches to dental care in autistic children.

Methods

Study Design

This study followed the international systematic review model, following the PRISMA (preferred reporting items for systematic reviews and meta-analysis) rules. Available at: http://www.prisma-statement.org/?AspxAutoDetectCookieSupport=1. Accessed at: 01/14/2026. The AMSTAR 2 (Assessing the methodological quality of systematic reviews) methodological quality standards were also followed. Available at: https://amstar.ca/. Accessed at: 01/14/2026.

Search Strategy and Search Sources

The literature search process was carried out from December 2025 to January 2026 and developed based on Web of Science, Embase, Scopus, PubMed, Lilacs, Ebsco, Scielo, and Google Scholar, covering scientific articles from various periods to the present day. The following descriptors were used in health sciences (DeCS/MeSH terms): *"Autism spectrum disorder. Neurodevelopmental disorder. Children. Anxiety. Dental care",* and the Boolean "and" was used between the MeSH terms and "or" between the historical findings.

Study Quality and Risk of Bias

Quality was classified as high, moderate, low, or very low regarding the risk of bias, clarity of comparisons, precision, and consistency of analyses. The most evident emphasis was on systematic review articles or meta-analyses of randomized clinical trials, followed by randomized clinical trials. Low quality of evidence was attributed to case reports, editorials, and brief communications, according to the GRADE instrument. The risk of bias was analyzed according to the Cochrane instrument by analyzing the Funnel Plot graph (Sample size versus Effect size), using Cohen's test (d).

Results and Discussion

Summary of Findings

A total of 80 articles were found and submitted to eligibility analysis, with 09 final studies selected to compose the results of this systematic review. The listed studies were of medium to high quality (Figure 1), considering the level of scientific evidence of studies such as meta-analysis, consensus, randomized clinical, prospective, and observational. Biases did not compromise the scientific basis of the studies. According to the GRADE instrument, most studies presented homogeneity in their results, with X^2=79.5%>50%. Considering the Cochrane tool for risk of bias, the overall assessment resulted in 05 studies with a high risk of bias and 12 studies that did not meet GRADE and AMSTAR-2.

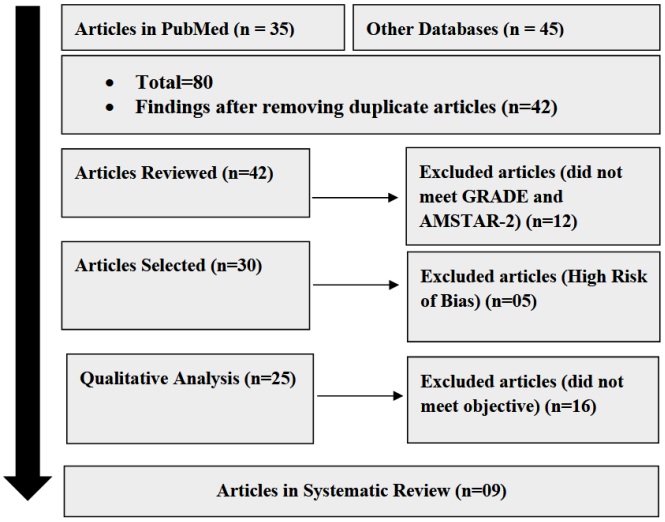

Figure 1. Flowchart showing the article selection process. Source: Own Authorship.

Figure 2 presents the results of the risk of bias of the studies using the Funnel Plot, showing the calculation of the Effect Size (Magnitude of the difference) using Cohen's Test (d). Precision (sample size) was determined indirectly by the inverse of the standard error (1/Standard Error). This graph did not

have a symmetrical behavior, suggesting a significant risk of bias, both among studies with small sample sizes (lower precision) that are shown at the base of the graph and in studies with large sample sizes that are presented at the top.

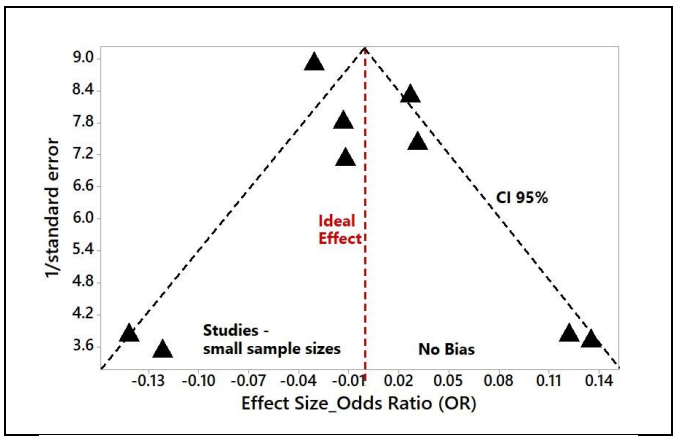

Figure 2. The non-symmetrical funnel plot suggests risk of bias among the studies with small sample sizes that are shown at the bottom of the graph. High confidence and high recommendation studies are shown above the graph (n=09 studies). Source: Own Authorship.

Major Considerations and Clinical Outcomes

The authors Al-Beltagi et al. (2025) [21] synthesized existing research on dental problems in children with ASD, barriers to care, management strategies, and future directions for better oral health outcomes. A total of 165 studies met the inclusion criteria. Children with ASD had a higher prevalence of dental caries, gingivitis, bruxism, and malocclusion compared to their neurotypical peers. Barriers to dental care included sensory sensitivities, communication difficulties, financial constraints, and a shortage of dental professionals trained to care for children with ASD. Effective interventions included desensitization programs, behavioral therapy, digital applications, and interdisciplinary collaboration. Parent education and professional training were crucial for improving oral health outcomes.

Furthermore, the authors Corridore et al. (2026) [22] evaluated through a retrospective study the effectiveness of an existing educational approach, called the sensory-based educational approach, which aims to improve cooperation during dental treatment of children with ASD. The final sample consisted of 45 children with ASD who were initially uncooperative and 40 children who were initially cooperative who completed the ESBA program between 2013 and 2020. The data included demographic and clinical examination variables, medical history, behavior, and child cooperation. A statistically significant improvement was observed throughout the different phases of the ESBA program, independent of the other explanatory variables of the study. The 95% confidence intervals for the predicted probability of an initially uncooperative child showing improvement at the end of the ESBA program were 0.71 and 0.88, while the probabilities of an initially cooperative child showing improvement were lower, at 0.04 and 0.20.

The authors Shan et al. (2025) [23] determined and compared the frequency and distribution of dental developmental disorders in children with ASD, ADHD, and neurotypical children. A total of 673 children, aged between 3 and 13 years, were included in this cross-sectional study. Children with ASD and ADHD showed a significantly higher prevalence of dental developmental disorders (51.6%) compared to the control group (22.6%). Anomalies such as hypodontia, conoid lateral incisors, talon cusp, and enamel hypoplasia were more prevalent in the ASD group than in the control group.

The authors Octavia et al. (2025) [24], through a systematic review, provided evidence for the structural-visual approach in reducing non-cooperative behavior in dental care in children with ASD. The studies analyzed several structural-visual interventions, participants, study design, countries, and outcomes. The structural-visual approach can reduce non-cooperative behavior in children with ASD.

A controlled, double-blind, randomized clinical trial conducted by the authors Aljubour et al. (2024) [25] analyzed the effectiveness of culturally adapted dental visual aids in modifying behavioral patterns during dental appointments in children with ASD. A total of 64 children were diagnosed with ASD. Behavioral patterns were significantly modified in the experimental group ($p < 0.001$), while in the control group, the difference was not statistically significant ($p=0.077$). In terms of behavioral patterns, the experimental group showed significantly superior performance to the control group ($p < 0.001$).

Finally, the authors Tang et al. (2023) [26] assessed through a systematic review the effectiveness and feasibility of managing dental anxiety in children with ASD by pediatric dentists. Four indicated that it is extremely necessary to reduce dental anxiety in children with ASD to increase cooperation in a sensorially adapted dental environment. Other studies have also shown similar results [1-3].

Limitations

Despite the growing awareness of these challenges, a comprehensive synthesis of evidence-based solutions is still lacking. It is necessary to conduct a pre-operative psychological assessment in children with ASD, investigate parental expectations and cooperation, and determine whether appropriate dental treatment should be initiated.

Conclusion

It was concluded that children with autism spectrum disorder face unique challenges in maintaining oral health due to sensory sensitivities, communication difficulties, and behavioral barriers. Culturally adapted dental visual aids have demonstrated effectiveness in modifying behavioral patterns in children diagnosed with autism spectrum disorder during dental appointments. Furthermore, it is necessary for children with ASD to undergo a pre-operative psychological evaluation to investigate parental expectations and cooperation and to determine if appropriate dental treatment should be initiated.

CRediT

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Conflict of Interest

The authors declare no conflict of interest.

Similarity Check

It was applied by Ithenticate@.

Application of Artificial Intelligence (AI)

Not applicable.

Peer Review Process

It was performed.

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