

Emerging Non-Traditional Methods in Pediatric Oral Health Education (A Narrative Review)



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Abstract

Aim: Traditional oral health education (OHE) methods do not always engage children actively. Therefore, researchers have increasingly explored innovative, non-traditional approaches. This narrative review aimed to assess how non-traditional OHE methods may encourage children to adopt and maintain good oral hygiene practices.

Materials and Methods: This review included 16 studies examining game-based learning, digital media, music, puppetry, mobile phone applications, and experiential learning approaches. Most studies used pre-post intervention designs, whereas others used randomised controlled or quasi-experimental designs.

Results: Overall, the included studies suggested that non-traditional methods, particularly game-based and interactive digital interventions, may improve children's oral health knowledge, attitudes, and behaviours. These approaches appeared to promote active participation, improve information recall, and encourage positive behavioural changes. The studies also highlighted the importance of age-appropriate content, cultural adaptation, and parental involvement in improving the effectiveness of OHE interventions. However, several limitations were reported, including small sample sizes, short follow-up periods, limited assessment of long-term behavioural outcomes, and a lack of standardisation in outcome measures.

Conclusion: This review highlights the potential of integrating technology and innovative teaching approaches into oral health promotion. These findings may inform the development of OHE strategies for children in different settings..

Keywords: health education; children; health promotion; non-traditional educational methods; educational technology; digital health tools

Abbreviations: OHE: Oral Health Education; WHO: World Health Organization; AR: Augmented Reality; SGs: Serious Games

Introduction

Dental caries (tooth decay) is one of the most common ailments around the globe. The World Health Organization (WHO) defines oral health as integral to essential functions and psychosocial well-being. Global oral health highlights the prevalence of oral diseases, affecting 3.5 billion people, with a significant impact on low- and middle-income countries WHO [1]. Despite being

preventable diseases, dental caries and periodontal diseases remain widespread, contributing to long-term consequences in children's cognitive development Elsadek [2]. Inadequate oral health can significantly impact the well-being of children, resulting in a decline in overall health. Children experiencing poor oral health are more prone to school absenteeism compared to those with good oral health. Pain, discomfort, sleep disturbances,

and missed school or workdays are commonly encountered issues for numerous children and adults globally Tinanoff [3]. Studies indicate that children's oral health awareness is greatly influenced, especially by education and personal hygiene practices Saadah [4]. Regular brushing and flossing are crucial in maintaining oral health. By doing so, we can prevent dental diseases such as cavities and gum disease from occurring, which can cause discomfort, pain, and even tooth loss. Having good oral hygiene can also reduce the risk of developing other illnesses, including diabetes, heart disease, and stroke.

The expenditure on treating diseases can be quite high in every country but taking simple and easy steps as preventive measures will help to avoid such expenses. Education always plays an essential role in decreasing the risk of oral diseases. The main goal of OHE is to promote overall health practices by providing information and guidance. These efforts aim to reinforce clinical results and encourage comprehensive oral health Dwi Febria [5].

The connection between traditional and non-traditional methods in dental health education reveals significant differences in effectiveness and engagement. Non-formal education methods emphasize the child's psychological and physical growth, incorporating health education within wider educational frameworks Angelova [6]. Traditional methods often depend on lectures and non-interactive presentations, while non-traditional approaches integrate interactive and participatory elements, boosting learning environments. This overview will analyze the key aspects of both methods. Forms of learning, especially in oral health, have immense potential through interactive media like games, augmented reality (AR), and stories. These media increase the degree of motivation and interest among children, and learning becomes fun and more effective. With the inclusion of play and

interactivity, these new approaches capture children's interests and allow for better retention of oral health facts. Health education games can enhance children's health awareness regarding healthy behaviours. For instance, a game was developed in a study, and children were empowered to identify chronic disease risk factors, thus improving co-responsibility for health (Fonseca 2013). This review aims to provide a comprehensive overview of the current state of non-traditional methods in OHE for children. It evaluates the effectiveness of various interventions and identifies areas for future research. The review also explores the theoretical underpinnings of these methods and discusses their potential to address the challenges associated with traditional OHE.

Methods

We conducted a narrative review of studies examining non-traditional methods of OHE for children. A narrative research strategy was used to locate relevant literature on current knowledge related to non-traditional methods of OHE for children. We searched PubMed, Google Scholar, and relevant oral health and paediatric journals for studies published between 2018 and 2025. We considered studies published in English, regardless of study design. While this type of review typically employs a non-systematic review strategy, it still plays a vital role by providing readers with up-to-date knowledge about a specific topic. A narrative review can efficiently summarise much information about the subject into just a few pages (Martin et al. 2024). To obtain a detailed view of non-traditional methods in OHE for children, research questions and objectives are listed in Table 1. We included papers focused on non-traditional methods in OHE for children. We excluded secondary studies published as abstracts, tutorials or posters.

Table 1

Research Questions	Research Objectives
1. What non-traditional methods are used in OHE for children?	1. To identify non-traditional OHE methods used for children, including games, AR, videos, and storytelling, in improving oral health knowledge, attitudes, and practices in children.
2. What are the key features and characteristics of effective non-traditional interventions?	2. To identify and analyse the key features and characteristics that define effective non-traditional interventions in health education, particularly focusing on their impact on engagement, learning outcomes, and the holistic development of children.
3. What are the limitations associated with the implementation of non-traditional methods?	3. To explore the limitations and challenges of implementing non-traditional health education methods.

Search strategy

The search strategy used the following Boolean search terms: ("oral health education" OR "dental health education") AND (child* OR children) AND (game OR "augmented reality" OR video OR music OR storytelling OR "non-traditional").

Study selection and data extraction

All identified references were imported into Zotero database

reference management, and duplicate records were eliminated. Titles and abstracts of studies reviewed using a search strategy were screened independently by authors to identify studies that potentially met the criteria.

Results

A total of 96 records were identified through database searching. Following title and abstract screening, 50 records were

screened, and 46 were excluded because they were duplicates or irrelevant to the topic. The remaining 26 records underwent full-text eligibility assessment, of which 10 were excluded because

they were not relevant to the review topic. A total of 16 studies were included in the narrative review, as shown in (Figure 1).

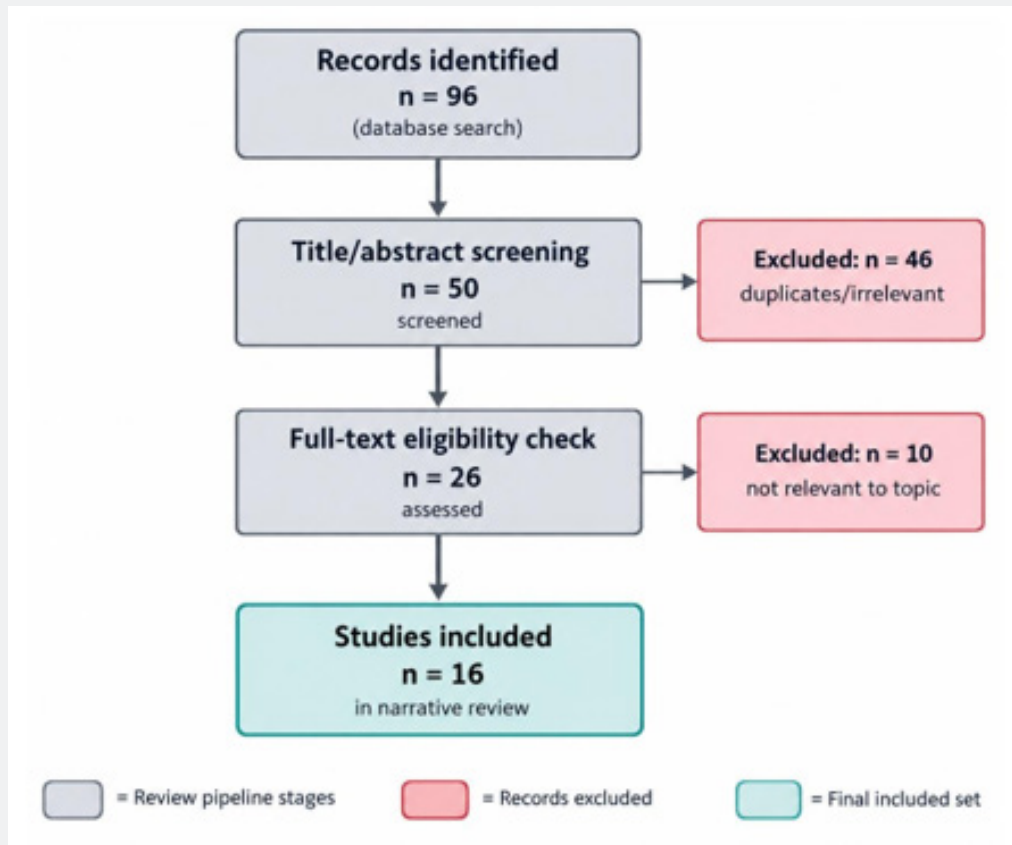


Figure1: Flow diagram of study selection for the narrative review

Games for Enhancing Children's OHE

Games have emerged as an engaging and effective tool for educating children about oral health. These interactive activities not only hold children's attention but also make learning enjoyable, enhancing oral health message retention."

Snakes and ladders

Snakes and Ladders have been utilized as an educational tool to improve children's understanding of dental health. A study by Ismayanti [7] highlighted its effectiveness in helping children grasp dental and oral health concepts. Cahyani & Sudaryanto [8], also emphasized the game's potential in fostering awareness and promoting behaviours related to dental hygiene. Ismayanti [7], demonstrated that incorporating Snakes and Ladders in an educational setting led to a significant improvement in oral health knowledge in the experimental group, compared to a control

group. The game's format, combining chance and learning, makes understanding oral health fun and educational. Additionally, the competitive aspect motivates children to actively participate and retain information.

Serious games (SGs)

Serious games (SGs) are designed with specific learning objectives in mind, making them an effective medium for delivering OHE. Zaror [9], explored the use of SGs to teach children about oral hygiene, the impact of diet on oral health, and the importance of regular dental visits. Abiel [10] used the play-way method, a form of serious gaming, to teach dental hygiene. SGs offer interactive experiences that enhance knowledge acquisition and skill development, and their interactive nature enables children to actively engage with content and receive immediate feedback, reinforcing learning.

Augmented reality (AR) in OHE for children

Augmented Reality (AR) is another innovative technology that provides children with a more immersive and engaging learning experience. By integrating virtual elements with the real world, AR offers a dynamic way for children to interact with educational content.

Interactive and engaging AR-based tools

S. Rahmasari [11], explored AR-based tools to provide interactive and engaging OHE for children. AR applications allow children to visualize concepts in 3D, making it easier to grasp abstract ideas. These applications can be particularly effective in teaching proper brushing techniques or demonstrating the harmful effects of bacteria on teeth. By engaging in multiple senses, AR tools help create a more memorable learning experience, ensuring that children retain important information about maintaining good oral hygiene.

The role of videos in OHE for children

Videos have become essential in OHE, providing a visually stimulating and dynamic way to present information. Videos in educational settings have proven effective in enhancing children's understanding of oral hygiene practices and promoting healthy behaviours.

Educational and culturally relevant videos

Aulia [12] found significant improvements in children's understanding of oral health through educational videos. Bankole [13] developed culturally relevant videos to address the specific needs of different populations, highlighting the importance of tailoring educational content to cultural contexts. Alhayek [14] also utilized animated videos to convey oral health messages effectively.

The use of music in promoting OHE

Music has been explored as a creative and effective strategy for promoting OHE, particularly by creating emotional connections with the content. Music can reinforce positive behaviours and make oral health messages more memorable.

Music as an emotional and educational tool

Cahyani & Sudaryanto [8] Highlighted music as an effective tool for improving children's understanding of dental hygiene. Music, through songs and rhythms, can make oral health education more memorable, while also helping to teach specific techniques, such as proper brushing methods and timing, in a fun and engaging way.

Storytelling as a powerful tool in OHE

Storytelling is a traditional yet powerful method for engaging children and conveying health messages in a relatable and

memorable way. Stories can serve as an educational tool by modelling positive behaviours and emphasising the importance of oral health.

Storytelling to enhance oral health knowledge and practices

Shruti [15] found that storytelling was effective in improving preschool children's knowledge, attitudes, and practices regarding oral health. Stories, which often involve characters and scenarios children can relate to, help convey health messages engagingly and meaningfully. Storytelling enables children to understand the importance of oral hygiene enjoyably and memorably, ultimately encouraging them to adopt positive health behaviours.

Discussion

Non-traditional and traditional methods show positive results in improving children's oral health behaviours. Game-based learning and e-health applications have become efficient in engaging children and making oral health education more interactive. Angelopoulou & Kavvadia [16], Aljafari [17], highlights methods that increase children's oral health knowledge and practices, frequently exceeding the effect of traditional methods. Animation-based tools and digital storytelling further support such learning, sparking children's interest and grabbing their attention regarding OHE Hashemi [18]. These practices, like non-traditional methods in health education, such as animations and games, improve children's self-assurance and oral hygiene behaviours Bayraktar Nahir [19]. Such methods in health education are more effective in improving oral hygiene practices and knowledge than traditional ones. Another study by Nguanairak [20] found improvement in plaque scores and OHE practices after using methods like multimodal education, including animated cartoons among children.

Some methods like puppetry, storytelling, folk songs, or cultural songs promote engagement and cultural competence. A study in Nigeria mentioned in Table 2 by Fagbule [21] also supports this, though as noted above, that study is a trial protocol and its outcomes are anticipated rather than confirmed. However, methodological differences among studies, including different sample sizes, follow-up periods, and outcomes, challenge comparability. Some of them lack long-term evaluation, leaving questions about the sustainability of behaviour change. Despite these limitations, the growing evidence supports including non-traditional methods as an effective supplement to traditional OHE. This success lies in promoting creativity, engagement and emotional resonance. Future research should focus on studies that combine both traditional and non-traditional methods as hybrid models. Collaboration with families, educators, and health professionals is key to strengthening interventions and incorporating them into school systems.

Table 2: Summary of Literature.

Title	Summary	Key Features	Methods	Results	Conclusion	Limitations
1. The Effectiveness of Snakes and Ladders Media in Dental and Oral Health Education for SDN 1 Gerba Students Ismayanti [7]	This study assesses the effectiveness of using a snake- and-ladder educational game to promote dental health knowledge and proper tooth-brushing habits in elementary school children.	Use of the Snakes and Ladders game for interactive learning. Focus on children's knowledge and understanding of oral health.	Lecture and demonstration method; 20 respondents (3 samples), a snake and ladder educational game banner used for teaching, and role-play for brushing techniques.	Significant enhancement in children's dental and oral health knowledge	Educational games like Snakes and Ladders can effectively increase dental health awareness among elementary school children.	The study had a small sample size (3 classes) and only targeted one school, so its results may not be generalizable to all elementary schools.
2. Dental Odyssey: A Comprehensive Literature Review on Global Strategies, Behavioural Programs, and Creative Approaches for Ages 6-12 Years Cahyani & Sudaryanto [8]	The study reviews global approaches to improve children's dental hygiene awareness, focusing on creative methods such as games, music, and educational programs.	Creative strategies (music, games, songs), educational programs like "Brush Day & Night"	Literature review of articles from Google Scholar, PubMed, and ScienceDirect	Effective interventions include the "Brush Day & Night" program and snake- and-ladder games for improving children's oral hygiene understanding	The review concludes that creative educational approaches, like games and music, enhance children's dental hygiene awareness	Short intervention periods, inconsistent results across regions, geographic and income disparities, and limited sample sizes.
3. Assessing the Potential Impact of an Oral Health Education Package Integrated with Augmented Reality on Improving Oral Health Knowledge in Children S. Rahmasari [11]	The study explores the impact of an AR-based educational tool on improving children's oral health knowledge.	AR technology, interactive modules on dental hygiene, real-time feedback, personalized learning	Pre-post study design with 49 children aged 7, using AR-based education tools and standardized questionnaires	Significant increase in oral health knowledge, with mean scores rising from 5.27 to 8.65. The proportion of children with good knowledge increased from 8.2% to 88%.	AR-based education significantly improved children's knowledge about oral hygiene, suggesting its effectiveness as an innovative educational tool.	Limited research on long-term behaviour change, accessibility issues with AR devices, and the need for broader studies to assess the generalizability of findings.
4. Effectiveness of Play Method Health Education on Oral Hygiene Among Selected School Children Abiel [10]	The study aimed to assess the prevalence of dental caries among rural children and evaluate the effectiveness of the play-way method in teaching dental hygiene in Saifai, Uttar Pradesh. It found that a significant number of children had dental caries, and after the intervention, many improved their dental hygiene practices.	- Prevalence of dental caries in rural school children - Use of a play way method for health education - Sample size: 177 children aged 6-12 - Data collection through questionnaires, interviews, and oral exams - Evaluation of effectiveness using paired "t" test and Chi-square analysis	Sample size of 177 children aged 6-12 years	- 45.19% of children had dental caries - post-intervention, 60.45% of children improved their oral hygiene practices - A significant improvement in knowledge and practice scores was observed	The play method significantly improved children's dental hygiene practices, highlighting the role of teachers and the importance of integrating health education into school curricula.	- Small sample size (177 children), limiting generalizability - The study focused only on rural children, which may not reflect urban populations - Short-term assessment, lacking long-term follow-up - Self-reported data may introduce bias - No control group to compare with traditional methods

5. Heard and Seen: Developing Inclusive Activities for Enabling the Voices of Children with Disabilities in Oral Health Research Alwadi [24]	This study explored inclusive methods for involving children with disabilities in oral health research. The researchers developed inclusive methodologies such as guided tours, games, and interviews to amplify children's voices and enhance their participation in research.	- Focus on children with disabilities in oral health research - Methods: Participant observation, semi-structured interviews, games, pictures - Study context: 30 participants (children, parents, healthcare providers) in Riyadh - Ethical considerations: Consent, pseudonyms, withdrawal rights	- Purposive sampling of children from two disability Centres - Data collection through participant observations and semi-structured interviews - Inclusive activities included drawings, symbols, games, and guided tours	- Inclusion of children with disabilities in oral health research was successfully achieved - Guided tours and games were effective methods to engage children - Symbols and drawings posed challenges for some participants	The study demonstrated that flexible and culturally sensitive methods are essential for including children with disabilities in oral health research. Children actively participated through games and other inclusive methods, despite some challenges.	- Communication barriers with some children required extended interactions. - Participant fatigue during activities like guided tours - Methodological challenges with symbols and drawings - Diversity of abilities meant not all methods were suitable - Limited time for children to fully express themselves - Sample size limited to two disability centers in Riyadh, limiting generalizability
6. Non-Pharmacological Behaviour Management in Children's Dental Care Astuti [25]	The paper discusses various non-pharmacological behaviour management techniques for reducing fear and anxiety and improving children's cooperation during dental procedures.	Focuses on non-pharmacological approaches such as behaviour shaping, TSD, desensitization, etc.	The paper details methods such as behaviour shaping, TSD, desensitization, modelling, distraction, positive reinforcement, voice control, and HOME.	Children's fear and anxiety during dental procedures can be significantly reduced with the use of appropriate behaviour management techniques.	Non-pharmacological behaviour management techniques are essential in creating a positive dental experience and improving children's cooperation during treatments.	Individual differences among children, the need for professional training, and the influence of parental attitudes can affect the effectiveness of these techniques.
7. Increasing Children's Dental Health Knowledge with Educational Games Dwi Febria [5]	The study explores the effectiveness of video games in increasing children's knowledge about dental health and healthy foods. Using a pretest-posttest design with 52 children, the research found significant improvements in knowledge related to dental health after participating in the educational game.	52 children aged 9–12 participated - Pretest and posttest with 8 questions on dental health and 10 on healthy foods - Use of video games as an educational tool - Statistical significance ($p < 0.05$) indicating effectiveness - Focus on promoting healthy habits through gaming	- Pretest-posttest design - 8 questions on dental health, 10 on healthy foods - Game-based learning (group answer selection) - Ethical clearance obtained - Data analysis: Microsoft Excel, Kolmogorov-Smirnov Test, Wilcoxon Signed-Rank Test	- Significant improvement in knowledge post-game ($p < 0.05$) - Pretest avg: 7.69 (healthy foods), 4.83 (dental health) - Posttest avg: 9.85 (healthy foods), 7.13 (dental health)	Video games effectively enhanced children's understanding of dental health and nutrition. Educational games are a promising tool for promoting healthy habits in children.	- Small sample size of 52 children - Limited generalizability to broader populations - Potential bias in pre/post responses - Focused on knowledge gain, not behaviour change

8. Effectiveness of Game-Based Oral Health Education Method on Oral Hygiene Performance of 12-Year-Old Private School Children in Lucknow City: A Field Trial Kashyap [27]	This study compares conventional and game-based oral health education methods to improve oral hygiene performance among 12-year-old children. The game-based method showed significant improvements in both knowledge and oral hygiene	- Comparison between conventional and game-based education - 160 participants from private schools - Used crosswords and PowerPoint presentations - Follow-up for 6 months	- 160 children aged 12, divided into Group A (conventional) and Group B (game-based) - Pretest with questionnaires and hygiene indices - 7-day education intervention - Follow-up at 1, 3, and 6 months	- Group B showed increased knowledge: 4.05, 4.73, 6.02 at follow-ups - Significant reduction in plaque and debris scores in Group B - Game-based method outperformed the conventional method	Game-based oral health education improved both knowledge and oral hygiene. It was more engaging and led to better retention than traditional methods.	- Limited to private schools - No long-term follow-up - Did not evaluate the application of knowledge in real-life behaviour
9. Using traditional rhyme (folk song) as a tool for oral hygiene promotion among children in rural communities in Nigeria: A protocol for a randomized controlled trial Fagbule [21]	This study proposes a culturally appropriate and sustainable oral health education intervention using folk songs for children in rural Nigeria. It aims to assess the effect of traditional rhyme on oral hygiene knowledge, attitudes, practices, and clinical oral health outcomes among school children.	- Cluster-randomized controlled trial - Assessor-blinded - IMB model-based - Rural Nigerian setting - Traditional folk songs as an intervention - Follow-up at 0, 6, and 12 months - Oral exams and surveys	- Two-arm cluster RCT in rural Oyo State - 424 children (age 7–9) from 8 schools - Intervention: folk song for 2 weeks - Control: conventional oral health talk - Tools: WHO children's oral health questionnaire, dmft/DMFT, simplified oral hygiene index - Outcomes assessed at baseline, immediately, 6- and 12-months post-intervention	- Improved oral hygiene knowledge, attitudes, and practices expected in the intervention group - Anticipated better oral hygiene status in the folk song group vs. the control - Evidence for culturally grounded interventions in oral health	Folk songs may serve as an effective, acceptable, and sustainable method of oral hygiene education for children. This trial will generate empirical data to guide future public health programs and policies in similar contexts.	- Use of non-reversible dmft/DMFT index - Language exclusion limits generalizability - Attrition and nonresponse may affect results - Cluster-level variations may impact consistency - Challenges in long-term follow-up in rural areas
10. Dental Health Education Game Based on the IRVO Model in Augmented Reality Technology Hapsari [22]	This study proposes an augmented reality (AR) educational game based on the IRVO model to enhance dental health education among children. It addresses the challenge of engaging children with conventional methods by offering interactive AR experiences.	- Based on the IRVO interaction model - Uses AR with 3DS Max and D-Fusion Studio - Designed for children aged 5–12 - Content validated by dental professionals - Includes modules on brushing, healthy food, and puzzles	- Development of an AR-based game using 3D animation, audio, and video - Focused on marker less AR for natural interaction - Game evaluated by dentists, nurses, and children - Targeted age group: 5–12 years	- 95.24% of children enjoyed the game - 71.43% showed understanding of content - The healthy food module was most engaging - Brushing simulation received lower ratings - Puzzle game found to be easiest	- AR can improve enjoyment and understanding in dental health education - Average understanding score: 72.69% - Suitable and enjoyable for young users - Needs further development for optimal impact	- Content needs refinement and alignment with updated dental guidelines - 3D visuals require quality enhancement - Interaction types are limited and not fully engaging - Age/maturity impact comprehension - Some games (e.g., brushing) are too simple - User engagement needs to be sustained through updates - AR dependence may limit accessibility

11. The Effect of Conventional Oral Health Education versus Animation on Perception. Saudi Males in Primary School Children Alhayek [14]	This intervention- al study compared traditional PowerPoint- based oral health education and animated videos among 6–9-year-old Saudi boys to assess which method better influenced their understanding of oral health concepts.	- 750 primary school boys (ages 6–9) in Saudi Arabia. - Two educational methods: Conventional (PowerPoint + jaw model) vs. Animation (Go Animate video). - 10-item questionnaire post-intervention.	- Interventional study using convenience sampling. - Two trained dental students delivered questions about conventional session. - Animated video covered identical content. - 738 valid responses were analyzed (369 per group). - Chi-square tests were used ($p < 0.05$ considered significant).	- Both methods were effective. - Animation outperformed in oral hygiene and tooth morphology. - Conventional was better for anatomical structure and cariogenic food knowledge. - Some items showed no significant difference.	Both methods were found to be effective for delivering oral health education. However, animated methods are gaining preference due to their efficiency and engagement level, while conventional methods foster interaction.	- No interval between interventions. - Difficulty in fully standardizing delivery methods. - The sample is limited to male students of a specific age and region.
12. Cultural Themes Related to Oral Health Practices, Beliefs, and Experiences in Nigeria: A Scoping Review Aliyu [12]	This scoping review maps cultural factors influencing oral health practices and outcomes in Nigeria, identifying both barriers and facilitators to care, and offering insights into culturally sensitive oral health promotion strategies.	- 37 empirical studies included (1998–2024). - Coverage across all Nigerian geopolitical zones. - Focus on self-medication, myths, traditional beliefs, and community norms.	- Scoping review using PRISMA-ScR and Joanna Briggs Institute guidelines. - Search in PubMed, Cochrane, Web of Science, Google Scholar, and CINAHL. - Population-Concept-Context framework. - Thematic synthesis using ChatGPT.	- Common themes: widespread self-medication, traditional remedies, oral health myths, spiritual beliefs. - Positive cultural norms promoting oral hygiene were also identified. - Visual tools and storytelling are found helpful in interventions.	Cultural norms significantly influence oral health in Nigeria. Strategies must align with these cultural contexts, promote trust, and incorporate community leaders and traditional practices to improve outcomes.	- Limited intervention-based studies. - Exclusion of grey literature and non-English publications. - Lack of data on program evaluation and sustainability. - Focused solely on Nigeria, limiting generalizability.
13. Dental Health Education using Dance and Song Media on the Knowledge of Preschool Children R. Rahmasari [11]	This study investigates the impact of dance and song-based dental health education on preschoolers' knowledge in Tasi Malaya, Indonesia.	A quasi-experimental, one-group pretest-post-test design focuses on using creative media for educational purposes.	A quasi-experimental design was conducted with 41 preschoolers, using pretest and post-test questionnaires. The data were analyzed using the Wilcoxon test.	Significant improvement in knowledge after intervention. - 78% of children had good knowledge of post-education vs. 56.1% pre-education.	Dance and song media effectively improve preschool children's knowledge of dental health.	The study is limited to one preschool in Tasi Malaya.
14. Incorporation of Storytelling as a Method of Oral Health Education among 3–6-year-old Preschool Children Shruti [15]	The study examines storytelling with hand puppets to improve preschool children's oral health knowledge, attitude, and practices in Bengaluru, India.	Non-randomized experimental pre-post design, 220 children, use of hand puppets in oral health education.	Pre- and post-intervention KAP questionnaire and parental audit. Data were analyzed using the Wilcoxon signed-rank test.	Significant increase in KAP scores, with improvements in knowledge, attitude, and practice.	Storytelling significantly improved the oral health-related KAP of preschool children.	Reliance on parental reports may introduce bias; the design was non-randomized and was conducted in a single urban location.
15. Can Serious Games Educate Children in Oral Health Knowledge? A Qualitative Controlled Pilot Study Simon-Krier [29]	The study evaluates a serious game designed to improve children's oral health knowledge and self-efficacy.	A controlled pilot study was conducted with 30 children using a dental-themed serious game ("Protect us").	Pre- and post-game interviews with children were conducted to assess knowledge and attitudes. Qualitative analysis of interviews.	Significant increase in knowledge about caries and fluoride use, positive player experience, and increased self-efficacy.	Serious games can be a cost-effective and attractive tool for oral health education.	Small sample size; lack of quantitative analysis of clinical effects.

16. Current State of Serious Games in Dentistry: A Scoping Review Zaror [9]	This scoping review synthesizes research on the use of serious games (SGs) for oral health education and promotion. It evaluates the effectiveness and design of these games and discusses the quality of existing studies.	Review of 19 studies, categorizing games for educational purposes (oral health professionals) and promotion (children, preschoolers). Focus on the use of games for improving oral health knowledge and engagement.	Systematic search across MEDLINE, Embase, Cochrane, LILACS, and Scopus from inception to September 2019; 19 studies reviewed, categorized by purpose (professional education vs. promotion for children/preschoolers); two independent reviewers screened studies and assessed quality using a standardized checklist.	Interactive SGs were as effective as traditional methods in improving outcomes, with higher participant satisfaction, but a limited number of rigorous RCTs.	SGs in oral health are still in their early stages, with limited empirical evidence. More rigorous research is needed to establish their effectiveness.	Limited use of RCTs, lack of theoretical frameworks in game design, and low methodological quality in many studies; missing grey literature and challenges contacting authors for clarification.
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Limitations

This review has several limitations. As a narrative rather than systematic review, we did not conduct a formal risk-of-bias or quality appraisal of included studies, and study selection, while independent, was not fully systematic. The search was restricted to English-language publications from 2018–2025 across a limited set of databases (PubMed, Google Scholar, Elsevier, and select oral health/pediatric journals), which may have excluded relevant non-English or older literature. Only one of the sixteen included studies Fagbule [21] is a trial protocol rather than a completed study, so its outcomes remain projected rather than confirmed. Finally, heterogeneity in study designs, sample sizes, and outcome measures across the included literature limits the ability to draw quantitative, pooled conclusions.

Implementation Barriers and Equity

Several included studies point to practical barriers that affect real-world scale-up of non-traditional methods: device and technology accessibility for AR-based tools Hapsari [22], S. Rahmasari [23], the need for teacher or facilitator training, and resource constraints in rural or low-income settings (Abiel [10], Fagbule [21]). Several of the strongest examples of culturally adapted, low-cost interventions, folk songs in rural Nigeria and dance and song in Indonesia, came from resource-limited settings, suggesting that non-traditional methods need not depend on expensive technology to be effective, and that culturally grounded, low-tech approaches deserve equal attention alongside digital and AR-based interventions in future research and policy [24–29].

Conclusion

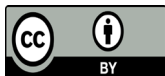
Non-traditional methods like games, digital tools, and storytelling are great ways to get children interested in dental

health and assist them in developing healthier routines. These fun and engaging approaches can greatly inspire children and enhance their enjoyment of dental care education. While research shows they work well in the short term, more studies are needed to understand their effectiveness over time and standardize outcome measures. Bringing these innovative approaches to community and school initiatives could make OHE more interesting and meaningful for kids in future.

References

1. World Health Organisation (2022) Global oral health status report. World Health Organization.
2. Elsadek YE, Edwebi S, Turner A, Vinall CK, Csikar J, et al. (2023) A systematic review of school-based student peer-led oral health interventions to promote the oral health of school children. *BMC Oral Health* 23(1): 742.
3. Tinanoff N, Baez RJ, Diaz GC, Donly KJ, Feldens CA, et al. (2019) Early childhood carries epidemiology, aetiology, risk assessment, societal burden, management, education, and policy: Global perspective. *International Journal of Paediatric Dentistry* 29(3): 238–248.
4. Alsadat FA, Alamoudi NM, El Housseiny AA, Felemban OM, Dardeer FM, et al. (2021) Oral and dental manifestations of celiac disease in children: A case-control study. *BMC Oral Health* 21(1): 669.
5. DFebria N, Femilian A, Yosi AD, Hasnasari HA, Kristin RA, et al. (2024) Increasing children's dental health knowledge with educational games. *E3S Web of Conferences* 570: 03003.
6. Angelova SP (2023) non-formal education for child health: What are the opportunities? *Education & Technologies* 14: 57–63.
7. Ismayanti I, Nurkholipah WS, Rahmasuli R, Sulistiani D, Dwisuhardjono W, et al. (2021) Efektivitas media ular tangga dalam pendidikan kesehatan gigi dan mulut siswa SDN 1 Gereba Kabupaten Ciamis. *Kolaborasi: Jurnal Pengabdian Masyarakat* 1(2): 104–111.
8. Cahyani MA, Sudaryanto A (2024) Dental odyssey: A comprehensive literature review on global strategies, behavioural programs, and creative approaches for ages 6–12 years. *Jurnal Ilmiah Kesehatan Sandi Husada* 13(1): 9–18.

9. Zaror C, Mariño R, Atala AC (2021) Current state of serious games in dentistry: A scoping review. *Games for Health Journal* 10(2): 95-108.
10. Abiel B (2020) Effectiveness of play method health education on oral hygiene among selected school children. *International Journal of Research in Engineering, Science and Management* 3(1): 621-622.
11. Rahmasari S, Arini M, Khairani R (2024) Assessing the potential impact of an oral health education package integrated with augmented reality on improving oral health knowledge in children: A pre-post study design. *Padjadjaran Journal of Dentistry* 36(2): 270-283.
12. Aliyu TK, Titus OS, Bernard OT, Alade OT, Ehizele AO, et al. (2025) Cultural themes related to oral health practices, beliefs, and experiences in Nigeria: A scoping review. *ORAL* 5(2): 23.
13. Bankole OO, Ibiyemi O, Lawal FB (2019) A health education video in an indigenous Nigerian language to dispel misconceptions associated with reversal of eruption sequence of anterior teeth. *African Journal of Biomedical Research* 22(1): 97-100.
14. Alhayek AIA, Alsulaiman MJ, Almuhanha HA, Alsalem MA, Althaqib MA, et al. (2018) The effect of conventional oral health education versus animation on the perception of Saudi males in primary school children. *Journal of International Oral Health* 10(3): 121-126.
15. Shruti T, Govindraju HA, Sriranga J (2021) Incorporation of storytelling as a method of oral health education among 3–6-year-old preschool children. *International Journal of Clinical Pediatric Dentistry* 14(3): 349-352.
16. Angelopoulou MV, Kavvadia K (2018) Experiential learning in oral health education. *Journal of Education and Health Promotion* 7(1): 70.
17. Aljafari A, Gallagher JE, Hosey MT (2017) Can oral health education be delivered to high-carries-risk children and their parents using a computer game? A randomized controlled trial. *International Journal of Paediatric Dentistry* 27(6): 476-485.
18. Hashemi ZS, Khorsandi M, Shamsi M, Moradzadeh R (2021). Effect of combined learning on oral health self-efficacy and self-care behaviours of students: A randomized controlled trial. *BMC Oral Health* 21(1): 342.
19. Bayraktar NC, Coşgun A, Şahin ND, Altan H (2025) Primary school children's oral hygiene knowledge assessed with different educational methods: A cross-sectional study. *BMC Oral Health* 25: 148.
20. Nguanjairak R, Duangsong R, Patcharanuchat P, Muangsom N, Bradshaw P, et al. (2016) Effectiveness of multimodal dental health education with animated cartoons for improving knowledge, attitudes, oral hygiene practices and reducing dental plaque in 7–9-year-old children in Khon Kaen Province. *Journal of Public Health and Development* 14(3): 69-82.
21. Fagbule OF, Emenyonu UK, Idiga E, Oni OO, Ijarogbe OA, et al. (2023) Using traditional rhyme (folk song) as a tool for oral hygiene promotion (UTRATOH) among children in rural communities in Nigeria: A protocol for a randomized controlled trial. *PLOS ONE* 18(6): e0280856.
22. Hapsari GI, Mutiara GA, Chaidir R (2022) Dental health education game based on the IRVO model in augmented reality technology. *Jurnal Infotel* 14(2): 108-115.
23. Rahmasari R, Primawati RS, Robbihi HI (2022) Dental health education using dance and song media on the knowledge of preschool children. *The Incisor (Indonesian Journal of Care's in Oral Health)* 6(2): 415-422.
24. Alwadi MA, Aljameel A, Baker S, Owens J (2024) Heard and seen: Developing inclusive activities for enabling the voices of children with disabilities in oral health research. *Journal of Disability Research* 3(2): e20240016.
25. Astuti ESY (2022) The role of non-pharmacological behaviour management on the success of children's dental care. *Makassar Dental Journal* 11(2): 211-213.
26. Aulia H, Laksmiastuti SR, Widhianingsih D (2023) Children's knowledge level about oral health before and after watching dental health education (DHE) videos. *Denta: Jurnal Kedokteran Gigi* 17(2): 47-51.
27. Kashyap P, Reddy LVK, Sinha P, Verma I, Adwani J, et al. (2022) Effectiveness of game-based oral health education method on oral hygiene performance of 12-year-old private school children in Lucknow City: A field trial. *Journal of Indian Association of Public Health Dentistry* 20(1): 43-48.
28. Lipsky MS, Singh T, Zakeri G, Hung M (2024) Oral health and older adults: A narrative review. *Dentistry Journal* 12(2): 30.
29. Simon KA, Hegele JM, Gerling K, Hellwig E, Woelber JP (2023) Can serious games educate children in oral health knowledge? A qualitative controlled pilot study. *JMIR Preprints*.



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