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Original Article

Strategies for Enhancing Oral and Dental Health in Children: A Comprehensive Review

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ABSTRACT

Effective education in dental and oral health plays an important role in screening and primary health services. Therefore, choosing an appropriate approach to impart health skills and knowledge is crucial. Children's oral health behaviors are particularly important due to their long-term health implications. This study evaluated various oral health promotion interventions targeted at children, analyzing both the methods used and their success rates. The review of existing studies showed that the interventions were structured as educational programs that included examinations, follow-up sessions, and preventive measures. These programs measured variables such as awareness, attitude, beliefs, and performance related to oral care. In addition, the model of health belief components and tooth decay indices showed statistically significant improvements in the test group after the educational interventions. Based on the results of the intervention, teaching parents effective oral health behaviors and offering preventive services in the short term positively influenced children's oral health. In addition, interventions grounded in behavior change theories and models proved to be effective in enhancing oral health practices. Feedback-oriented training helped to significantly improvements in children's oral health, self-efficacy, and self-care. It is recommended that this approach be adopted as part of a community-focused strategy to promote better self-care practices and achieve better oral health outcomes.

Keywords: Children, Oral and dental health, Education, Interventions.

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Introduction

The World Health Organization (WHO) has highlighted the global challenge posed by dental and oral diseases, urging countries to prioritize behavioral changes through the provision of oral health services and preventive programs [1]. Research indicates that many adolescents are not using appropriate self-care practices for dental and oral health, making it crucial to implement educational interventions, supervised by various healthcare professionals, within primary oral health services and during screenings. The primary goal of education in the health care system is to effect behavioral changes that improve health, which underscores the importance of selecting effective methods for conveying health skills and knowledge. Despite advancements in educational technology, many of these methods still lack proven effectiveness and efficiency [2-5].

Oral health extends beyond just the condition of teeth; it is a fundamental aspect of overall health that impacts individuals throughout their lives. The WHO defines oral health as the absence of pain, cancers of the pharynx, mouth, and larynx, oral ulcers, birth defects, and other conditions affecting the oral cavity. Oral and dental diseases can affect people of all ages, and maintaining oral health from birth, starting with the

eruption of the first teeth is vital. Early oral health plays a significant role in public health, especially for children, who are considered a vulnerable group due to their limited ability to manage oral hygiene independently [6-9]. Early attention to oral health is critical, as scientific evidence demonstrates that baby teeth are essential for a child's overall well-being. They contribute to proper nutrition, the maintenance of permanent teeth, speech development, and self-esteem [10-13].

In children, the lack of full developmental capacity and the tendency to place objects in their mouths exposes them to higher risks of bacterial infections. Additionally, due to insufficient mineralization of their teeth, a diet high in carbohydrates and low in essential minerals, especially during sleep, further increases the risk of tooth decay. Moreover, a lack of parental knowledge about children's oral hygiene exacerbates these issues [14-17]. A 2014 study conducted in Canada emphasized the importance of addressing oral health problems in children aged up to 6 years. It revealed that tooth decay is one of the most prevalent diseases in this age group, leading to pain, disrupted sleep, malnutrition, stress, and diminished self-esteem. This underscores the need for early intervention, with responsibility shared among the child, family, dental hygienist, and dentist. It is suggested to have an early visit to the dentist for a preventive measure to reduce the risk of early childhood caries [18].

Parents have a crucial influence on their children's dental and oral health. Just as children adopt their life behaviors and functions from their parents, they also learn about oral hygiene and dental care from them. A healthy and balanced diet, especially one promoted by the mother, plays a significant role in preventing dental caries in children [19-21]. Providing education to parents, particularly those from economically disadvantaged backgrounds who lack access to dental care, can lead to considerable improvements in preventing oral health issues. A study in China focused on parents of children aged 0 to 5 years revealed that enhancing their awareness and involving them in group educational sessions contributed to improved oral health outcomes for their children, ultimately reducing the prevalence of caries [6].

Reviewing existing articles and evaluating previous intervention studies shows that health promotion strategies can provide valuable guidance for future actions [22-24]. The motivation for this study stems from the lack of comprehensive and summarized evidence concerning the different types of interventions aimed at improving children's oral health. Consequently, this review aims to explore various oral health promotion strategies and assess their effectiveness in enhancing children's oral and dental health.

Results and Discussion

The review of the studies revealed that the preventive interventions used in these studies included various dental and oral hygiene products. These products featured primary milk teeth, wipes for cleaning the mouths of infants, special toothbrushes designed for children aged up to 6 years old, and fluoride-containing toothpaste. Additionally, fluoride varnish was applied as part of the interventions. The duration of the interventions varied across studies, with the shortest being a 20-minute video presentation, while the longest interventions included follow-up meetings lasting from two months to three years. Some studies did not specify the duration of the intervention [25-29]. Follow-up sessions were a common feature in all studies, with their timing differing depending on the children's age. The shortest follow-up was conducted after the intervention, while the longest was 3 months later [30-34].

The educational interventions in the studies demonstrated success rates ranging from 95% to 98%. Among the various variables assessed, the knowledge of parents, particularly mothers, showed the highest success. All 16 studies showed improvements in parental awareness and a reduction in children's caries. Specifically, teaching preschool children proper brushing techniques using fluoride toothpaste led to a 95% reduction in tooth decay. Other preventive measures highlighted in the studies included fluoride treatments, such as fluoride varnish. When applied consistently at regular intervals over two to three years, these treatments resulted in a 97 percent improvement in oral health and a significant decrease in caries [18, 35-39].

This review explored the types and extent of interventions aimed at enhancing children's dental and oral health, along with their outcomes. Despite the growing body of evidence emphasizing the cruciality of oral hygiene in early childhood and the availability of various guidelines from dental and medical organizations, there remains a huge gap in translating this knowledge into effective oral health promotion. The reviewed studies employed a range of interventions, including educational programs, lectures, group discussions, Q&A sessions, counseling, PowerPoint presentations, and films shown via projectors. Additionally, oral health instructions, preventive measures like booklets and brochures, demonstrations of correct brushing techniques, and the

distribution of oral hygiene products such as toothbrushes, fluoride varnish, fluoride toothpaste, and dental floss were part of the intervention strategies [14, 18, 33-39].

A lot of studies focused on outcomes related to self-efficacy, oral health awareness, and the evaluation of children's oral health behaviors. In other research, educational sessions expanded on these topics, covering aspects such as the prevention of early childhood caries through fluoride use, the timing of the first dental visit, teeth grinding, and proper nutrition. These sessions also included explanations of normal oral anatomy, teething patterns, and healthy oral habits (e.g., using a pacifier instead of sucking fingers) directed at mothers. Given that children's oral health and hygiene begin from birth, educating mothers—particularly those with newborns—on proper oral care behaviors is a crucial time for intervention [38-40].

Although health promotion initiatives led to improvements in the targeted outcomes, it is clear that dental and oral health education alone cannot fully address the issues in this field. The review highlighted the need for theory-based interventions with a structured framework to be incorporated alongside the existing educational approaches to ensure long-term effectiveness [38-42].

The positive outcomes from the training sessions conducted for dental hygienists and parents highlight the effectiveness of this method in improving children's oral health, as indicated by the findings of the studies reviewed. One of the key benefits of these training sessions is their low cost and the ability to engage a large group of participants over a set period, making it easier to gather results and assess various factors. However, it is important to note that a single training session is insufficient on its own. Participants have diverse attitudes, beliefs, and functional abilities, which can limit the accuracy of the results. To achieve reliable findings, follow-up sessions are essential, though they require more time. Another limitation of many studies reviewed is their short duration, which makes the results less dependable. Therefore, longer-term studies are needed to assess the true impact of interventions on caries indicators and the long-term effects on children's oral health [37-42].

The studies suggest that feedback-oriented methods, such as the Teach Back approach, can provide an effective platform for encouraging behavior change. This interactive educational method, endorsed by multiple healthcare organizations, helps clarify important information in clinical settings and reduces misunderstandings [43]. The Teach Back method emphasizes participation, collaboration, collective acceptance, and the stimulation of experiential learning. In this approach, learners must demonstrate mastery and proficiency before the educational process concludes, making their competence the criterion for the completion of the training [44]. An additional benefit of this method is its focus on self-evaluation, which encourages learners to assess their understanding before being evaluated by others, providing a corrective and therapeutic aspect to the training. This technique has been successfully applied to various behavioral issues, such as managing diabetes [45], self-care for heart failure patients, postpartum care [46], and promoting happiness in individuals with breast cancer [47].

Conclusion

The analysis of the interventions and their outcomes demonstrates that educating parents about dental and oral health practices and offering short-term preventive services leads to positive improvements in children's oral health. Additionally, interventions grounded in behavior change theories and models appear to be a promising strategy for enhancing children's oral health outcomes. Training that incorporates feedback has proven to be effective in enhancing children's oral health, self-care habits, and self-efficacy. It is recommended to implement this approach within a community-based framework to foster better self-care practices and improve overall oral health indicators.

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