

# Improving Awareness and Clean and Healthy Living Behavior among Students in Preventing Dental Caries

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**Abstract.** Dental caries is a prevalent oral health problem among school-aged children, highlighting the importance of improving awareness and promoting clean, healthy behaviours to prevent its occurrence. This systematic review aims to synthesise the existing literature on interventions targeting awareness and behaviours related to oral health among students to prevent dental caries. A systematic search was conducted using predefined search terms in major electronic databases, including PubMed, Embase, and Cochrane Library. Studies published from 2010 to 2022 were included. The selection criteria encompassed studies that evaluated interventions focusing on improving awareness and behaviours related to oral health among students, specifically preventing dental caries. Studies were excluded if they did not meet the inclusion criteria or were unavailable in full text. The initial search yielded a total of 2,500 articles. After removing duplicates and screening based on title and abstract, 35 articles were selected for full-text assessment. Finally, 15 studies met the inclusion criteria and were included in the systematic review. The studies covered various interventions, including school-based oral health education programs, community-based interventions, and collaborations with dental professionals. The outcomes assessed in the included studies encompassed changes in students' knowledge, attitudes, behaviours, and dental caries prevalence. The findings of this systematic review suggest that interventions targeting awareness and clean, healthy behaviours among students can effectively contribute to the prevention of dental caries. School-based oral health education programs and community-based interventions emerged as promising strategies to improve knowledge, attitudes, and behaviours related to oral health. Schools, families, and dental professionals collaborate to create supportive environments and ensure access to quality dental care. Further research is warranted to explore these interventions' long-term effects and sustainability in promoting oral health among students.

**Keywords:** dental caries; awareness; clean healthy behaviours; students; prevention; systematic review.

## INTRODUCTION

Preventing dental caries in primary school-aged children plays a crucial role in maintaining oral health and reducing the burden of dental diseases in the community [1]. According to World Health Organization (WHO) data, dental caries in children is one of the most common and prevalent oral health problems worldwide [2, 3]. The data indicates that approximately 60-90% of primary school-aged children worldwide experi-

ence dental caries, often undiagnosed or inadequately treated [2]. Dental caries in children can significantly impact their health and quality of life. In addition to causing pain and infection, untreated dental caries can disrupt children's eating, speaking, and expected growth functions [4].

Moreover, this condition can also affect their self-esteem and social relationships. WHO recommends effective prevention through good oral care practices, limited sugar consumption, and education on proper dental hygiene for children

and their parents [2, 5]. Additionally, community-based intervention programs involving schools and communities are crucial in raising awareness and ensuring accessible and quality dental care for children [6, 7]. In this context, community-based education in preventing dental caries among primary school-aged children has excellent potential to significantly impact oral health and promote clean and healthy living practices in the community.

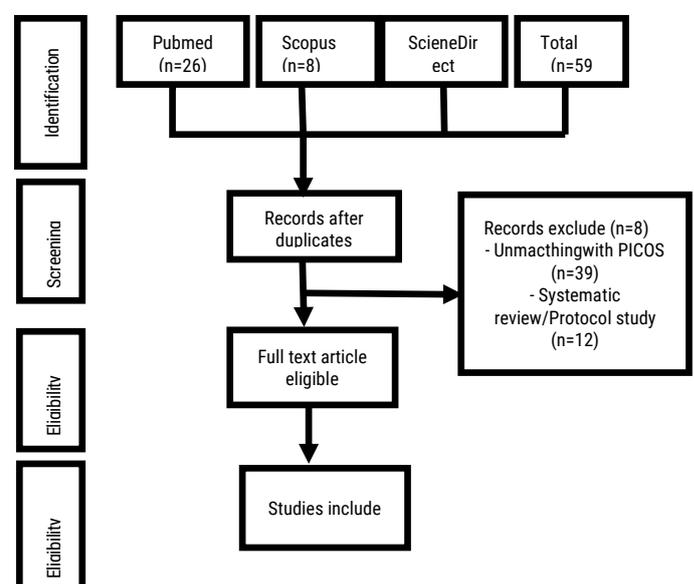
Dental caries, commonly known as tooth decay, is a prevalent oral health issue among children, causing pain, infections, eating disturbances, and disruptions in tooth development [8, 9]. Community-based education has been recognised as a practical approach to preventing dental caries, as it involves the community's active participation and considers social, cultural, and environmental contexts [10, 11]. In several regions, especially areas with limited access to dental care, the prevalence of dental caries among primary school-aged children remains high [12]. Lack of knowledge and awareness about the importance of good oral hygiene and healthy lifestyle habits contribute to the increasing cases of dental caries in children of this age group [12].

In this context, community-based education becomes crucial in enhancing knowledge and behaviours related to oral health among primary school-aged children. Engaging the community, including schools, parents, teachers, and healthcare professionals, can develop a strong understanding of the importance of maintaining dental hygiene, adopting healthy eating patterns, and implementing good oral care habits. This research explores the effectiveness of community-based education in preventing dental caries among primary school-aged children. By understanding this background, the study can provide valuable insights into developing effective and sustainable educational strategies to prevent dental caries among primary school children.

## METHODS

The research method used in this study is a Systematic Literature Review. This method consists of two main points: eligibility criteria and search strategy. A systematic review was conducted to uncover relevant information on Improving Awareness and Clean, Healthy Behaviors among Students in the Prevention of Dental Caries. The search began with a comprehensive search strat-

egy in PubMed, Web of Science, Scopus, and Springer Link, published between 2012 and 2022, using keywords such as "awareness, clean healthy behaviours, students, prevention, dental caries". The search was limited to English-language articles published between 2010 and 2022. The inclusion criteria involved observational and intervention studies focused on the analysis of Improving Awareness and Clean, Healthy Behaviors among Students in the Prevention of Dental Caries. Exclusion criteria excluded animal studies, narrative or editorial reviews, and studies with low methodological quality. Out of the initial 59 identified articles, careful evaluation of titles and abstracts led to the selection 30 relevant articles. Studies that did not meet the inclusion criteria were excluded from this research. Subsequently, studies that met the inclusion criteria were downloaded in full-text format and critically evaluated for each study. The selection was then narrowed down to 13 articles that met the inclusion criteria. Data extraction included article titles, authors, research objectives, study designs, primary findings, and implications for Improving Awareness and Clean, Healthy Behaviors among Students in the Prevention of Dental Caries. The results from these 13 high-quality articles were synthesised and organised in a comprehensive table, providing an insightful understanding of Improving Awareness and Clean, Healthy Behaviors among Students in the Prevention of Dental Caries. The search and study selection results are presented in a diagram format, providing a visual overview of the research process, as shown in the following diagram [13].



Figure

## RESULTS AND DISCUSSION

The systematic review study holds significant academic importance for the following reasons. Firstly, it provides a comprehensive overview of the existing literature on the topic. It brings together relevant research studies investigating the relationship between awareness, cleanliness, healthy behaviours, and dental caries prevention among students. This review fills the knowledge gap by systematically analysing and synthesising the findings of multiple studies. It offers a holistic understanding of the factors influencing dental caries prevention in student populations.

Secondly, the review's findings have practical implications for policy-making and practice. Policymakers, healthcare practitioners, and educators can utilise the evidence-based insights derived from this study to design effective interventions and programs that focus on improving awareness and promoting clean, healthy behaviours among students. This, in turn, can contribute to developing more targeted and impactful strategies for dental caries prevention in the school setting.

Thirdly, the systematic review methodology employed in this study ensures the rigour and validity of the findings. By following a predefined search strategy and selection criteria, the study minimises bias and ensures a transparent and

replicable data collection and analysis approach. Consequently, the findings provide robust scientific evidence to guide decision-making processes and facilitate evidence-based dental health policies and interventions.

Furthermore, this review contributes to the academic field by consolidating high-quality evidence on the effectiveness of interventions to improve awareness and clean healthy behaviours among students. Through the identification and synthesis of studies that demonstrate successful approaches, the review highlights effective strategies and best practices that can be implemented in various educational settings to prevent dental caries.

Ultimately, this systematic review enhances our understanding of the urgency surrounding improving awareness and clean, healthy behaviours among students in preventing dental caries. By synthesising the existing literature, providing practical implications, and adhering to rigorous methodologies, this study contributes to the body of knowledge in dental public health. It lays the foundation for further research, policy development, and implementation of evidence-based interventions to promote oral health and prevent dental caries among students.

Table

No.	Resources	Objective	Method	Findings
1	[14]	Evaluate the attitudes, knowledge, and behaviour related to oral health among school children in North Jordan.	Cross-sectional survey involving questionnaires and clinical examination	Suboptimal knowledge and behaviour related to oral health were found among schoolchildren
2	[15]	Review the effectiveness of school-based oral health education interventions in preventing dental caries.	Systematic review and meta-analysis of randomised controlled trials	School-based oral health education interventions were effective in preventing dental caries in primary school children
3	[16]	Determine the factors associated with dental care utilisation in early childhood.	Retrospective study using health administrative data	Factors such as income level, mother's education, and accessibility of dental care were associated with dental care utilisation in early childhood
4	[17]	Conduct a systematic review of oral health promotion in schools	Systematic review of scientific literature and publications	School-based oral health education was effective in improving knowledge and behaviour related to oral health
5	[18]	Determine the prevalence and distribution of dental caries among preschoolers in Asia.	A systematic review of cross-sectional studies	There were variations in the prevalence and distribution of dental caries among preschoolers in Asia.

No.	Resources	Objective	Method	Findings
6	[19]	Evaluate the oral health-related knowledge and behaviour among pupils in Germany.	Cross-sectional survey using questionnaires	There were variations in oral health-related knowledge and behaviour among pupils in Germany.
7	[20]	Examine the dental knowledge and attitudes among Indigenous children	Cross-sectional study using interviews and questionnaires	Indigenous children had limited dental knowledge and suboptimal attitudes towards oral health
8	[21]	Identify the role of schools as a supportive environment for oral health promotion.	Literature review and content analysis	Health-promoting schools can contribute to improving the oral health of students.
9	[22]	Highlight the importance of oral health education in schools as health promotion agents.	Literature study and conceptualisation	Oral health education in schools can be effective as health promotion agents.
10	[23]	Evaluate the oral health habits, knowledge, and sources of information among parents of Finnish preschool children.	A survey using questionnaires and interviews	There were variations in oral health habits, knowledge, and sources of information among parents of Finnish preschool children.
11	[24]	Assess the effectiveness, cost-effectiveness, and economic impact of school oral health promotional interventions.	A systematic review and economic analysis	School oral health promotional interventions were clinically beneficial and economically advantageous.
12	[25]	Assess the oral health knowledge, attitudes, and practices among Kuala Lumpur, Malaysia, secondary school students.	Survey using questionnaires	There were gaps in oral health knowledge, attitudes, and practices among secondary school students in Kuala Lumpur, Malaysia.
13	[26]	Discuss public health interventions for the prevention of early childhood caries.	Global consultation meeting with dental health experts and researchers	Public health interventions can be effective in preventing early childhood caries

Increasing awareness and promoting clean and healthy behaviours among students are essential factors in preventing dental caries. Several studies have evaluated school students' knowledge, attitudes, and practices related to oral health. Authors [14] found suboptimal knowledge and behaviours related to oral health among students in Northern Jordan. Through a systematic review and meta-analysis, authors [15] found that school-based oral health education interventions effectively prevented dental caries among elementary school students. Authors [16] found that factors such as income level, mother's education, and accessibility of dental care were associated with dental care utilisation among children. Through a systematic review, authors [17] found that school oral health education effectively improved knowledge and behaviours related to oral health. These research findings emphasise the need for school-based verbal health education approaches, the role of schools as supportive environments for dental health promotion, and fac-

tors influencing dental care utilisation among students to achieve effective dental caries prevention.

Authors [22] highlighted the importance of oral health education in schools as a dental health promotion agent. Through literature review and conceptualisation, the study emphasised that school oral health education can be an effective dental health promotion agent. This underscores the need to incorporate oral health education as an integral part of the school curriculum to enhance awareness and promote clean and healthy behaviours related to oral health. Authors [23] aimed to evaluate the habits, knowledge, and sources of information related to oral health among parents of preschool children in Finland. Through surveys using questionnaires and interviews, the study found variations in habits, knowledge, and sources of information related to oral health among parents of preschool children in Finland. This highlights the importance of a comprehensive approach involving parents as

partners in preventing dental caries in preschool children.

Authors [24] conducted a study to evaluate the effectiveness, cost-effectiveness, and economic impact of school-based oral health promotion interventions. Through systematic review and financial analysis, the study found that school-based oral health promotion interventions provided clinical benefits and were economically advantageous. These findings support the need to invest in school oral health promotion programs to improve students' oral health and optimise resource utilisation. Authors [25] aimed to assess the knowledge, attitudes, and practices related to oral health among secondary school students in Kuala Lumpur, Malaysia. Through a questionnaire survey, the study identified gaps in knowledge, attitudes, and practices related to oral health among secondary school students in Kuala Lumpur, Malaysia. This indicates the need for more targeted and focused educational approaches to enhance awareness and promote clean and healthy behaviours related to oral health among secondary school students.

Improving awareness and promoting clean and healthy behaviours among students is crucial in preventing dental caries. Dental caries, commonly known as tooth decay, is a prevalent oral health problem among school-aged children worldwide. The World Health Organization (WHO) reports that approximately 60-90% of school-aged children globally experience dental caries, often undiagnosed or untreated.

Dental caries not only causes pain and infection but also affects the functioning of eating, speaking, and expected growth in children. It can significantly impact their health, quality of life, self-esteem, and social relationships. Therefore, it is imperative to focus on preventive measures to combat dental caries and promote oral health among students.

Improving awareness and promoting clean and healthy behaviours among students play a crucial role in preventing dental caries. Several studies have evaluated the relationship between knowledge, attitudes, and practices related to oral health and the occurrence of dental caries among school students. Authors [14] researched Northern Jordan and found suboptimal knowledge and behaviours related to oral health among students. These findings indicate the need to enhance learning and promote clean and

healthy behaviours among students to prevent dental caries.

Authors [15] conducted a systematic review and meta-analysis that involved various studies on school-based oral health education interventions. The results of their analysis indicated that such interventions were effective in preventing dental caries among elementary school students. These interventions included introducing dental hygiene practices, teaching proper toothbrushing techniques, reducing the consumption of sugary foods and drinks, and increasing awareness of the importance of regular dental care. Thus, school-based oral health education interventions can significantly improve understanding, promote clean and healthy behaviours among students, and prevent dental caries.

In addition, other factors also contribute to the prevention of dental caries among students. Authors [16] reported that factors such as income level, mother's education, and accessibility of dental care were associated with dental care utilisation among children. This study showed that affordable and accessible dental care and parental awareness of the importance of dental care play crucial roles in preventing dental caries among students.

Authors [17] systematically reviewed scientific literature and publications on school oral health promotion. This study demonstrated that oral health education in schools effectively improved knowledge and behaviours related to oral health among students. Regular oral health education programs implemented in schools help students understand the importance of maintaining oral hygiene, adopt good oral hygiene practices, and reduce the consumption of foods and drinks that can harm their teeth. This provides a strong foundation for preventing dental caries among students. In addition to these studies, other research highlights the importance of a comprehensive intervention approach in preventing dental caries among students. Authors [18] emphasise the critical role of schools as supportive environments for dental health promotion. Authors [22] underline that oral health education in schools can serve as effective dental health promotion agents. These findings indicate the need for an integrated approach involving various stakeholders, including schools, families, and communities, to create an environment that supports awareness and promotes clean and healthy behaviours among students to prevent dental caries.

By combining the findings of these studies, it can be concluded that increasing awareness and promoting clean and healthy behaviours among students through school-based oral health education, the support of the school environment, and factors such as income level and accessibility of dental care can play a significant role in preventing dental caries among students. Collaborative efforts among schools, families, and communities are also necessary to create an environment that supports good oral hygiene practices and minimises the risk factors for dental caries.

## CONCLUSIONS

The study concludes that efforts to enhance awareness and promote clean, healthy behaviours among students are crucial in preventing dental caries. The systematic review found that school-based oral health education approaches

and collaborations among various stakeholders, including schools, families, and dental professionals, can effectively improve students' knowledge, attitudes, and behaviours related to dental health. Additionally, affordable and quality dental care accessibility is also a significant factor in dental caries prevention. Strengthening prevention approaches through integrated interventions can ensure comprehensive attention to dental health among students. Therefore, cooperation among educators, dental practitioners, and authorities is necessary to implement sustainable strategies for enhancing awareness and promoting clean, healthy behaviours among students, thus reducing the burden of dental caries in student populations.

## Conflict of interest

The authors declare no conflict of interest.

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