



ASSESSMENT OF AWARENESS ABOUT ORAL HYGIENE IN CHILDREN OF SCHOOL AGE: A CROSS-SECTIONAL STUDY

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ABSTRACT

Introduction: Education about oral hygiene during childhood is essential for establishing habits that promote lifelong oral health. Children are more likely to practice good oral hygiene as they understand the long-term benefits of maintaining their oral health.

Aim: To assess the level of oral hygiene awareness among school-age children (ages 6–12), including knowledge about brushing techniques, oral hygiene products, and the importance of maintaining good oral health.

Materials and method: This study includes 287 school-aged children (6 to 12 years) who responded positively to the question of whether they had received training or knowledge on oral health promotion at least once prior to the study. All participants completed a questionnaire regarding their awareness of oral hygiene.

Results: According to the distribution of the source of oral health education, most children (79,8 %) reported receiving their knowledge from parents, teachers, and dentists. About 20,2 % of children are educated about oral health through various digital sources. The data show that statistically, the most of children use a manual toothbrush (56,1 %), while a smaller number use an electric – 35,5% or ultrasonic one – 8,4 %. The children studied show stable knowledge regarding the necessary frequency of tooth brushing, with the majority (85,7%) reporting that they brush their teeth twice a day.

Conclusion: The implementation of informational and educational oral health programs in schools and within families plays a crucial role in improving children's health literacy, enhancing their oral hygiene practices, and reducing the incidence and prevention of oral diseases during childhood.

Keywords: oral health promotion, oral health education, oral hygiene,

INTRODUCTION

Knowledge and education about oral hygiene during childhood are essential for establishing habits that promote lifelong oral health [1, 2]. When children are taught proper and effective brushing and flossing techniques at an early age, they are more likely to maintain these practices into adulthood [3, 4]. Studies highlight the importance of oral health promotion and the introduction of oral hygiene education, especially in areas where access to dental care may be limited [5]. When knowledge and awareness of the importance of oral health are established early in childhood, children are more likely to practice good oral hygiene as they understand the long-term benefits of maintaining their oral health [5, 6]

The school years are when children actively take on the role of learners and are more likely to adopt knowledge in all areas of life [7, 8]. Building upon their understanding and awareness of the importance and role of maintaining good oral hygiene and oral health at this age is crucial for establishing lasting healthy habits that will persist throughout life [9, 10]

Based on the fact that childhood is a key stage for developing healthy habits and lifestyle, the American Academy of Pediatric Dentistry (AAPD) emphasizes that educating children at an early age, both in early childhood and school years, about brushing, flossing and maintaining regular dental visits will lead to effective prevention and/or reduction of oral diseases in adults [11]. Neglecting oral health, poor oral hygiene, and lack of primary prevention lead to the development of dental caries, which remains one of the most common chronic diseases in children worldwide [2]. Furthermore, untreated oral diseases in childhood and their complications can lead to pain and difficulty eating and affect the child's quality of life, school performance, social interaction, and self-esteem [5].

Studies show that education and establishing habits for maintaining good oral hygiene are among the most widely implemented and effective methods for promoting oral health in children [12]. The results demonstrate significant benefits from school-based oral health programs, which include training on the importance of regular oral hygiene

and proper brushing and flossing techniques [13]. One advantage of promoting oral health during the school years is that children are in a social environment with their peers and have similar intellectual and emotional needs [14]. An analysis of the application of school oral health education programs shows that implementing such programs at this age could significantly increase children's knowledge of oral health and improve their attitudes toward dental treatment and preventive visits to the dentist [15, 16]. These programs include elements for assessing knowledge on oral health promotion, oral hygiene, demonstrations of appropriate and effective brushing techniques, and the role of exogenous fluoride prevention in the prevention of dental caries [17, 18].

Therefore, the primary aim of this study is to assess the level of oral hygiene awareness among school-aged children (6–12 years), including their knowledge of brushing techniques, oral hygiene products, and the importance of maintaining good oral health.

AIM

The primary objective of this study is to assess the level and sources of oral hygiene awareness among school-aged children (6–12 years), focusing on their knowledge of tooth brushing techniques, the types of oral hygiene products used (e.g., toothbrushes and toothpaste), and the frequency of their hygiene practices. The study also examines the influence of demographic factors on children's awareness levels and highlights potential trends in digital health education.

MATERIALS AND METHODS

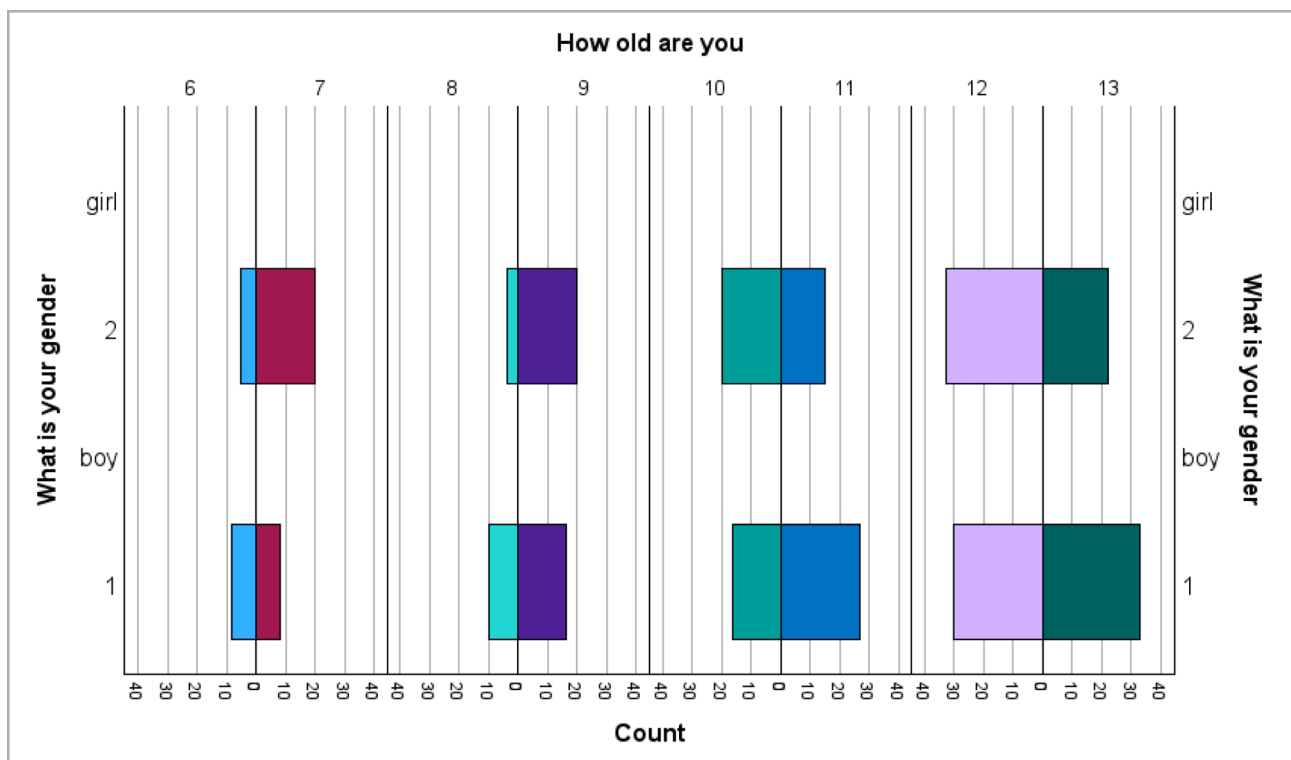
This study aims to assess the level of awareness regarding oral hygiene among children aged 6 to 12 years. It includes a group of 287 school-aged children who responded positively to the question of whether they had received training or knowledge on oral health promotion at least once prior to the study. All participants completed a questionnaire regarding their knowledge of proper dental care, the use of toothbrushes and toothpaste, and their habits concerning the frequency of practicing oral hygiene. A structured questionnaire was used to assess the children's awareness of oral hygiene, administered in simple language and suitable formats (e.g., pictures or icons for younger children, multiple-choice questions). Data were collected and analyzed to identify the main factors influencing the prevalence of oral diseases in this age group.

Statistical analysis - All statistical analyses have been carried out using SPSSr v.30.0 statistical software (IBM, Armonk, NY) - Frequency distribution for categorical responses (e.g., types of toothbrushes, frequency of brushing). Chi-Square Test or Fisher's exact test to examine the association between oral hygiene awareness and demographic variables (e.g., age, gender). Differences have been considered statistically significant at the $p < 0.05$ level.

RESULTS

The present study involved 287 school-aged children between the ages of 6 and 12 from the city of Sofia. Their distribution by gender and age is presented in the following figure.

Fig. 1. Distribution by age and gender



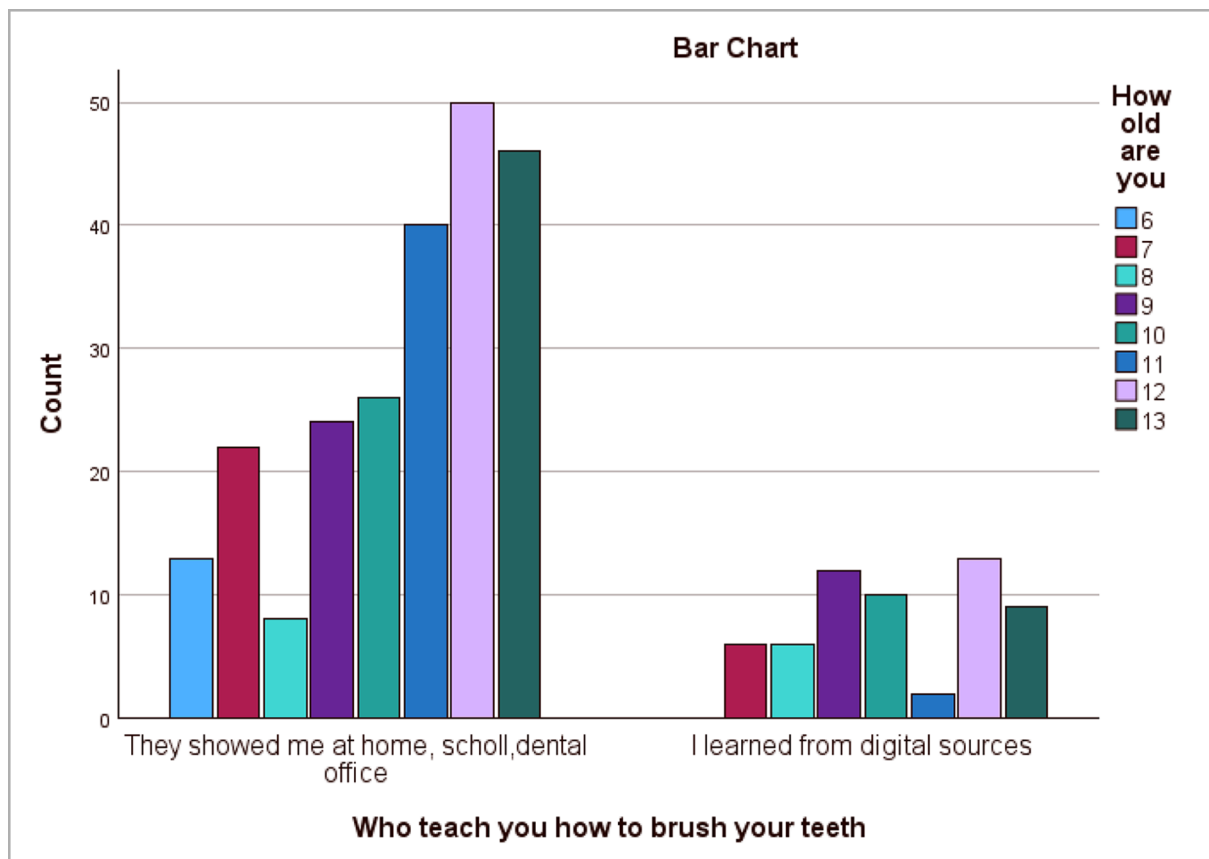
Pearson Chi-Square = 14.799, $p < 0.05$

A statistically significant difference was observed in the age distribution of participants. The group of 12–13-year-olds was the largest, while fewer children were in the 6–7-year-old group. As expected, younger children were less likely to report having received oral health education, likely due to their limited life and social experience. Gender distribution was relatively balanced, with a slight predominance of girls in the 7-year-old group and

boys in the 11- and 13-year-old groups.

Children’s current knowledge of oral hygiene practices was assessed through questions regarding who taught them to brush their teeth, how frequently they brush, the type of toothbrush and toothpaste used. The distribution of the studied children according to their source of information on oral health promotion is presented in the following figure.

Fig. 2. Distribution of children according to the source of health education.



Pearson Chi-Square = 19.623, $p < 0.05$

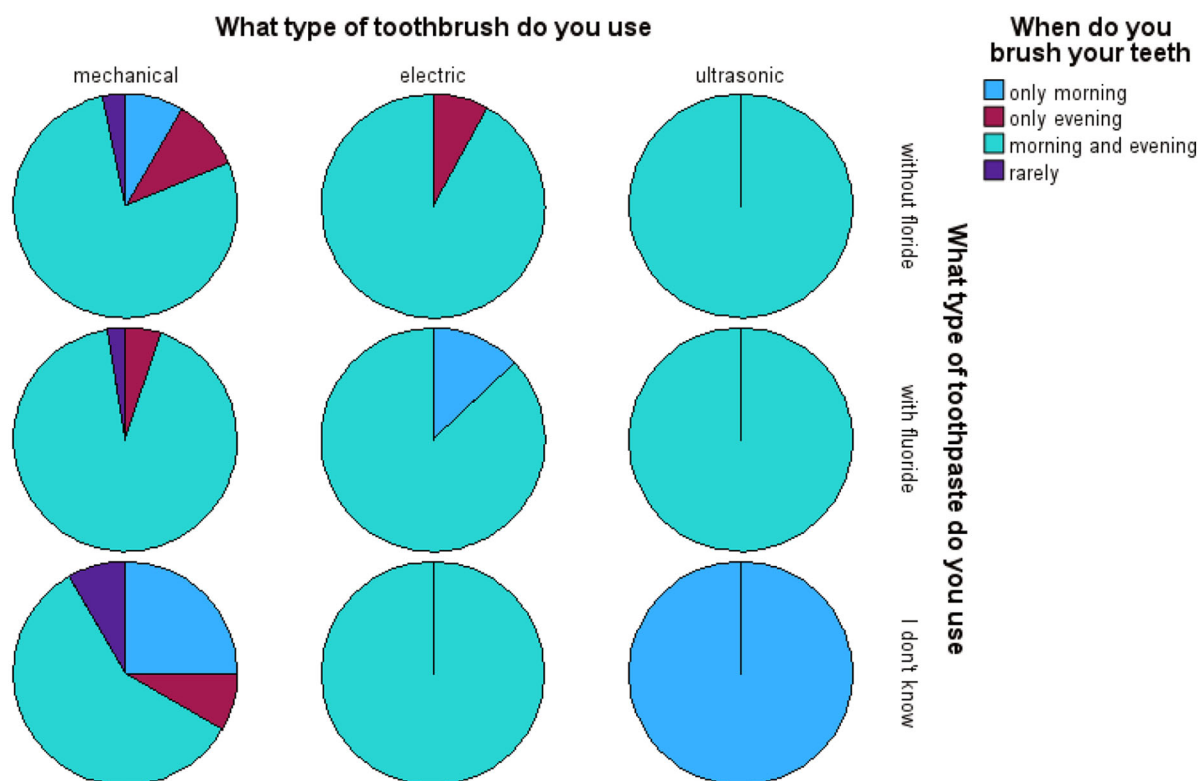
The majority of children (79.8%) reported receiving information about oral hygiene from parents, teachers, and dentists. A smaller but noteworthy proportion (20.2%) reported learning from digital sources. However, the number of children who have informed themselves through various digital sources is not negligible. Given the increasing screen time of children in recent years and the influence of different electronic devices and applications, it is likely that this will lead to a growing impact on the information children receive from these sources. Including this element in future oral health promotion and education programs is becoming an increasingly relevant issue.

The individually established oral hygiene habits of the children, the main types of toothbrushes and toothpaste they use, and the frequency of performing oral hy-

giene procedures are presented in the following figure 3.

Most children (56.1%) used a manual toothbrush, followed by electric (35.5%) and ultrasonic brushes (8.4%) (Pearson Chi-Square = 33.402, $p < 0.05$). Regarding toothpaste, 46.9% used fluoride-containing toothpaste, compared to 40.2% who used fluoride-free products (Pearson Chi-Square = 104.616, $p < 0.05$). Although no analysis was conducted to determine the cause of this preference, it is likely due to the knowledge and awareness of the children and their parents regarding the role of fluoride in the prevention of dental caries (Pearson Chi-Square = 104.616, $p < 0.05$). A strong majority (85.7%) reported brushing their teeth twice daily, in line with standard recommendations (Pearson Chi-Square = 53.765, $p < 0.05$).

Fig. 3. Distribution of children according to the frequency of brushing, type of toothpaste and toothbrush



DISCUSSION

Raising awareness and motivation for maintaining good oral hygiene during childhood is essential for preventing oral diseases both in early life and adulthood. [1, 3, 11]. Previous studies emphasize the importance of early education, parental involvement, and school-based health programs. Increasingly, digital tools and applications are also recognized as valuable resources for reinforcing oral hygiene habits [4, 7]. Overcoming socio-economic and cultural barriers is also essential to ensure equal access to health education for all children, regardless of their background [19]. It is of utmost importance to recognize the role of oral health promotion and education not only as a way to teach children how to brush their teeth but also to raise awareness of the necessity and development of knowledge, ensuring that they will carry these habits throughout their lives [9, 12, 18].

Our results confirm that most children demonstrate a satisfactory level of knowledge regarding oral hygiene, which appears to result from prior training and participation in oral health promotion initiatives. The high proportion of children who brush twice daily corresponds with current health guidelines and findings from previous studies. The majority of them report brushing their teeth twice a day, which aligns with health recommendations from pediatric dental associations and documented prior research that emphasizes the importance of regular oral hygiene practices in preventing oral diseases such as caries and periodontitis.

The preference for fluoride-containing toothpaste is consistent with dental public health recommendations and may reflect awareness among both children and parents re-

garding fluoride's role in caries prevention. Undoubtedly, additional studies would be beneficial in investigating the impact of different types of toothpaste and their correlation when combined with the use of various types of toothbrushes. While the findings suggest a positive level of awareness, future longitudinal research is needed to determine whether this knowledge translates into long-term behavioral adherence [12, 13, 17, 19]. Additionally, socio-economic factors and access to dental care remain crucial variables influencing children's oral health outcomes. The integration of technology, such as electric toothbrushes and digital education platforms, may further enhance engagement and effectiveness of oral health education.

LIMITATIONS

This study has several limitations. First, the data rely on self-reported responses, which may be affected by social desirability bias. Second, the absence of a control group of children without prior oral health education limits the ability to compare results. Third, the study sample includes only children from Sofia, limiting generalizability. Lastly, the cross-sectional design precludes conclusions about long-term behaviors or causal relationships

CONCLUSION

In conclusion, the implementation of informational and educational oral health programs in schools and within families plays a crucial role in improving children's health literacy, enhancing their oral hygiene practices, and reducing the incidence and prevention of oral diseases during childhood.

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