Relationship between dental caries and their impact on school children

K. R. Rajesh Nidhi¹, R. Mahesh²*

ABSTRACT

Aim: The aim of the study was to assess dental caries experience and their impact on oral health among private school children in 8–12 years of age. Objective: The aim of the study is to evaluate relationship between dental caries status, nutritional status, snack foods, and sugar-sweetened beverages consumption among children of age 8–12 years. Background: The incidence of dental caries is about 73% among the schoolchildren in India, and this can be attributed to sociobehavior factors such as dietary habits, improper brushing techniques, socioeconomic status, and oral hygiene practices. Refined carbohydrate consumption is an important factor in the development of dental caries. Sugars are most important cause of dental caries. Frequent consumption of carbohydrate-containing snacks between meals is known to increase the amount of dental caries. Fluoridation of water probably plays a major role.

KEY WORDS: Dental caries, School children, Sociobehavioural factors

INTRODUCTION

Dental caries has been called as scourge of modern civilization and is a highly prevalent chronic disease and its consequences cause a lot of pain and suffering. Millions of people throughout the world have lost their teeth due to caries. Dental problems impact considerably on self-esteem and quality of life and expensive to treat. Sugars are the most important dietary etiological cause of dental caries.[¹] The frequent consumption of carbohydrate-containing snacks between meals is known to increase greatly the amount of dental caries. Tooth decay or dental caries is initiated when simple carbohydrates in the mouth are fermented by bacteria, which collect in a dense matrix called plaque. The period of critically lowered pH needed for caries to occur is mainly a function of the type and frequency of carbohydrates consumed and the microbial composition of the tooth biofilm and salivary factors. However, there is relatively little information about the amount of sugar consumed and patterns of consumption in developing countries.

Meals, such as breakfast, often are skipped altogether. Children who miss breakfast are more likely to snack during the day, and snacks have the highest sugar content of any type of meal (that is, breakfast, lunch, dinner, or snacks). Missing meals could have a direct influence on the consumption of refined carbohydrates, and skipping meals such as breakfast could lead to increased sugar consumption.[²]

Routine snacking on refined carbohydrates such as candies, cookies, cakes, fruit drinks, soda, and honey and processed foods such as potato chips, pasta, crackers, sweetened cereals, and French fries are a high-risk factor for caries to develop. More importantly, snacking several times throughout the day and allowing the snacks to stay on teeth cannot be neglected as an important cause of dental caries. As oral health data on schoolchildren is lacking in our country, this research is conducted to determine the prevalence of dental caries in children consuming junk food.

Behavioral factors such as improper brushing technique, family background, and knowledge about oral health may lead to dental health problems.[³] Oral health habits are measures people learn and practice

¹Department of Pedodontics and Preventive Dentistry, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India, ²Department of Pedodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, Chennai, Tamil Nadu, India

*Corresponding author: Dr. R. Mahesh, Department of Pedodontics, Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University, 112, PH Road, Velappanchavadi, Chennai, Tamil Nadu, India. E-mail: maheshpedo@gmail.com

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regularly to maintain good oral health or prevent oral disease. The most common oral diseases, dental caries, and periodontal disease are considered to be behavioral diseases because adoption of healthy oral habits is crucial in controlling them.[4]

The attitude of the parents toward oral health will create an impact on children's oral health. Decreased food intake because of oral pain or poor dental status can cause low growth in children and may worsen the nutritional status. Increased prevalence of dental caries may affect the esthetics and self-confidence of the child. While poor dental status among children has a negative effect on speech development, it may also affect the social well-being with others. Dental care has been systematically organized to improve dental health attitudes among children and the young.[5] This development has improved children's dental health and changed the dental caries patterns affecting them.

Oral health conditions are known to affect various aspects of quality of life. Sociodental indicators have been developed to assess the functional and psychological impacts of oral health on daily life.[6] Recent studies have found that early childhood dental caries is prevalent among the schoolchildren, and caries experience is also associated with their oral health-related behaviors, socioeconomic background, parental education, and dental knowledge.

In developing countries like India, caries prevalence has shown results ranging from 31.5% to 89%.[7] In addition, dental caries is one of the most important public health problems because of their prevalence, their impact on the individual and society, and the expense for their treatment.[8] Some of the studies have found a significant relationship between parental education level and their children's oral health status.

According to the "National Oral Health Policy of India," the goal is to bring down the decayed/missed/fallen teeth index in schoolchildren between 6 and 12 years of age to <2 which is approximately 4 at present. Hygiene is embedded in Indian culture and it is the way of life. Time-tested practices of rising mouth with plain water after each meal, promoting traditional diets, brushing of teeth, etc., should be promoted. Children in particular should be educated on correct brushing and tongue cleaning besides avoiding cariogenic foods. Schoolchildren can be used as ambassadors of health messages to their homes and neighborhood and can act as changing agents.[9]

**MATERIALS AND METHODS**

The total number of private schools in Karaikudi is 100, and this was selected based on the random method. This study was conducted among private schoolchildren of age 8–12 years, and a questionnaire-based survey was taken. It is a self-formulated questionnaire containing 12 questions and distributed among private schoolchildren. Parents and children were informed about the study previously. All children taking part in the study were invited to complete a structured questionnaire on relationship between food pattern and caries experience. The questionnaire was based on various sociobehavioral factors, knowledge about brushing techniques, awareness about oral health, attitude toward studies, and type of daily snack food consumption at breakfast, lunch, and dinner. Snack foods included cookies, sweets, chocolates, ice cream, jam, jellies, and potato chips. Beverages list included fruit juices, carbonated drinks, ice, and tea. Breakfast and dinner list included milk with sugar, tea with sugar, and milk with sugar before bed.

The questionnaire was collected; the results were analyzed; and the data were observed.

**RESULT**

The result for the study is given in the form of chart below.

This shows that 93% of the children uses toothbrush to clean their tooth and 7% of them uses toothpowder to clean their tooth, and among them, 76% of them belong to the middle-class family and this was based on their annual income.

Among the children, 62% of them brush once daily, 28% of them brush twice daily, and 10% of them brush thrice daily using toothbrush and toothpaste.

This indicates that 16% of them consume snack during meal, 10% consume snack after lunch, 12% consume snack before bed, and 62% consume snack uncertainty.

Among the children, 67% of them visit the dental clinic only due to toothache and 23% of them due to
parents advice, and 10% of them due to the advice by the dentist during the previous visit.

Among the children, 37% of them consume 2 chocolates in a week, 29% consume 5 chocolates in a week, 20% consume one chocolate in a week, and 14% consume >5 chocolates in a week.

29% of them were taught about brushing technique in the school and had some knowledge about the brushing technique, and 71% of them do not have any knowledge about the brushing techniques and oral hygiene.

73% of the children drink milk at night times before bed and 23% of children do not drink milk at night times before bed.

This indicates that 47% rinse their mouth once after they consume meal, 20% rinse their mouth twice after they consume meal, 33% rinse their mouth after every meal, 67% of them rinse mouth once after they consume snack, 20% rinse their mouth twice after they consume snack, and 13% rinse their mouth after every snack they consume.

Graph 2: Number of times brushing a teeth

Graph 3: Frequency of snack consumption

Graph 4: Reason for dental visit

Graph 5: Chocolates consumed in a week

Graph 6: Knowledge taught about brushing technique in school

Graph 7: Drinking milk before bed time
DISCUSSION

This study presented a view of the oral health behavior, knowledge, and attitude of schoolchildren ages 8–12 years, and, to the best of our knowledge, this is the first study that explored oral health knowledge among school children. Previous studies involving schoolchildren showed that oral hygiene, gingival conditions, and dental caries have improved since the early 1990s although gingival disease and dental caries among children were found to be more prevalent.

The mean decayed missing filled tooth score of Tamil Nadu is about 1.6 and this was found in 2016 and this may differ from the age group and the caries prevalence was around 2.2 and the periodontal disease prevalence was about 1 in Tamil Nadu. Hence, behavioral changes should be brought among the children to improve the oral health.\[11\]

This study shows that 93% of the children uses toothbrush to clean their teeth and 7% of them uses powder to clean the teeth,\[12\] and among them, 56% of them belong to the middle-class family, and other studies show that 88% of the children uses toothbrush to clean their tooth.\[13\]

This also shows that 62% of them brush once daily, 28% brush twice daily, and 10% brush after every meal, and other studies show that 67% brush once daily using toothbrush and toothpaste.\[14\] 67% of them visit the dental clinic due to toothache, 23% of them visit due to parents advice, and 10% dentists advice, and other studies show that 58.7% of them visit the dental clinic due to toothache and 14.7% of them visit due to parents advice.

This study shows that 37% consume two chocolates in a week, 29% consume five chocolates in a week, 20% consume one chocolate in a week, and 14% >5 chocolates in a week.

This study shows that 16% consume snack during meal, 10% consume snack after lunch, 12% consume snack before bed, and 62% consume snack uncertainly.

The knowledge about the oral health and oral hygiene practices were not taught in the schools in 71% of the children, and only 29% of them had knowledge about the oral hygiene practices in the school.\[15\]

The habit of drinking milk at night times was in practice among 73% of the children and 27% do not drink milk before bed at night times.

This study shows that 47% rinse their mouth once after they consume meal, 20% rinse their mouth twice after they consume meal, and 33% rinse their mouth after every meal. 67% of them rinse mouth once after they consume snack, 20% rinse their mouth twice after they consume snack, and 13% rinse their mouth after every snack they consume.\[16,17\]

Recommendation

• Awareness programs on oral health to be planned for the parents of the schoolchildren.
• School teachers to be deployed in oral health awareness program incorporated in the school curriculum.
• Cost-effective measures in maintaining oral hygiene to be taught to the middle- and lower-class families.

CONCLUSION

Only 50% of the children brush twice daily using toothbrush and toothpaste, and one-third of the participants did not brush at night times. 22% of the children had compromised oral hygiene status, and among them, 44% of them belong to the middle-class families. Hence, the oral hygiene status should be increased among children and knowledge should be given in the school, and by the parents, this will be helpful in maintaining the oral hygiene status.

Limitation

This study is conducted as a pilot project in a private school. Further studies with a larger scale of analytical in nature can be done with larger sample size and regional representations of Tamil Nadu.

REFERENCES


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