

Knowledge and Awareness on the Role of Diet in the Incidence of Dental Caries among General Population

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Abstract

Aim: The aim of this study is to assess the knowledge and awareness among general population towards oral health and dental care as well as to evaluate the factors that determine these variables.

Materials and Methods: Educational level and knowledge of the general population, about oral health maintenance and their awareness were measured by a self-structured questionnaire. A survey was conducted among 100 general population aged between 21-45years, in Chennai, India.

Background: Oral health is related to diet in many ways, it is known that any food, containing fermentable carbohydrates may potentiate the incidence of dental caries. Diet affects the integrity of the teeth; quantity, pH, composition of the saliva; and plaque pH. Sugars and other fermentable carbohydrates, after being hydrolysed by salivary amylase, provide substrate for the actions of oral bacteria, which in turn lower plaque and salivary pH and may potentiate the incidence of dental caries by demineralisation of enamel. The objective of this paper is to review the awareness of the people regarding the association between nutrition, diet and dental diseases and to present dietary recommendations for their prevention.

Results: Survey population consisted of 37 female and 63 male, aged between 21-45 years. Based on the survey conducted an average of 71% of the population had an awareness regarding the association between diet and the incidence of dental caries.

Introduction

Dental caries is probably the most common disease in the world, the prevalence of this disease associated with dietary change is being strongly increased [1].

Untreated oral diseases frequently lead to serious general health problems. Now-a-days due to mechanical life, people often neglect their oral health [2]. In developing countries, changing life-styles and dietary patterns markedly increases the caries incidence. Dental health education begins from footsteps of awareness [3]. It is necessary to create awareness about the dental caries and oral hygiene. As oral diseases are largely preventable, it is hoped that with the early exposure to oral health care activities, the prevalence of dental diseases will be reduced [4].

It is recommended that national health authorities and decision-makers formulate country-specific and community-specific goals for reducing the amount of free sugars, aiming towards the recommended maximum of no more than 10% of energy intake. In addition, the frequency of consumption of foods containing free sugars should be limited to a maximum of 4 times per day. It is the responsibility of national authorities to ensure implementation of feasible fluoride programmes for their country [5].

Materials and Methods

The study was undertaken in two stages: stage 1 and stage 2. Stage 1 comprised of formulating and designing the questionnaire, whereas stage 2 tested the formulated questionnaire.

A survey was undertaken among the general population of Chennai. The sample size included in this survey was 100, with the age of 21-45 years. Both the genders were included, male (34%) female (66%). After obtaining the informed consent; they were

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made to answer the questionnaire. Pre-tested, structured and self-administered questionnaire was used in the survey (Figure 1).

The questionnaire had questions to assess their personal details, knowledge about dental caries, their daily dietary habits, attitude toward its prevention and practice guidelines and opinions. All the data were entered and a statistical analysis was done.

Results

The total number of people enrolled in this study was 100, aged between 21- 45 years.

It was found that 73.55% people (p-value=0.001) know that

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Name:

Age:

Sex:

1. How many times a day you eat sweets?

A) once a day B) more than once C) don't eat sweets everyday

2. Frequency of sugar consumption plays an important role in the development of dental caries.

A) yes B) no c) don't know

3. Do you eat snacks in between meals?

A) yes B) no

4. How many times do you brush your teeth a day?

A) Once B) twice

5. What do you think is the cause for dental caries?

A) Sugar and sweets B) bacteria C) I don't know

6. Do you take carbonated drinks between your meals?

A) yes B) no C) primarily at meal times

7. Do you know what is dental plaque

A) food remaining on teeth B) stains C) I don't know

Figure 1: Questionnaire

sweetened food causes dental caries, 20% people take sweetened food regularly. Large number, 63% of people brush their teeth once a day while only 37% brush their teeth twice a day. Among the people 78.09% (p-value=0.000) know that chocolate, chewing gum may cause dental caries but remaining 21.91% did not know about this information. 26% take carbonated drinks and 10% during meal times. 76% (p-value=0.001) are indulged in in-between meal snacking.

64% of the population know that dental sealants and fluoride application can be used in caries prevention and 21% were unaware of this information. Nearly more than half of the people 78% had never visited the dentist before and 22% had visited the dentist when necessary (Figure 2). The common reason why they had not visited the dentist, for a regular check-up can be due to their perceived idea that dental problems are not an emergency situation.

Discussion

Through this survey we came to a conclusion that knowledge among the general population regarding their dietary habits plays an important role in oral health. Dental caries occurs due to demineralisation of enamel and dentine, by organic acids formed by bacteria in dental plaque through the anaerobic metabolism of sugars derived from the diet [6].

The relation between sugars and dental caries is difficult to quantify because of inherent limitations. Konig and Navia [7] noted that 1) variability in patterns of sugar consumption affects the duration of exposure of the teeth to sugars, 2) dietary recalls or food diaries only provide an approximation of actual sugar and food consumption patterns, 3) patterns of sugar consumption are reported on an annual basis but caries formation can take several years, and 4) caries prevalence is influenced by several factors that are difficult to control for, including the dietary mineral content (fluoride, calcium, and phosphorus), health care, oral hygiene habits, and education level.

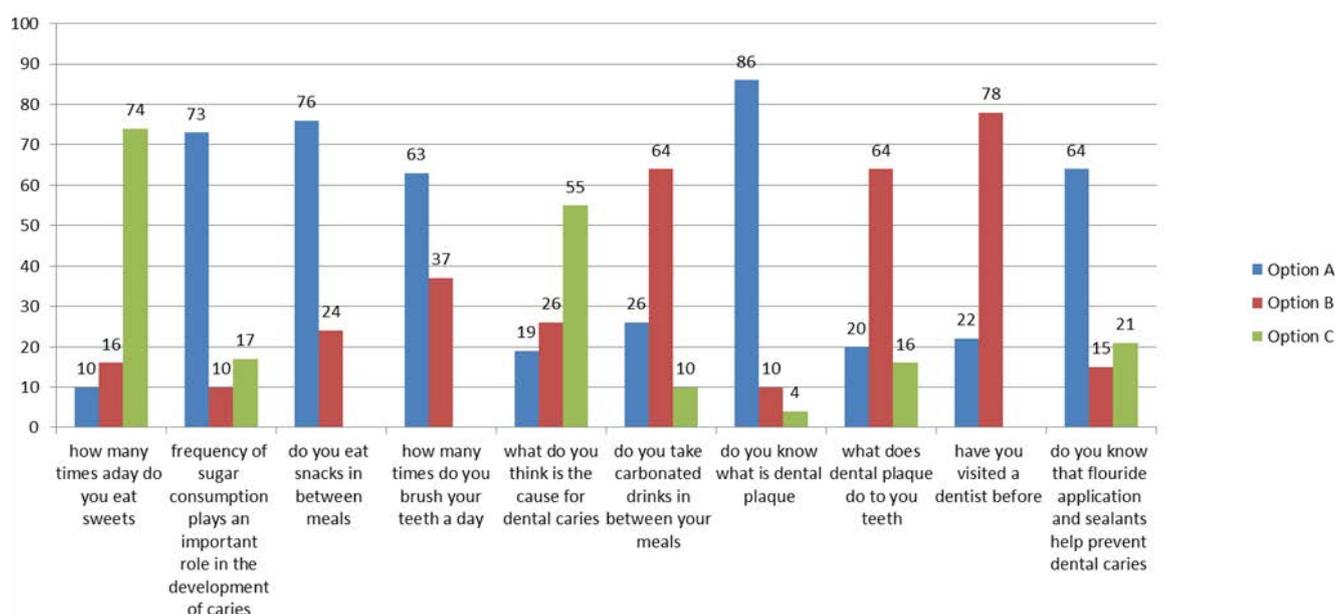


Figure 2: Knowledge and awareness on role of diet in the incidence of dental caries

One of the main conclusions from the Vipeholm study [8] was that sugars in sticky foods consumed between meals were associated with high caries activity. These findings stimulated research on non acidogenic sugar substitutes (sweeteners) that do not cause pH falls in dental plaque [9].

Because the behaviour of an individual person is an important determinant for caries and caries risk, it is clear that cultural and social practices play a role as well [10]. In most industrialized countries, people with relatively high risk of caries are found in the lower socioeconomic and immigrant groups.

A comprehensive treatment plan for dental caries should include eliminating cariogenic bacteria, reducing plaque acidogenicity, enhancing tooth remineralization, and repairing the damaged teeth. Contemporary caries management philosophy has changed from the traditional surgical approach to a medical model, which often includes dietary analysis and advice, oral hygiene instruction, placement of fissure sealants, and the use of fluoride therapy, xylitol chewing gum, and antimicrobial agents such as chlorhexidine [11].

Various forms of fluoride therapy and dental sealants are used as a prophylactic measure to prevent caries. People should be educated and must be aware of all the preventive measures that are available for a comprehensive oral health care.

It is necessary to evaluate patients' dietary habits in order to propose a realistic change that may lead to the reestablishment of the balance between demineralization and remineralization. Advice to restrict the consumption of sugary snacks and drinks is part of general dietary counselling [12] since diet is a common risk factor for other chronic diseases such as obesity and diabetes.

One must remember that dental caries is a multifactorial disease, and other factors such as oral hygiene and access to fluoridated products are also determinants of the carious process and should be addressed for caries prevention and treatment [13].

Conclusion

Through this survey, it was evident that knowledge of the common population regarding their diet and oral health was significant, but lacks in the overall motivation on prevention of dental caries and majority visit the dentist only on pain.

The relationship between sugar consumption and dental caries is not as strong as it used to be before the widespread use of fluoride. Diet is still key factor acting in the caries process.

Advice on the rational consumption of sugar should be given to patients as a part of general dietary counselling [14].

Diet, hygiene, tobacco, alcohol and stress are common causes to many chronic diseases such as cancer, periodontitis, dental caries, cardiovascular disease, diabetes, obesity and psychiatric diseases. A common risk factor approach should be used to prevent these diseases. An active collective effort of the dental health care team can make awareness program more effective and can also make people more aware about the importance of dental caries prevention.

References

1. Grover S, Anuradha P. Prevalence and treatment needs of dental caries among 12 and 15 years old school going children in Lucknow city. *J Indian Assoc Public Health Dent.* 2011;9(18):105-111.
2. Ganesh SA, Bhatt PK, Jyothi SD. Initial impact of health education program on oral health, knowledge and awareness among 15 year old children of Government High School, Sarakki, Bangalore. *J Indian Assoc Public Health Dent.* 2007;10:57-65.
3. Rao A, Sequeira SP, Peter S. Prevalence of dental caries among school children of Moodbidri. *J Indian Soc Pedo Prev Dent.* 1999;17(2):45-48.
4. Othman WM. Guidelines on Oral Health Care for Pre-school Children???. Oral Health Division, Ministry of Health Malaysia. 2003.
5. Paula Moynihan, Poul Erik Petersen. Diet, nutrition and the prevention of dental diseases. 1WHOCollaborating Centre for Nutrition and Oral Health, School of Dental Sciences, University of Newcastle upon Tyne, Newcastle upon Tyne, UK: 2WHO Collaborating Centre for Community Oral Health Programmes and Research, University of Copenhagen, Copenhagen, Denmark.
6. Arens U. Oral Health, Diet and Other Factors: Report of the British Nutrition foundation Task Force. *Amsterdam: Elsevier.* 1998.
7. Konig KG, Navia J. Nutritional role of sugars in oral health. *Am J Clin Nutr.* 1995;62(suppl):275S-283S.
8. Gustaffson BE, Quensel CE, Lanke LS, et al. The Vipeholm dental caries study; the effect of different levels of carbohydrate intake on caries activity in 436 individuals observed for five years. *Acta Odontol Scand.* 1954;11(3-4):232-264.
9. Birkhed D. Sugar substitutes-one consequence of the Vipeholm study? *Scand J Dent Res.* 1989;97(2):126-129.
10. Riva Touger-Decker and Cor van Loveren Sugars and dental caries 1-4.
11. Chu CH, Mei ML, Lo EC. Use of fluorides in dental caries management. *Gen Dent.* 2010;58(1):37-43.
12. Selwitz RH, Ismail AI, Pitts NB. Dental caries. *Lancet.* 2007;369(9555):51-59.
13. Sheiham A. Dietary effects on dental diseases. *Public Health Nutr.* 2001;4(2B):569-591.
14. Juliana Jobim Jardim, Luana Severo Alves, Marisa Maltz, Health promotion and dental caries. *Braz oral res.* 2010;24(1).