



Knowledge, Attitude and Behavior Concerning Fluoridated Toothpaste and among Indian Adolescents

J Kittu^{1*} and V Aditi²

¹Senior Lecturer, Department of Public Health Dentistry, Rungta College of Dental Sciences and Research, Bhilai, Chhattisgarh, India

²Assistant Professor, Department of Public Health Dentistry, Faculty of Dentistry, Jamia Millia Islamia, New-Delhi, India

*Corresponding Author: Kittu Jain, Senior Lecturer, Department of Public Health Dentistry, Rungta College of Dental Sciences and Research, Bhilai, Chhattisgarh, India.

Received: November 15, 2017; Published: December 02, 2017

Abstract

Background: Most effective method for administering fluoride for caries prevention is the regular use of fluoridated toothpaste and tooth brushing. Indian adolescents seem to have low awareness regarding their oral health care primarily in the use of fluoridated toothpaste and tooth brushing methods. The aim of this study was to evaluate knowledge, attitude and behavior concerning fluoridated toothpaste and tooth brushing habit among Indian Adolescents.

Methods: A self-administered, closed ended questionnaire was distributed amongst 200 school children of age group 15 years in Bangalore city, Karnataka, India.

Results: Although the study participants showed little knowledge about the reason and technique of using a fluoridated toothpaste effectively, the total of 82% were using fluoride toothpaste without knowing that their toothpaste was fluoridated (57.5%). Majority of them gave advertisement as reason for toothpaste selection. 40.5% answered that fluoride cleans the teeth. 41% brushed their teeth twice daily, 76% brushed for more than 3 minutes. 20% share their toothbrush with family members.

Conclusion: Despite having good attitude and behavior regarding fluoridated toothpaste and tooth brushing, the state of knowledge needs improvement.

Keywords: Fluoride; Fluoridated Toothpaste; Toothpaste; Tooth Brushing; Knowledge

Introduction

Oral diseases qualify as major public health problems owing to their high prevalence and incidence in all regions of the world. According to the World Oral Health Report 2003, dental caries and periodontal diseases are the two most common oral afflictions worldwide [1]. The primary etiologic agent for the development of these two diseases is recognized as plaque. The most widely used and efficient method of plaque control all over the world is tooth brushing with tooth paste [2].

From a global perspective, toothpaste containing fluoride is considered to have had the most significant impact of any intervention on the decline in dental caries [3]. Main factors for positive effect of fluoride toothpaste are tooth brushing frequency, fluoride concentration in the toothpaste, the amount of toothpaste used, brushing time and subsequent water rinsing [4].

Schoolchildren form a vital priority group of the society, they can be targeted for preventive care, as they are receptive to new knowledge, and desirable attitudes and practices can be formed comparatively easy at that age. To plan and conduct oral health promotion activities, it is important to know existing knowledge, attitudes and practices of this group [1].

The knowledge is usually derived from information and the information, when believed translates into an attitude. Behavior is the outcome when that attitude is sustained. It is the primary concern of oral health educators to impart a positive oral health knowledge and behavior in the society [5]. Previous literature from India and abroad reveals the oral hygiene behavior amongst school children, but little is known regarding their knowledge, attitude and practice concerning fluoridated toothpaste and tooth brushing. Thus, the aim of this study was to identify the knowledge, attitude and behavior concerning fluoridated toothpaste and tooth brushing among Indian Adolescents.

Materials and Methods

A cross sectional study was conducted amongst 10th standard (15 ± 1 year) school children in three randomly selected government schools of Bangalore city, Karnataka, India. The School Children present on the day of data collection were included in the study. Permission was obtained from the ethical review committee of the institution number MRADCH/ECIRB/32/2014-15 prior to the commencement of the study. The permission was also obtained from the principals of the selected government schools before the start of the study.

Sampling

The sample size was estimated based on the proportion of 15 year old government school children using fluoridated toothpaste. It was found to be 80% in the pilot study

Formula used was, $n = (z\alpha + z\beta) pqD / L^2$

n (Sample size) = $(1.96 + 0.84)^2 \times 0.8 \times 0.2 \times 2 / (0.08)^2 = 200$

Assuming design effect of 2 based on the cluster random sampling method used.

Sampling technique

List of the high schools under Bangalore city was obtained from Deputy Directorate of Public Instructions (DDPI) served as a sampling frame. Three Government schools from the North zone were selected randomly for the purpose of the study.

A self-administered questionnaire was prepared to assess the knowledge, attitude and behavior concerning fluoridated toothpaste and tooth brushing. The multiple-choice questionnaire consisted of 14 closed ended questions. Background information was gathered on age, gender and the toothpaste they use. Knowledge of toothpaste and fluoride was assessed with the help of three questions, five questions were based on attitudes towards tooth brushing and toothpaste and oral health were investigated in five questions. Last five questions were concerned with oral hygiene behavior.

Before the questionnaire was definitely established, the questions were pretested in a pilot study on 30 school children, to assess the children’s ability to understand. The questionnaire was translated into Kannada language and was also translated back to English to ensure correct translation.

The study participants received a full instruction on how to fill the questionnaire. Furthermore, the investigators were always available during the completion of questionnaire and the participants were encouraged to approach the investigators, whenever clarification is required. Care was taken that no discussion took place amongst the students while filling out the questionnaire. The completed questionnaire was collected back in 10 - 15 minutes by the investigator and checked for completeness. Any incomplete forms were asked to be completed.

Responses to the questions were recorded as correct or incorrect and each of the correct answer was given a score of 1 and the wrong answer as score 0. Based on the sum of the scores of the questions on knowledge, attitude and behavior, two categories were defined for each of them: Adequate (> 2 score) and Inadequate (< 2 score) knowledge; positive (> 2 score) and negative (< 2 score) attitude; Adequate (> 3 score) and Inadequate (< 3 score) behavior.

Statistical analysis

Statistical analysis was performed using IBM SPSS version 20. Data were presented as frequency and percentage. Pearson correlation coefficient was used to find relationship between the scores obtained on the questions on knowledge, attitude and behavior.

Results

A total of 200 school children of 15 year of age comprised the sample. About half (49%) were males and half (51%) were females. Knowledge concerning fluoridated toothpaste and tooth brushing is shown in figure 1. A majority of the participants (57.5%) did not know whether their toothpaste is fluoridated or not. Most of them (40.5%) expressed the opinion that the main effect of fluoride was to ‘clean the teeth’. Very few participants (12.5%) stated that fluoride in toothpaste was the most important tool to avoid cavities whereas 33.5% thought that only tooth brushing is important.

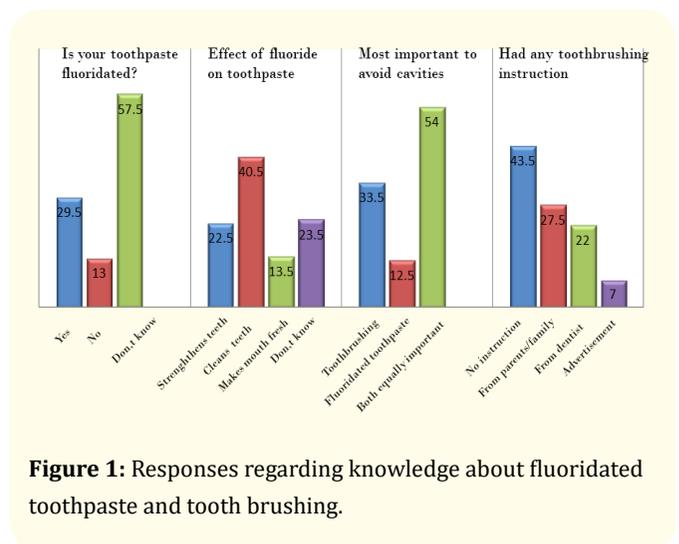


Figure 1: Responses regarding knowledge about fluoridated toothpaste and tooth brushing.

Attitudes concerning fluoridated toothpaste and tooth brushing are shown in figure 2. Almost all (98.5%) the participants thought that brushing was 'very important' and only few (1.5%) thought that brushing was 'quite important'. Almost similar opinion was found about brushing with toothpaste. Among them, 11.5% of the participants considered taste as the most important factor for choosing toothpaste and 20.5% participants did not know the reason for using the toothpaste.

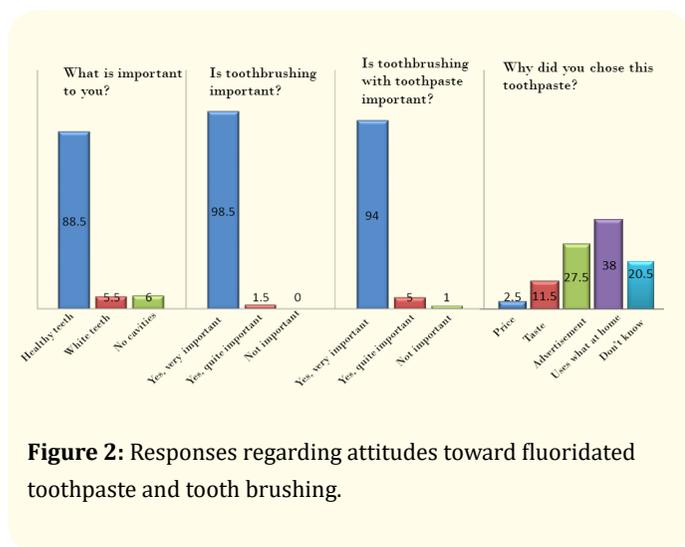


Figure 2: Responses regarding attitudes toward fluoridated toothpaste and tooth brushing.

Responses regarding tooth brushing behavior are shown in figure 3. About 41% of them brushed twice a day and half of them brushed once a day. The most common brushing pattern was 'before or after breakfast'. Most of the participants stated that they brushed just once a day brushed 'before the breakfast'. A vast majority (76%) of the participants brushed their teeth for more than 3 minutes. Most participants (45%) stated that they used 2 cm of toothpaste on a tooth brush. About half of the participants changed their brush after 6 months. Three-fourth of the participants stated that they did not share toothbrush with any of the family member.

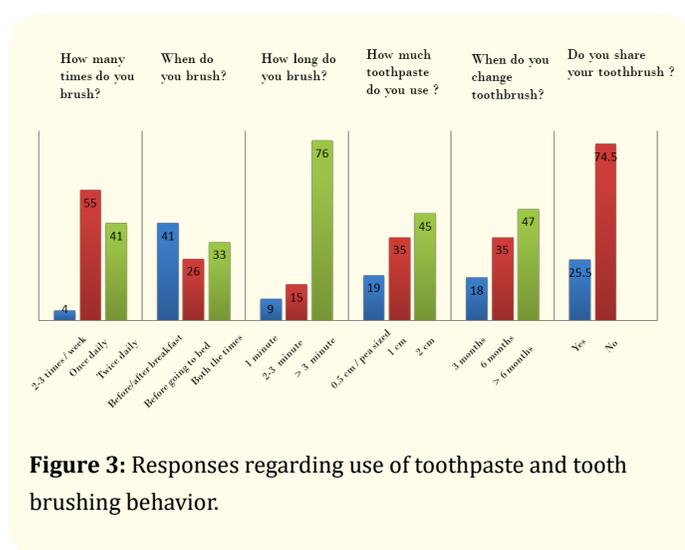


Figure 3: Responses regarding use of toothpaste and tooth brushing behavior.

When participants were categorized according to the sum of their scores of the answers, it was found that adequate knowledge was reported by only one-third (30.5%) of the participants whereas positive attitude and adequate behavior was reported by majority of the participant (Table 1).

	Score	N	%
Knowledge			
Adequate	(score > 2)	61	30.5
Inadequate	(score < 2)	139	69.5
Attitude			
Positive	(score > 2)	166	83
Negative	(score < 2)	24	17
Behavior			
Adequate	(score > 3)	164	82
Inadequate	(score > 3)	36	18

Table 1: Categories according to sum of scores.

Pearson's correlation co-efficient showed that there was a highly significant positive ($r = 0.26$; $p < 0.001$) correlation between attitude and behavior, whereas no correlation between knowledge and attitude; and knowledge and behavior (Table 2).

Correlation between	Knowledge	Attitude	Behavior
Knowledge	R value	1	0.047
	P value	-	0.512
Attitude	R value	0.047	1
	P value	0.512	-
Behavior	R value	0.260	1
	P value	0.167	< 0.001**

Table 2: Correlation between the scores of knowledge, attitude and behavior.

Discussion

A number of studies have been carried out in India to assess oral health knowledge, attitudes and practices during recent years. However the data on knowledge, attitudes and practices of schoolchildren regarding fluoridated toothpaste and tooth brushing is still lacking. Hence, the present study was conducted to assess knowledge, attitude and behavior concerning fluoridated toothpaste and tooth brushing among Indian Adolescent in Bangalore city, Karnataka, India. The target age of 15 years was selected as adolescent is one of the key developmental periods of life. Biological features such as eruption of permanent dentition which must last the individual's life time, and psychological features such as the development of self-reliance, set the stage for health education opportunities.

In this study, 100% of the respondents were using toothpaste and toothbrush to clean their teeth and majority (82%) of them were using fluoridated toothpaste. This figure was more than that found by the study done by Harikiran., *et al.* [6], where half (50.9%) of the children were found to be using fluoridated toothpaste. More than half (60%) did not know whether their toothpaste contained fluoride or not, which was comparatively more than that found by Gupta., *et al.* [1], where about two-thirds of the participants did not know and only one third of the participants reported to be using fluoridated toothpaste. The reason for using toothpaste and the effects of fluoride were very uncertain which is in line with similar findings were reported by Jensen O [7]. Despite inadequate knowledge about fluoridated toothpaste and tooth brushing, majority of the participants showed a positive attitude towards the importance of tooth brushing and toothpaste, which is in line with the study done by Jensen O [7]. Adequate toothpaste and tooth brushing behavior identified as brushing twice a day, using sufficient amount of toothpaste, brushing 2 minutes or longer, changing the toothbrush within 3 months and not sharing the toothbrush was reported by 82% of the participants. The common opinion was that tooth brushing was more important for oral health than the use of fluoride toothpaste, possibly a logical conclusion if oral hygiene was performed with the purpose of preventing both caries and periodontal diseases in line with the study by Jensen O [7]. Less than half of the respondents, 41%, answered that they brushed their teeth twice a day in accordance with the study done by Harikiran., *et al.* [6] and better than the results from the study in Tamil Nadu [5]. Twice daily tooth brushing also increases the fluoride concentration in saliva and plaque and seems therefore to have potential to further prevent caries. Three-fourth of the respondents brushed their teeth for 3 minutes or longer. Longer brushing time reduced retention of toothpaste in the brush, leading to both higher and prolonged fluoride levels in the mouth. The amount of toothpaste on the brush has been described as important increasing the amount from 0.5 to 1.5g more than doubled the fluoride content in saliva after brushing [3]. In the present study, 40% of the participants stated that they used a large amount of 2 cm of toothpaste, which corresponds to 1 - 1.5 gms and 18% changed their tooth brush after 3 months or longer in contrast with the study in Tamil Nadu [5] where 70% changed their toothbrush within 3 months. One-fourth (25%) gave advertisement as reason for toothpaste selection whereas almost half of them (50%) use the toothpaste whatever available at home in line with the previous study [7]. The probable reason could be the participants considered that advertisements are deceptive. However, despite the negative attitude towards advertisements, the informants were still influenced by them. These findings were in contrast as in study by Sharda., *et al* [2].

Conclusion

Through optimal use of fluoride toothpaste the incidence of caries in the population can decrease. Adolescents in this study showed lack of knowledge about the reasons and technique for using fluoride toothpaste effectively. In addition they lacked awareness of their behavior and the reason for acting, giving the theme of this study: tooth brushing with fluoride toothpaste was a priority, despite the lack of knowledge about how to use toothpaste effec-

tively and its positive effects on oral health. In conclusion the state of knowledge concerning tooth brushing and fluoride toothpaste needs to be improved and simple and clear advice, easy to adopt, should be given. Oral care professionals and promoters need to better inform about the importance and use of fluoride toothpaste especially in developing countries like India where the oral health awareness is quite poor as this is considered the most cost effective tool for the preventing of caries. Findings of the present study provide baseline information for effective oral health training and its promotion.

Conflict of Interest

Authors declare conflict of interest as Nil.

Bibliography

1. Gupta T., *et al.* "Oral Health Knowledge, Attitude and practices of a 15 year old Adolescent population in Southern India and their social determinants". *Oral Health and Preventive Dentistry* 10.4 (2012): 345-354.
2. Sharda A and Sharda J. "Factors influencing choice of oral hygiene products used among the population of Udaipur, India". *International Journal of Dental Clinics* 2.2 (2010): 7-12.
3. Davies R, Ellwood R, Davies G. "The rational use of fluoride toothpaste". *International Journal of Dental Hygiene* 1.1 (2003): 3-8.
4. Prasad AK., *et al.* "Oral health Knowledge Attitude Practice of School students of KSR Matriculation School, Thiruchengode". *Journal of Indian Academy of Dental Specialist Researchers* 1.1 (2010): 5 -11.
5. Jensen O., *et al.* "Is the use of fluoride toothpaste optimal? Knowledge, attitudes and behavior concerning fluoride toothpaste and toothbrushing in different age groups in Sweden". *Community Dentistry and Oral Epidemiology* 40.2 (2012): 175-184.
6. Harikiran A., *et al.* "Oral health related KAP among 11 to 12 year old school children in a government –aided missionary school of Bangalore city". *Indian Journal of Dental Research* 19.3 (2008): 236-242.
7. Jensen O., *et al.* "Fluoride Toothpaste and Toothbrushing: knowledge, attitudes and behavior among Swedish adolescents and adults". *Swedish Dental Journal* 35.4 (2011): 203-213.

Volume 2 Issue1 January 2018

© All rights are reserved by J Kittu and V Aditi.