

Contemporary Perception Of Oral Hygiene Among Adults Using Pea-Sized Blob And A Glut Of Toothpaste In Chennai, India- A Cross-Sectional Study

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ABSTRACT:

Background: Toothpaste manufacturers and dental professionals frequently recommend to brush our teeth with a pea-sized blob of toothpaste. But often people tend to cover the entire head of a toothbrush, sometimes with two bars and further, some people also apply toothpaste for a second time to brush their teeth.

Aim: To access the excess amount of toothpaste usage while brushing among adults in Chennai.

Materials and method: A cross-sectional study was done using a self-validated questionnaire which consists of 15 closed-ended and open-ended questions. This study was conducted among 103 active participants in Tambaram local population of Chennai. The Chi-Square test was used for the statistical analysis where the p-value less than 0.05 was considered significant.

Result:

Almost 98.3% of males had purchased less than or equal to 3 toothpaste tubes per month, whereas 1.7% of males had purchased less than or equal to 6 toothpaste tubes per month. Moreover, among females, 93.2% had purchased less than or equal to 3 toothpaste tubes, whereas 2.3% of females are using mouth freshener to control their mouth odor. The association between male and female in using mouth fresheners to control the mouth odor and quantity of toothpaste purchased every month was statistically significant.

Conclusion: Most of the individuals use exorbitant toothpaste for cleaning the teeth, the tongue, as well as the mucosa of the oral cavity that is heavily coated with flavors and sensations leaving behind the plaque. There is a need for the dental professionals to create awareness on the effects of using the excess quantity of toothpaste for brushing (like dental fluorosis leading to caries, staining, loss of taste sensations etc.). Hence, the education of people regarding the importance of the quantity of toothpaste to be used for brushing to maintain good oral hygiene is essential for day to day life. Professionals can educate every individual about using the recommended amount of toothpaste to realize the maximum benefit.

Keywords: Toothpaste, Excess, Oral hygiene, Educate.

INTRODUCTION:

Oral health is more critical for complete individual health which is related to esthetics and detection the systemic problems. Grins are one of the most significant resources of an individual, both in personal as well as professional life. One of the main factors affecting this spirited grin is the viability of brushing our teeth. As little as, most of the individuals think about it, toothpaste is an essential item that we use every day. Everyone knows that they are alleged to brush their teeth at least twice a day, and it's surprisingly ubiquitous to run out of toothpaste more quickly than it seems they should. The World Health Organization (WHO) report states that about 60 percent to 90 per cent of people are affected by dental caries all over the world. According to the American Dental Association (ADA), oral health is a functional, structural, aesthetic, physiologic, and psychosocial state of well-being. It is essential to an individual's general health and quality of life¹.

The mouth harbours one of the most diverse microbiomes in the body, which includes viruses, fungi, protozoa as well as bacteria. Availability of innumerable oral hygiene products in the market becomes gruelling for the general public to determine which is more useful for their teeth. Oral hygiene is sought to be one of the most necessary aspects to maintain good health since the pre-modern era, where natural products like Neem sticks were used to maintain good teeth. With the advancement of technology in the modern era, products like toothpaste, mouthwashes, dental floss, and teeth whiteners have been introduced. Toothpaste is the most commonly used home care products to maintain oral hygiene. Most people's choice of toothpaste is based on taste or cost and not on the oral benefit it provides. Some of the factors which influence the choice of toothpaste from the customer's perspective are protracted performance, brand awareness, product attribute, taste, the credibility of the company, availability of product information and herbal ingredients².

Since 5000 BC, the Egyptians made a tooth powder, which comprised of powdered cinders of bull hooves, myrrh, powdered and burnt eggshells, and pumice. The Greeks, and subsequently the Romans, improved the plans by including abrasives, for example, squashed bones and shellfish shells. There is a different enormous gap throughout the entire existence of toothpaste until the eighteenth century. In Britain, tooth powder and toothpaste came to market. Bicarbonate of soda was utilized as the reason for most toothpowders, and some contained other ingredients that would not be viewed as today, for example, sugar. The borax powder was included towards the finish of the eighteenth century to create an excellent frothing impact³. The toothpaste is more critical to remove the plaque from teeth, as this is the cleansing agent. Selection of the Toothpaste depends on their own.

It is generally agreed that the widespread use of toothpaste has been important for the reduction of caries prevalence observed among children and young adults all over the world. The daily use of toothpaste had become a fundamental part of dental health education to individuals in all age groups. Though the amount of toothpaste can be utilized and it should be left to an individual decision, for the most part, represented by commerce toothpaste promoting, and depends on advertising, the taste of the toothpaste, pleasant smell of the toothpaste, usage of the toothpaste was increasing per day. Hence, this study aims to assess the quantity of toothpaste used among adults.

MATERIALS AND METHOD: -

A questionnaire-based cross-sectional study was conducted among the adults in tambaram in Chennai population for two months to understand the status of oral hygiene comparatively in people using an excess amount of toothpaste (dentifrices) and a lesser amount of toothpaste. The ethical approval for this study was obtained from the ethical committee from the Department of Public Health And Dentistry-SRM dental college, Ramapuram, Chennai.

The sample size was 107 adults of all gender. The convenience sampling technique used. The inclusion criteria encompass only the healthy adults who are using toothpaste for more than a year and who are personally willing to participate and gave informed consent. Exclusion criteria include for children below 18 years of age and people using toothpaste less than a year and people with oral developmental disturbances.

Data was collected through a self-administered structured questionnaire in English and shared via online. The questionnaire contains personal details such as (name, age, gender, etc.) and 15 questions related to the type of toothpaste used, the brand of toothpaste/powder used, amount of toothpaste dispensed on the brush, satisfactory level with the use of current toothpaste, the reason for choosing that particular brand of tooth paste¹¹. Among the 15 questions, nine were of multiple-choice, and six were closed-ended. For data analysis SPSS (IBM SPSS Statistics for Windows, Version 26.0, Armonk, NY: IBM Corp. Released 2019) is used. Significance level was fixed as 5% ($\alpha = 0.05$). Statistical methods include descriptive statistics and to compare proportions Chi-Square test was applied, if any expected cell frequency is less than five, then Fisher’s exact test is used. The P-value of less than 0.05 is considered significant.

RESULTS

FIGURE-1 GENDER CHARACTERISTICS OF STUDY POPULATION

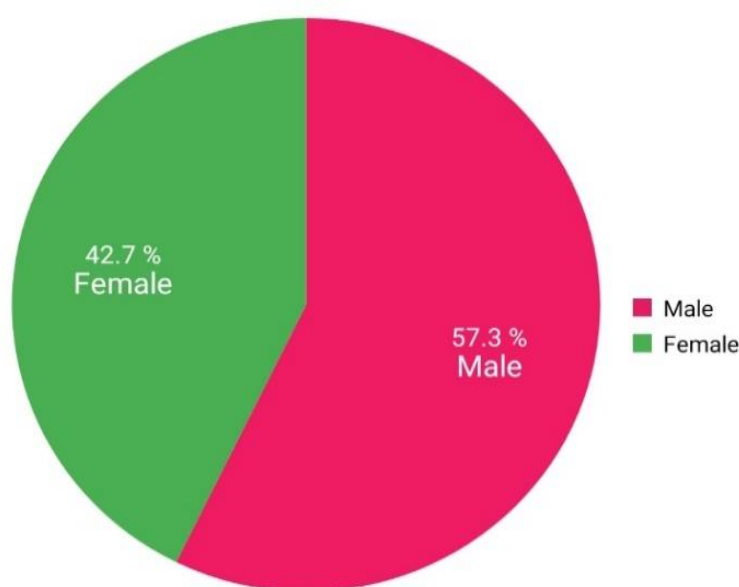


Figure 1 shows that, out of 107 individuals who had been actively participating in the cross-sectional study, 59 were male, and 44 were female who is 57.3% and 42.7% respectively.

Table – 1 SOCIO-ECONOMIC STATUS DETAILS OF THE VARIABLES (Kuppuswamy).

Socio-economic status	Male	Female
Upper class	11.9%	6.8%
Upper middle	10.2%	13.6%
Lower middle	39.0%	38.6%
Upper lower	32.2%	31.8%
Lower	6.8%	9.1%

According to Table-1, 11.9% of males and 6.8% of females were upper class, and 10.2% of males and 13.6% of females were upper-middle class. Further, the lower middle class which shows that 39.0% were males and 38.6% were females. Almost 32.2% of males and 31.8 % of females were under the category of the upper lower class. Finally, the lower class showed that 6.8% are males and 9.1% are females.

TABLE-2 Descriptive variable of questionnaire recorded

		Male	Female	P-value
) What kind of toothpaste do you use	Herbal toothpaste	44.1%	27.3%	0.43
	Fluoridated toothpaste	25.4%	38.6%	
	Charcoal toothpaste	3.4%	4.5%	
	Salted toothpaste	27.1%	29.5%	
) Since when you are using this toothpaste?	Less than 3 months	10.2%	18.2%	0.17
	Between 3-12 months	13.6%	25.0%	
	Between 1-3 months	5.1%	9.1%	
	More than three years	71.2%	47.7%	
) Have you ever encountered any dental problem on using a particular amount of toothpaste?	Yes	3.4%	9.1%	0.64
	No	96.6%	90.9%	
) How do you control your mouth odour?	Using a drop of toothpaste	22.0%	6.8%	0.04*
	Using exorbitant toothpaste	40.7%	31.8%	
	Rinsing with mouthwash	6.8%	13.6%	
	Rinsing with plain water	25.4%	45.5%	
	Using mouth freshener	5.1%	2.3%	
) What is the quantity of toothpaste you use?	About a drop	28.8%	25.0%	0.5
	As much as the length of the brush head	54.2%	34.1%	
	Apply for the 2nd time	8.5%	25.0%	
	Not noticed	8.5%	15.9%	
) Have you ever encountered staining or discolouration on using an excess amount of toothpaste?	Yes	10.2%	11.4%	0.5
	No	89.8%	88.6%	
) What do you think results in healthier tooth and gums?	Using less amount of toothpaste for brushing	32.2%	31.8%	0.8
	Using an excessive amount of toothpaste for brushing	67.8%	68.2%	

) Which brand of toothpaste do you use?	Colgate/Pepsodent	44.1%	27.3%	0.43
	closeup/dabur red	25.4%	38.6%	
	Himalaya/patanjali	3.4%	4.5%	
	other	27.1%	29.5%	
) Have you ever encountered any changes in the texture of your tooth-surface due to toothpaste usage?	Yes	20.3%	20.5%	0.7
	No	79.7%	79.5%	
0.) Do you keep changing the brand of toothpaste or use the same brand of toothpaste continuously?	Keep changing the brand	20.3%	22.7%	0.36
	Use the same brand continuously	79.7%	77.3%	
1.) If you use the same brand of toothpaste continuously or keep changing, kindly specify the reason behind.	Not Comfortable	27.1%	65.9%	0.7
	Comfortable	72.9%	34.1%	
2.) The total number of members in your family?	Less than or equal to 3 members	25.4%	36.4%	0.5
	Less than or equal to 6 members	74.6%	61.4%	
	More than six members	0	2.3%	
3.) How many toothpaste tubes you use to purchase per month?	Less than or equal to 3 tubes	98.3%	93.2%	0.7
	Less than or equal to 6 tubes	1.7%	6.8%	
4.) What is the quantity of each toothpaste tube you purchase?	Less than or equal to 100 grams	33.9%	40.9%	0.04*
	Less than or equal to 200 grams	30.5%	47.7%	
	More than 200 grams	11.9%	0	
	not noticed	23.7%	11.4%	
5.) What is the approximate price of the toothpaste you are purchasing?	Less than or equal to Rs.50 More	15.3%	38.6%	0.14
	Less than or equal to Rs.100	45.8%	47.7%	
	More than Rs.100	33.9%	2.3%	
	not noticed	5.1%	11.4%	

Table-2 shows that 98.3% of males had purchased less than or equal to 3 toothpaste tubes per month, whereas 1.7% of males had purchased less than or equal to 6 toothpaste tubes per month. Moreover, in

females, 93.2% had purchased less than or equal to 3 toothpaste tubes, whereas 2.3% of females are utilizing mouth freshener to control their mouth odour. The association between male and female in utilizing to control the mouth odour and quantity of toothpaste purchased every month was statistically significant.

DISCUSSION

Most of the individuals tend to think that it was necessary to cover the entire brushing surface of a toothbrush because of the way toothpaste is advertised on television. Liberal use of toothpaste is far too much, and it was only necessary for adults to use an estimated pea-sized dab of toothpaste to clean their teeth properly. 44.1% of males and 27.3% of females used herbal toothpaste, and also 25.4% of males and 38.6% of females used fluoridated toothpaste. At a low range, i.e. 3.4% and 4.5% of males and females respectively used charcoal toothpaste. Finally, 27.1% of males and 29.5% of females use salted toothpaste. 10.2% of males and 18.2% of females use the toothpaste for less than 3 months. 13.6% males and 25.0% of females use the toothpaste between 3-12 months. On using those toothpaste for a mentioned period 3.4% of males and 9.1% of females have encountered some dental problems was evident and again 96.6% of males and 90.9% females have not experienced any of the dental problems. The data also reveals that 22.0% of males and 6.8% females use a drop of toothpaste to control the mouth odour. Also a high range of males i.e. 40.7% and 31.8% females use excess quantity of toothpaste to control the mouth odour. Mouthwash is been used by 6.8% of males and 13.6% females. 25.4% and 45.5% of males and females are rinsing with plain water to control the mouth odour. At a low distribution 5.1% males and 2.3% females use mouth fresheners to control their mouth odour. It is also understood that 28.8% males and 25.0% of females use just a drop of toothpaste for brushing. It is evident that 54.2% of males and 34.1% of females i.e. a wide range of people were using toothpaste that covers the entire brush head for brushing. Then 8.5% males and 25.0% females apply toothpaste for second time for brushing. 8.5% and 15.9% of males and females have not yet noticed the quantity of toothpaste for brushing. 10.2% of males and 11.4% of females have noticed some discoloration on the teeth and majority of males and females i.e. 89.8% and 88.6% respectively have not noticed such changes. 32.2% and 31.8% of males and females respectively think that using less amount of toothpaste results in healthier tooth and gums. But at a wide range of people i.e. 67.8% of males and 68.2% of females think that using excess toothpaste for brushing results in healthier tooth and gums. 44.1% and 27.3% of males and females respectively use Colgate and Pepsodent Toothpaste for brushing. 25.4% of males and 38.6% of females use Close-up and Dabur red toothpaste for brushing. 3.4% males and 4.5% of females use Himalayas and Patanjali for brushing. 27.1% and 29.5% female use other toothpaste for brushing. As per the table it is also known that 20.3% of males and 20.5% females have not encountered any changes in surface texture of tooth. At a wide range i.e. 79.7% of males and 79.5% of females have not yet encountered such changes in the tooth. 20.3% of males and 22.7% of females are not keep changing the toothpaste brand for brushing. 79.7% of males and 77.3% of females use the same brand of toothpaste continuously. 27.1% and 65.9% of males and females respectively feel uncomfortable and 72.9% and 34.1% males and females respectively feel comfortable to use the same brand of toothpaste. As from the data collected 25.4% of males and 36.4% of females tend to have less than or equal to 3 members in their family. 74.6% males and 61.4% males have family members less than or equal to 6 and 2.3% if females have more than 6 family members. 98.3% males and 93.2% females use less than or equal to three tubes of toothpaste and 1.7% males and 6.8% females use more than 6 tubes of toothpaste for brushing per month. 33.9% males and 40.9% females use to purchase toothpaste less than 100 grams for every month. Also 30.7% and 47.7% males and females purchase less than or equal to 200 grams per month. 11.9% males alone buy more than 200 grams of toothpaste per month. 23.7% males and 11.4% females have not yet noticed the quantity of toothpaste they been purchasing. And accordingly 15.3% males and 38.6% females purchase a toothpaste tube for about less than or equal to Rs.50. Then the percentage of males and females who buy toothpaste for less than or equal to Rs.100 are 45.8% and 47.7% respectively. As per the data 33.9%

males and 2.3% females use to purchase toothpaste for more than Rs.100 each and every month. And also 5.1% males and 11.4% females have not noticed the quantity of toothpaste they have been purchasing every month. The association between male and female in utilizing to control the mouth odor and quantity of tooth paste purchased every month was statistically significant.

Jonathan et al reported that his study was based on a large majority of people bestowed more toothpaste in the course of their regular oral hygiene routine than the recommended 0.25g. Adult dispensed approximately 20% more than their average amount in the USA and UK, almost 50% more in Germany. This was despite the high claimed awareness of the professional recommendation that their children should be using a pea-sized amount (at least 85% across each population). Awareness of key oral health messages among parents were high but by no means universal, across all countries⁴.

Other studies reported that children from higher socio-economic status are more likely to buy children's dentifrice and that children from lower socio-economic status may be at greater risk of higher doses of F intake. Families with a lower socio-economic status should be closely followed, and oral hygiene orientation should be reinforced, as their children may be a greater risk of exposure to higher F doses⁵.

In Brazil, studying at a private kindergarten is more common among children with a higher SES. Families that are more apt to buy children's products (children's dentifrice and toothbrush) appear to have higher SES and also have greater access to oral health care and information⁶. Moreover, even when parents buy, they choose a children's dentifrice. Other studies have demonstrated that when the child uses the same dentifrice as the family, it is usually a family dentifrice⁷⁻⁹. These findings underscore the social tendency toward the choice of a children's dentifrice, which is usually more expensive than family dentifrices.

Recommendations from the American Dental Association, for adults, "its old enough to brush their teeth independently (including children that can rinse well and floss on their own,) only a pea-sized amount of toothpaste is necessary". In the past, parents used to distance their toddler from using any form of fluoridated toothpaste until they were able to rinse well (to avoid accidental ingestion over time.) Today, experts recommend using fluoridated products earlier, but only an amount that's the size of a grain of rice. Accordingly, if it's swallowed, it won't be enough to cause intestinal problems or issues with tooth development¹⁰

The present study confirms that using a smaller amount of toothpaste during tooth brushing is more important than the type of toothpaste. It was essential to establish public policies with the aid of the national health authorities and manufacturers of toothpaste to create educational campaigns that emphasized the use of small amounts of toothpaste. Dentists should be particularly concerned with lower socio-economic families, as they have less access to dental services and to oral health information, in order that they may not adopt healthy behaviours. Consequently, due to the lack of information, this population might be dispense greater amounts of dentifrice on the tooth brush.

LIMITATION

The sample size of this study was small and hence the generalizability of this study is low. As the present study was a questionnaire survey, people who are not aware of the quantity of toothpaste to be used/uneducated and sequentially there may be a chance of under or overestimated response. The question about the amount of toothpaste used focuses on the amount currently used and therefore might overestimate the amount that was used at younger ages. The research was conducted within a constrained sample of respondents. The respondents were mostly from big cities which biased the results towards the consumer behaviour of the urban areas attributable to the unequal distribution of both the genders and various age groups.

CONCLUSION

Most of the individuals using exorbitant toothpaste for cleaning the teeth, the tongue, as well as mucosa of the oral cavity which is heavily coated with flavour and sensations leaving the plaque still left behind. There is a need for the dental professionals to create awareness on the effects of using an excess of toothpaste for brushing (like dental fluorosis leading to caries, staining, loss of taste sensations etc.). Hence, the education of people regarding the importance of the quantity of toothpaste to be used for brushing to maintain good oral hygiene is essential for day to day life. Professionals can educate every individual about using the recommended amount of toothpaste to realize the maximum benefit.

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