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## Factors influencing choice of oral hygiene products used among the outpatients attending a dental college in Bangalore: A cross sectional study

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### Abstract

**Background:** Toothbrush and toothpaste remain the mainstay of oral hygiene measure. The study was conducted to assess the factors influencing choice of oral hygiene products used among the patients attending dental outpatient department of the Oxford Dental College of the Bengaluru city.

**Methods:** The study was conducted among 100 patients by distributing a validated questionnaire in English and Kannada. The statistical analysis was performed using Chi square test and the p value <0.05 was considered statistically significant.

**Results:** Results showed that 52% of patients selected their toothbrushes depending on the brands and 14.0% based on Dentist recommendation. 53.0% patients reported the brand as the main factor while selecting toothpastes, while 25.0% patients did it based on Dentist recommendation.

**Conclusion:** The present study showed that the participants selected their toothbrush and toothpaste mainly based on the brands. Dentist recommendation was the next influencing factor while selecting their oral hygiene aids.

**Keywords:** Oral hygiene aids, toothbrush, toothpaste, dentist, advertisement

### 1. Introduction

The oral health is now recognized as equally important in relation to general health. The oral cavity is the 'mirror' of general health. Various factors like nutritional status, tobacco smoking, alcohol, hygiene, stress etc. are linked to a wide range of oral diseases forming the fundamental basis of the common risk factor approach (WHO 2000) to prevent the oral diseases. Among these oral hygiene is the most significant factor when it comes to prevention of oral diseases and preservation of oral health<sup>[1]</sup>. The best way of maintaining good oral hygiene for good health of oral tissues is by "Plaque Control" since plaque is a main factor responsible for dental and gingival diseases.

There are a number of oral hygiene products in the market and it becomes arduous for the people to ascertain which is more beneficial to their teeth. Tooth brush and toothpaste are among the most commonly used home care products to maintain oral hygiene.<sup>[2]</sup> Other oral hygiene aids include dental floss, wood stick, interspace brush, and interproximal brush which are used by the people either by advice of a dentist or voluntarily. Earlier consumers were negligent of their oral hygiene and even didn't care to see a dentist for their oral health problems. Today's consumer has a wide variety of choice in terms of toothpaste and toothbrush brands<sup>[3]</sup>.

The choice of dentifrice used in tooth brushing varies from one household to the other and some factors are definitely responsible for this. These products are used based on personal choice or advice from oral health care workers. Socioeconomic status, information from media (advertisements), and material properties such as taste, flavor, color, and appearance have been reported to influence the choice of an oral hygiene aids products<sup>[4]</sup>. There is a lot of information available about various oral hygiene aids used for the maintenance of oral hygiene, but the reason why people use a particular product is not addressed<sup>[5]</sup>.

So the present study was conducted to understand the factors that influence the choice of oral hygiene product for the maintenance of oral hygiene, among the patients attending the outpatient department of the Oxford College, Bommanahalli, Bangalore.

## 2. Materials and methods

A hospital based cross sectional study was performed to evaluate the factors influencing the choice of oral hygiene products used among the patients attending the outpatient department of The Oxford Dental College. Systematic random sampling was done and study population included 100 patients. The study was conducted over a period of one month from September 2019 to October 2019. Prior to the start of the study, a protocol of the intended study was submitted to the Ethical Review Committee, The Oxford Dental College, Bengaluru and ethical clearance for the present study was obtained. Only participants who were aged above 18 years, who had given written consent to participate in the study and who were literates in English or Kannada language were included. Patients who were attending the outpatient department for emergency cases, edentulous and who had disability were excluded from the study.

Written consent was obtained from the patients by disclosing the purpose of the study and only those who satisfied the inclusion and exclusion criteria were given the questionnaire. The demographic details of the study subjects which included name, age and gender were recorded. The subjects were asked to fill the 17-item questionnaire regarding factors influencing the selection of oral hygiene aids. After distribution of questionnaire, 10 minutes was allotted for completing the questionnaire. The collected information was subjected to statistical analysis.

### 2.1 Statistical analysis

Statistical Package for Social Sciences [SPSS] for Windows, Version 22.0 was used to perform statistical analyses. Chi square Test was used to compare the responses of the study participants to the questionnaire based on their important socio demographic & other study related characteristics. The level of significance was set at  $P < 0.05$ .

## 3. Results & Discussion

Results showed that 33% of the respondents were in the age group of 21-30 years. About 21% were in the age group of 31-40 years as well as 41-50 years. Almost 20% were in the age group of 51-60 years and 5% of study participants were of age <20 years. Gender distribution showed that almost 47% of study participants were males where as 53% were females.

When occupation status was considered, results showed that 36% of the study population were professionals, followed by 21% of semiskilled workers. Almost 14% of them belonged to the semi-professionals group. About 12% of them were either students or housewives and 11% of them were either having business or clerical work. About 6% of the study subjects were semiskilled workers (Table 1).

On asking what was the basis for selecting a toothbrush, 52% of the study participants selected based on the brand, where as 29% selected based on the bristle design, 14% selected based on the dentist recommendation and was found to be statistically significant as shown in figure 1. About 3% of participants selected their toothbrush based on advertisements and 2% based on cost factor. While considering tooth brush bristle design, 52% of study subjects selected cross placed bristles, whereas 32% selected straight bristles, 12% were

unaware of the bristle designs and 4% selected other types of bristle designs and was found to be statistically significant.

When asked about the basis of selecting a toothpaste, 53% of study participants selected based on the brand, 25% selected based on dentist recommendation and was found to be statistically significant. About 17% of study subjects selected flavour, 4% selected advertisements and 1% selected cost as the basis for selecting their toothpaste. Of the total study subjects, 50% of them were using their current tooth paste brand for more than 2 years, where as 25% were using for the past 1 to 2 years and was found to be statistically significant. When considering about the regularly changing tooth paste, 79% of the study participant used to not change their tooth paste regularly where as 21% of them changed regularly and it was found to be statistically significant (Table 2).

The study results showed that, 40.4% did not use other oral hygiene aids, whereas 35.4% used other oral hygiene aids and was not found to be statistically significant. 24.2% of study subjects used other oral hygiene aids once in a while. Among those who used other oral hygiene aids, 64.9% used mouthwash, followed by 24.6% using dental floss and was found to be statistically significant. 10.5% of study subjects used other oral hygiene aids like tongue cleaners (Table 3).

The present study was done to assess the factors influencing choice of oral hygiene products used among the patients attending dental outpatient department of the Oxford Dental College of the Bengaluru city. This study helped us to know the factors which influence the patients while buying an oral hygiene aid. In our present study it was seen that almost 53% of study participants were females and 47% were males. Similar findings were found by Study done by Opeodu *et al.* in Nigeria where 55.0% study participants were female.<sup>[4]</sup> The findings suggest that the females are more concerned about dental health and dental care utilization is more seen in females compared to males.

In our study we found that majority of the participants (52%) are selecting their tooth brush and toothpaste based on the brand factor. Similar results were seen in study done by Opeodu *et al.* where 61.9% participants looked out for the brand name in the toothbrush<sup>[4]</sup>. Similarly study done by Dani *et al.* found that major parameter for selection of the tooth paste was brand name among 28% of participants<sup>[8]</sup>. Brand is the aspect of a product or service that distinguishes such product/service from any other type of its kind. Brand is defined by the American Marketing Association as, "a name, term, design, symbol, or any other feature that identifies one seller's product or service as distinct from those of another seller. However, apart from the effect of the branding on the producer of goods and services, choice of brands had been used to determine the status, taste and socioeconomic class of a user<sup>[4]</sup>.

In our study, 25% of study participants selected their tooth paste based on dentist recommendation. This was the second influencing factor for the basis of tooth paste selection, after the brand factor. Similarly in the study done by Kote *et al.*, they found out that 30.6% of study participants selected their toothbrush based on dentist recommendation<sup>[5]</sup>. Dentist recommendation was also found as a significant factor in the study done by Lalithambigai G *et al.* with 69.6% study participants opting so<sup>[7]</sup>. In our study, 14% of participants selected their tooth brush based on dentist recommendation and was found to be the third influencing factor following brand and bristle design. About 51% of the participants choose their toothbrush based on dentist advice in the study done by Opeodu *et al.*<sup>[4]</sup> Sharda *et al.* reported that only 7%

of the respondents in their study depended on a dentist's advice in choosing a toothbrush, [1] while Kote, *et al.* reported that 9.6% of their respondents will do so [5]. The differences in the percentage of those that depend on advice by a dentist in choosing toothbrush in these studies could have been because the present study is carried out among respondents attending an out-patient dental college in comparison to the other studies that were not done in a dental clinic setting.

While considering the influence of advertisements on selection of tooth paste, it was found to be influencing only 4% of study participants in our study. Sharda *et al.* reported that 39.6% of study selected their tooth paste based on advertisement on media [1]. Similarly Lokaranjani *et al.* had reported that 59.1% of study subjects selected toothpaste based on the advertisement [on media [2]. In our present study, only 3% of study subjects selected their toothbrush on the basis of advertisements. Contrary to this, Sharada *et al.* in their reported that about 33.6% of people selected the toothbrush based on advertisements only [1]. This can be due to the study population being general public compared to present study where study population is patients visiting dental college.

In our study, 17% of study subjects selected their dentrifice based on the flavour. Similar results were reported by Sharda *et al.* where 16% of study subjects selected their tooth paste based on the flavor [1]. However, 37% of study subjects selected their dentrifice based on flavour in the study done by Uma *et al.* [6] Flavour can also pay an important factor during the selection of dentrifice.

In the present study, 50% of study subjects were using their present brand of tooth paste for more than 2 years. Similar results were seen in the study done by Uma Sudhakar *et al.* where 53% of study participants were using their present brand of tooth paste for about 1 to 2 years [7]. In our study, 35.4% of study participants had the habit of using other oral hygiene aids and 24.2% used them once in a while. Similar

results were reported by Kote *et al.* where 43.6% of study subjects were using other oral hygiene aids [5]. However Sharda *et al.* reported only 7.8% of the study subjects using any oral hygiene aids [1]. Among the study participants who were using other oral hygiene aids, 64.9% used mouthwash, followed by dental floss (24.6%) in our study. Similar results were reported by Sharda *et al.*, in which 64.1% were using mouthwash, followed by dental floss (15.3%) [1]. Kote *et al.* also reported that, 70% of study subjects using mouthwash, followed by interdental brush (22.1%) and dental floss (10.8%) in their study [5]. Overall the percentage of people using other oral hygiene aids was low (35.4%). The use of other dental hygiene aids like mouthwashes, dental floss and toothpicks helps in keeping good oral hygiene and maintaining the health of the oral cavity.

Major limitation of this study was response bias associated with self-reported data (social desirability bias). Individuals may give different interpretation to the questions may have been influenced by the social acceptability of their responses. Small sample size and short duration of the study was another limitation as this might limit the generalization of the results. Socioeconomic status of the study participants were not assessed, which can also act as an influencing factor while selecting oral hygiene aids

### 3.1 Tables and Figures

**Table 1:** Distribution of occupation status among study subjects

Variable	Category	n(%)
Occupation	Professional	36(36%)
	Semi-professional	14(14%)
	Clerical/Business	11(11%)
	Skilled Work	6(6%)
	Semi-skilled Work	21(21%)
	Housewife/Student	12(12%)

**Table 2:** Comparison of factors influencing selection of tooth paste

Questions	response	n	%	χ <sup>2</sup> Value	p Value
Basis for selecting Tooth Paste	Flavour	17	17.0%	87.700	<0.001*
	Advertisement/Celebrity	4	4.0%		
	Dentist recommendation	25	25.0%		
	Cost	1	1.0%		
	Brand	53	53.0%		
Duration of use of brand of tooth Paste	> 2 years	50	50.0%	40.880	<0.001*
	1 to 2 years	25	25.0%		
	5 to 6 months	19	19.0%		
	1 month	6	6.0%		
Taste of Tooth paste effect the choice	Yes	42	42.0%	3.620	0.16
	No	27	27.0%		
	Not very much	31	31.0%		
	To a great extent	0	0.0%		
Change Tooth Paste regularly	Yes	21	21.0%	33.640	<0.001*
	No	79	79.0%		

**Table 3:** Distribution of other oral hygiene aids among study subjects

Questions	Response	n	%	χ <sup>2</sup> Value	p Value
Habit of using any oral hygiene aid	Yes	35	35.4%	4.061	0.13
	No	40	40.4%		
	Once in a while	24	24.2%		
	I'm unaware of such aids	0	0.0%		
Oral Hygiene aid using	Mouth wash	37	64.9%	27.263	<0.001*
	Proximal Brush	0	0.0%		
	Dental Floss	14	24.6%		
	Waterpark	0	0.0%		
	Others	6	10.5%		

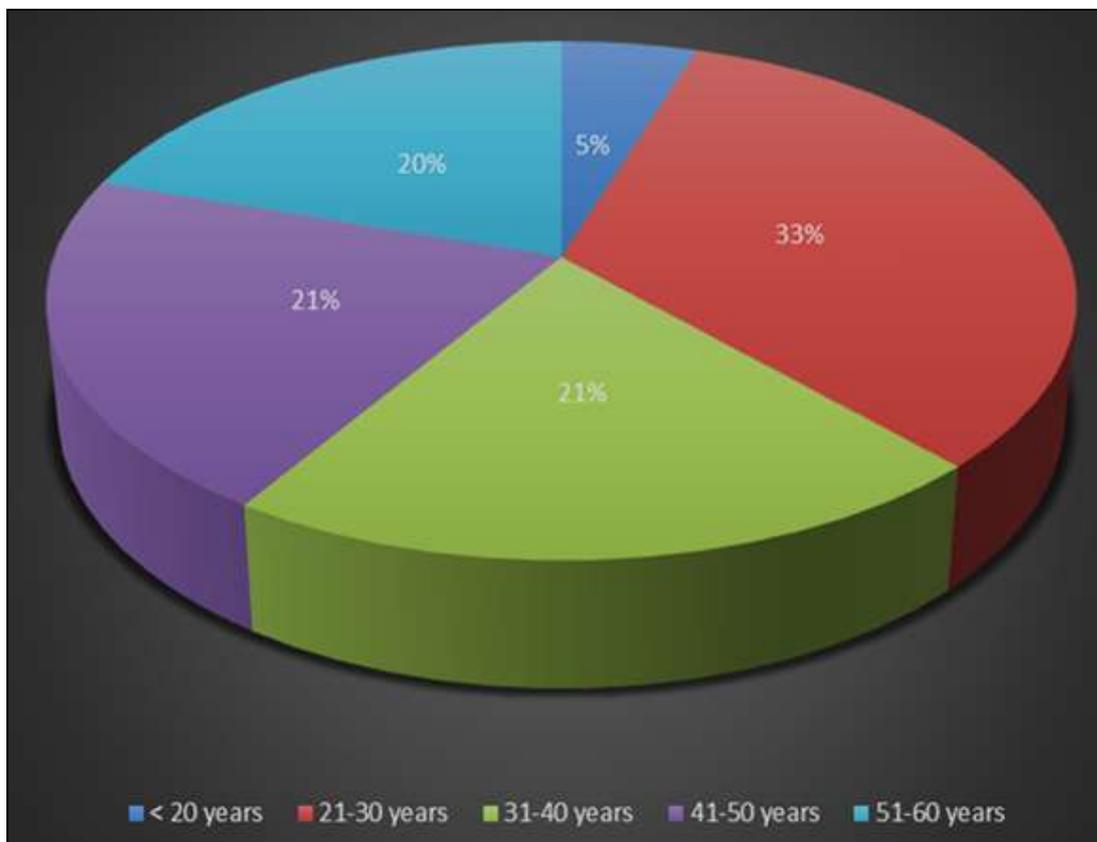


Fig 1: Age distribution among study participants

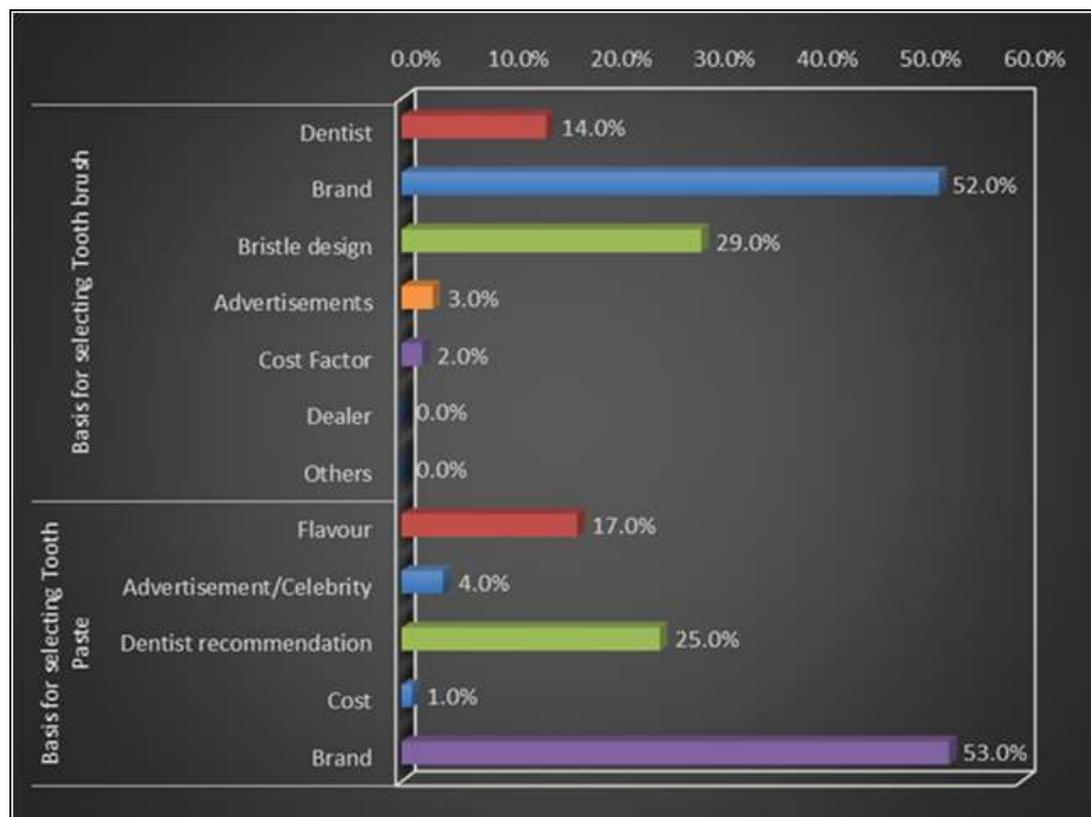


Fig 2: Distribution of study participants reason for selecting tooth brush and tooth paste

**4. Conclusions**

The study showed that majority of the participants selected their oral hygiene aids based on the commercial brands available in the market. Respondents have made up their minds as to their choice of toothpaste/brush based on their previous experience. Previous experience seems to be a very

strong factor in the choice of both the toothbrush and toothpaste in this study, which suggest that for as long as the respondents are satisfied with a particular product, they will stick to it.

Dentist recommendation was shown to have the second influence among study subjects while selecting toothpaste.

However the dentist recommendation had only half the influence compared to brand factor. Despite the huge investment on advertisement by manufacturers, it had the least effect on the respondents in their choice of either toothpaste or toothbrush in the present study. Overall there seems to be a lack of knowledge and awareness about how to choose a dentrifice and toothbrush, so education of people on the importance of oral hygiene maintenance, proper selection and method of use of oral hygiene products is needed.

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