

FACTORS INFLUENCING CHOICE OF ORAL HYGIENE PRODUCTS BY DENTAL PATIENTS IN A NIGERIAN TEACHING HOSPITAL

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ABSTRACT

Background: Several factors, such as cost, branding, packaging and family influence, had been implicated as influencing the choice of toothpastes and toothbrushes by individuals. Media advertisement is also considered a very strong factor influencing consumer's choice.

Aim: To assess the extent to which some factors influenced the choice of toothpastes and toothbrushes among dental patients in a Nigerian teaching hospital.

Materials and methods: Two-hundred and two patients were interviewed on factors that influenced their choice of toothbrush and toothpaste. Some of the factors considered include the cost, packaging, brand, media advertisement and their previous experience.

Result: Factors that affected choice of toothbrush by respondents included texture (89.6%), brand (62.9%), previous experience (64.4%) and for toothpaste, fluoride content (62.4%), previous experience (69.3%), and advice by a dentist (55.0%). Media advertisement was the least influential in their choice of toothpaste (29.2%) and toothbrush (24.3%). Consideration for fluoride was a stronger factor than herbal contents in the choice of toothpaste ($P < 0.001$)

Conclusion: 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.

Keywords: Choice, Toothpaste, Toothbrush, Dental, Out-patients

INTRODUCTION

The choice of dentifrice used in tooth brushing varies from one household to the other and some factors are definitely responsible for this. Some of the factors that had been implicated in determining choice of dentifrice include socioeconomic factors, design or packaging and advertisement.¹⁻³ Some other factors that had been considered as important in the choice of toothpaste brand include the smell of the paste, perceived performance, awareness by the consumers and some other attributes of the paste.⁴

Different designs and packaging of products have been used by manufacturers to gain an added advantage over other competing manufacturers of similar products. This has resulted in some companies specialising on product design as a competitive tool.¹ These efforts are geared towards attracting and retaining the attention of consumers concerning a particular product. Appearance of products had been reported to have some of the following effects on the consumers, which includes attention drawing,

functionalities, aesthetics and symbolic. The appearance of a product is supposed to draw the attention of a would-be consumer, while at the same time, it should communicate the brand image of the product.¹ 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."³ 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.⁴

Another factor that may go a long way in determining the choice of toothpaste by a consumer is the content of the paste. Some consumers are concerned with the herbal contents, while others are concerned about the fluoride content. Anecdotal reports have it that the majority of consumers of toothpaste in Nigeria are

more concerned about the herbal content, while the dentists are those more concerned about the fluoride content. Though many studies have reported the importance of fluoride content of toothpaste in the prevention of dental caries,^{5, 6} a study has reported that fluoride containing toothpaste may not be globally affordable,⁶ which could be a factor in a consumer's choice as the cost of the paste will come in to affect the choice by the consumer. Many functions had been attributed to herbal toothpastes, which include anti-cariogenic effects and "clearing of internal heat".^{5, 7} Kumar et al, reported that herbal toothpastes are as potent as three other conventional toothpastes in their anti-cariogenic effect,⁵ while another study reported that a toothpaste containing herbal product is able to "clear internal heat", which was described as including oral diseases such as toothache and sore or bleeding gums by traditional Chinese medicine (TCM).⁷ Such a claim like this will presumably influence the decision of consumers concerning their choice of toothpastes. Anecdotal report has it that many individuals especially in this part of the world believe that the harder the bristles of their toothbrushes, the more effective the toothbrush as they have the sense of accomplishment after their tooth brushing. While there might be psychological satisfaction from the use of such hard-textured toothbrushes, there is the increased danger to both the hard and soft tissue within the mouth as the gingivae will be more predisposed to recession, while the tooth will be more predisposed to cervical abrasion.⁸ Therefore, this study was conducted to ascertain the various reasons that inform the choice of oral hygiene products by dental patients in the University College Hospital, Ibadan, Nigeria. The authors hope that the result of the study will help in the formulation of appropriate public enlightenment program geared towards the right choice of toothbrushes and pastes by individuals.

SUBJECTS AND METHODS

A cross sectional questionnaire-based study was carried out among 202 dental out-patients in the University College Hospital, Ibadan, Nigeria. Sampling was by convenience, with completion and returning of the questionnaire taken as consent by the respondents to participate in the study. The interviewer-administered questionnaire sought among other things, the reasons why individuals chose their toothpastes and toothbrushes. Factors that were considered for their choice of toothpaste included the cost, colour, flavour/taste, packaging, content (herbal/fluoride), media advertisement and family influence. Factors considered for their choice of toothbrush included texture of the bristle, cost, packaging, brand, media advertisement, size of the bristle head and family influence. The effect of advice by a dentist on their choice of either the type of toothpaste or toothbrush was also sought.

Ethical approval was obtained from the local ethical committee before the commencement of the study. Data collected was entered into a personal computer and analysed using SPSS version 19. Data was presented as frequency table and means \pm standard deviation (SD). Statistical significance was inferred at $p < 0.05$.

RESULTS

Two-hundred and two completely filled questionnaires were returned by the respondents consisting of 111/202 (55.0%) females and 91/202 (45.0%) males. The mean age of the respondents was 38.6 ± 16.6 years, with only a few of them being younger than 21 years and 66/202 (32.7%) of them being in the 21 -30 years age group (Table 1). About 50% (100/202) of the respondents were married, 92/202 (45.5%) were single and the remaining 10 (5.0%) were widows/widowers. Most of the respondents 190/202 (94.1%) brushed their teeth with toothbrush and paste alone while the remaining 12/202 (5.9%) also make use of chewing

Table 1: Distribution of respondents according to their age groups and academic status

		Frequency (%)
Age group (years)	< 21	24 (11.9)
	21 – 30	66 (32.7)
	31 – 40	33 (16.3)
	41 – 50	25 (12.4)
	> 50	54 (26.7)
Total		202 (100)
Highest academic achievement	= Secondary school	48 (23.7)
	Post-secondary school diploma	26 (12.9)
	University degree	128 (63.4)
Total		202 (100)

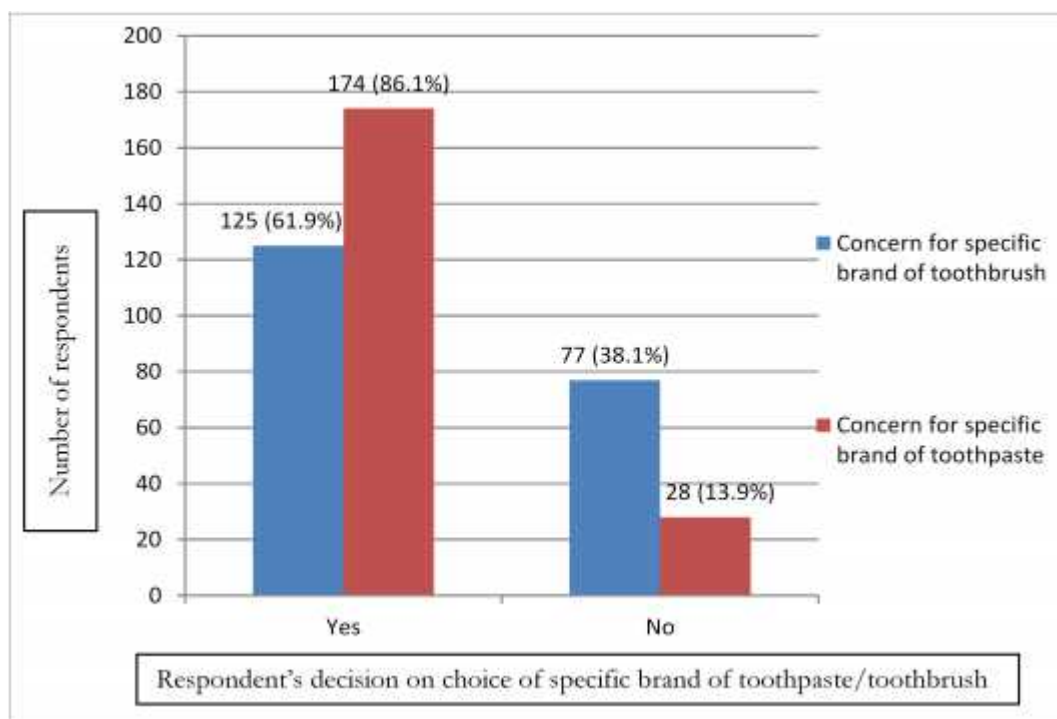


Figure 1: Distribution of Respondents according to their concern for specific brands in their choice of toothpaste and toothbrush

sticks along with toothbrush. Many of the respondents 122/202 (60.4%) brushed once daily while the remaining 80 (39.6%) brushed more than once daily.

Respondent's choice was influenced by known brands of toothbrushes and toothpastes as 125/202 (61.9%) will look out for specific brand of toothbrush and 174/202 (86.1%) will look out for specific brand of toothpaste (Fig. I). A higher percentage of female respondents 100/111 (90.0%) will look out for specific brand of toothpaste compared with their male counterparts 77/91 (84.6%). The opposite was the case for their preference for specific brand of toothbrush,

in which more male respondents 60/91 (65.9%) look out for specific brand compared with the females 69/111 (62.2%). A greater percentage of the male respondents 16/91 (17.6%) were making use of hard textured toothbrush compared with 14/111 (12.6%) among the female respondents and none of the female respondents will prefer smoker's hard texture, while 4/91 (4.4%) of the male respondents will prefer that. However, none of these was statistically significant.

Factors that influenced the respondents in their choice of toothpaste include the flavour of the paste 102/202 (50.5%), fluoride content 126/202 (62.4%), their

Table 2: Factors that influence the choice of toothpaste by respondents

Factors that affect choice of toothpaste	Rate at which factors influenced respondents' choice (%)		
	Influenced	Indifferent	No influence
Colour of toothpaste	71 (35.1)	46 (22.8)	85 (42.1)
Cost of toothpaste	77 (38.1)	35 (17.3)	90 (44.6)
Flavour/taste of toothpaste	102 (50.5)	35 (17.3)	65 (32.2)
Packaging (beauty of pack)	70 (34.7)	51 (25.2)	81 (40.1)
Media advertisement (T.V/Radio)	59 (29.2)	56 (27.7)	87 (43.1)
Family influence (parents/children)	82 (40.6)	37 (18.3)	83 (41.1)
Herbal content	86 (42.6)	33 (16.3)	83 (41.1)
Fluoride content	126 (62.4)	30 (14.8)	46 (22.8)
Previous experience	140 (69.3)	24 (11.9)	38 (18.8)
Advice by a dentist	111 (55.0)	21 (10.4)	70 (34.6)

previous experience with the toothpaste 140/202 (69.3%) and the recommendation by their dentist 111/202 (55.0%). Packaging 70/202 (34.7%), media advertisement 59/202 (29.2%) and herbal content of the toothpaste 86/202 (42.6%) were not that influential on their choice of toothpaste (Table 2). Some of the factors that influenced the choice of toothbrush by respondents include the texture of the toothbrush 181/202 (89.6%), brand of the toothbrush 127/202 (62.9%) and their previous experience with a particular type of toothbrush 130/202 (64.4%). Some other factors such as the cost of the toothbrush 85/202 (42.1%),

packaging 89/202 (44.1%) and media advertisement 49/202 (24.2%) did not affect the choice of the respondents as the other factors (Table 3). There was a statistically significant difference when the academic status of the respondents was compared with their being influenced by their previous experience in choosing toothbrush ($P < 0.001$), but not with the influence of fluoride content on their choice of toothpaste ($P = 0.34$) (Table 4). Majority of the respondents (127/202) will prefer toothpastes that contain fluoride with or without herbal content, while 60 of them will prefer that their toothpastes contain

Table 3: Factors that influence choice of toothbrush by respondents

Factors that affect choice of toothbrush	Rate at which factors influenced respondents' choice (%)		
	Influenced	Indifferent	No influence
Texture of bristle	181 (89.6)	7 (3.5)	14 (6.9)
Cost of toothbrush	85 (42.1)	41 (20.3)	76 (37.6)
Brand (maker)	127 (62.9)	34 (16.8)	41 (20.3)
Packaging (beauty of brush)	89 (44.1)	49 (24.2)	64 (31.7)
Media advertisement (T.V/Radio)	49 (24.2)	47 (23.3)	106 (52.5)
Family influence (Parents/children)	61 (30.2)	49 (24.3)	92 (45.5)
Previous experience	130 (64.4)	33 (16.3)	39 (19.3)
Size of head of toothbrush	105 (52.0)	44 (21.8)	53 (26.2)
Advice by a dentist	102 (50.5)	20 (9.9)	80 (39.6)

Table 4: Comparison of the highest academic qualification of respondents with some factors that influenced their choice of toothbrush and toothpaste

Influencing factors		Highest academic achievement (%)			Total (%)	P – value
		Secondary school	Diploma	University degree		
Influence of previous experience on choice of toothbrush	Influence	29 (14.4)	10 (5.0)	91 (45.0)	130 (64.4)	<0.001
	Indifferent	11 (5.4)	1 (0.5)	21 (10.4)	33 (16.3)	
	No Influence	8 (4.0)	15 (7.4)	16 (7.9)	39 (19.3)	
Influence of fluoride content on choice of toothpaste	Influence	29 (14.4)	17 (8.4)	94 (46.5)	140 (69.3)	0.34
	Indifferent	7 (3.5)	2 (1.0)	15 (7.4)	24 (11.9)	
	No Influence	12 (5.9)	7 (3.5)	19 (9.4)	38 (18.8)	
Total		48 (23.8)	26 (12.9)	128 (63.3)	202 (100)	

Table 5: Comparison of the respondents' preference for either the fluoride or herbal contents in their choice of toothpaste

		Fluoride content (%)		Total (%)	p-value
		Yes	No		
Herbal content	Yes	67 (33.2)	19 (9.4)	86 (42.6)	<0.001
	No	60 (29.7)	56 (27.7)	116 (57.4)	
Total		127 (62.9)	75 (37.1)	202 (100)	

no herbal product but fluoride alone. A minority of the respondents (19/202) will prefer that their toothpastes contain no fluoride but herbal product alone and 56/202 will not wish to have any of the two products in their toothpastes. This was found to be statistically significant (Table 5).

DISCUSSION

Though previous studies have reported that advertisement through mass media, dentist advice and dental literature/information are the main sources of influence in the choice of toothpaste by respondents,⁹⁻¹¹ this study showed that advertisement, dentist advice and packaging have little effect on respondents' choice when choosing either their toothpaste or toothbrush. Despite the huge investment on advertisement by manufacturers, it had the least effect on the respondents in their choice of either toothpaste or toothbrush, which could have been due to the fact that the respondents have made up their minds as to their choice of toothpaste/brush based on their previous experience. Therefore, it might be advisable for manufacturers in this environment to pay more attention on the quality of their products than to solely depend on advertisement to woo and retain a consumer. Packaging, which is specifically aimed at attracting the attention of would-be-consumer,¹ was not a major influencing factor in this study as less than 50% of the respondents were influenced by the factor. This could have been due to the differences in the socio-cultural background of the respondents in this study compared with the previous studies.⁹⁻¹¹

This study shows that a higher percentage of the female respondents will look for a particular brand of toothpaste, while more of their male counterparts will prefer a particular brand of toothbrush. This could have accounted for the reason why more male respondents choose a toothbrush of harder textures than their female counterparts. The anecdotal belief that the harder the bristle of a toothbrush, the more effective it is, could presumably have being more true with the males than their female counterparts. A further study may be required in order to fully understand why more males prefer harder toothbrushes than the females as this study did not focus on that. However, the choice of toothpaste by majority of the respondents was influenced by previous experience or exposure, but family influence had a lower effect on their choice. This is contrary to previous studies that reported a higher percentage of influence by the family or parental factor.^{10,11,13}

Against the anecdotal belief that it might be the dentists that are more concerned with fluoride content in toothpastes and not their patients, over 60% of the

respondents will be influenced by fluoride content of toothpaste when making a choice. This could have been as a result of widely held view about the benefit of fluoride in preventing dental caries.^{7,9,14,15} The influence of herbal content in the choice of toothpaste by respondents was not as much as that by fluoride contents, this is in contrast to the report by a study that most chosen toothpaste by consumer was a brand of herbal toothpaste.⁵ There is a recent upsurge of herbal toothpastes in the Nigerian market, which suggest a possible increase for the demand of such. There is no previous study in the country to compare this study with, which could have shed light on the possibility of a change in the trend of pattern of demand for toothpaste based on whether it contains fluoride or herbal product. However, studies have reported that both conventional dentifrice with fluoride and that containing herbal product(s) are equally potent in reducing the incidence of dental caries and gingivitis,^{6,7} with the conclusion that those with multiple herbal products are more effective as anticariogenic agent.⁷

Choice of toothbrush in this study was more influenced by texture of the bristle than any other factor. This is in agreement with some studies which reported that texture of the toothbrush bristles was the major influencing factor in the choice of toothbrush^{10,12} and that soft texture was more preferred followed by medium texture,¹⁰ but the medium texture was more preferred in the study by Azodo *et al.*¹² The study by Kote, *et al.*,¹⁰ did not report the effect of gender difference in the choice of texture of the bristle unlike this study which showed more male than females preferring hard toothbrush and more males preferring smokers' hard toothbrush than females but this was not statistically significant. The male preference for hard toothbrush could be due to the fact that it is amongst this gender that we have higher number of smokers,^{16,17} and coffee consumption.¹⁸ Both factors predispose to extrinsic staining, which may lead to the search for possible way(s) of removing the stains and thus the choice of harder texture of toothbrush.

About 51% of the participants choose their toothbrush based on dentist advice, which is contrary to previous studies.^{9,10} Sharda *et al* reported that only 7% of the respondents in their study depended on a dentist's advice in choosing a toothbrush,⁹ while Kote, *et al* reported that 9.6% of their respondents will do so.¹⁰ The differences in the percentage of those that depend on advice by a dentist in choosing toothbrush in these studies could have been because this study is carried out among respondents attending an out-patient dental clinic in comparison to the other studies that were not done in a dental clinic setting. If this is the case, then

there is a need for a greater effort from dental public health practitioners in order that more people in the public will be enlightened on oral hygiene measures. However, it could also have been that the community dental outreaches in the area of this study, which had been sustained for quite some time, is responsible for the respondents being influenced by dentist's advice.

CONCLUSION

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.

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