

Attitudes and behavior regarding oral hygiene in a group university students: A self-reported

Mahmut Sertaç Özdoğan(0000-0003-1312-8794)^α, Mustafa Gümüşok(0000-0002-2468-5548)^β,

Esma Sarıçam(0000-0001-7701-4214)^γ

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ABSTRACT

Attitudes and behavior regarding oral hygiene in a group university students: A self-reported

Background: The aim of this study is to evaluate the factors of oral hygiene habits, tooth brushing motivation and toothpaste preference factors.

Methods: This cross-sectional study based on the hospital was carried out by surveying 759 university students over 18 years of age except dentistry student. The demographics, duration and frequency of self-reported questionnaire oral hygiene habits, motivation source in tooth brushing and effective factors in the selection of toothpaste were investigated. The level of statistical significance was accepted as $p < 0.05$.

Results: As a source of motivation when brushing among university students, tooth loss was the most common. It was found that those who brushed the teeth at least twice a day brushed their teeth significantly longer time than those who brushed the teeth less than twice a day ($p < 0.05$). The use of the interdental cleaning was found to be 24% in addition to tooth brushing. From all the factors affecting the motivation to brush teeth, the most important factor for the survey practitioners is the fear of losing teeth. The most important factor for toothpaste selection is its whitening feature for the majority of all.

Conclusion: The development of oral hygiene habits should be consider motivation source in tooth brushing and effective factors in toothpaste selection.

KEYWORDS

Brushing, Interdental cleaning, Motivation, Toothpaste.

ÖZ

Bir grup üniversite öğrencisi arasında ağız hijyenine ilişkin tutum ve davranışlar: Kendiliğinden bildirim

Amaç: Bu çalışmanın amacı bir grup üniversite öğrencisinin, oral hijyen alışkanlıklarının, diş fırçalama motivasyon ve diş macunu tercihi faktörlerinin değerlendirilmesidir.

Gereç ve Yöntemler: Hastane bazlı bu kesitsel çalışma üniversite öğrencisi 18 yaş üstü 759 diş hekimliği öğrencisi olmayan üniversite öğrencisi hastaya anket yapılarak gerçekleştirildi. Kendiliğinden bildirim anket oral hijyen alışkanlıklarının demografisi, süresi ve sıklığı, diş fırçalama motivasyon kaynağı ve diş macunu seçiminde etkili faktörler araştırıldı. İstatistiksel anlamlılık düzeyi $p < 0.05$ olarak kabul edildi.

Bulgular: Üniversite öğrencileri arasında diş fırçalama motivasyon kaynağı olarak en çok diş kaybetme korkusu bulunurken, diş macunu seçiminde en etkili faktörün beyazlatıcı özelliği olduğu tespit edildi. Günlük en az iki defa fırçalama yapanların istatistiksel olarak anlamlı şekilde daha az sayıda fırçalama yapanlara göre daha uzun süre fırçalama yaptığı tespit edildi ($p < 0.05$). Arayüz temizliği oranı diş fırçalamaya ilaveten %24 olarak bulundu. Diş fırçalama motivasyonunu etkileyen tüm faktörlerden anket uygulayıcıları için en önemli faktör diş kaybetme korkusudur. Diş macunu seçiminde en önemli faktör, üniversite öğrencilerinin çoğunluğu için beyazlatma özelliğidir.

Sonuç: Oral hijyen alışkanlıkları geliştirilmesinde diş fırçalama motivasyon kaynağı ve diş macunu seçiminde etkili faktörler bulundurulabilir.

ANAHTAR KELİMELER

Fırçalama, Arayüz temizliği, Motivasyon, Diş Macunu.

In the long history of oral hygiene products, the toothbrush has an important place to date. It is recommended to brush the teeth twice a day for two minutes¹ to remove the plaque and prevent caries.² Plaque plays an important role in the formation of periodontal diseases.³ Patients who frequently brush their teeth, have low periodontal disease compared to those who brush sometimes.⁴ Although toothbrushes are effective in removing the plaque

from the buccal, lingual, occlusal areas, they are not so effective in interdental areas.⁵ Periodontitis occurs mostly in interproximal or interdental areas which are covered with plaque.⁶ Therefore, interproximal area cleaning is important.⁷ A wide range of products such as dental floss, toothpick, interdental brush is used in interdental area cleaning. Yet, among all, dentists often advise the interdental brushes.³ When dental floss is used in all interdental areas, patients need sufficient interdental space to use the interdental brush.⁸

^α Department of Prosthodontics Faculty of Dentistry Ankara Yıldırım Beyazıt University Ankara/Turkey

^β Ankara 75th Year Oral and Tooth Health Hospital

^γ Department of Endodontics Faculty of Dentistry Ankara Yıldırım Beyazıt University Ankara/Turkey

The promotion of oral health is primarily focused on prevention of periodontal diseases and less tooth decay. Although some uncertainties remain in the natural history of periodontal disease, it is well known that adequate plaque control is the most important measure to prevent this condition.⁹

Motivation in dental brushing studies has received little attention. In their study on adults, Macgregor et al¹⁰ reported that higher proportions of adolescents brush their teeth for cosmetic effect rather than for dental health reasons and studies have shown that the reasons for tooth brushing are related to appearance rather than medical ones.¹¹

The cleaning activity of the toothbrush is supported by the use of toothpaste. According to a recent systematic review, toothpaste brushing has no effect on the mechanical removal of dental plaque.¹² The traditional role of the tooth cleaner is basically cosmetic, the user takes a fresh breath and makes the brushing more enjoyable.¹³ Toothpaste contains abrasives that help remove plaques and polish teeth. Fluorides are the most commonly used medicinal active ingredients. Brushing with a fluoride-containing toothpaste is more effective in removing tooth decay compared to non-fluoride toothpastes.¹⁴

Many factors, such as cost, branding, packaging, and family effect, have been found to influence the choice of toothpastes and toothbrushes by individuals.¹⁵

The aim of this study was to determine the habits and attitudes of a group of patients regarding oral care. Few studies have been conducted on oral health in university students.

Therefore, the aim of this study was to investigate oral health behavior about tooth brushing and dental attendance. This study will contribute to the current research in the group of university students who will take personal responsibility especially in oral health behaviors and will be future leaders and role models in their communities.

MATERIALS AND METHODS

Study Design and Population

This cross-sectional hospital-based study was carried out using a self-reported study questionnaire with 759 patients (496 female and 263 male, mean age: 21 years) who applied to the Ministry of Health 75th Year Oral and Dental Health Hospital for dental treatment between 01/18 and 10/18. The patients included in the study consisted of university students, except dentistry, studying in the capital, Ankara and surrounding cities. The dental hospital where the study was conducted was one of the largest dental hospitals in the country, which was financed by the state in the city center. The study was approved by the Ethics

Committee of Ankara University Faculty of Dentistry Ethics Committee at 2018 (30.06.2018, No.10/06) and conducted in accordance with the most recent guidelines of the Declaration of Helsinki. The patients were informed about this study before any study-related procedure and written consent were obtained from patients.

Study Questionnaire

The researchers designed the questionnaire based on previous studies using similar questionnaires.¹⁵⁻¹⁸ In the first part of the questionnaire, the questions were intended to investigate the following: age, gender, the frequency of brushing; interdental cleaning and brushing time. After that, factors that motivate tooth brushing and factors considered when choosing a toothpaste were investigated using a five-point Likert scale. The questionnaire was completed by the patients as self-reported.

Statistical Analysis

The data were summarized using descriptive statistics (i.e., frequency and percentage). Kruskal-wallis, mann-whitney u test and chi-square test were used to analyze the data. All statistical analyzes were performed using Statistical Package for the Social Science Program (SPSS version 22.0 for Windows, Inc, Chicago, IL). The level of statistical significance was set at $P < 0.05$.

RESULTS

The survey was practised by 759 participant. The age groups are determined as 18-20 ($n=279$, 36.8%), 21-23 ($n=334$, 44%) and ≥ 24 ($n=146$, 19.2%). The distribution of people for tooth brushing frequency were as follows: irregular brushing ones $n=95$ (12.5%), once a day $n=138$, 18.2%; twice a day $n=397$, 52.3%; ≥ 3 times a day $n=120$, 15.9%. (Table 1). From all the factors affecting the motivation to brush teeth, the most important factor for the survey practitioners is the fear of losing teeth ($n=647$, 86.2%). The most important factor for tooth-paste selection is its whitening feature for the majority of all ($n=415$, 55.3%) (Table 2). All the factors affecting the motivation to brush teeth and selection of toothpaste did not differ between the age groups significantly ($p>0.05$) (Table 3). The females showed significantly higher scores to all of the factors that motivate them to brush their teeth compared to males ($p<0.05$) (Table 3). Factors that effect in the selection of toothpaste such as whitening feature, having herbal content and brand, took a significantly higher score from females ($p<0.05$), while the other factors did not differ between the females and males ($p>0.05$) (Table 3).

Table 1.

The number and percentage of age, and tooth brushing frequency of survey practitioners

Parameters		Patients n (%)
Gender	Female	496 (65)
	Male	263 (35)
Age	18-20	279 (36.8)
	21-23	334 (44)
	24+	146 (19.2)
Tooth brushing frequency	Don't brush	8 (0.1)
	Irregular	95 (12.5)
	Once a day	138 (18.2)
	Twice a day	397 (52.3)
	≥3 times a day	120 (15.9)
Total		759(%100)

Table 2.

The number and percentage of factors that motivate to brush teeth and effect the selection of toothpaste

		Very important n	%	Important N	%	Less Important n	%	A Little Important n	%	No Important n	%
Factors that motivate to brush teeth	Fair of losing teeth	647	86.2%	80	10.7%	22	2.9%	2	0.3%	0	0.0%
	Preventing halitosis	613	81.6%	116	15.4%	21	2.8%	1	0.1%	0	0.0%
	Having a nice, fresh breath	572	76.2%	139	18.5%	37	4.9%	3	0.4%	0	0.0%
	To gain more aesthetic (beautiful) appearance	554	73.8%	150	20.0%	43	5.7%	3	0.4%	1	0.1%
	Warnings of my family and neighbourhood	254	33.8%	194	25.8%	171	22.8%	74	9.9%	57	7.6%
	Warnings of dentist	423	56.3%	178	23.7%	101	13.4%	35	4.7%	14	1.9%
	To feel having a clean mouth	599	79.8%	110	14.6%	37	4.9%	3	0.4%	2	0.3%
	Fair of tooth-ache	553	73.6%	117	15.6%	58	7.7%	15	2.0%	8	1.1%
	Cheaper price	124	16.5%	192	25.6%	228	30.4%	103	13.7%	104	13.8%
Factors that effect the selection of toothpaste	Whitening feature	415	55.3%	209	27.8%	104	13.8%	14	1.9%	9	1.2%
	Having herbal content	244	32.5%	197	26.2%	176	23.4%	81	10.8%	53	7.1%
	Containing fluoride	175	23.3%	235	31.3%	212	28.2%	64	8.5%	65	8.7%
	Brand	240	32.0%	226	30.1%	181	24.1%	59	7.9%	45	6.0%
	Package&box	109	14.5%	108	14.4%	196	26.1%	146	19.4%	192	25.6%
	Smell& taste	198	26.4%	232	30.9%	166	22.1%	84	11.2%	71	9.5%
	My experiences	358	47.7%	259	34.5%	91	12.1%	27	3.6%	16	2.1%

Table 3.

Comparison for age, gender and tooth brushing frequency groups for the factors that motivate to brush teeth, effect the selection of toothpaste

	Age						Gender				Tooth brushing frequency									
	18-20		21-23		≥24		p (K)	Female	Male		p (M)	Irregular-Once a day	Twice a day		Three times a day		p (K)			
	mean±sd	med	mean±sd	med	mean±sd	med		mean±sd	med	mean±sd	med		mean±sd	med	mean±sd	med				
Factors that motivate to brush teeth	Fair of losing teeth	3.79±0.50	4.00	3.87±0.41	4.00	3.80±0.52	4.00	0.223	3.86±0.42	4.00	3.77±0.54	4.00	0.023*	3.75±0.56	4.00	3.87±0.40	4.00	3.83±0.46	4.00	0.003*
	Preventing halitosis	3.76±0.52	4.00	3.82±0.44	4.00	3.77±0.50	4.00	0.329	3.83±0.45	4.00	3.70±0.53	4.00	0.000*	3.70±0.54	4.00	3.83±0.43	4.00	3.79±0.50	4.00	0.004*
	Having a nice, fresh breath	3.68±0.61	4.00	3.75±0.50	4.00	3.64±0.65	4.00	0.153	3.77±0.53	4.00	3.58±0.64	4.00	0.000 *	3.56±0.67	4.00	3.76±0.52	4.00	3.80±0.48	4.00	0.000*
	To gain more aesthetic (beautiful) appearance	3.65±0.66	4.00	3.70±0.55	4.00	3.62±0.64	4.00	0.271	3.74±0.57	4.00	3.54±0.68	4.00	0.000*	3.57±0.68	4.00	3.69±0.61	4.00	3.80±0.44	4.00	0.005*
	Warnings of my family and neighbourhood	2.71±1.22	3.00	2.71±1.22	3.00	2.57±1.35	3.00	0.383	2.79±1.22	3.00	2.48±1.26	3.00	0.000*	2.56±1.18	3.00	2.71±1.26	3.00	2.85±1.30	3.00	0.026*
	Warnings of dentist	32.8±0.99	4.00	3.31±0.96	4.00	3.21±1.05	4.00	0.454	3.42±0.88	4.00	3.01±1.12	3.00	0.000 *	3.09±1.05	3.00	3.34±0.96	4.00	3.43±0.90	4.00	0.001*
	To feel having a clean mouth	3.73±0.56	4.00	3.74±0.62	4.00	3.71±0.60	4.00	0.415	3.81±0.51	4.00	3.58±0.70	4.00	0.000 *	3.61±0.67	4.00	3.79±0.55	4.00	3.78±0.52	4.00	0.000*
	Fair of tooth-ache	3.62±0.76	4.00	3.61±0.80	4.00	3.47±0.88	4.00	0.051	3.68±0.71	4.00	3.41±0.94	4.00	0.000 *	3.50±0.92	4.00	3.61±0.76	4.00	3.68±0.68	4.00	0.320
Factors that effect the selection of toothpaste	Cheaper price	2.19±1.24	2.00	2.19±1.24	2.00	2.22±1.26	2.00	0.539	2.16±1.27	2.00	2.19±1.24	2.00	0.812	2.30±1.20	3.00	2.19±1.26	2.00	1.86±1.32	2.00	0.010*
	Whitening feature	3.42±0.79	4.00	3.42±0.79	4.00	3.27±0.92	4.00	0.625	3.38±0.85	4.00	3.26±0.90	3.00	0.049*	3.29±0.91	1.00	3.39±0.83	4.00	3.26±0.93	4.00	0.256
	Having herbal content	2.59±1.22	3.00	2.59±1.22	3.00	2.66±1.34	3.00	0.969	2.80±1.19	3.00	2.41±1.26	3.00	0.000*	2.47±1.27	2.00	2.74±1.22	3.00	2.78±1.16	3.00	0.021*
	Containing fluoride	2.54±1.16	3.00	2.54±1.16	3.00	2.54±1.27	3.00	0.534	2.63±1.14	3.00	2.31±1.24	2.00	0.001*	2.33±1.19	3.00	2.61±1.15	3.00	2.60±1.24	3.00	0.011*
	Brand	2.71±1.17	3.00	2.71±1.17	3.00	2.66±1.21	3.00	0.267	2.83±1.13	3.00	2.57±1.20	3.00	0.005*	2.70±1.15	2.00	2.76±1.17	3.00	2.76±1.17	3.00	0.761
	Package&box	1.77±1.42	2.00	1.77±1.42	2.00	1.64±1.38	2.00	0.456	1.75±1.39	2.00	1.69±1.33	2.00	0.652	1.71±1.31	3.00	1.71±1.41	2.00	1.84±1.33	2.00	0.537
	Smell& taste	2.61±1.21	3.00	2.61±1.21	3.00	2.59±1.26	3.00	0.285	2.54±1.21	3.00	2.52±1.32	3.00	0.823	2.42±1.30	2.00	2.58±1.24	3.00	2.62±1.18	3.00	0.285
	My experiences	3.17±0.97	3.00	3.17±0.97	3.00	3.25±0.95	4.00	0.786	3.27±2.72	18323	3.12±1.01	3.00	0.068	3.00±1.02	2.00	3.29±0.91	4.00	3.39±0.80	4.00	0.000*

* $p < 0.05$, ^K Kruskal-wallis, ^M Mann-whitney u test

The once a day group gave lower yes answer to 'Does your tooth-brushing take at least two minutes?' question with the percentage of 60.1% ($p=0.012$) while there was no significant difference between twice and ≥ 3 times a day groups (70.1% and 73.3% respectively) (Table 4). 67.5% of all practitioners stated that their tooth-brushing takes at least two minutes (Table 4).

Table 4.

The relationship between tooth brushing frequency and brushing time.

		Tooth Brushing Frequency						
		Irregular-Once a Day		Twice a Day		≥ Three Times a Day		
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>p</i>
Do you think your brushing process lasts at least two minutes?	Yes	140	0,601	279	0,701	88	0,733	X ² 0,012
	No	93	0,399	119	0,299	32	0,267	
X ² Chi-square test								

24% of all the survey practitioners remarked that they practise inter-dental cleaning generally; while 49.7% said that they practise sometimes and 26.4% practise never. Dental-floss users were 43.4% of all practitioners; the 17% stated that they use an interdental brush and 27.3% uses a toothpick for inter-dental cleaning. 67.5% of all practitioners stated that their tooth-brushing takes at least two minutes.

DISCUSSION

Reduction of dental plaque is an important factor for oral health. Two times a day, tooth brushing with fluoride toothpaste is effective in studies reported.^{14,19} Dental brushing habits vary according to socioeconomic characteristics.²⁰ It was observed that women¹⁶ and people with high social status gave more importance to tooth brushing.²¹

In a study conducted by Azodo et al. with dental technology students, 71.9% of the participants stated that they brushed their teeth 2 times a day and 52.1% brushed their teeth in 3-5 minutes.²²

In their study about the oral care practices of university students, Basari et al²³ stated that 90% of the students brushed their teeth once a day. Peltzer et al²⁴ reported that 67.2% of the students brushed their teeth 2 times or more a day in the study about their oral care attitudes with university students. In a study, Saxer et al²⁵ stated that dental professionals should be aware of there is a consistent difference in the time that patients believe they brush, and the time they actually spend brushing.²⁵

In the present study, it was found that there was a significant relation between tooth brushing frequency and tooth brushing time. 37% of the participants were brushing their teeth over 2 minutes.

Unfortunately, interproximal plaque removal with toothbrushes is relatively ineffective and therefore patients should refer to additional techniques.

Dental floss is the most effective means for removing interdental plaque and reducing interdental gingival inflammation.²⁶ Unfortunately, most people do not floss routinely.²⁷

Removal of the interproximal plaque is thought to have significant benefits in maintaining gingival health, preventing periodontal disease and reducing caries. Dental floss, toothpick, interdental brushes now represent the primary methods available for interdental cleaning.²⁸ Dental floss is the most used among interdental cleansing methods²⁶ and the American Association of Dentists reports that up to 80% of interdental plaques can be removed with this method, which significantly reduces the incidence of caries and prevents periodontal disease.¹

If there is interdental papilla loss due to periodontal destruction between the teeth, wide embrasure cavities occur and dentists recommend interdental brushes. They can have different widths and conical or cylindrical shapes to fill the interdental space.²⁹

Considering their ease of use, the use of interdental brushes is reported to be easier than dental floss and therefore preferred by patients.³⁰

These helpers can remove plaque and accumulated food residues from inaccessible areas to toothbrushes, provide chemotherapeutic agents, and reduce interdental gingivitis.³¹

In a study on university students oral care practices, Bashiru and his friends stated that 5.8% of the students who brush their teeth also used dental floss.²³

At the present study, 24% of university students stated that they do regular interdental cleaning, 49.7% of students reported that they do interdental cleaning sometimes. Although 43.4% of the students was using dental floss, 17% of them was using interdental brush and 27.3% were using toothpicks.

Consumer behavior is expressed as the behavior that the consumer searches, buys, uses, evaluates, disposes of, and fulfils the ideas that the products and services are taken and are required. There are some important factors that are taken into account to make decisions by the consumer. Brand image, advertising and bidding play an important role in the purchase of toothpaste, sometimes based on the proposal that the consumer should compare with the competing product and choose the best.³²

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 as determinants of dentifrice include socioeconomic factors, design or packaging and advertisement.^{33,34} 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.³⁵

In the present study, there was no significant difference between the age groups in the selection of toothpaste. Regardless of gender, there is no difference when the 'price is affordable' bill and box, taste and smell, and past experiences are evaluated. In the group that brushes ≥ 3 times a day for 'Factors that affect the selection of toothpaste' question the score that is given to the '*Cheaper price*' option were significantly lower than Irregular and once a day and twice a day tooth brushing group. These results suggest that toothpaste price may increase brushing efficiency.

There is a recognized need to deliver oral health information to people during clinical encounters to enable them to develop personal skills in managing their own oral health.³⁶

Oral hygiene promotion includes any combination of educational, organizational, economic and environmental support for oral health behavior.³⁷

The maintenance of oral health requires a motivated patient. Historically, the dominant preventive approach has been based on a behavioral model.³⁸

Oral health promotion seeks to achieve sustainable improvements in oral health and reduce inequalities through actions directed at the underlying determinants of oral health.³⁹

Oral hygiene promotion involves any combination of educational, organisational, economic and environmental supports for behaviour conducive to oral health.³⁷

Conceptually, health promotion involves more than health education. Health education is the transmission of the knowledge and skills to maintain a healthy lifestyle and improve the quality of life. The promotion also includes manipulation of the environment of a population to favour health. The maintenance of oral health requires a motivated patient.

At the present study, there was no difference as a cause of motivation in all age groups. In women, as a cause of motivation, there was a significant difference in all the subjects. Students reported that their source of motivation was the fear of losing their teeth (86.2%) and dentist warnings (56.3%).

A study of tooth brushing habits in Sweden, Hugoson et al.⁴⁰ reported that 90% of adults brushed their teeth 1 or 2 times a day, in another study conducted in Finland, 47% of men and 79% of women reported tooth brushing at least 2 times a day.²⁰ In another study, conducted with Swedish adults, 95% of the participants used fluoride toothpaste to brush their teeth twice a day.⁴¹

These findings seem to confirm low rates of tooth brushing and dental attendance in developing economy countries compared to high income countries.²⁴

In order to raise the awareness of the people on the oral and dental health, especially the educated, the state should address this issue. Industry and the media could be challenged to develop and advertise oral hygiene products in ways that interest and empower consumers in all groups.

This study assessed oral self-care practices among undergraduate non-medical students at the health hospital, Ankara, Turkey. The major limitation of this study was the convenient sampling method used. Although regarded to be non-representative of the total population, it reflects a true picture of the general population and there is no reason to doubt that the sample taken was similar to the rest of the population.

CONCLUSION

In developing societies, it is of great importance for the public to develop oral hygiene habits and to prepare the factors that facilitate these habits. It is important that university students develop their self-care, and dentists are likely to have significant self-sacrificing duties.

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Corresponding Author:

Mahmut Sertaç ÖZDOĞAN
 Faculty of Dentistry Department of Prosthodontics,
 Ankara Yıldırım Beyazıt University,
 Etlik, Ankara, Turkey
 Phone : +90 505 629 14 75
 E-mail : msozdogan@ybu.edu.tr