

# The correlation between tooth brushing habit and familial education level in Turkish young population

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## ÖZET

### Türk toplumundaki genç bireylerde diş fırçalama alışkanlığının aile eğitim düzeyi ile ilişkisi

Bu çalışmanın amacı genç erişkin Türk popülasyonunda günlük diş fırçalama alışkanlığının çeşitli değişkenlere göre değerlendirmektir. Bu kesitsel çalışma 19-29 yaş aralığındaki 645 bireyde yürütüldü. Ailelerin eğitim durumu, sosyo ekonomik durum, oral hijyen alışkanlıkları ve tutumları gibi bazı değişkenler anket ile toplandı. Diş fırçalama sıklığı sekiz gruba ayrıldı. İstatistiksel analiz için ki-kare test kullanıldı. Ortalama yaş 20,72 idi. Günde bir kere diş fırçalama alışkanlığı sıklığı %18.3 (n=118), günde birçok defalar diş fırçalama alışkanlığı %6.4(n=41) ve orduya katıldıktan sonra düzenli olarak diş fırçalama alışkanlığı 23.1(n=149) idi. Genç erişkinler arasında eğitilmiş olanlarda (p<0.05) diş fırçalama alışkanlığı daha fazlaydı. Genç erişkinler arasında diş fırçalama sıklığı ve ekonomik durumları arasında önemli derecede farklılık vardı. Ebeveynlerin ve kişilerin okur-yazarlık seviyesinin yüksek olması (sosyo-ekonomik durumun bir göstergesi olarak) diş fırçalama sıklığıyla örtüşmektedir. Diş fırçalama sıklığıyla kişinin ortalama geliri arasında korelasyon vardır. Ebeveynler çocuklarının ağız sağlığı konusunda model olarak rol alırlar.

**Anahtar Kelimeler:** diş fırçalama, genç erişkinler, ebeveyn

## SUMMARY

The aim of this study is to assess the prevalence of daily tooth brushing among young adults in Turkish subpopulation and evaluate some variables associated. A cross-sectional study was carried out in 645 young adults 19 to 29 years old in Ankara, Turkey. Information of some variables like parents' education level, socio-economic indicator, oral hygiene habits and attitudes were collected through a questionnaire. The frequency of tooth brushing was categorized into eight groups. Chi-square test was used for analysis. The mean age was 20,72. The frequency of once a day tooth brushing was 18,3% (n=118), multiple times tooth brushing on a day's frequency was 6,4% (n=41) and beginning regularly tooth brushing after joining military was 23,1% (n=149). The prevalence of tooth brushing (p<0.05) among the young adults, who have more educated parents, was higher. There was statistically significant difference between tooth brushing frequency of young adults and their economic status (p<0.05). Parents' and person's maximum level of schooling (as an indicator of socio-economic position) was associated with higher frequency of tooth brushing. And there was a correlation between tooth brushing frequency and person's average earning. Parents are being role model for the oral health behavior of their children.

**Key words:** tooth brushing, young adults, parents

## Introduction

Oral health has an important place in general health (1), and according to WHO it is defined as, being free of chronic mouth and facial pain, oral and throat cancer, oral sores, birth defects and other diseases and disorders that affect the mouth and oral cavity (2).

The knowledge about the management of dental diseases focuses on the role of oral health behavior to avoid caries or periodontal diseases (3-6). The main factors affecting tooth caries include cariogenic bacteria, those fermentable carbohydrates, plaques as well as time. Additionally, saliva components, salivary gland diseases, hereditary elements, age and immunological factors affect the occurrence of caries. Hypomineralization associated abnormalities also accelerate the occurrence of caries (7). Getting brushing teeth and visiting dental professionals regularly are the key for the prevention of dental diseases (3-6). Because of that oral disease is strongly related to lifestyle (8). It is widely acknowledged that brushing teeth twice a day and flossing on a daily are the current recommendation in many countries. The parents, and especially mothers, affect their children's oral health behavior (9). Some factors such as education level, occupation, age, current knowledge, and behavior can provide insight about their health habits and their children's health indirectly (10).

Tooth caries is a common problem in numerous countries. Treatment of tooth caries and caries related tooth losses with prosthetic restorations requires rather expensive procedures as well as more dental professionals (11). It is a commonly accepted approach to perform the prophylactic precautions against the tooth caries during pediatric ages. The educational background of mother and those factors affecting the dental health of the child have been presented in numerous studies (12-15). On the other hand, there are not so many studies conducted on the adults. The aim of this study was to assess the prevalence of tooth brushing. And to predict the association between daily tooth brushing habits and education level, environmental factors or parents' education levels by using data from a sample of young adults who are in military, Ankara, Turkey.

## Material and method

A cross-sectional study was carried out in Armoured Command Headquarters, Ankara, Turkey. Randomly, 645 young adults 19 to 29 years old private soldiers were enrolled in the study. A structured questionnaire was distributed by one of the investigators (AA) to private soldiers. This was constructed through self-report from soldiers. The questionnaire included some demographic characteristics, socioeconomic statuses,

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education levels of the soldiers and their parents. For the oral health behaviors some questions added in the questionnaire. For the frequency of tooth brushing habits the question "How often do you normally brush your teeth?" was asked and offered eight answering alternatives: never, occasionally, once a month, once a week, more than once per week, once a day, more than once per day, started brushing after joining military. The question "How often do you visit a dentist?" indicated participants' opinion about dental health. All Datas were analyzed using the statistical package SPSS (version 12.0). We used frequencies for each category as well as its corresponding percentages. Their differences between the groups were analyzed with the Pearson Chi-square test based on the corresponding frequencies.

## Results

645 private soldiers responded the survey. The average age was 20.72 shown in **table 1**. Although 284 respondents of 645 answered the "Do you brush your teeth?" question as yes, 361 of the participants' answers were no. 334 respondents had visited a dentist, 331 participants had never visited a dentist in their lives.

The only 6.4% of all respondents reported brushing their teeth more than once a day (n=41) 30.4% (n=196) reported that they had never brushed their teeth (**Table 2a**). 149 participants (23.1%) reported that they had begun brushing their teeth after joining military and 496 participants (76.9%) reported that they had already brushed their teeth before joining military (**Table 2b**). **Table 3** emphasis that the correlation between toothbrushing and education level. The 1.2% of the participants (n=8) had university education. The most of the participants (42.9%) in the survey had high school education (n=277), additionally 5.1% of the participants were uneducated (n=33). 36.4% of uneducated (n=12), 50.9% of high school educated (n=141) and 75% of university educated participants (n=6) were brushing their teeth. The level of education increased tooth brushing ratio ( $p < 0.05$ ). The increased education levels of parents affected positively tooth brushing frequency of the participants (**Table 4a-b**). The parents' maximum level of schooling was higher ( $p < 0.05$ ) among those children who brushed their teeth than among those who did not.

## Discussion

Oral hygiene has been in the interest of people since ancient times; however, toothbrushing became available in the modern sense in the late 18<sup>th</sup> century. As a result of advances in technology and cosmetic industry, today, a wide variety of oral care products have been introduced into the market. The importance of dental hygiene has increased as a result of demonstrating the effects of oral hygiene on the general health and an increase in the knowledge of oral diseases (16). Toothbrushing is known to help to prevent some oral diseases, particularly periodontal diseases and dental caries, which are considered as public health problems (17). Toothbrushing has dental plaque removal effect in varying levels according to characteristics of toothbrush and toothbrushing duration (18).

Toothbrushing habit and frequency vary according to different cultures and geographical regions. In a study conducted on 5,401 adults representing the general population in Finland, it was determined that 59% of the subjects attended regular dental visits and 62% of the subjects brushed their teeth for 2 or more times in a day as oral health-related behaviors

(19). In a study conducted on African-American school-age children in Chicago-area, it was reported that at least 80% of the children brushed their teeth at least twice daily and 98% of the children brushed their teeth at least daily (20). In Mexico, among school-age children, the rate of children brushing their teeth at least once daily was determined as 49.1% (21). In a study conducted in Israel on native Israeli children and on immigrant children from Ethiopia (49-82 months), the rates of children brushing their teeth at least once daily were reported as 65% and 45%, respectively (22). In the present study, while the rate of adult males brushing their teeth at least once daily was 24.7%, the rate of those brushing their teeth more than once daily was 6.4% and the rate of those not brushing their teeth was 30.4%. In addition to the low rates of toothbrushing in our study group, the fact that 23.1% of the males started to brush their teeth after attending military service indicated the lack of knowledge and habit in the general population.

The factors affecting oral hygiene-related behavior as well as toothbrushing include sociodemographic factors, education level, and gender (23). Moreover, levels of sense of coherence (SOC) have been suggested to be higher in individuals with better oral health status and oral health-related behaviors (24). A study on 4,131 adults in Finland demonstrated that SOC might be a determinant of the frequency and quality of toothbrushing (25). In a nationally representative study in Finland conducted on 4,156 adults, the subjects belonging to the lowest cynical hostility level were more frequently brushed their teeth and had better oral hygiene than those belonging to the highest cynical hostility level (26). Moreover, that particular study suggested that this relationship of cynical hostility with toothbrushing frequency and oral hygiene was also partly dependent on education level (26). In Turkey, in a study conducted on 1,200 adults in Istanbul, oral health control beliefs were found to be significantly associated with self-rated oral health, socio-demographic factors, and oral health behaviors (27). Moreover, in the multivariate analysis, higher Internal beliefs were determined to be associated with female gender, younger age, higher socioeconomic status, more frequent daily toothbrushing, and regular dental check-ups, whereas higher Chance beliefs were found to be associated with older age, lower educational level, lower socioeconomic status, low toothbrushing frequency, and symptom-orientated dental attendance (27). The Results of that particular study demonstrated that the association between socioeconomic status, education, and health was partially mediated by control beliefs (27).

Many studies have reported that gender influences oral hygiene-related behaviors (21, 28-31). A study performed on young adults (age range, 20-29 years; 245 males and 282 females) revealed that females had better oral health behavior and reported a significantly higher rate of good behavior in females than in males in each oral health behavior item (toothbrushing frequency, using dental floss, dental check-ups) (28). In a study conducted on adolescents (n=237) in Lithuania, dental plaque level was found to be associated with socioeconomic status, number of children in family, and toothbrushing frequency, whereas toothbrushing frequency was determined to be associated with gender, socioeconomic status, and external locus of control (29). In Iran, toothbrushing frequency was determined to be significantly higher in girls than in boys (30). The present study group being composed of only males ruled out the confounding effect of gender in the

evaluation regarding toothbrushing frequency.

Education level is also one of the factors found to be effective on toothbrushing frequency (19, 26, 31). In a study conducted on general population in Finland, socioeconomic status (parenteral education) in childhood and socioeconomic status (educational and income level) in adulthood were reported to be effective on tooth retention (19). In Mexico, the study conducted on school-age children (n=1,373) demonstrated that girls and children having mothers with high education level brushed their teeth more frequently (31). In Iran, a study performed on adolescents (n=1,049) reported that education level was not significant as an independent predictor of toothbrushing frequency (30). In that particular study, toothbrushing frequency was found to be significantly associated with the education level of father but not with the education level of mother (30). Toothbrushing frequency as a component of health-related life style in adolescence has been reported to be a predictor of education level in adulthood. In Finland, in a long-term study including nationally representative samples of 12- to 16-year-old children, high tooth brushing frequency was found to be a predictor of education level between the ages 27 and 33 years (32). In another long-term study conducted on children demonstrated that toothbrushing frequency also varied in association with the changes in oral health-related knowledge and attitudes (33). In that particular study, it was concluded that long-term interventions instead of short-term interventions should be planned for oral health promotion (33). Similar to the above-mentioned studies, the present study also determined that as the education level of individual increased, toothbrushing frequency also increased. Additionally, the education level of mother and father was also found to be effective on toothbrushing frequency.

In conclusion, in the present evaluation conducted on young, adult male military population, toothbrushing frequency was found to be low. Moreover, an association was determined between toothbrushing frequency and education level. Education interventions should be planned for oral hygiene that is an important public health problem.

Age	Frequency	Percent
19	1	0,2
20	452	70,1
21	76	11,8
22	44	6,8
23	36	5,6
24	18	2,8
25	4	0,6
26	6	0,9
27	2	0,3
28	4	0,6
29	2	0,3
Mean	Total	Total
20,72	645	100

	Frequency	Percent
Never	345	53,5
Once a month	13	2
Once a week	37	5,7
More than once a week	56	8,7
Once a day	118	18,3
More than once a day	41	6,4
Rarely	35	5,4
Total	645	100

	Frequency	Percent
Tooth brushing habits before joining military	496	76,9
Tooth brushing habits after joining military	149	23,1
Total	645	100

		Brushing Teeth		
		No	Yes	Total
uneducated	Count	21	12	33
	% within brushing frequency	63.6%	36.4%	100%
	<b>% within education level</b>	5.8%	4.2%	5.1%
lettered	Count	10	2	12
	% within brushing frequency	83.3%	16.7%	100%
	<b>% within education level</b>	2.8%	0.7%	1.9%
elementary school	Count	132	56	188
	% within brushing frequency	70.2%	29.8%	100%
	<b>% within education level</b>	36.6%	19.7%	29.1%
secondary school	Count	46	39	85
	% within brushing frequency	54.1%	45.9%	100%
	<b>% within education level</b>	12.7%	13.7%	13.2%
high school	Count	136	141	277
	% within brushing frequency	49.1%	50.9%	100%
	<b>% within education level</b>	37.7%	49.6%	42.9
junior college	Count	14	28	42
	% within brushing frequency	33.3%	66.7%	100%
	<b>% within education level</b>	3.9%	9.9%	6.5%
university	Count	2	6	8
	% within brushing frequency	25%	75%	100%
	% within education level	0.6%	2.1%	1.2%
TOTAL	<b>Count</b>	361	284	645
	% within brushing frequency	56%	44%	100%
	<b>% within education level</b>	100%	100%	100%

Participants' education level ~tooth brushing / Pearson Chi-Square; *p* value ***p* = .000**

**Table 4a.** Results of brushing frequency associated with mothers' education levels of the participants and *p* value.

		Brushing Teeth			
		No	Yes	Total	
Mothers' education level	uneducated	Count	142	76	218
		% within brushing frequency	65.1%	34.9%	100%
		<b>% within education level</b>	39.3%	26.8%	33.8%
	elementary school	Count	198	153	351
		% within brushing frequency	56.4%	43.6%	100%
		<b>% within education level</b>	54.8%	53.9%	54.4%
	secondary school	Count	15	24	39
		% within brushing frequency	56.4%	61.5%	100%
		<b>% within education level</b>	54.8%	8.5%	6%
	high school	Count	4	18	22
		% within brushing frequency	18.2%	81.8%	100%
		<b>% within education level</b>	1.1%	6.3%	3.4%
	junior college	Count	2	10	12
		% within brushing frequency	16.7%	83.3%	100%
		<b>% within education level</b>	0.6%	3.5%	1.9%
	university	Count	0	3	3
		% within brushing frequency	0%	100%	100%
		<b>% within education level</b>	0%	1.1%	0.5%
TOTAL	Count	361	284	645	
	% within brushing frequency	56%	44%	100%	
	<b>% within education level</b>	100%	100%	100%	

**Mother's education level ~tooth brushing / Pearson Chi-Square; *p* value** *p* = .000

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**Table 4b.** Results of brushing frequency associated with fathers' education levels of the participants.

		Brushing Teeth			
		No	Yes	Total	
Fathers' education level	uneducated	Count	59	28	87
		% within brushing frequency	67.8%	32.2%	100%
		<b>% within education level</b>	16.3%	9.9%	13.5%
	elementary school	Count	232	152	384
		% within brushing frequency	60.4%	39.6%	100%
		<b>% within education level</b>	64.3%	53.5%	59.5%
	secondary school	Count	45	44	89
		% within brushing frequency	50.6%	49.4%	100%
		<b>% within education level</b>	12.5%	15.5%	13.8%
	high school	Count	17	29	46
		% within brushing frequency	37%	63%	100%
		<b>% within education level</b>	4.7%	10.2%	7.1%
	junior college	Count	6	24	30
		% within brushing frequency	20%	80%	100%
		<b>% within education level</b>	1.7%	8.5%	4.7%
	university	Count	2	7	9
		% within brushing frequency	22.2%	77.8%	100%
		<b>% within education level</b>	0.6%	2.5%	1.4%
TOTAL	Count	361	284	645	
	% within brushing frequency	56%	44%	100%	
	<b>% within education level</b>	100%	100%	100%	

**Father's education level ~tooth brushing / Pearson Chi-Square; *p* value** *p* = .000

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