



## Comparison of Tooth Brushing Habits and Oral Care Motivation Resources of Dental Assistant and Dental Students

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### Abstract

Dental assistants, are member of the dental care. Along with dentists, they play an important role in the dental clinics. Therefore, the aim of this study is to investigate oral hygiene habits, tooth brushing motivation factors of a group of oral and dental assistant (DA) and dental (D) students. This student-based cross-sectional study was carried out by conducting a self-administered questionnaire of a total of 142 students, 68 of whom were dental assistant and 74 of them were dental students. In this self-report questionnaire, the demography, duration and frequency of oral hygiene habits, motivating factor in brushing teeth were investigated. Dental students brushed twice a day but the vast majority (94%) of dental assistant students brushed at least once a day. Among those 76.1% them reported they brushed at least 2. While there was a statistically significant difference in brushing rate between D and DA students ( $p < 0.0001$ ), no statistically significant difference was found by gender and grade level. The regular interdental aid usage rate is quite low among both D (14.9%) and DA (5.9%) students. 83.1% of the students reported that they brushed their teeth for at least 2 minutes. No significant difference was found in brushing time according to gender or grade level ( $p > 0.05$ ). Among the participants, "fear of losing teeth" was the most marked among the brushing motivation factors. Oral hygiene habits can be improved by considering the motivational factors in brushing teeth. In addition, DA and D students are thought to carry their attitudes and knowledge to their patients in the field. Therefore it is important to identify the deficiencies and enhance oral and dental health habits

### Research Article

## INTRODUCTION

Oral health is an indispensable part of the general health<sup>1,2</sup>. Microbial dental plaque causes dental caries and periodontal diseases, the two most common diseases in the oral cavity. Prevention from these diseases is possible only by the mechanical removal of the etiological factor, microbial dental plaque<sup>1</sup>. A healthy mouth can only be achieved by regular and effective tooth brushing. The person can control oral health by rigorous application of self-care applications in the mouth. Dentists should explain the importance of oral hygiene and be an example to patients and the society with their oral health behaviors to draw attention to the public's oral hygiene practices<sup>3</sup>.

The degree and type of education also affect the perception of the person, and therefore dental awareness<sup>4</sup>. Dentists, dental students and those working in the field of oral and dental health can be considered as role models for good oral hygiene practices by the social environment. It is

important to receive education in order to improve oral health in the academic years. FDI recommended that the curriculum on this subject be taught in dental education<sup>5</sup>.

A dental assistant's responsibilities are extensive and include helping the dentist during several clinical treatments, helping patients feel comfortable and relieving anxieties, and giving patients the necessary skills to maintain and improve oral health. In order to improve oral and dental health, it is necessary to increase the knowledge level of not only dentists but also oral health workers. Since dental assistant are involved in preventive dental practices, it is essential for them to have good knowledge of oral health and to carry this to their professional advice. There is not enough data about the experience, attitude and behavior of the dental assistants in this field.

After completing their education, dental assistants are expected to improve their dental health behavior and become a role model for patients.<sup>5</sup>

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Evaluation of dental brushing habits and oral care motivation resources of DA and D students will reflect the importance of disease prevention and their commitment to improving their oral health; this attitude should be developed and strengthened during undergraduate education <sup>6</sup>.

For this reason, the aim of this study is to evaluate the oral hygiene and tooth brushing habits of dental assistant and dental students.

## **MATERIALS and METHOD**

### *Study design and participants*

The questionnaire, which was prepared for the assessment of habits and behaviors about oral health care, was approved by the Ankara Yıldırım Beyazıt University ethics committee (Date: 29.05.2019; No: 10) and in accordance with the Helsinki Declaration principles. The questionnaire was applied to dental assistant and dental students. The survey was conducted in June 2019 to evaluate students' level of knowledge and includes a total of 10 multiple-choice questions. The questionnaire (Table 1) was applied only to students who volunteered to participate in the survey. The questionnaire was attended by 142 students, of which 68 were dental assistant (DA), and 74 were dental students (D). Ankara Yıldırım Beyazıt University, Vocational School of Health Services, Oral and Dental Health program 1st and 2nd-grade students and 3rd and 4th-grade students of dentistry participated in the survey.

The study was conducted by four researchers personally, and all participants were informed before their contribution and asked to give written consent. The study was aimed to evaluate dental hygiene behaviors of DA and D students. In this evaluation, the frequency of brushing, the duration, the factors that motivate brushing was determined. Anonymity is provided only with a unique code number known to the survey participant, thereby ensuring the completion of the study without any student being identified or tracked.

### *Study survey*

The survey was prepared based on similar oral and dental hygiene studies <sup>2,7-9</sup>. Its aim was to collect data on students' demographic characteristics and attitudes and habits regarding oral care. The questions are prepared to investigate: frequency of brushing; preferred time for regular brushing; oral care aids used; The items that he thought was effective in gaining the applied toothbrushing method were researched. The

questionnaire was filled out by the participants. The profile of the study group, the questionnaire items about brushing and motivations factors in brushing teeth are given in Table 1.

### *Statistical analysis*

Study data were summarized using descriptive statistics (frequency and percentage). Chi-square test was used to evaluate the effects of education level, age and gender on brushing habits. In cases where variables are continuous, they were examined by using t-test and one-way analysis of variance. All statistical testing was performed at a pre-set alpha of 0.05. Data analysis was done with R program version 3.5.1 <sup>10</sup>.

## **RESULTS**

One hundred forty-two students, 68 of whom DA and 74 dentistry students, participated in the survey. 46 female and 22 male students from the DA students (mean age, 19 years; age range, 18-23 years) and 51 females and 23 males (mean age, 22 years; age range, 20-24 years) from dental students participated in the study. No statistically significant difference was observed between groups in terms of gender distribution ( $p = 0.88$ ). It was stated that 58.8% ( $n = 40$ ) of the DA and 17.6% ( $n=24$ ) of the D students were staying in the dormitory, 29.4% ( $n = 20$ ) of the DA and 45.9% ( $n=34$ ) of the D students were living with their family, 10.3% ( $n=7$ ) of the DA and 27.2% ( $n=7$ ) of the D students were sharing the same home with their friends and 1.5% ( $n = 1$ ) of the DA and 27.2% ( $n=20$ ) the D students were living alone (Table 1).

48% ( $n: 68$ ) of the students surveyed are DA students and 52% ( $n: 74$ ) are D students.

While the majority of DA students (67.2%) reported the frequency of brushing their teeth twice a day, all of the dental students (100%) answered they brushed twice a day. When the proportion of those who brush their teeth at least once or more considered brushing habits rises up to 94% among DA students. There is a statistically significant difference between the brushing frequency of D and DA students ( $p < 0.05$ ). In addition to brushing, 50% of DA students stated that they cleaned the interdental surface intermittently, while this rate is 61% for dental students. However, the regular interdental brush usage rate is quite low in both groups (5.9% DA, 15% D). When the groups were compared with each other, a statistically significant difference was found ( $p = 0.02$ ). In addition to brushing, there was no

gender difference in terms of interdental cleaning ( $p > 0.5$ ); There was a statistically significant difference in interdental aid usage by classes ( $p = 0.0075$ ) among DA students. Regular interdental brush usage rate is quite low (2.9%) among DA students. Although irregular, the frequency of dental floss was higher in the 2nd grades than the 1st grades ( $p = 0.008$ ). However, this improvement rate seen in the upper class among DA was not seen in 4th grade dentistry students compared to 3rd grades ( $p = 0.36$ ). 51.4% of the individuals were preferring dental floss for interdental cleaning. This is followed by the interdental brush (5%) and toothpicks (13%). There is no statistically significant difference between DA and D students in materials used for interdental cleaning ( $p = 0.36$ ).

83.1% (n: 118; 58 DA and 60 D) of the participants think that brushing takes at least two minutes. There was no difference in brushing time according to gender ( $p = 0.61$ ) (Table 1). According to the distribution of groups (DA, D), there was no difference between the brushing time ( $p = 0.66$ ).

For the question about the duration of toothbrush replacement, 59.5% (n=44) of dental students stated that they change toothbrushes every 3-4 months and 47.1 % (n:32) of DA students use the toothbrush for 3-4 months. No statistically significant difference was found between the groups ( $p = 0.13$ ) (Table 1). Again, no statistically significant difference was found between the frequency of brush replacement by gender ( $p = 0.25$ ).

In the question of substances that motivate them the most in tooth brushing; losing tooth, preventing bad breath, getting a fresh breath, feeling that they having a clean mouth (approximately 15% each) were marked (Figure 1). Among the factors that motivate tooth brushing, social motivating factors such as preventing bad breath and gaining a more aesthetic appearance were found to be effective at the same rates as factors such as fear of losing teeth and toothache. The least effective factors among these were family (4%) and dentist (5%) warning (Figure 2). No statistically significant difference was found among the factors that motivate brushing by gender. (not losing their teeth ( $p = 0.51$ ), preventing bad breath ( $p = 0.21$ ), getting a fresh breath ( $p = 0.65$ ), family warnings ( $p = 0.89$ ), the dentist warnings ( $p = 0.73$ ), fear of toothache ( $p = 0.83$ ).

Again, no statistically significant difference was found between the factors motivating brushing among D and DA students. (losing tooth ( $p = 0.19$ ), preventing bad breath

( $p = 0.67$ ), getting a fresh breath ( $p = 0.52$ ), warnings of my family ( $p = 0.11$ ), warnings of the dentist ( $p = 0.60$ ), fear of toothache ( $p = 0.57$ ).

## DISCUSSION

Oral health is an indispensable part of body health. Since oral and dental professionals play an important role in the advancement of public oral health, it is important that they are a good role model. In the protection of oral and dental health, not only dentists but also dental assistant have important duties. As a result of literature review, no questionnaire study evaluating the tooth brushing habits of dental assistants was found. For this reason, the present study aimed to evaluate oral care habits of dental assistant students together with the dental students and to determine the sources of motivation for oral care.

In the present study, while the majority of dental assistant students (67.2%) reported to brush twice a day, all of the dentistry students (100%) stated that they brushed teeth twice a day. Tooth brushing is considered fundamental self-care behavior for maintenance of oral health, and brushing twice a day has become a social norm. The Centers for Disease Control and Prevention (CDC) recommends brushing twice a day specifically for preventing dental caries (CDC 2014)<sup>11</sup>. In addition, 50% of DA students and 61% of D students stated that they cleaned the interproximal surfaces of teeth in addition to brushing. Our results are similar to the study (more than 67.6% once a day) investigating the brushing habits of dentistry, pharmacy and medical school students in Kuwait<sup>12</sup>. Other studies, about brushing frequency of Iranian dentistry students<sup>13</sup> (57%) and brushing frequency of Turkish medical school students<sup>14,15</sup> [(54.1%), (59.1%)] were similar. However, in Italy, it is lower than the results of the survey study conducted on university students other than the health branches of Rimondini et al. (92%)<sup>16</sup>. This result difference may be due to socioeconomic reasons. It is an accepted fact that the socioeconomic class is an important risk factor affecting periodontal health<sup>17</sup>.

Epidemiological studies in many parts of the world have drawn attention to a close relationship between periodontal disease and dental calculus accumulation<sup>18</sup>. Today, if brushing and other mechanical cleaning is done regularly and at regular intervals, it is considered as the most reliable way to control the dental plaque<sup>18</sup>.

**Table 1.** Profile of the study group and questionnaire items about brushing.

QNS	Distribution of answers in numbers and %							
1	Your age							
	ODP	Average of 19.6 years (min 18 years, maximum 23 years)						
	D	Average 22 years (min 20 years, maximum 24 years)						
2	Your gender							
		Woman	Man					
	ODP	46 (68%)	46 (68%) 22 (32%)					
	D	51(70%)	51 (70%) 23 (30%)					
3	Your academic year at university?							
	ODP	1st Year	2nd Year					
		41 (60.3%)	27 (39.7%)					
	D	3rd Year	4th Year					
		36(48,6%)	38(51,4%)					
4	What is your accommodation during your education?							
		At dormitory	I live alone	with my friends	With my family			
	ODP	40 (58.8%)	1 (1.5%)	7 (10.3%)	20 (29.4%)			
	D	0	20(27,02%)	20(27,2%)	34(45,9%)			
5	How often do you brush your teeth?							
		Never	irregular	once a day	2 times a day	3 times a day		
	ODP	0	4 (6%)	12 (17.9%)	45 (67.2%)	6 (9.01%)		
	D				74(100%)			
6	Do you do interface cleaning in addition to brushing?							
		Yes	Sometimes I do it (occasionally)	No I don't				
	ODP 1st Class	2 (2.9%)	15 (19.1%)	6(8.8%)				
	ODP 2nd Class	2(2.9%)	19(22.9%)	24(35.3%)				
	ODP (all)	4(5.9%)	34(50%)	30(44.1%)				
	D	11(15%)	45(61%)	18(24%)				
7	Which or which do you prefer for interdental cleaning (if you are doing it)?							
		Toothfloss	Interdental brush	Toothpick				
	ODP	23 (62.2%)	1 (2.7%)	13 (35.1%)				
	D	53(71.6%)	5(6.75%)	7(9.45%)				
	All	73(51.4%)	7(5%)	18(13%)				
8	Do you think your brushing takes at least two minutes?							
		Yes	No					
	ODP	58(85.3%)	10(14.7%)					
	D	60(81%)	14(19%)					
	All	118 (58 ODP 60 D)(%83,1)	24(16.9%)					
9	How often do you change your toothbrush?							
		in 3-4 months	3-4 months to 1 year	more than 1 year				
	ODP	32 (47.1%)	33 (48.5%)	3 (4.4%)				
	D	44(59.4%)	25(36.8%)	5(6.75%)				
10	Evaluate the options that <b>motivate</b> you in brushing teeth using the scale given below.							
No	OPTIONS			Most important	important	Moderately important	little matter	Does not matter
1	Not losing their teeth							
2	Preventing bad breath,							
3	Getting a fresh breath							
4	Gaining a more aesthetic appearance							
5	My family's warnings							
6	Dentist's warnings							
7	Feeling that I have a clean mouth							
8	Fear of toothache							

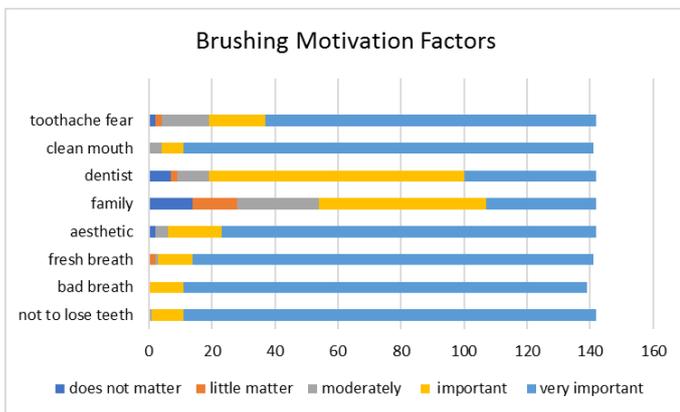


Figure 1. Tooth brushing brushing motivation factors.

Plaque buildup can also lead to tooth decay. Both gum disease and caries are the primary causes of tooth loss. In maintaining gingival health, it has been shown that cleaning teeth at long intervals is not enough<sup>19</sup>. On the other hand, in a study examining the brushing habits involving the vast majority of European countries, it showed that brushing habits played a limited role in preventing caries<sup>20</sup>. Brushing alone is not sufficient for cleaning the proximal surfaces of the teeth. Therefore, the use of dental floss is recommended for further assistance in both prevention of dental caries and periodontal disease<sup>21,22</sup>.

In the present study, the use of regular interdental brushing was quite low in DA students (5.9%), but irregular interdental brushing usage was found to be 50%. This rate is 15% and 61% for D students, respectively. Interestingly, although there was no difference in the use of the interdental brush by gender, it was observed that the rate of use of the interdental brush increased with the education ( $p = 0.0075$ ) among DA students (Table 1). According to the findings of an international study<sup>17</sup> dental floss are rarely used in addition to brushing to provide good oral hygiene; Al-Hussaini et al. showed that 25.4% of students at the university did not know anything about dental floss<sup>12</sup>. In the present study, 50% of DA students ( $n = 34$ ) and 61% of D students ( $n = 45$ ) were determined to perform interdental cleaning in addition to brushing.

Motivation is an important factor in tooth brushing. In the present study, it was observed that social motivating factors such as preventing bad breath, gaining a more aesthetic appearance among the factors that motivate tooth brushing are effective in the same ratios as factors such as fear of losing teeth and toothache. These results are in line with the results that show that it is cosmetic, not because of dental health, which motivates brushing<sup>22-24</sup>. In order to increase the

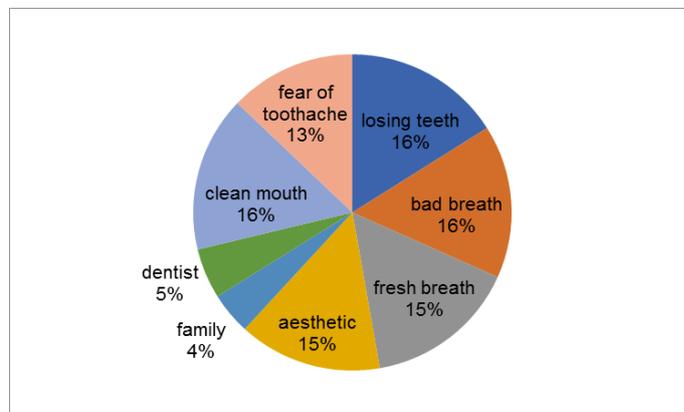


Figure 2. Factors qualified as very important in brushing motivation.

brushing habit, the dentists not only concentrate on the fear of losing teeth, but also on aesthetics indicates that will increase the brushing rates. These results support the studies showing that brushing is performed for aesthetic reasons as much as protecting dental health in young individuals<sup>11,23,24</sup>.

It is known that oral health affects general health. Although the education levels are different, similar data were obtained in the interest of the students who received different education on oral and dental health. In this study, it was observed that dental assistants and dental students who will improve public oral and dental health do regular oral care. This study can be considered as an indicator that young students are trying to take care of oral and dental health.

### Conflict of interest

The authors declare that there is no conflict of interest.

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