

# Investigating the Level of Knowledge of the Community about Oral and Dental Health

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Eur J Dent:2021;5:145–151

## Abstract

**Objectives** This study aimed to determine the knowledge and approaches of the participants about oral and dental health.

**Materials and Methods** This was a questionnaire-based cross-sectional survey. Participants' demographic characteristics, tooth brushing habits, selection of toothpaste, and reasons for visiting the dentist were examined in this study. Participants' knowledge levels of fluoride and their attitudes toward the most common fluoride applications among preventive treatments were also evaluated. Data entry and analyses were performed using SPSS statistical software. Descriptive and inferential statistics and chi-square test were used for analyzes.

**Results** A total of 2,744 voluntary participants including 1,938 (70.6%) females and 806 (29.4%) males responded; 1,391 (50.7%) participants know the contents of their toothpaste; 1,680 (61.2%) participants point out that fluoride is effective in preventing dental caries. Female participants reported a statistically significant difference in their knowledge of what is fluoride when compared with male participants ( $p = 0.0001$ ). The knowledge level of participants who had higher levels of education were statistically significantly different when compared with the participants who had lower education levels about fluoride and fluoride applications ( $p = 0.0001$ ).

**Conclusions** The results of this study indicate that participants' attitudes toward oral health and dental care need to be improved.

## Keywords

- ▶ dental health
- ▶ behavior
- ▶ parents
- ▶ fluoride
- ▶ education
- ▶ oral health

## Introduction

Preservation and maintenance of oral and dental health are one of the most important factors affecting general health. It also plays a key role in quality of life.<sup>1,2</sup> The World Health Organization assesses the effects of various risk factors on health and emphasizes that these factors, which cause health status and worsen the quality of life, also adversely affect general health.<sup>3</sup>

Dental infections such as periodontal disease and tooth decay are the most common bacterial infections in children and adults.<sup>4</sup> The major cause of tooth decay and gingival diseases is the dental plaque that accumulates on the tooth surfaces.<sup>5,6</sup>

Dental caries, the most common dental disease, causes pain, discomfort, and expensive treatment procedures in the community.<sup>7</sup> In addition, these conditions are associated with stressful and unpleasant dental experiences between

DOI <https://doi.org/10.1055/s-0040-1716583>  
ISSN 1305-7456.

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children and adults. These negative factors are also affected by general health. Therefore, removal of the dental plaque and provision of oral hygiene in the prevention of tooth decay and periodontal diseases have a critical prescription.<sup>8</sup>

Epidemiological studies show that tooth decay rates can be successfully controlled by improving oral hygiene.<sup>9</sup> Oral and dental health care programs are the most basic and effective for the protection and maintenance of dental health among children and adults. From these practices, individual practices are at the forefront of improving the oral and dental health of the community and reducing the prevalence of dental diseases.<sup>10,11</sup>

The individual oral hygiene habits such as tooth brushing habits that are used to protect oral and dental health can vary depending on the level of knowledge of the community on oral health.<sup>12</sup> That is, the level of knowledge about oral and dental health of individuals also affects their attitudes toward hygiene habits on oral and dental health. Also, the attitudes and skills of parents about oral hygiene affect the prevalence of oral and dental diseases as well as the development of oral hygiene habits of children.<sup>13,14</sup> The aim of this study is to investigate the level of knowledge about fluoride and fluoride applications among the professional dental practices as well as knowledge, attitudes, and behaviors about oral and dental health.

## Materials and Methods

This cross-sectional study was completed compatible with the Declaration of Helsinki presented in 1975 which is revised in 2000. Ethical approval of the study protocol was obtained from the Research Ethical Board of Faculty of Dentistry, Istanbul University, Istanbul, Turkey (No: 2016/63).

The study population comprised 2,744 randomly selected volunteered people ranging in age 18 to 51 years and older. The exclusion criteria were questionnaires that individuals had not completed, for whatever reason. All participants were asked to answer a total of 22 questions, including subgroups. A questionnaire was developed to assess participants' dental health knowledge, oral health experiences, and preferences and provided information on their demographic characteristics. Participants' knowledge levels of fluoride and their attitudes toward the most common fluoride applications among preventive treatments were also evaluated.

### Data Measurements

#### Participant Demographics

The distribution of basic demographic information including participants' age, gender, education level, working status, monthly income, and participants having children were evaluated.

#### Knowledge and Attitude of Oral Hygiene Habits for Participants and Their Children

The following five-item scale to assess participants' oral health knowledge and attitude was designed. These five questions were also evaluated for their children by the participants who have children. The items included: (1) How often do you brush your teeth? (2) Which features does toothpaste have, when you are choosing toothpaste? (3) What brand of toothpaste are

you using? (4) Do you know the contents of your toothpaste? (5) Why did you go to your dentist in the last year?

### Knowledge and Attitude of Fluoride Applications

Knowledge and attitude of fluoride applications consisted of eight items were evaluated: (1) Do you know what the fluoride is? (2) Does the fluoride help prevent tooth decay? (3) What is the amount of toothpaste for children younger than 3 years? (4) What is the amount of toothpaste for children aged 3 to 6 years? (5) What is the amount of toothpaste for children of 6 years and older? (6) Do you know professional fluoride applications? (7) Have you ever had topical fluoride application? (8) Do you know systemic fluoride applications?

### Statistical Analysis

Collected data were processed statistically using SPSS. Descriptive statistics (frequencies, standard deviations, means, ranges, and proportions) were used to summarize the data. Differences in knowledge and attitudes about oral health based on participants' demographic characteristics were analyzed with chi-square test. Results were reported as statistically significant at  $p < 0.005$ .

## Results

### Demographic Features of the Participants

► **Table 1** shows the demographic information of the 2,744 participants in the survey; 1,938 of participants were females (70.6%) and 806 were males (29.4%). The age prevalence ranged from 11.9% (329) at age 18 to 25 years, 32.6%

**Table 1** Demographic data of the participants

	N	%
<b>Gender</b>		
Female	1,938	70.6
Male	806	29.3
<b>Age</b>		
18–25	329	11.9
26–35	896	32.6
36–50	1,330	48.4
50+	189	6.8
<b>Education level</b>		
Primary	372	13.5
Middle	361	13.1
High	973	35.4
University	1,038	37.8
<b>Working situation</b>		
Yes	1,333	48.5
No	1,411	51.4
<b>Income level</b>		
Low	860	31.3
High	1,884	68.6
<b>Having children</b>		
Yes	2,157	78.6
No	587	21.3

(896) at age 26 to 35 years, 48.4% (1,330) at age 36 to 50 years to 6.8% (189) at 51 years and older. While the education levels of the participants were evaluating, the four education groups were used to determine participants' educational levels. According to these scales, 13.5% of them were graduated from primary school, 13.1% from middle school, 35.4% from high school, and 37.8% were university graduates. Total 48.5% (1,333) of the participants were working, while 51.4% (1411) were not. It was also found that 31.3% of the participants had a low income level. It was reported that 78.6 of the participants had children.

**Knowledge and Attitude of Oral Hygiene Behaviors**

Approximately 53% of the study population reported that they brushed their teeth twice a day. While 37% of the study population stated that they brushed their teeth once a day, 8% of the population gave the answer "a few times in a week," and 3% of them said that they brushed their teeth less frequently. Total 43% of the parents said that they brushed their teeth two or more times a day for their children. Similarly, 43% of the parents stated that their children brushed their teeth once a day; 12 and 2% of the parents gave the answers "a few times in a week" and "less frequently." According to the results of the study, the most important factor affecting the participants' toothpaste is the brand of toothpaste (35.3%). Another important factor is the dentist's recommendation (35.7%). The participants stated that dentist's recommendation was the most important factor in selecting children's toothpaste (41.7%).

Many subjects (44%) reported that they visited the dentist only when they felt pain or had a problem with the tooth during the last year. Only 24% of the study population reported that they visited the dentist only for examination and routine checkup. About 44% of the study population never visited a dentist in the last year.

Total 43% of the parents reported that they had taken their children to the dentist with dental problems, while 25% of them stated that they had taken for the routine checkup and 42% of them stated that they had not taken their children to the dentist in the last 1 year. The reason for going to the dentist and the level of income were also compared. Participants with a high level of income seem to have a statistically significant level of dental control over the past year according to the participants who have low income ( $p = 0.001$ ). The participants with lower income levels stated that they went to the dentist with more dental problems or they did not go at all in 1 year.

**Knowledge and Attitude of Oral Hygiene Habits and Fluoride Applications**

Participants' knowledge of oral and dental health and preventive dentistry applications are shown in ►Table 2. Approximately 52.1% of respondents realized the contents of their toothpastes and also 40% of the childbearing participants reported that they realized the contents of the child toothpastes. While more than half of the participants ( $n = 1,744$ ; 63.5%) had knowledge about the fluoride, very few of the participants knew the professional topical fluoride

**Table 2** Knowledge levels of the participants

	N	%
<b>Do you know the contents of your toothpaste?</b>		
Yes	1,430	52.1
No	1,314	47.8
<b>Do you know the contents of the toothpaste for your child?</b>		
Yes	1,191	43.4
No	885	32.3
<b>Do you know what the fluoride is?</b>		
Yes	1,744	63.5
No	1,000	36.4
<b>Does the fluoride help prevent the tooth decays?</b>		
Yes	1,795	65.4
No	821	29.9
I do not know	128	4.6
<b>Do you know the professional topical fluoride applications?</b>		
Yes	331	12.06
No	2,413	87.9
<b>Do you know the systemic fluoride applications?</b>		
Yes	514	18.7
No	2,230	81.2

application ( $n = 331$ ; 12.06%) and systemic fluoride applications ( $n = 514$ ; 18.7%). Total 65.4% of respondents answered "yes," 29.1% answered "no," and 4.6% answered "I do not know" to the question that "Does fluoride help prevent tooth decays?" A total of 66.5% of respondents answered correctly what amount of toothpaste should be for children younger than 3 years. The percentage of participants who know the amount of toothpaste correctly for children aged 3 to 6 years is 23.2%. The amount of toothpaste for children older than 6 years was correctly known by 61.5% of the participants.

The demographic data and oral hygiene habits are statistically compared in ►Table 3. Statistical analysis of the data obtained showed that the frequency of teeth brushing was significantly higher for women than for men ( $p = 0.001$ ). As age increases, there is a significant decrease in the frequency of tooth brushing ( $p = 0.001$ ). Participants with a high level of education have significantly more tooth brushing per day ( $p = 0.001$ ). A statistically significant difference was not found between working and nonworking participants, in terms of tooth brushing frequency ( $p = 0.077$ ). Compared with the income levels of the participants, the participants with high income levels had a significantly higher frequency of tooth brushing ( $p = 0.001$ ).

In comparison between genders, it was found that women had significantly more knowledge about fluoride ( $p = 0.0001$ ). The results are shown in ►Table 4. The question that "Do you know the professional topical fluoride treatments?" was answered "yes" by 25% of the females and 18.6% of the males, and it was found that women had more knowledge at a statistically significant rate than men ( $p = 0.0001$ ) (►Table 4).

**Table 3** Comparison of demographic data and tooth brushing frequency

	Twice or more a day	Once a day	Few in a week	Less frequently	p-Value
<b>Gender</b>					
Female	60.2%	34.2%	4.7%	0.8%	0.001
Male	36.4%	44.4%	14.1%	5.1%	
<b>Age</b>					
18–24	60.9%	32.1%	7.1%	0.0%	0.001
25–35	54.7%	35.2%	7.1%	3%	
36–50	52.6%	38.9%	6.9%	1.6%	
50+	38.5%	43.7%	13.2%	4.6%	
<b>Education level</b>					
Primary	41.4%	41.7%	12.1%	4.8%	0.001
Middle	35.8%	44.8%	15.7%	3.8%	
High	50%	42.2%	5.8%	2%	
University	66.6%	28.4%	0.4%	0.4%	
<b>Working situation</b>					
Yes	55.6%	34.6%	7.6%	2.2%	0.077
No	51.5%	39.4%	7.1%	1.9%	
<b>Income level</b>					
Low income	46.0%	37.7%	12.3%	4%	0.001
High income	56.4%	36.8%	5.5%	1.2%	

**Table 4** Comparison of the gender and knowledge of the fluoride

	Female (%)	Male (%)	p-Value
<b>Do you know the fluoride?</b>			
Yes	67.5	55.5	0.0001
No	32.5	44.5	
<b>Do you know the professional topical fluoride applications?</b>			
Yes	25	18.6	0.001
No	75	81.4	

As the age of participants increases, the knowledge level of fluoride is significantly increased ( $p = 0.0001$ ), but the knowledge level of fluoride in participants aged 51 years and older is the lowest.

► **Table 5** shows the relationship between educational level and fluoride knowledge. According to the comparison between the education levels, fluoride knowledge levels of the participants with higher education level were found to be significantly higher ( $p = 0.0001$ ) (► **Table 5**).

The fluoride knowledge levels of participants who had previously applied topical fluoride (fluoride varnish or gel) were found to be statistically significantly higher than those who did not have topical fluoride experience ( $p = 0.001$ ) (► **Table 6**).

The participants who were at work were found to have a statistically significant higher level of knowledge about “What is the fluoride?” and “professional fluoride applications” than the participants who did not work ( $p = 0.003$ ;  $p = 0.0001$ ).

Participants have found that those who use social media as a source of fluoride information have less knowledge of fluoride ( $p = 0.014$ ).

## Discussion

The importance of studies involving the knowledge and behavior of the population on oral and dental health is increasing. Poor oral hygiene is often described as the most important local etiologic factor of the dental diseases.<sup>15</sup>

The public oral health is related to their oral health information because the habits related to oral health are shaped by the individual's level of knowledge.<sup>16</sup>

In addition, parents' knowledge and habits of oral and dental health play an important role in the development of oral hygiene habits of children.<sup>17</sup> Therefore, the knowledge and awareness are very important prerequisites for changes in behaviors of the community related to health and disease prevention.<sup>18</sup>

**Table 5** Comparison of the educational levels and knowledge of the fluoride

	Primary	Middle	High	University	p-Value
<b>Do you know the fluoride?</b>					
Yes	35.5%	45%	64.2%	80.4%	0.0001
No	64.5%	55%	35.8%	19.6%	
<b>Does the fluoride help prevent the tooth decays?</b>					
Yes	62%	62.5%	70.8%	74.1%	0.0001
No	37.7%	37.5%	28.8%	25.1%	
<b>Do you know the topical fluoride applications?</b>					
Yes	11%	10.7%	21.6%	32.6%	0.0001
No	89%	89.3%	78.4%	67.4%	

**Table 6** Comparison of the fluoride knowledge level with experience about topical fluoride applications

	Experience (+)	Experience (-)	p-Value
<b>Do you know the fluoride?</b>			
Yes	13.1%	4.7%	0.001
No	86.9%	95.3%	
<b>Does the fluoride help prevent the tooth decays?</b>			
Yes	12.6%	5.5%	0.001
No	87.4%	94.5%	
<b>Do you know the topical fluoride applications?</b>			
Yes	27.7%	4.7%	0.001
No	72.3%	95.3%	

The knowledge and attitudes of the population on oral and dental health were determined and the awareness of the community was important in line with the identified deficiencies. Many previous studies show that oral hygiene habits and oral health information are related to demographic characteristics.<sup>19,20</sup>

Rajab et al reported that the parents who have high level of education cared more about their children's and their oral health.<sup>20</sup> In our study, there was also a significant relationship between oral and dental health habits and education levels ( $p = 0.000$ ). Some studies have emphasized that low-socioeconomic status people visit a dentist more frequently due to pain or discomfort.<sup>17,21,22</sup> This is confirmed by the finding of our study as well. In this study, a direct relationship was found between socioeconomic level and tooth brushing frequency ( $p = 0.001$ ). Similar to the findings in other surveys, study subjects with a higher socioeconomic status practiced better oral hygiene.<sup>23,24</sup>

Ota et al have investigated the relationship between fluoride toothpaste and toothpaste selection in their work of ~6,000 people. They have found that the most important factor in the selection of toothpaste is taste. In addition, the community has reached the conclusion that fluoride-free toothpastes are preferred because of the lack of information on fluoride.<sup>25</sup> In our study, it was reported that, unlike the results of this study, the most important factor affecting

toothpaste choice for adults was the brand of the toothpaste and for the children, it was the dentist's recommendation. The taste factor affects ~4 to 5% of participants. The presence of fluoride in toothpastes also affects ~14 to 12% of toothpaste choice for adults and their children, respectively.

The level of information about the oral health of the community and in this survey, the identification of oral hygiene habits, as opposed to further level of information about the community's preventive dental care from this type of work done in Turkey was also investigated. The results showed that most of the participants had a low level of knowledge about professional topical fluoride applications (12.06%) and systemic fluoride applications (18.7%). This level of knowledge in similar studies has been reported as more than 50% of relevant results.<sup>26,27</sup>

Tahani et al assessed the knowledge level of the community on professional fluoride applications. The results obtained did not reveal any significant difference between age, gender, and level of knowledge. However, they found a statistically significant difference between the education levels and the treatment experiences and the knowledge level.<sup>28</sup>

Blumer et al reported that there was no significant difference in age, dental experience, and level of education between having information about preventive dental treatments in their survey study.<sup>29</sup>



In our study, the knowledge of topical fluoride applications was found more in women than in men; a similar trend has been reported in the findings of study conducted by Jagan et al.<sup>30</sup> Also, statistically significant difference was found between the education levels, the treatment experiences, and the knowledge levels of the participants. There was no statistically significant difference between the age level and the level of knowledge as in other studies<sup>31,32</sup> but in contrast with the findings of the study conducted by Jagan et al.<sup>30</sup>

Those who use social media as a source of information, from participants, have found that the level of knowledge about what fluoride is less than participants who do not use social media as a source of information. In other studies, the majority of parents have learned about preventive dental treatment with mass media, but it is reported that dental surgeons have better knowledge. This result has been associated with face-to-face training with dentists.<sup>27,32,33</sup>

## Conclusions

Due to the low knowledge of participants about professional preventive dental care, it is necessary to improve the collective consciousness to improve the oral health of children and community. On the contrary, owing to the positive impact of the trainings provided by the dentists and mass media, it appears that increasing the knowledge of dentists in this area and asking them to offer prevention education to their patients while providing services as well as involving the mass media in providing public education can be effective strategies to raise the knowledge of society in making use of oral health preventive measures.

## Limitations

The present study had some limitations. The results may not reflect the knowledge and attitudes of the participants. Data reported in this study is based on self-reported information of participants in different region, so this limits the ability to determine the actual prevalence of oral health knowledge. Socially desirable answers to the questions regarding the participants' own oral health knowledge and their children's dental care may have biased the study results.

### Note

This research was presented at the 1st International Congress of Preventive Dentistry March 5–8, 2018, Erzurum, Turkey as an oral presentation.

### Conflict of Interest

None declared.

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