

The Role of Parental Education in the Dental Health Behavior of Turkish Secondary School Children

SUMMARY

Background/Aim: Parents are usually the major factor influencing children's development of routine oral health behavior. A higher education level of the parents is generally associated with having a more positive influence on their children's health habits and motivation to maintain healthy dentition. From this perspective, the aim of the present study was to investigate the frequency of certain habits influencing dental health, such as toothbrushing, regular visits to the dentist, and changing toothbrushes, in a group of Turkish secondary school children, and to explore its relation to the education level of their mothers and fathers. **Material and Methods:** The study consisted of the use of a questionnaire designed to collect demographic information, oral health behavior of the children, and the parents' education level. Demographic characteristics and oral health behavior of the children were asked of the children in a face-to-face interview by one investigator. Only the parents' education level was asked of the children's parents. **Results:** The mean age of the 444 children was 11.66 ± 0.98 . According to chi-square testing applied, there was a statistically significant correlation between the parents' education level and their children's dental visit frequency ($p < 0.05$), whereas there was no statistically significant link between the parents' education level and the frequency of the children's toothbrushing and replacing their toothbrushes ($p > 0.05$). **Conclusions:** Irrespective of the education level of their parents, positive oral health attitudes and behavior were not observed in Turkish secondary school children.

Key words: Child, Education, Parents, Oral Health

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ORIGINAL PAPER (OP)

Balk J Dent Med, 2020;178-185

Introduction

Oral diseases are among the most common health problems in children, and the preservation of healthy teeth is a key factor in childhood¹. Lack of oral hygiene is the most significant etiological risk factor in the pathogenesis of oral diseases; knowledge concerning the management of oral diseases focuses on the role of oral health behavior². Regular visits to the dentist for checkups, brushing teeth twice a day, and changing the toothbrush every three months are required to preserve and manage oral health in children³.

The family is the aspect of children's environment that most influences the development and establishment of oral health behaviors⁴. Parents, the children's first

teachers, play an important role in adopting a routine of oral hygiene practices by transferring health-related habits to their children⁵. Improvement in children's oral health depends on their parents' knowledge, attitude and education level^{2,6}. Parental education is among the most commonly-used measures of socioeconomic condition in epidemiological studies on children's oral health outcomes^{7,8}. Parents with more education have a more positive attitude regarding their children's oral health and pay more attention to maintaining their children's healthy dentition. Lower-educated parents have been shown to pay less attention to their children's oral care habits and regular dentist visits^{9,10}. Studies in developed countries have demonstrated the relationship between parents' education level and their children's oral health

behaviour¹⁰⁻¹², but there is insufficient literature on the oral health influence of parents in developing countries. In Turkey, oral epidemiological data on schoolchildren are scarce; we lack evidence for assessing the association between parental education and the development of good oral hygiene skills in children.

From this standpoint, the aim of the present study was to investigate the frequency of certain behavior influencing dental health, such as toothbrushing, regular dental visits, and toothbrush changing, in a group of Turkish secondary school children and to evaluate its association with the education level of their mothers and fathers.

Material and Methods

A total of 444 children (270 girls and 174 boys) between 10 and 14 years of age were included. The study was conducted in the Usak University Faculty of Dentistry, the only public dental school in Usak, serving a population estimated at about half a million, in accordance with the ethical standards established by the Declaration of Helsinki. Written informed consent was reviewed and approved by the University's Ethics Committee and signed by all children and their parents.

The study consisted of a questionnaire designed to gather the demographic information, oral health behavior of the children, and the parents' education levels. Demographic characteristics and oral health behavior of the children and related questions were asked of the children in a face-to-face interview by one investigator. Only the parents' education level was asked of the children's parents in a face-to-face interview by another investigator who was blind to the children's oral health behaviors.

The questions concerning oral health behaviors were chosen from questionnaires used in previous studies^{5,7,10,13}. Possible options for reporting toothbrushing frequency were twice or more daily, once daily, once every three or four days, once a week, or no brushing. The possible options for dental visit frequency were every six months, every year, only for an emergency or pain, or had never visited a dentist previously. Options for the frequency of changing the toothbrush were every three months, every six months, every year, or had been using the same brush for years. From whom the children had learned to brush included parents, teachers, dentists, or others.

Parents' education level was differentiated as primary school, secondary school, high school, or university.

Version 17.0 of the Statistical Package for the Social Sciences (SPSS) was used for data analysis. Kolmogorov-Smirnov and Shapiro-Wilks tests were used to confirm the normality of the data. The relationship between parents' education level and the frequency of toothbrushing, toothbrush replacement, and dental visits was examined using the chi-square test, which was also used to compare the oral health behaviors of girl versus boy students. Data

were presented as mean and standard deviation, and the level of statistical significance was set at 0,05.

Results

A total of 444 children, 174 (39.2%) boys and 270 (60.8%) girls, were included in the study. The age of the participants ranged from 10 to 14, with a mean age of 11.66 ± 0.98 . The age and gender distributions of participants are shown in Table 1.

Table 1. The age and gender distribution of children

	Gender	n (%)	mean±sd.
Age	Male	174 (39.2)	11.59±1.08
	Female	270 (60.8)	11.700.92
	Total	444	11.66±0.98

Children who brush their teeth twice or more daily accounted for 40.5%, while 3.4% reported having no brushing habit; 6.1% of the children had used the same toothbrush for years, and 62.8% reported going to the dentist only for pain or an emergency. Parents had taught 81.75% of the children their toothbrushing skills, while 8.78% of children learned toothbrushing from their teachers. Data on the children's oral health behavior are listed in Table 2.

Table 2. The oral health behaviour of children

		n	%
Tooth brushing frequency	no brushing	15	3.4
	once a week	48	10.8
	once every three or four days	63	14.2
	once daily	138	31.1
	twice or more daily	180	40.5
Tooth brush changing frequency	using the same brush for years	27	6.1
	every year	84	18.9
	every six months	123	27.7
	every three months	210	47.3
Dental visit frequency	never visit before	66	14.9
	only emergency and pain	279	62.8
	every year	27	6.1
From whom children had learned to brush	every six months	72	16.2
	parents	363	81.75
	teachers	39	8.78
	dentists	18	4.05
	others	24	5.42

The mothers' education level was primary school for 37.8% of the children, while only 8.8% of the mothers' education level was university. The fathers' education level was secondary school for 33.8% and 20.3% of the fathers' education level was university. Education level distributions of mothers and fathers are given in Table 3.

Table 3. Education level of mothers and fathers

	Education level	n	%
Education level of mothers	Primary school	168	37.8
	Secondary school	138	31.1
	High school	99	22.3
	University	39	8.8
Education level of fathers	Primary school	72	16.2
	Secondary school	150	33.8
	High school	132	29.7
	University	90	20.3

There was no statistically significant correlation between the mothers' and fathers' education level and the children's toothbrushing or toothbrush changing frequencies ($p > 0.05$) (Tables 4 and 5).

There was a statistically significant correlation between the mothers' and fathers' education levels and the frequency of the children's dental visits ($p < 0.05$) (Table 6). As the education level of the mother and father increased, the frequency of going to the dentist increased.

Table 4. The education level of parents and children's tooth brushing frequency

		Mother education level				Chi-square	P	Father education level				Chi-square	P
		primary school	secondary school	high school	university			primary school	secondary school	high school	university		
Tooth brushing frequency	no brushing	n	9	3	0	3	Monte Carlo 0.888	6	3	6	0	Monte Carlo 0.485	
		% R	60.0%	20.0%	0.0%	20.0%		40.0%	20.0%	40.0%	0.0%		
		% C	5.4%	2.2%	0.0%	7.7%		8.3%	2.0%	4.5%	0.0%		
	once a week	n	18	21	6	3		9	18	9	12		
		% R	37.5%	43.8%	12.5%	6.3%		18.8%	37.5%	18.8%	25.0%		
		% C	10.7%	15.2%	6.1%	7.7%		12.5%	12.0%	6.8%	13.3%		
	once every three or four days	n	24	15	21	3		12	24	15	12		
		% R	38.1%	23.8%	33.3%	4.8%		19.0%	38.1%	23.8%	19.0%		
		% C	14.3%	10.9%	21.2%	7.7%		16.7%	16.0%	11.4%	13.3%		
	once daily	n	51	39	33	15		12	54	33	39		
		% R	37.0%	28.3%	23.9%	10.9%		8.7%	39.1%	23.9%	28.3%		
		% C	30.4%	28.3%	33.3%	38.5%		16.7%	36.0%	25.0%	43.3%		
twice or more daily	n	66	60	39	15	33	51	69	27				
	% R	36.7%	33.3%	21.7%	8.3%	18.3%	28.3%	38.3%	15.0%				
	% C	39.3%	43.5%	39.4%	38.5%	45.8%	34.0%	52.3%	30.0%				

%R: percentage of frequencies in the row; %C: percentage of frequencies in the column; n: sample size

Table 5. The education level of parents and children's tooth brush changing frequency

		Mother education level				Chi-square	P	Father education level				Chi-square	P
		primary school	secondary school	high school	university			primary school	secondary school	high school	university		
Tooth brush changing frequency	using the same brush for years	n	15	9	3	0	Monte Carlo 0.842	9	12	3	3	Monte Carlo 0.667	
		% R	55.6%	33.3%	11.1%	.0%		33.3%	44.4%	11.1%	11.1%		
		% C	8.9%	6.5%	3.0%	.0%		12.5%	8.0%	2.3%	3.3%		
	every year	n	33	24	21	6		6	27	27	24		
		% R	39.3%	28.6%	25.0%	7.1%		7.1%	32.1%	32.1%	28.6%		
		% C	19.6%	17.4%	21.2%	15.4%		8.3%	18.0%	20.5%	26.7%		
	every six months	n	45	48	21	9		21	45	39	18		
		% R	36.6%	39.0%	17.1%	7.3%		17.1%	36.6%	31.7%	14.6%		
		% C	26.8%	34.8%	21.2%	23.1%		29.2%	30.0%	29.5%	20.0%		
	every three months	n	75	57	54	24		36	66	63	45		
		% R	35.7%	27.1%	25.7%	11.4%		17.1%	31.4%	30.0%	21.4%		
		% C	44.6%	41.3%	54.5%	61.5%		50.0%	44.0%	47.7%	50.0%		

%R: percentage of frequencies in the row; %C: percentage of frequencies in the column; n: sample size

Table 6. The education level of parents and children's dental visit frequency

	Mother education level					Chi-square	p	Father education level				Chi-square	p	
		primary school	secondary school	high school	university			primary school	secondary school	high school	university			
Dental visit frequency	never visit before	n	27	13	0	Monte Carlo	0.011*	12	30	9	15	Monte Carlo	0.049*	
		% R	40.9%	18.2%	45.5%			13.6%	22.7%					
		% C	16.1%	19.6%	12.1%			0.0%	16.7%	20.0%	6.8%			16.7%
	only emergency and pain	n	111	90	60			18	51	87	93			48
		% R	39.8%	32.3%	21.5%			6.5%	18.3%	31.2%	33.3%			17.2%
		% C	66.1%	65.2%	60.6%			46.2%	70.8%	58.0%	70.5%			53.3%
	every year	n	9	6	6			6	3	15	3			6
		% R	33.3%	22.2%	22.2%			22.2%	11.1%	55.6%	11.1%			22.2%
		% C	5.4%	4.3%	6.1%			15.4%	4.2%	10.0%	2.3%			6.7%
	every six months	n	21	15	21			15	6	18	27			21
		% R	29.2%	20.8%	29.2%			20.8%	8.3%	25.0%	37.5%			29.2%
		% C	12.5%	10.9%	21.2%			38.5%	8.3%	12.0%	20.5%			23.3%

*p<0.05; %R: percentage of frequencies in the row; %C: percentage of frequencies in the column; n: sample size

Table 7. gender difference of oral health behaviour

		n	Gender		Chi-square	p
			Boy	Girl		
Tooth brushing frequency	no brushing	n	9	6	14.443	0.006*
		% R	60.0%	40.0%		
		%C	5.2%	2.2%		
	once a week	n	30	18		
		% R	62.5%	37.5%		
		%C	17.2%	6.7%		
	once every three or four days	n	21	42		
		% R	33.3%	66.7%		
		%C	12.1%	15.6%		
	once daily	n	72	66		
		% R	52.2%	47.8%		
		%C	41.4%	24.4%		
twice or more daily	n	42	138			
	% R	23.3%	76.7%			
	%C	24.1%	51.1%			
Tooth brush changing frequency	using the same brush for years	n	12	15	7.596	0.055
		% R	44.4%	55.6%		
		%C	6.9%	5.6%		
	every year	n	21	63		
		% R	25.0%	75.0%		
		%C	12.1%	23.3%		
	every six months	n	36	87		
		% R	29.3%	70.7%		
		%C	20.7%	32.2%		
	every three months	n	105	105		
		% R	50.0%	50.0%		
		%C	60.3%	38.9%		
Dental visit frequency	never visit before	n	33	33	2.706	0.439
		%R	50.0%	50.0%		
		%C	19.0%	12.2%		
	only emergency and pain	n	102	177		
		% R	36.6%	63.4%		
		%C	58.6%	65.6%		
	every year	n	15	12		
		% R	55.6%	44.4%		
		%C	8.6%	4.4%		
	every six months	n	24	48		
		% R	33.3%	66.7%		
		%C	13.8%	17.8%		

*p<0.05; %R: percentage of frequencies in the row; %C: percentage of frequencies in the column; n: sample size

There were no statistically significant correlations between the gender of the children and the frequencies of dental visits and toothbrush changing ($p > 0.05$) (Table 7), but there was a significant association between gender and toothbrushing frequency ($p < 0.05$) (Table 7). The girls' toothbrushing frequency was significantly higher than the boys'.

Discussion

Oral health is clearly related to behavior; the prevalence of oral diseases can be diminished considerably with improvements in attitude and the oral hygiene habits of children, which depend on the awareness and knowledge of their parents¹⁴. The attitudes toward oral health of parents, the primary role models for developing children's oral health behavior, depend on their education^{2,15}. Therefore, parents' education level should be considered a powerful social force to ensure the oral well-being of children. For this reason, our objective was to examine the effects of fathers' and mothers' education level on the oral health behavior of secondary school children.

Generally, children need help and encouragement brushing their teeth until the age of 10, as supported by a study by Sandström *et al.*¹⁶. Eleven-year-old children were found by Pujar *et al.*¹⁷ to have the ability to effectively brush their teeth. Considering these parameters, secondary school students (ages 10–14) are of an age at which they can brush their teeth on their own without help from their parents, and were thus included in our study. In addition, most previous studies have examined the relationship between the mothers' education level and the oral health behavior of children¹⁸⁻²¹, but the fathers' education level has rarely been examined¹⁰. In this study, the education levels of both mothers and fathers were examined.

Toothbrushing is considered a fundamental self-care behavior for the maintenance of oral health, and brushing twice a day is widely recommended to preserve good oral health²². In the present study, the frequency of brushing twice daily was reported by 40.5% of the children. This percentage is markedly lower than in Sweden (79%), Denmark (78%) and Switzerland (85%), but is similar to percentages in Lithuania (39%) and Finland (40%)²³. No statistically significant correlation between the mothers' and fathers' education level and the children's toothbrushing frequency was found. This did not agree with previous findings reporting that children's toothbrushing frequency was directly linked to the educational level of their parents²⁴. Although higher educational levels may make people more receptive to health education programs²⁵, the results indicated that children in Turkey need more support for achieving

efficient oral health behavior, regardless of their parents' education level. In particular, we highlight these possible explanations. First, the knowledge of parents in Turkey did not translate into behavior. This disparity between improved knowledge and changing behavior has also been reported by other authors²⁶. Second, many parents today experience a stressful daily life, and this may lead to a more lenient attitude towards children skipping toothbrushing. This is consistent with a Norwegian study by Skeie *et al.*²⁷.

It is generally recommended that toothbrushes should be changed after three months of use in order to maintain their efficacy²⁸. In this survey, 47.3% of the children changed their toothbrushes every three months, whereas 6.1% of them had used the same toothbrush for years. The average annual usage of brushes per capita in Turkey is 0.3, while the average annual usage rate in the UK is 2.4 and 2.5 in Sweden²⁹. The frequency of changing toothbrushes in Turkey is lower than in developed countries. No statistically significant link was found in this study between the mothers' and fathers' education level and children's toothbrush changing frequency. These results are not in line with previous studies that reported that people with a higher level of education tend to change their toothbrushes more often^{24,30}. This may suggest that an oral health culture has not been developed in Turkey due to lower levels of parental oral health literacy and culture. Previous studies have revealed that dental attitudes and behaviors depend on cultural factors^{9,11}. It is essential to understand the oral health beliefs of parents and strive to change the customs that are inconsistent with scientific knowledge, in order to overcome socio-cultural barriers in promoting good oral health in children³¹.

Regular dentist visits at least every six months are important for preserving good oral health³². Most children use dental services only in case of pain or an emergency, which is in line with other studies³³. Only 16.2% of the children attended regular checkups every six months. This rate is lower than many developed countries, such as Denmark, Norway, and Sweden³⁴. This study indicated that Turkish children use dental services only in cases of serious disorders causing physical discomfort. The reasons for avoiding regular visits may include apprehension, lack of knowledge about the importance of visiting the dentist regularly, difficulty of accessibility to dental clinics, time shortage, and cultural beliefs associated with dental treatment. Statistically significant correlations between the parents' education level and the children's dental visit frequency were found in this study. As the education level of parents increased, the frequency of children going to the dentist rose. This is in agreement with previous studies that reported the frequency of utilization of dental services being higher in the children of parents with high educational status³⁵.

In the current research, it was observed that as the education level of the mother and father increased, the

frequency of toothbrushing and changing toothbrushes was not affected, although the frequency of going to the dentist rose. This may be related to “knowledgeable but defensive” oral health attitudes of Turkish mothers and fathers, even if their education levels are high⁸. The knowledgeable but defensive attitude is one of five prevailing attitudes identified, that is, parents who are aware of why and how to apply healthy dental behavior but report being too busy to put it into practice. Although these parents consider having healthy teeth important, they prefer not to argue with their children over toothbrushing due to a busy life and other things having higher priority. Therefore, it is very important for their children to see a dentist regularly for checkups and treatment. This attitude stems from an avoidance of arguing about toothbrushing with their child. It may be related to the cultural beliefs of Turkish parents, and motivating these parents may be necessary to prevent oral disease in their children^{8,36}.

The triangle of parents, schoolteachers, and the dentist plays an important role in the preservation and improvement of children’s oral health behavior. Schoolteachers are an important key for influencing children’s oral health behaviour³⁷. Children can be educated by schoolteachers while their oral health habits are developing because they spend considerable time in school³⁷. Only 8.78% of children reported that they learned toothbrushing from their schoolteachers. This may indicate that teachers have poor oral health knowledge, skills, and motivation, in accordance with other studies finding that some teachers had poor levels of motivation and behavior related to oral health³⁸. The dentist can have significant influence in the process of oral health education. The role of the dentist is essential in educating parents and children about the importance of oral health and adequate preventive measures to preserve good oral health³⁹. Only 4.05% of the children stated that they learned toothbrushing from dentists. This may be the result of children not having regular dental visits, as well as the fact that dentists give priority to treatment practices rather than focusing on preventive dentistry.

When the oral health behaviors of girls and boys were compared, regardless of the education level of the parents, the frequency of toothbrushing was higher in girls, but there was no significant difference in the frequency of toothbrush changing and visiting the dentist. This is in line with results from other countries that confirm that toothbrushing is less frequent among boys than girls in most European countries, except France^{12,23}. This suggests that girls are more concerned about their oral health than boys and practice more health-directed behaviors than boys¹².

This study has certain limitations. First, the research relied on self-reported data that may change depending on cultural differences and environmental factors. On the

other hand, dental self-reports have high clinical validity and a high level of concordance between children and parents⁴⁰. Second, the sample size was small and may not have been representative of all secondary school children in Turkey. Third, the questionnaire was chosen from questionnaires used in previous studies and not previously pilot-tested, because it was considered that the questions were simple and would be readily understood.

Conclusions

This study provides evidence that a high level of education of the parents does not directly contribute to positive oral health attitudes and behavior of their children. Adequate support cannot be provided from only teachers and dentists in developing children’s oral health behaviors. Family and school-based education programs are needed to develop positive behaviors in children. Further research with a larger sample and over a longer period is essential for a better understanding of the influence of parents’ education on secondary students’ oral health behavior and associated factors.

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Conflict of Interests: Nothing to declare.

Financial Disclosure Statement: Nothing to declare.

Human Rights Statement: All the procedures on humans were conducted in accordance with the Helsinki Declaration of 1975, as revised 2000. Consent was obtained from the patient/s and approved for the current study by national ethical committee.

Animal Rights Statement: None required.

Received on March 23, 2020.

Revised on Jun 1, 2020.

Accepted on Jun 20, 2020.

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