

## Evaluation of Parents' Selection Criteria and Related Factors of Oral and Dental Health Care Products Used by Their Children

### Ebeveynlerin Çocuklarının Kullandıkları Ağız ve Diş Sağlığı Bakım Ürünlerini Seçme Kriterleri ve İlişkili Faktörlerin Değerlendirilmesi

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#### ABSTRACT

In the study, the factors that can be effective in choosing oral and dental health care products for their children were evaluated. A descriptive survey was applied to the parents (n=270) of children aged 0-14. Descriptive statistics and chi-square tests were used in the analysis. A  $p<0.05$  level was considered significant. Although the dentist's recommendation is the most effective in the process, the characteristics of the product such as taste, smell, brand, natural and herbal content, past experience, and pharmacist recommendation were found to be effective as well. It was determined that parent education status and monthly income had a significant effect on the products provided for children and on the preference for herbal products ( $p<0.05$ ). It was observed that the frequency of visits to the dentist and parent education status had a significant effect on the person consulted in product selection ( $p<0.05$ ). A significant relationship was found between monthly income and trust in the brand ( $p<0.05$ ). The primary factor that is compelling in decision-making is dentist recommendations. Parent education status, monthly income, frequency of dental visits, herbal and natural content, past experiences, pharmacist recommendations, easy accessibility, as well as taste and smell of the product are other effective factors. Planning should be made for producing high-quality oral care products that are focused on consumer trends and requirements in order to maintain the oral health of the community.

**Keywords:** Oral and dental care products, Oral and dental health, Parent, Selection criteria

#### ÖZET

Çalışmada ebeveynlerin çocukları için ağız ve diş sağlığı bakım ürünleri seçerken seçimlerinde etkili olabilecek unsurlar değerlendirilmiştir. Tanımlayıcı tipte anket, 0-14 yaş arası çocukların ebeveynlerine (n=270) uygulandı. Yapılan analizlerde tanımlayıcı istatistikler ve ki-kare testi kullanıldı.  $P<0.05$  düzeyi anlamlı olarak belirlendi. Ebeveyn ürün seçiminde daha çok diş hekimi tavsiyesi etkili olmakla birlikte, ürünün tadı, kokusu, markası, doğal ve bitkisel içeriğe sahip olması gibi özellikleri, kullanıcının geçmiş deneyimi ve eczacı tarafından önerilmiş olması gibi faktörlerin de etkili olduğu tespit edildi. Ebeveyn eğitim düzeyi ile aylık gelirin çocuklar için temin edilen ürünlere ve bitkisel içerikli ürün tercih etme durumuna anlamlı etkisinin olduğu saptandı ( $p<0.05$ ). Diş hekimi ziyaret sıklığının ve ebeveyn eğitim düzeyinin, ürün seçiminde danışmayı tercih ettikleri kişiye anlamlı bir etkisinin olduğu görüldü ( $p<0.05$ ). Aylık gelir ile markaya güvenme durumu arasında anlamlı bir ilişki bulundu ( $p<0.05$ ). Ebeveynlerin ürün seçimlerinde etkili olan birincil etmenin diş hekimi tavsiyesi olduğu tespit edilmiştir. Ebeveyn eğitim durumu, gelir düzeyi, ebeveyn ve çocuk diş hekimi ziyareti sıklığı, bitkisel ve doğal içerikli ürün, geçmiş deneyim, eczacı önerisi, ürünün kolay ulaşılabilirliği, tadı ve kokusu da etkili olan diğer unsurlardır. Tüm bu faktörler dikkate alınarak sürdürülebilir bir toplum ağız sağlığı için tüketici eğilim ve gereksinimlerine yönelik, kaliteli ağız bakım ajanlarının üretilmesi için planlama yapılmalıdır.

**Anahtar Kelimeler:** Ağız bakım ürünleri, Ağız sağlığı, Ebeveyn, Seçim kriteri

## INTRODUCTION

The World Health Organization states that oral health is an integral part of general health and has a very important effect on quality of life.<sup>1</sup> Dental caries is a very common disease in children.<sup>2</sup> Regular removal of plaque<sup>3</sup>, which is the most important factor leading to dental and gingival diseases, is ensured by oral hygiene practices.<sup>4</sup> 'Priority to prevention' is one of the important issues emphasized in the Declaration of Alma Ata, primary health care published by the World Health Organization in 1978.<sup>5</sup>

The correct selection of oral hygiene care products has an important effect on achieving adequate oral health.<sup>6</sup> Oral and dental care products available in the market with a wide range of products are classified in various ways. This classification is based on the method of use, purpose, and product content.<sup>6,7</sup> Products are classified as mechanical and chemotherapeutic according to the method of use, plaque preventive and caries preventive according to the purpose of use, and natural and synthetic according to the product content. The most commonly used products are toothbrushes and toothpaste. However, the diversity in oral and dental care products and the presence of many attractive advertisements for these products make it difficult for people to make a choice.<sup>6</sup>

Many cultural, social, personal and psychological factors influence the choice of oral and dental care products.<sup>8</sup> Socioeconomic status, social environment or dentist recommendation, advertisements, product taste, odor, packaging and content are among these factors.<sup>9</sup> In addition, education, age, gender, income, past experiences, brand influence and easy accessibility of the product are also effective in consumers' purchasing decisions.<sup>6</sup>

The aim of this study was to determine the preference habits of parents for oral and dental care products used by their children and to examine the effective factors that may be related to their usage preferences.

## METHODS

Ethics committee approval was obtained from Karadeniz Technical University Faculty of Dentistry, Scientific Research Ethics Committee (No. 2022/1; 25/04/2022), and the study was conducted in accordance with the ethical rules of the Declaration of Helsinki. In determining the sample size, alpha error=0.05, beta error=0.20, and effect size=0.34 based on the study

conducted by Eğıl *et al.*,<sup>10</sup> and it was concluded that 226 parents were sufficient to be included in the study. Considering possible data losses, it was decided to include 270 parents in the study. The data in the study were obtained by applying a survey to the parents of 270 patients aged 0-14 years who applied to the clinic of the Department of Pedodontics, Faculty of Dentistry, Karadeniz Technical University, between June 2022 and September 2022. The informed consent form was obtained from the parents before the survey was conducted. Among the patients who made an appointment at Karadeniz Technical University Faculty of Dentistry Department of Pedodontics between June 2022 and September 2022, parents who had children between the ages of 0-14, did not have learning or comprehension disabilities, had the ability to read Turkish and were native speakers of Turkish were included in the study. The questionnaire form of the participants who did not have the ability to read Turkish, whose native language is not Turkish, who have learning and comprehension disabilities, or who gave incomplete, contradictory, or inappropriate answers in the data collection form were excluded from the analysis. In accordance with these limitations, 270 patients were selected with a computer-assisted randomization program using the stratified randomization method according to child gender.

A 24-question descriptive survey was created by the researchers following a literature review. The survey consisted of 3 sections including open-ended and multiple-choice questions evaluating the sociodemographic data of parents and children, oral hygiene habits, and factors affecting the choice of oral and dental care products used by parents. At the beginning of the study, 20 parents who were not included in the study group conducted the survey at one-week intervals, and a reliability analysis was performed. SPSS (Statistical Package for the Social Sciences, SPSS Inc. Chicago, IL, USA) 17.0 statistical package program was used to analyze the data obtained in the study. The results of descriptive statistics were given as number and frequency values (%). Chi-square tests were used for comparisons between variables. A  $p < 0.05$  level was considered significant in all analyses.

## RESULTS

The reliability coefficient of the survey conducted in the study was calculated as 0.705. It was found that most of the parents who participated in the survey were between

30-39 years of age (55.2%), female (78.9%), had high school or equivalent education level (36.3%) and a monthly income between 4,501-15,000 TL (57.4%). It was found that the children who came to treatment were mostly between the ages of 6-14 years (84.4%) and attended primary school (43.7%). When the number of children was questioned, it was seen that the participants mostly had children between the ages of 6-14. It was found that 92.2% answered no to the question of whether at least one of the parents was a healthcare professional (Table 1). It was found that 53.3% of the

children of the parents who participated in the study consumed sweets, floury foods, and sugary drinks between main meals once a day or less, 40.7% brushed their teeth twice a day, 84.4% did not use any auxiliary cleaning products other than toothbrush and toothpaste, and 78.1% were taken to the dentist when there was any problem. It was found that 52.6% of the parents brushed their teeth 2 times a day, 58.9% did not use any products other than a toothbrush and toothpaste, and 81.5% visited the dentist in case of any problem (Table 2).

**Table 1.** Sociodemographic characteristics of participants

	N	%
<b>Parent age</b>		
18-29	7	2.6
30-39	149	55.2
40-49	102	37.8
50-59	11	4.1
60-69	1	0.4
<b>Parent gender</b>		
Female	213	78.9
Male	57	21.1
<b>Parent education level</b>		
Literate	1	0.4
Primary school	55	20.4
Middle school	39	14.4
High school or equivalent	98	36.3
College degree or university	73	27
Doktorate/ PhD	4	1.5
<b>Age of child attending treatment</b>		
0-3	6	2.2
3-6	36	13.3
6-14	228	84.4
<b>Child education status</b>		
Not receiving training	9	3.3
Pre-school	28	10.4
Primary school	118	43.7
Middle school	87	32.2
High school	28	10.4
<b>Approximate monthly family income</b>		
0-4,500 TL	92	34.1
4,501-15,000 TL	155	57.4
15,001 TL and above	23	8.5
<b>Number of children in the family</b>		
<b>Age 0-3</b>		
0	217	80.4
1	49	18.1
2	4	1.5
<b>Age 3-6</b>		
0	173	64.1
1	94	34.8
2	3	1.1
<b>Age 6-14</b>		
0	24	8.9
1	117	43.3
2	105	38.9
3	22	8.1
4	2	0.7
<b>Is at least one parent a healthcare professional?</b>		
Yes	21	7.8
No	249	92.2

**Table 2.** Distribution of oral and dental health care habits of parents and children

	N	%
<b>Frequency of children's consumption of sweets, bakery foods and sugary drinks between main meals</b>		
Never consumes	4	1.5
1 or less per day	144	53.3
2 or more per day	122	45.2
<b>Parents' teeth brushing frequency</b>		
1	82	30.4
2	142	52.6
More than 2	20	7.4
Sometimes	23	8.5
None	3	1.1
<b>Children's teeth brushing frequency</b>		
1	96	35.6
2	110	40.7
More than 2	17	6.3
Sometimes	44	16.3
None	3	1.1
<b>Products used by parents other than toothbrush and toothpaste</b>		
Mouthwash	26	9.6
Dental floss	42	15.6
Interdental brush	7	2.6
Miswak	10	3.7
Other	5	1.9
None	159	58.9
Combined (mouthwash, dental floss)	10	3.7
Combined (mouthwash, interdental brush)	4	1.5
Combined (mouthwash, miswak)	3	1.1
Combined (dental floss, miswak)	1	0.4
Combined (mouthwash, dental floss, interdental brush)	1	0.4
Combined (mouthwash, dental floss, miswak)	1	0.4
Combined (Dental floss, interdental brush, miswak)	1	0.4
None	228	84.4
Combined (mouthwash, dental floss)	3	1.1
Combined (mouthwash, interdental brush)	1	0.4
Combined (mouthwash, miswak)	4	1.5
Combined (mouthwash, dental floss, interdental brush)	1	0.4
<b>Frequency of dental visits by parents</b>		
When there is any problem	220	81.5
1 time per year	35	13
2 times a year	15	5.6
<b>Frequency of dental visits by children</b>		
When there is any problem	211	78.1
1 time per year	38	14.1
2 times a year	21	7.8

**Table 3.** Distribution of factors affecting parents' choice of oral and dental health care products used by their children

	N(%)		N(%)	
<b>Products provided for children's use</b>		<b>Which plant(s) do you think are effective in oral and dental care?</b>		
All	2(0.7)	Clove	13(4.8)	
Combined(toothpaste, toothbrush)	27(84.1)	Miswak	80(29.6)	
Combined (toothpaste, toothbrush, dental floss)	18(6.7)	Mint	11(4.1)	
Combined (toothpaste, toothbrush, mouthwash)	17(6.3)	Sage	1(0.4)	
Combined (toothpaste, toothbrush, dental gel)	1(0.4)	Aloe vera	4(1.5)	
Combined (toothpaste, toothbrush, dental floss, mouthwash)	5(1.9)	None	38(14.1)	
<b>Whom do you consult when choosing the products that your children will use for oral and dental health?</b>		Combined (licorice, miswak)	1(0.4)	
I do not consult anyone, I choose myself	158(58.5)	Combined (clove, miswak)	30(11.1)	
I consult my dentist	93(34.4)	Combined (clove, mint)	9(3.3)	
I consult the pharmacist	15(5.6)	Combined (clove, sage)	3(1.1)	
Other	4(1.5)	Combined (Miswak, mint)	12(4.4)	
<b>Which of the following factors will be most effective in your choice when purchasing oral and dental care products?</b>		Combined (Miswak, aloe vera)	5(1.9)	
Dentist advice	232(85.9)	Combined (licorice, clove, miswak)	1(0.4)	
Pharmacist advice	6(2.2)	Combined (clove, miswak, mint)	26(9.6)	
TV-advertising	4(1.5)	Combined (clove, miswak, sage)	8(3)	
Promotional brochure	1(0.4)	Combined (clove, miswak, aloe vera)	6(2.2)	
Price	8(3)	Combined (cloves, mint, sage)	3(1.1)	
Advice from those who use it	16(5.9)	Combined (clove, mint, aloe vera)	2(0.7)	
Social media	3(1.1)	Combined (Miswak, mint, sage)	1(0.4)	
<b>Where do you primarily obtain the products used by your children for oral and dental health?</b>		Combined (Miswak, mint, aloe vera)	4(1.5)	
Pharmacy	101(37.4)	Combined (licorice, clove, miswak, mint)	1(0.4)	
Market	151(55.9)	Combined (clove, miswak, mint, sage)	7(2.6)	
Internet	18(6.7)	Combined (clove, miswak, mint, aloe vera)	2(0.7)	
<b>Where do you think the products used for oral and dental health should be obtained from?</b>		Combined (clove, mint, sage, aloe vera)	1(0.4)	
Pharmacy	221(81.9)	Combined (licorice, clove, miswak, mint, sage, aloe vera)	1(0.4)	
Market	43(15.9)			
Internet	6(2.2)			
<b>For the following suggestions about the products your children use for oral and dental health, please tick the option that suits you best.</b>				
	<b>Always</b>	<b>Sometimes</b>	<b>Never</b>	
I choose the product myself	198(73.3)	56(20.7)	16(5.9)	
My children choose the product	23(8.5)	123(45.6)	124(45.9)	
I prefer products with herbal ingredients	73(27)	120(44.4)	77(28.5)	
I only prefer products with herbal ingredients	41(15.2)	108(40.0)	121(44.8)	
I only consider the price when choosing a product	19(7)	68(25.2)	183(67.8)	
<b>Can you rate how much the options played a role in your choice?</b>				
	<b>Important</b>	<b>Very important</b>	<b>Unimportant</b>	
Recommended by the dentist	209(77.4)	55(20.4)	6(2.2)	
Prescribed by the dentist	211(78.1)	53(19.6)	6(2.2)	
Recommended by the pharmacist	38(14.1)	129(47.8)	103(38.1)	
Recommended by my friend	8(3)	54(20)	208(77)	
Recommended by my child's teacher	46(17)	100(37)	124(45.9)	
Being cheaper than alternative products	13(4.8)	34(12.6)	223(82.6)	
Having seen the advertisement	3(1.1)	27(10)	240(88.9)	
Herbal ingredient of the product	90(33.3)	113(41.9)	67(24.8)	
The product contains only natural ingredients	109(40.4)	106(39.3)	55(20.4)	
My past experience	126(46.7)	112(41.5)	32(11.9)	
Trusting the brand for quality	94(34.8)	107(39.6)	69(25.6)	
Being easily accessible	102(37.8)	102(37.8)	66(24.4)	
Promotional brochure	26(9.6)	60(22.2)	184(68.1)	
Price	38(14.1)	90(33.3)	142(52.6)	
Social media	11(4.1)	33(12.2)	226(83.7)	
Taste	88(32.6)	97(35.9)	85(31.5)	
Odor	94(34.8)	97(35.9)	79(29.3)	
<b>Tick the option that suits you best</b>				
	<b>I agree</b>	<b>I partially agree</b>	<b>I do not agree</b>	<b>No idea</b>
I think that kinds of toothpastes with herbal ingredients are more reliable	138(51.1)	71(26.3)	19(7.0)	42(15.6)
I think that kinds of toothpaste with herbal ingredients clean better	86(31.9)	109(40.4)	28(10.4)	47(17.4)
I think that kinds of toothpastes with synthetic ingredients are more reliable	22(8.1)	45(16.7)	134(49.6)	69(25.6)
I think that kinds of toothpastes with synthetic ingredients clean better	39(14.4)	59(21.9)	90(33.3)	82(30.4)

**Table 4.** Evaluation of statistically significant relationships

Affected	p-value	Affected	p-value
<b>Parent education level</b>		<b>Parent age</b>	
Products provided for children's use	0.005	I choose the product myself	<0.001
I choose the product myself	<0.001	My children choose the product	0.034
My children choose the product	0.006	I prefer products with herbal ingredients	0.029
I prefer products with herbal ingredients	0.014	I only prefer products with herbal ingredients	0.017
I only consider the price when choosing a product.	0.012	Having seen the advertisement	<0.001
Whom do you consult when choosing the products that your children will use for oral and dental health?	0.005	Herbal ingredient of the product	0.015
Recommended by my child's teacher	0.003	Promotional brochure	0.011
Having seen the advertisement	0.014	I think that kinds of toothpastes with synthetic ingredients clean better	0.043
My past experience	0.002	<b>What products do you use other than toothbrush and toothpaste for oral and dental health care?</b>	
Trusting the brand for quality	0.030	Products provided for children's use	<0.001
Promotional brochure	0.016	I prefer products with herbal ingredients	0.028
I think that kinds of toothpaste with herbal ingredients clean better	0.009	Social media	<0.001
<b>Approximate monthly family income</b>		The most effective factor in the choice of oral and dental care products	<0.001
Products provided for children's use	<0.001	Where do you primarily obtain the products used by your children for oral and dental health?	<0.001
My children choose the product	0.049	Where do you think the products used for oral and dental health should be obtained?	<0.001
I prefer products with herbal ingredients	0.021	Which plant(s) do you think are effective in oral and dental care?	<0.001
I only prefer products with herbal ingredients.	0.033	<b>What products do your children use other than toothbrush and toothpaste for oral and dental health care?</b>	
Trusting the brand for quality	0.018	Products provided for children's use	<0.001
<b>Parent daily brushing frequency</b>		Recommended by the pharmacist	0.021
Whom do you consult when choosing the products that your children will use for oral and dental health?	0.018	Social media	0.001
<b>Frequency of dental visits by parents</b>		The most effective factor in the choice of oral and dental care products	<0.001
I prefer products with herbal ingredients	0.020	Which plant(s) do you think are effective in oral and dental care?	<0.001
I only prefer products with herbal ingredients.	0.017	<b>Frequency of dental visits by children</b>	
Whom do you consult when choosing the products that your children will use for oral and dental health?	0.022	Products provided for children's use	0.010
Having seen the advertisement	0.005	Whom do you consult when choosing the products that your children will use for oral and dental health?	<0.001
<b>Children's daily brushing frequency</b>		<b>Child age at treatment</b>	
Promotional brochure	0.032	Being cheaper than alternative products	0.027
Where do you primarily obtain the products used by your children for oral and dental health?	0.006		

\* Chi-square (Pearson Chi-Square) test was applied. (p<0.05)

According to the answers given to the questions evaluating the factors affecting the selection of oral and dental health care products, it was found that parents provided toothbrush and toothpaste in combination the most (84.1%) and tooth gel with toothbrush and toothpaste the least (0.4%) for their children. It was found that 73.3% of the parents always made the product selection themselves and 45.9% of the parents never had any influence over the products their kids chose. It was found that 44.4% of the participants sometimes preferred products with herbal ingredients, 44.8% never responded to the statement "I only prefer products with herbal ingredients", and 67.8% never considered only the price when choosing a product. It was found that 58.5% of the parents did not consult anyone when choosing the products to be used by their

children but made the choice themselves. The recommendation and prescription of the product by the dentist were found to be very important by 77.4% and 78.1%, respectively, and the recommendation by the pharmacist was considered very important by 47.8% of the parents. The recommendation of friends and teachers was found to be unimportant in product selection by 77% and 45.9%, respectively. 82.6% and 88.9% of the parents answered, "being cheaper than alternative products" and "having seen the advertisement" as unimportant, respectively. It was found that 41.9% of the parents considered it very important that the product contained herbal ingredients, while 40.4% considered it very important that its content consisted only of natural products. It was observed that 46.7% of the parents considered past

experience very important, 39.6% considered trusting the brand very important, and 75.6% considered easy accessibility of the product important (very important + very important). Promotional brochures, price, and social media were considered unimportant by 68.1%, 52.6%, and 83.7% of parents, respectively. Taste and odor antecedents were both considered as very important (35.9%).

It was observed that most of the parents (55.9%) obtained the oral and dental care products used by children primarily from the market, while 81.9% of the participants thought that these products should be obtained from the pharmacy. When asked which herbs are effective in oral and dental hygiene, most of the participants (29.6%) chose miswak. It was found that most of the parents (51.1%) agreed that kinds of toothpaste with herbal ingredients were more reliable and 40.4% partially agreed that these products cleaned better. It was found that 49.6% of the parents disagreed with the idea that toothpastes with synthetic ingredients were more reliable and 33.3% disagreed with the idea that these toothpastes cleaned better (Table 3).

The correlations that the study's analysis revealed to be statistically significant are shown in Table 4. It was found that there was a significant effect of parent education level with parent age on the propositions "I choose the product myself", "my children choose the product", "I prefer products with herbal ingredients", "having seen the advertisement" and the antecedent "promotional brochures" ( $p < 0.05$ ). Statistically significant correlations were found between parent education level and the products provided for the use of children, as well as the question "Whom do you consult when choosing the products that your children will use for oral and dental health?", and the statements "I only consider the price when choosing a product" and "I think that kinds of toothpaste with herbal ingredients clean better", "recommended by my child's teacher", "my past experience" and "trusting the brand for quality" ( $p < 0.05$ ). Statistically significant relationships were also found between the age of the parents and the premises "I only prefer products with herbal ingredients", "I think that kinds of toothpaste with synthetic ingredients clean better" and the herbal content of the product. No significant relationship was found between parent education level and age or all other influential factors ( $p > 0.05$ ).

Statistically significant correlations were found between the approximate monthly income of the family and the

products provided for the use of children, the question "where do you think the products used for oral dental health should be obtained from?", "my children make the product selection", "I prefer products with herbal ingredients", "I prefer only products with herbal ingredients", "trusting the brand for quality" and "I think toothpastes with herbal ingredients clean better" ( $p < 0.05$ ). As a result of the analysis with monthly income, no significant relationship was found with all other influential factors ( $p > 0.05$ ).

It was found that the frequency of dental visits and daily tooth brushing had a significant effect on the person whom parents consulted when choosing products for their children ( $p < 0.05$ ). In addition, it was found that there were statistically significant relationships between the frequency of parental dental visits and the statements "I prefer products with herbal ingredients", "I prefer only products with herbal ingredients" and "having seen the advertisement" ( $p < 0.05$ ). In the analyses performed with the frequency of dental visits and daily tooth brushing frequency of the parents, no significant relationship was found between them and all other influential factors ( $p > 0.05$ ).

Although the daily tooth brushing frequency of children showed a significant effect ( $p < 0.05$ ) on the antecedent "promotional brochure", the question "Where do you primarily obtain the products used by your children for oral and dental health?" and the suggestion "I think toothpastes with herbal ingredients clean better", no significant relationship was found with all other influencing factors ( $p > 0.05$ ).

There were statistically significant associations ( $p < 0.05$ ) between the products used by parents and children for oral and dental health care other than toothbrushes and toothpaste, the products provided for children's use, the most effective factor in the choice of care products, the question about the knowledge of herbs used in oral and dental care, and the social media premise. Statistically significant correlations were found between the products used by parents other than toothbrushes and toothpaste and the statement "I prefer products with herbal ingredients" and the questions "Where do you primarily obtain the products used by your children for oral and dental health?" and "Where do you think the products used for oral and dental health should be obtained?" ( $p < 0.05$ ). In addition, it was observed that the products used by children other than toothbrushes and toothpaste had a significant effect on the antecedent "recommended by the pharmacist",

which was questioned to have an effect on product selection ( $p < 0.05$ ). There was no significant correlation between the products other than toothbrushes and toothpaste used by parents and children for oral and dental health care and all other influencing factors ( $p > 0.05$ ).

Although there were statistically significant relationships ( $p < 0.05$ ) between the frequency of dental visits of children and the products provided for children's use and the question "Whom do you consult when choosing the products that your children will use for oral and dental health?", there was no significant relationship with all other influencing factors ( $p > 0.05$ ). It was also found that the age of the child attending the treatment had a significant effect ( $p < 0.05$ ) on the condition that the product was cheaper than the alternatives and did not show a significant interaction with all other influencing factors ( $p > 0.05$ ).

## DISCUSSION

Oral hygiene practices performed with various oral care products are important in maintaining oral health.<sup>11</sup> These products are available in different forms in the market.<sup>6</sup> Natural-derived products are accepted as an alternative to synthetic antimicrobials, especially due to their lower side effect profiles, and the application of these products for preventive and therapeutic purposes in oral health is becoming widespread day by day.<sup>12</sup> There are various studies in the literature investigating the usability of herbal treatments in the field of dentistry, but no study has been found to examine the habits of herbal product use in oral and dental health and the factors affecting preference in our country.<sup>13</sup> Our study contains important and remarkable findings about the factors affecting the preference habits of parents for oral and dental care products for their children.

In our study, although it was observed that all parents had toothbrushes and toothpaste for their children, it was found that the supply of auxiliary cleaning products such as dental floss (6.7%) or oral care water (6.3%) in combination with toothbrush and toothpaste was very low. In the Türkiye Oral Dental Health Profile study conducted by Orhan et al. in 2018<sup>14</sup>, it was reported that 7.3%, 4.5%, and 3.0% of 5-, 12- and 15-year-old children, respectively, did not own a toothbrush, and 10.3%, 34.8%, and 45.8%, respectively, used at least 1 additional product. In the study of Özyürek et al., it was reported that 3.77% of the parents of primary school students knew that dental floss should be used.<sup>15</sup> All

these results may be an indication that parents do not have sufficient awareness and correct attitudes toward supplementary cleaning products that are necessary for good oral hygiene.

The ratio of the additional products that parents use for oral and dental health care other than toothbrushes and toothpaste to the products they provide for their children's use was found to be significant in this study ( $p < 0.001$ ). It can be said that parents who do not use any products other than toothbrush and toothpaste ( $n = 159$ ) are less likely to provide auxiliary products for their children ( $n = 8$ ), while parents who use a cleaning product in addition to toothbrush and toothpaste ( $n = 111$ ) are more likely to provide these products for their children ( $n = 43$ ). In the study conducted by Karağaç and Küçükeşmen, the parallelism between the percentages of parents who used dental floss, mouthwash, and tongue cleaning (4.6%, 2.9%, 7.7%, respectively) and children (3.6%, 1.9%, 3.6%) is compatible with our study.<sup>16</sup>

Similar to our study, Shirke et al. reported that 60% of the parents chose toothpaste according to their personal preferences and 4% according to their children's preferences, while most of the participants in our study (73.3%) stated that they always choose the product for their children.<sup>17</sup> Considering the significant relationship ( $p < 0.001$ ) between parent age and the statement "I make product selection myself", it can be thought that parent intervention in product selection may decrease as the age range increases.

In a systematic review in which 22 different studies evaluating the relationship between pediatric oral and dental health and socioeconomic/demographic status were examined, it was reported that parent education level and socioeconomic status had an effect on children's oral and dental health.<sup>18</sup> In another study, it was determined that the number of parents whose children use dental floss increased significantly depending on the monthly income level.<sup>19</sup> In our study, in line with the literature, statistically significant relationships were found between parent education level and family income level and the question about the products provided for children ( $p = 0.005$  and  $p < 0.001$ , respectively). According to these relationships, it was determined that as the level of education increases, awareness of the necessity of providing different products for oral hygiene may increase and as the income level increases, a proportional increase in the provision of auxiliary cleaning products is observed.

It was found that parent education level had a significant effect ( $p=0.002$ ) on past experience, which was also found to have a significant effect (46.7%) on parents' product choices. Consistent with our study, Opeodu et al. found that past experience had a very strong effect on the participants' choice of toothbrush with a rate of 64.4% in toothbrush choice and 69.3% in toothpaste choice and that there was a significant relationship between the effect of previous experience and academic status in terms of toothbrush choice.<sup>20</sup>

Umanah et al. reported that income is the main factor affecting the preference for oral care products.<sup>21</sup> In our survey, it was found that the approximate monthly income level of the family had a significant effect on the statement "I prefer products with herbal ingredients" ( $p=0.021$ ). In a study, it was reported that the knowledge of parents about the content of the paste used by their children decreased significantly with increasing age.<sup>19</sup> In our study, a significant relationship was found when parents' preference for herbal products was evaluated according to parent age ( $p=0.029$ ).

In our study, it was found that the most effective factor in product choice was dentist recommendation (85.9%) and dentist recommendation was considered as very important by parents (77.4%). In a study conducted in Turkey, it was reported that dentist recommendation was important for 21.4% of parents in the choice of pediatric toothpaste.<sup>10</sup> In the study by Opeodu et al., it was reported that approximately 51% of the participants chose toothbrushes according to the dentist recommendation.<sup>20</sup> Considering all these results, it can be said that physicians should be aware of the constantly developing and changing product range and should routinely inform and guide parents in appointments. The fact that the parents (47.8%) who participated in our study found the product recommendation by the pharmacist to be very important reveals once again that pharmacists have an important responsibility in providing quality products. As a requirement of this responsibility, pharmacists should provide effective consultancy services on products with natural ingredients used in oral and dental health by updating their knowledge through in-professional training programs in order to meet the demands of parents and to protect and improve public health.

When the significant relationship ( $p=0.022$ ) found between the frequency of dental visits of parents and the question "Whom do you consult when choosing oral and dental health products for your children?" was analyzed,

it was observed that the rate of those who answered "I consult my dentist" increased from the group that visits the dentist when there is any problem to the group that visits the dentist 2 times a year. In the significant relationship ( $p<0.001$ ) between the frequency of dental visits and the question "whom do you consult when choosing oral and dental health products for your children?", it was observed that parents who visited the dentist when there was any problem for their children did not consult anyone at a high rate (65.9%), while parents who visited the dentist once a year and twice a year consulted the dentist more often (52.6% and 57.1%, respectively) when choosing products within their groups. According to these analyses, it can be stated that the high frequency of visits increases awareness and causes parents to turn to the right source when making a choice.

There are studies showing that various herbal substances found in nature have antibacterial, antiviral, antifungal, anti-inflammatory, deodorizing, saliva stimulating, and caries preventive effects.<sup>22</sup> According to the results of our study, it was observed that parents had positive attitudes toward pastes with herbal ingredients and negative attitudes toward synthetic ingredients. It can be thought that these views develop as a result of numerous sources of information (family, friends, television, and social media).

One of those factors influencing consumer preferences is product content.<sup>9,23</sup> In a study, it was reported that one of the factors affecting the choice of toothpaste was herbal content.<sup>9</sup> Opeodu et al. reported that herbal content was not very effective in toothpaste selection.<sup>20</sup> In our study, 44.4% of the participants answered as sometimes to the statement "I prefer products with herbal ingredients" and most participants (44.8%) answered never to the statement "I prefer only products with herbal ingredients". These results suggest that herbal ingredients are not completely ignored or ignored by parents and that herbal ingredients alone are not seen as an alternative to other products in product selection. In addition, as the level of parents' education increases, the tendency to prefer products with herbal ingredients increases significantly ( $p=0.014$ ). Similar to this result, in a study by Eğıl et al., the use of toothpaste with natural ingredients was associated with an increase in the education level of the families.<sup>10</sup> Considering the increase in the tendency of parents towards herbal and natural-content products and the increase in the variety of natural-content products available in the market, it

was concluded that pediatric dentists should inform parents about the choice of natural-content products and possible side effects.

Taste and odor antecedents were both considered very important for the majority of parents (35.9%). Köseoğlu et al. reported in their study that most of the participants (29.7%) frequently reported that the taste of toothpaste was effective in their choice, and toothpaste odor was sometimes effective (36.7%).<sup>24</sup> Opeodu et al. reported that the taste of toothpaste was among the factors influencing product choices (50.5%).<sup>20</sup> In contrast to the results we found in the study of Eğıl et al. 11.6% of the parents reported that taste was effective in the choice of toothpaste for their children.<sup>10</sup>

Branding has a very important role in purchasing behavior. In our survey, it was observed that brand trust has a high impact on product choice. In the study conducted by Eğıl et al., the brand was the second most important factor in the product selection of parents.<sup>10</sup> Opeodu et al.'s study discovered that brand influences a sizable portion (62.9%) of customer purchases.<sup>20</sup> In the interaction between income and the antecedent of brand trust, it was observed that as the income level increases, the proportion of those who think that the brand is unimportant decreases within each income group and the proportion of those who consider it important (very important and quite important) increases. This may be an indication that the importance and trust in the brand increases with the increase in purchasing power.

In the study of Vani et al., which supports the data in our study, availability was reported as an important factor in preference.<sup>25</sup> In the study of Eğıl et al., it was reported that easy accessibility of the product was the reason for the preference for only 35 out of 653 parents.<sup>10</sup>

In our study, it was observed that although parents thought that the oral and dental care products used by their children should be obtained from pharmacies (81.9%), they mostly obtained these products from grocery stores (55.9%). This result may be due to parents' inability to internalize the correct information they have for oral-dental health or the availability of products suitable for all income levels in the markets. In the study by Yalınz and Gönder, the place of purchase of mouthwashes was questioned, and similar to our study, the market was preferred the most (70%) and the internet option ranked last in preference.<sup>26</sup> These results are remarkable considering the wide range of oral and dental health products available in the market in terms of quality and content. It emphasizes the importance of

the inspection of these products by the competent authorities in terms of quality and content before they are put on the market.

The questions in our survey should be answered by considering all oral and dental health care products in general, rather than a single product. Since the attitude towards fluoride products has been questioned in many previous studies, the effect of fluoride content on product choice has not been questioned. In addition, although the choice of dental gel in product supply was questioned in the survey, there were no specific questions about the use of dental gel for tooth eruption. These situations can be considered as limitations of the study.

## CONCLUSION

As a result of this study, it was found that the most influential factor in parents' product selection for their children was dentist recommendation. Other factors that were found to be influential were the parents' past experience, whether the product contains herbal and natural ingredients, whether the product is easily accessible, the presence of a pharmacist's recommendation, and the brand, taste, and smell of the product. In addition, parents' education level and age, family income level, frequency of dental visits by parents and children, and other products used by parents and children other than toothbrushes and toothpaste were found to have significant relationships with the factors affecting product selection. When all these results are evaluated, considering the factors affecting parents in the selection of oral and dental health care products for their children, preferable and accessible quality oral hygiene products should be designed for the needs and tendencies of consumers and should be placed on the market after being inspected by competent authorities. For better public oral health, it is important for dentists to inform and guide parents about oral hygiene products and to recommend the right products. For this, dentists need to be aware of the ever-evolving product range of oral hygiene products, their marketing, and changing consumer trends.

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