



Evaluation of the Effect of Socioeconomic Status on Oral Hygiene Habits

Ali Batuhan Bayırlı^{1-a*}, Seniha Kısakürek^{2-b}

¹ Department of Periodontology, Faculty of Dentistry, Muğla Sıtkı Koçman University, Muğla, Türkiye.

² Department of Prosthodontics, Faculty of Dentistry, Muğla Sıtkı Koçman University, Muğla, Türkiye.

*Corresponding author

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ABSTRACT

Objectives: The aim of this study was to evaluate the impact of socioeconomic status on oral hygiene habits.

Materials and Methods: A questionnaire was conducted on 709 adult individuals who applied to Muğla Sıtkı Koçman University Faculty of Dentistry periodontology clinic. Evaluation was performed on participants' sociodemographic characteristics, socioeconomic statuses, and oral hygiene habits. Questions directed at the participants encompass oral hygiene habits, frequency of dental examination, gum health, prevalence of restorations and prostheses, as well as educational level, occupation, and monthly income. The 'Modified Kuppaswamy Socioeconomic Status Scale' was used to assess participants' socioeconomic status. Data from the study were analyzed using the Pearson Chi-square test ($p=0.05$).

Results: Statistically significant differences were determined between socioeconomic status (SES) groups in the variables of smoking, tooth brushing, toothpaste selection, frequency of dental examination, presence of gum bleeding, dental filling, root canal treatment and previous dental implant treatment ($p<0.05$). 81.8% of individuals in the low SES group and 95.5% in the high SES group stated that they brush their teeth daily. When selecting toothpaste, 45.5% of participants in the low SES group considered the price, 68.9% in the upper-middle SES group considered the content and 27.3% in the high SES group prioritized dentist recommendations.

Conclusions: Within the limitations of our study, it is evident that socioeconomic factors affect oral hygiene habits and oral health from different perspectives. Further studies involving different populations and larger sample sizes are needed to understand better the precise impact of socioeconomic status on oral hygiene habits.

Keywords: Socioeconomic Status, Oral Hygiene, Oral Health, Financial Income, Education Level

Sosyoekonomik Statünün Oral Hijyen Alışkanlıkları Üzerine Etkisinin Değerlendirilmesi

Research Article

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ÖZ

Amaçlar: Bu çalışmanın amacı; sosyoekonomik statünün oral hijyen alışkanlıkları üzerine etkisini değerlendirmektir.

Gereçler ve Yöntemler: Muğla Sıtkı Koçman Üniversitesi Diş Hekimliği Fakültesi periodontoloji kliniğine başvuran 709 yetişkin bireye anket uygulanmıştır. Bireylerin sosyodemografik özellikleri, sosyoekonomik statüleri ve oral hijyen alışkanlıkları üzerine değerlendirme yapılmıştır. Katılımcılara yöneltilen sorularda oral hijyen alışkanlıkları, diş hekimi muayene sıklıkları, dişeti sağlıkları, restorasyon ve protez prevalansları ile eğitim düzeyi, meslek ve aylık maddi gelir durumları değerlendirilmiştir. Katılımcıların sosyoekonomik statü durumlarının değerlendirilebilmesi için 'Modifiye Kuppaswamy Sosyoekonomik Statü Ölçeği' referans alınmıştır. Çalışmanın verileri, Pearson Ki-Kare testi kullanılarak analiz edilmiştir ($p=0,05$).

Bulgular: Sosyoekonomik durum (SES) grupları arasında sigara içme, diş fırçalama, diş macunu seçimi, dental muayene sıklığı, diş eti kanaması, dolgu, kök kanal tedavisi ve geçirilmiş dental implant tedavisi değişkenlerinde istatistiksel olarak anlamlı farklılıklar belirlendi ($p<0.05$). Düşük SES grubundaki bireylerin %81.8'i, yüksek SES grubundakilerin %95.5'i her gün dişlerini fırçaladıklarını belirtti. Diş macunu seçerken, düşük SES grubundaki katılımcıların %45.5'i fiyatı, üst-orta SES grubundakilerin %68.9'u içeriği ve yüksek SES grubundakilerin %27.3'ü diş hekimi önerilerini esas aldıklarını belirtmiştir.

Sonuçlar: Çalışmamızın sınırları dahilinde sosyoekonomik faktörlerin oral hijyen alışkanlıkları ve oral sağlık üzerinde farklı açılardan etkili olduğu görülmektedir. Sosyoekonomik statünün oral hijyen alışkanlıkları üzerindeki etkisinin daha net anlaşılabilmesi için farklı popülasyonlarda ve daha fazla katılımcının olduğu çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Sosyoekonomik Statü, Oral Hijyen, Ağız Sağlığı, Maddi Gelir, Eğitim Düzeyi

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^a batuhanbayirli@mu.edu.tr

^b <https://orcid.org/0000-0003-1028-9461>

^b senihakisakurek@gmail.com

^b <https://orcid.org/0000-0002-6704-0774>

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Introduction

It has been accepted that good oral hygiene is an important factor in the improvement of the quality of life. Oral and dental hygiene reflects the necessary physiological, social, and psychological features for a high quality of life.¹ Oral diseases continue to be an important public health issue worldwide. Regular and adequate oral hygiene habits are needed to preserve oral and dental health.² It is known that microbial dental plaque accumulating in hard and soft tissues within the mouth due to inadequate oral hygiene causes gingivitis and tooth cavities.^{3,4}

Inadequate and/or incorrect oral hygiene habits can be observed in addition to loss of teeth and function deficiencies due to disruptions of professional dental examinations and treatments. Considering the relationship of oral and dental health with the systemic condition of the individual, this situation also can be figured as an issue in terms of public health.⁵

The selection of the materials used by the individual to ensure oral hygiene mechanically and chemically (toothbrush, toothpaste, mouthwash, etc.), method and frequency of use of these materials, and knowledge level about these materials might be affected by socioeconomic situations such as education level, financial situation and occupation of the individual. In addition, it is known that socioeconomic situations also affect routine visits to the dentist.^{6,7}

Although studies have shown that socioeconomic status affects oral health at different levels, the general opinion is that people are more prone to oral problems that lead to general and oral health risk factors and therefore a decrease in quality of life.⁸

The main idea of this study arose from the desire to learn about patients' oral hygiene levels and to find out how

much they use their financial means to have better oral health. Therefore, the purpose of our study was to evaluate the effect of socioeconomic status (SES) on oral hygiene habits. The hypothesis of our study was that individuals who have higher socioeconomic status will have better oral hygiene habits and higher awareness levels.

Materials and Methods

Our study started by obtaining permission from Muğla Sıtkı Koçman University Medicine and Health Sciences Ethics Committee on 15th July 2023, decision number being 54. The consent form was taken from the patients who applied to the Faculty of Dentistry of Muğla Sıtkı Koçman University periodontology clinic after informing them about the study. 709 individuals participated in this study voluntarily. A comprehensive socioeconomic status and oral hygiene evaluation questionnaire was designed for participants to fill out. With the questionnaire having 25 close-ended questions, oral hygiene habits, frequency of dentist examination, gingival health, restoration and prevalence of prosthesis and education level, occupation, monthly financial income status of the participants were evaluated (Table S1). The oral hygiene habits of the participants were evaluated by considering the frequency of brushing teeth, use of toothpaste, frequency of use of interdental brush and dental floss, and frequency of use of mouthwash. In addition, the factors that were important in the selection of these equipments and materials that are used to ensure oral hygiene were evaluated. Smoking, which may directly be correlated with both oral hygiene and socioeconomic status was also evaluated. The 'Modified Kuppaswamy Socioeconomic Status Scale' was based on the evaluation of the socioeconomic status of the participants.⁹

Table S1. Oral Hygiene Habits Evaluation Questionnaire

Question	Answers
1. Mark which age range you are in.	a) aged 18-25 b) aged 25-40 c) aged 40-65 d) over 65
2. Mark your gender.	a) Female b) Male
3. Mark your education level.	a) Illiterate b) Elementary school c) Middle school d) High school e) University f) Master's Degree g) Doctorate Degree
4. Write your occupation. (If you are retired, write your occupation before being retired.)	
5. Which range includes your monthly financial income?	a) 0-8.500 TL b) 8.500-15.000 TL c) 15.000-25.000 TL d) 25.000-35.000 TL e) 35.000-50.000 TL f) 50.000-70.000 TL g) over 70.000 TL
6. Do you smoke?	a) Yes

- | | |
|---|--|
| 7. Do you brush your teeth every day? | b) No
a) Yes |
| 8. How many times do you brush your teeth a day? | b) No
a) Once
b) Twice
c) Three times
d) More |
| 9. How often do you change your toothbrush? | a) Once in 3 months
b) Once in 6 months
c) Once a year
d) More |
| 10. Which criteria do you consider while choosing your toothbrush? | a) Color
b) Brand
c) Size and quality of toothbrush bristles
d) Recommendation of the dentist |
| 11. Do you use toothpaste while brushing your teeth? | a) Yes
b) No |
| 12. Which criteria do you consider while choosing your toothpaste? | a) Flavour
b) Price
c) Ingredients of the toothpaste
d) Recommendation of the dentist |
| 13. Do you clean the interfaces of your teeth? If yes, how often do you clean them? | a) No, I do not
b) Once a week
c) Every two or three days
d) Once a day |
| 14. What do you use to clean the interfaces of your teeth? | a) Toothpick
b) Dental floss
c) Interdental brush
d) Dental floss and interdental brush |
| 15. Do you use mouthwash? | a) Yes
b) No |
| 16. Which criteria do you consider while choosing your mouthwash? | a) Brand
b) Price
c) Flavour
d) Recommendation of dentist |
| 17. Do you clean your tongue surface? If yes, how often do you clean it? | a) No, I do not
b) Once a week
c) Every two or three days
d) Once a day |
| 18. How often do you get examined by a dentist? | a) Once in 3 months
b) Once in 6 months
c) Once a year
d) More |
| 19. Do your gums bleed while brushing your teeth or eating? | a) Yes
b) No |
| 20. Do you have breath odor? | a) Yes
b) No |
| 21. Do you have fillings in your teeth? | a) Yes
b) No |
| 22. Do you have teeth treated with root canal treatment? | a) Yes
b) No |
| 23. Do you have any tooth deficiency? | a) Yes
b) No |
| 24. Do you have a prosthesis which you use within the mouth? | a) Yes
b) No |
| 25. Have you ever got a dental implant treatment? | a) Yes
b) No |

The groups below were created according to the socioeconomic status levels of the participants:

- 1st group: Low socioeconomic group
- 2nd group: Upper-low socioeconomic group
- 3rd group: Middle socioeconomic group
- 4th group: Upper-middle socioeconomic group

5th group: High socioeconomic group

The answers that were given to the third, fourth, and fifth questions of the questionnaire influenced the grouping of the participants as low, upper-low, middle, upper-middle, and high. These questions demonstrated the education level, occupation, and monthly financial status of the participants

and the scoring was determined accordingly as to specify their socioeconomic status. According to the scoring system based on the 'Modified Kuppaswamy Socioeconomic Status Scale', total points were determined and groups were created according to these points.

According to the answers given to the third, fourth, and fifth questions in the questionnaire, the participants took separate points from education level, occupation, and monthly financial income according to the socioeconomic status scale table below (Table 1) and these points were added up. The total point was determined by adding up these three statuses related to socioeconomic status. The participants that had a total point of 0 to 5 were included in the low socioeconomic group, a total point of 5 to 10 were included in the upper-low socioeconomic group, a total point of 11 to 15 were included in the middle socioeconomic group, a total point of 16 to 25 were included in the upper-middle socioeconomic group, a total point of 26 to 29 were included in the high socioeconomic group (Table 1).

Oral hygiene habits and socioeconomic status of the participants were evaluated and five different socioeconomic groups were compared to each other regarding oral hygiene habits.

The statistical analysis of this study was performed using IBM SPSS 20 statistical analysis software. Data was presented as mean, standard deviation, median, minimum, maximum, percentage, and number. The normal distribution of continuous variables was analyzed using the Shapiro-Wilk test, Kolmogorov-Smirnov test, Q-Q plot, and Skewness & Kurtosis. In comparisons between two independent groups, the Independent Samples t-test was used when the normal distribution condition was met, and the Mann-Whitney U test was utilized when it was not met. The ANOVA test was used when the normal distribution condition was met, and the Kruskal-Wallis test when it was not met when comparing continuous variables with more than two independent groups. Statistical significance was $p < 0.05$.

Table 1: Demographic distribution

Status	Point
Education Level	
Doctorate Degree	7
Master's Degree	6
University	5
High school	4
Middle school	3
Elementary school	2
Illiterate	1
Occupation	
Professionals	10
Semi-professionals	6
Bureau/Department Jobs, Store Owners, Farmers	5
Qualified Worker	4
Semi-qualified Worker	3
Elementary Occupations	2
Unemployed	1
Monthly Financial Income	
Over 70.000 TL	12
50.000-70.000 TL	10
35.000-50.000 TL	6
25.000-35.000 TL	4
15.000-25.000 TL	3
8.500-15.000 TL	2
0-8.500 TL	1
Socioeconomic Group	
Low Socioeconomic Group	0-5
Upper-Low Socioeconomic Group	5-10
Middle Socioeconomic Group	11-15
Upper-Middle Socioeconomic Group	16-25
High Socioeconomic Group	26-29

Results

In the focus of 709 participants. it can be seen that 329 of the participants were female (46.5%). while 379 of the participants (53.5%) were male. One of the participants in the study did not report the gender. The highest age frequency was seen between the ages of 40-65 with 373 individuals (52.6%) and the lowest age frequency was

seen in the age group over 65 with 19 individuals (2.7%) (Table 2).

Identifying data that were obtained from smoking, oral hygiene habits, and dental status of the participants were given in detail in the table (Table 3). The participants' education levels, occupations and monthly financial incomes were classified into seven categories (Table 4).

Socioeconomic groups were classified into five categories according to the scale obtained from the participants' occupation status, education levels, and monthly financial incomes (Table 5).

Statistically significant differences were determined between SES groups in the variables of smoking, tooth brushing, toothpaste selection, frequency of dental examination, presence of gum bleeding, dental filling, root canal treatment, and previous dental implant treatment ($p<0.05$) (Table 6). However, there were no statistically meaningful differences between SES groups in daily toothbrushing frequency, frequency of changing toothbrush and criteria of choosing toothbrush, interdental cleaning and choosing interdental cleaning tools, use of mouthwash and reason for mouthwash preference, tongue cleaning, breath odor and gingival bleeding, tooth deficiency and presence of prosthetic restoration ($p>0.05$) (Table 6).

In the middle SES group, the smoking rate was statistically significantly higher compared to the low SES group ($p=0.005$). In the high SES group, the daily tooth brushing rate was significantly higher than in the low SES group ($p<0.001$). In the low SES group, the price was a statistically significant factor in toothpaste selection, whereas dentist recommendation was significantly influential in the high SES group ($p<0.001$). The frequency of dental check-ups every six months and annually was significantly higher in the high SES group compared to the low SES group ($p<0.001$). The rate of gum bleeding in the upper low SES group was significantly higher than in the high SES group ($p=0.033$). The rate of fillings in the upper

middle SES group was significantly higher compared to the low SES group ($p<0.001$). The rate of root canal treatment in the high SES group was significantly higher than in the low SES group ($p<0.001$). The presence of dental implants in the high SES group was significantly higher compared to the upper low SES group ($p<0.001$).

In participants in the low SES group, 18.2% of them reported smoking, while in individuals in the middle SES group, 42.3% stated that they smoking. Regarding oral hygiene, 81.8% of individuals in the low SES group and 95.5% in the high SES group mentioned brushing their teeth Daily (Table 7). When selecting toothpaste, 45.5% of participants in the low SES group considered the price, 68.9% in the upper-middle SES group considered the content, and 27.3% in the high SES group prioritized dentist recommendations. Looking at the frequency of dental examination, 60.0% of participants in the low SES group had an examination for more than a year, with none having an examination every six months (Table 7). The highest rate of examination every six months was observed in the high SES group at 27.3%. Concerning gingival bleeding, 30.2% of participants in the upper low SES group reported experiencing it, while 18.2% in the high SES group reported gingival bleeding (Table 7). As for dental procedures, 45.5% of participants in the low SES group had fillings, and 88.0% in the upper-middle SES group had them. Root canal treatment was undergone by 40.0% in the low SES group and 68.2% in the high SES group. Regarding previous dental implant treatment, 9.8% of participants in the upper low SES group and 36.4% in the high SES group reported undergoing this procedure (Table 7).

Table 2: Distribution of Age and Gender

Age	Frequency	%	Cumulative %	
18-25	137	19.3	19.3	
25-40	180	25.4	44.7	
40-65	373	52.6	97.3	
65+	19	2.7	100.0	
Total	709	100.0		
Gender	Frequency	%	Valid %	Cumulative %
Woman	329	46.4	46.5	46.5
Man	379	53.5	53.5	100.0
Total	708	99.9	100.0	
Loss	1	.1		
Total	709	100.0		

Table 3: Identifying Data on Smoking, Oral Hygiene Habits, and Dental Status

	Yes		No	
	N	%	N	%
Smoking	252	35.6	455	64.4
Brushing Teeth	623	88.4	82	11.6
Use of Toothpaste	702	99.7	2	0.3
Use of Mouthwash	225	31.7	484	68.3
Gum Bleeding	165	23.3	543	76.7
Breath Odor	145	20.6	558	79.4
Filling Status	586	83.4	117	16.6
Root Canal Treatment	419	59.3	287	40.7
Tooth Deficiency	406	57.5	300	42.5
Prosthesis	187	26.4	521	73.6
Implant	147	20.8	560	79.2

Table 4: Distribution of Education Level, Occupation and Monthly Financial Income

Education Level		Frequency	%	Cumulative%	
Valid	Elementary school	27	3.8	3.8	
	Middle school	23	3.2	7.1	
	High school	107	15.1	22.1	
	Univercity	420	59.2	81.4	
	Master degree	116	16.4	97.7	
	Doctorate	16	2.3	100.0	
	Total	709	100.0		
Occupation		Frequency	%	Cumulative %	
Valid	Unemployed	1	.1	.1	
	Elementary occupations	138	19.5	19.6	
	Semi-qualified worker	13	1.8	21.4	
	Qualified worker	34	4.8	26.2	
	Bureau/Department jobs.	138	19.5	45.7	
	Store owners. Farmers				
	Semi-professionals	70	9.9	55.6	
	Professionals	315	44.4	100.0	
Total	709	100.0			
Monthly Financial Income		Frequency	%	Valid %	Cumulative %
Valid	0-8500 TL	180	25.4	25.4	25.4
	8500-15000 TL	171	24.1	24.2	49.6
	15000-25000 TL	157	22.1	22.2	71.8
	25000-35000 TL	108	15.2	15.3	87.0
	35000-50000 TL	57	8.0	8.1	95.1
	50000-70000 TL	19	2.7	2.7	97.7
	70000 TL+	16	2.3	2.3	100.0
	Total	708	99.9	100.0	
Loss		1	.1		
Total		709	100.0		

Table 5. Distribution of Socioeconomic Groups

Socioeconomic Group	Frequency	%	Valid %	Cumulative%
Low	11	1.6	1.6	1.6
Upper Low	173	24.4	24.4	26.0
Middle	203	28.6	28.6	54.6
Upper Middle	301	42.5	42.5	97.0
High	21	3.0	3.0	100.0
Total	709	100.0	100.0	

Table 6. Comparison of Variables with Socioeconomic Status

Questions	Answers	Mean	Standard Deviation	Socioeconomic Status			Z	p-value
				Median	Minimum	Maximum		
Do you smoke?	No	3.28	0.91	4.00	1.00	5.00	-	0.005
	Yes	3.10	0.87	3.00	1.00	5.00		
Do you brush your teeth every day?	No	2.88	0.88	3.00	1.00	5.00	-	<0.001
	Yes	3.25	0.90	3.00	1.00	5.00		
How many times do you brush your teeth a day?	Once	3.22	0.91	3.00	1.00	5.00	0.807	0.848
	Twice	3.20	0.90	3.00	1.00	5.00		
	Three times	3.33	0.82	3.50	2.00	5.00		
	More	3.25	0.96	3.50	2.00	4.00		
How often do you change your toothbrush?	Once in 3 months	3.24	0.91	3.00	1.00	5.00	3.992	0.262
	Once in 6 months	3.22	0.88	3.00	1.00	5.00		
	Once a year	3.02	0.94	3.00	1.00	4.00		
Which criteria do you consider while	Color	2.86	0.77	3.00	2.00	4.00	2.991	0.393
	Brand	3.20	0.87	3.00	1.00	5.00		
	Size and quality of toothbrush bristles	3.22	0.92	3.00	1.00	5.00		

choosing your toothbrush?	Recommendation of the dentist	3.27	0.85	3.00	1.00	5.00		
Do you use toothpaste while brushing your teeth?	Yes	3.22	0.90	3.00	1.00	5.00		
Which criteria do you consider while choosing your toothpaste?	Flavour	3.08	0.83	3.00	2.00	4.00		
	Price	2.93	0.92	3.00	1.00	5.00		
	Ingredients of the toothpaste	3.30	0.88	4.00	1.00	5.00	18.059	<0.001
Do you clean the interfaces of your teeth?	Recommendation of the dentist	3.24	0.90	3.00	2.00	5.00		
If yes, how often do you clean them?	No. I do not	3.12	0.90	3.00	1.00	5.00		
	Once a week	3.21	0.88	3.00	2.00	5.00		
	Every two or three days	3.27	0.91	3.00	2.00	5.00	6.237	0.101
What do you use to clean the interfaces of your teeth?	Once a day	3.40	0.82	4.00	2.00	5.00		
	Toothpick	3.16	0.86	3.00	1.00	5.00		
	Dental floss	3.22	0.91	3.00	1.00	5.00		
	Interdental brush	3.38	0.83	4.00	1.00	5.00	3.740	0.291
Do you use mouthwash?	Dental floss and interdental brush	3.33	0.90	4.00	2.00	5.00		
	No	3.21	0.90	3.00	1.00	5.00	-	0.901
Which criteria do you consider while choosing your mouthwash?	Yes	3.21	0.91	3.00	1.00	5.00	0.124	
	Brand	3.31	0.82	4.00	2.00	5.00		
	Price	3.04	0.90	3.00	1.00	5.00		
Do you clean your tongue surface? If yes, how often do you clean it?	Flavour	3.21	0.87	3.00	1.00	5.00	4.982	0.173
	Recommendation of the dentist	3.18	0.96	3.00	1.00	5.00		
How often do you get examined by a dentist?	No. I do not	3.23	0.91	3.00	1.00	5.00		
	Once a week	3.20	0.85	3.00	1.00	5.00		
	Every two or three days	3.22	0.93	3.00	1.00	5.00	0.135	0.987
	Once a day	3.19	0.92	3.00	1.00	5.00		
Do your gums bleed while brushing your teeth or eating?	Once in 3 months	2.53	0.72	2.50	1.00	4.00		
	Once in 6 months	3.40	0.86	4.00	2.00	5.00	33.968	<0.001
	Once a year	3.36	0.86	4.00	1.00	5.00		
	More	3.17	0.91	3.00	1.00	5.00		
Do you have breath odor?	No	3.25	0.90	3.00	1.00	5.00		
	Yes	3.09	0.90	3.00	1.00	5.00	-	0.033
Do you have fillings in your teeth?	Yes	3.22	0.91	3.00	1.00	5.00	-	0.933
	No	3.23	0.87	3.00	1.00	5.00	0.084	
Do you have teeth treated with root canal treatment?	No	2.92	0.98	3.00	1.00	5.00	-	<0.001
	Yes	3.27	0.88	3.00	1.00	5.00	3.629	
Do you have any tooth deficiency?	No	3.07	0.90	3.00	1.00	5.00		
	Yes	3.31	0.88	4.00	1.00	5.00	-	<0.001
	Yes	3.31	0.88	4.00	1.00	5.00	3.502	
	No	3.17	0.91	3.00	1.00	5.00	-	0.172
	Yes	3.25	0.90	3.00	1.00	5.00	1.366	

Do you have a prosthesis which you use within the mouth?	No	3.20	0.89	3.00	1.00	5.00	-	0.389
	Yes	3.27	0.90	3.00	2.00	5.00	0.862	
Have you ever got a dental implant treatment?	No	3.13	0.90	3.00	1.00	5.00	-	<0.001
	Yes	3.56	0.82	4.00	1.00	5.00	5.359	

Table 7. Distribution of Socioeconomic Status Frequencies Within Variables

Questions	Answers	Low SES Group		Upper Low SES Group		Middle SES Group		Upper Middle SES Group		High SES Group	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
Do you smoke?	No	9	81.8%	101	58.7%	116	57.7%	213	70.8%	16	72.7%
	Yes	2	18.2%	71	41.3%	85	42.3%	88	29.2%	6	27.3%
Do you brush your teeth every day?	No	2	18.2%	30	17.3%	27	13.5%	22	7.4%	1	4.5%
	Yes	9	81.8%	143	82.7%	173	86.5%	277	92.6%	21	95.5%
How many times do you brush your teeth a day?	Once	6	54.5%	66	39.3%	79	39.5%	122	41.1%	9	40.9%
	Twice	5	45.5%	93	55.4%	107	53.5%	153	51.5%	12	54.5%
	Three times	0	0.0%	8	4.8%	13	6.5%	20	6.7%	1	4.5%
	More	0	0.0%	1	0.6%	1	0.5%	2	0.7%	0	0.0%
How often do you change your toothbrush?	Once in 3 months	5	45.5%	78	45.1%	93	46.3%	143	47.4%	13	59.1%
	Once in 6 months	3	27.3%	77	44.5%	91	45.3%	136	45.0%	9	40.9%
	Once a year	2	18.2%	15	8.7%	13	6.5%	20	6.6%	0	0.0%
	More	1	9.1%	3	1.7%	4	2.0%	3	1.0%	0	0.0%
Which criteria do you consider while choosing your toothbrush?	Color	0	0.0%	5	2.9%	6	3.0%	3	1.0%	0	0.0%
	Brand	2	18.2%	29	16.8%	39	19.4%	55	18.2%	2	9.1%
	Size and quality of toothbrush bristles	8	72.7%	124	71.7%	135	67.2%	209	69.2%	19	86.4%
Do you use toothpaste while brushing your teeth?	Recommendation of the dentist	1	9.1%	15	8.7%	21	10.4%	35	11.6%	1	4.5%
Which criteria do you consider while choosing your toothpaste?	Yes	11	100.0%	172	100.0%	196	100.0%	301	100.0%	22	100.0%
	Flavour	0	0.0%	7	4.0%	8	4.0%	9	3.0%	0	0.0%
	Price	5	45.5%	45	26.0%	41	20.4%	41	13.6%	2	9.1%
	Ingredients of the toothpaste	6	54.5%	92	53.2%	119	59.2%	208	68.9%	14	63.6%
	Recommendation of the dentist	0	0.0%	29	16.8%	33	16.4%	44	14.6%	6	27.3%
Do you clean the interfaces of your teeth? If yes. how often do you clean them?	No. I do not	6	54.5%	66	38.2%	69	34.3%	102	33.8%	3	13.6%
	Once a week	2	18.2%	58	33.5%	59	29.4%	94	31.1%	6	27.3%
	Every two or three days	3	27.3%	32	18.5%	36	17.9%	57	18.9%	7	31.8%
	Once a day	0	0.0%	17	9.8%	37	18.4%	49	16.2%	6	27.3%
What do you use to clean the interfaces of your teeth?	Toothpick	1	20.0%	44	31.7%	55	32.4%	66	26.9%	4	20.0%
	Dental floss	3	60.0%	72	51.8%	78	45.9%	119	48.6%	11	55.0%
	Interdental brush	1	20.0%	12	8.6%	26	15.3%	38	15.5%	3	15.0%
	Dental floss and interdental brush	0	0.0%	11	7.9%	11	6.5%	22	9.0%	2	10.0%

Do you use mouthwash?	No	8	72.7%	116	67.1%	138	68.7%	208	68.9%	14	63.6%
	Yes	3	27.3%	57	32.9%	63	31.3%	94	31.1%	8	36.4%
Which criteria do you consider while choosing your mouthwash?	Brand	0	0.0%	29	24.2%	37	28.0%	66	34.9%	2	13.3%
	Price	1	20.0%	26	21.7%	26	19.7%	27	14.3%	2	13.3%
	Flavour	1	20.0%	16	13.3%	20	15.2%	30	15.9%	1	6.7%
	Recommendation of the dentist	3	60.0%	49	40.8%	49	37.1%	66	34.9%	10	66.7%
Do you clean your tongue surface? If yes, how often do you clean it?	No. I do not	6	54.5%	95	55.9%	113	56.5%	167	55.7%	15	68.2%
	Once a week	1	9.1%	30	17.6%	36	18.0%	55	18.3%	1	4.5%
	Every two or three days	2	18.2%	14	8.2%	19	9.5%	28	9.3%	2	9.1%
	Once a day	2	18.2%	31	18.2%	32	16.0%	50	16.7%	4	18.2%
How often do you get examined by a dentist?	Once in 3 months	2	20.0%	18	10.7%	17	8.6%	3	1.0%	0	0.0%
	Once in 6 months	0	0.0%	21	12.4%	30	15.2%	53	17.6%	6	27.3%
	Once a year	2	20.0%	34	20.1%	57	28.8%	90	29.9%	9	40.9%
	More	6	60.0%	96	56.8%	94	47.5%	155	51.5%	7	31.8%
Do your gums bleed while brushing your teeth or eating?	No	10	90.9%	120	69.8%	154	76.6%	241	79.8%	18	81.8%
	Yes	1	9.1%	52	30.2%	47	23.4%	61	20.2%	4	18.2%
Do you have breath odor?	No	8	80.0%	140	81.9%	150	75.8%	243	80.5%	17	77.3%
	Yes	2	20.0%	31	18.1%	48	24.2%	59	19.5%	5	22.7%
Do you have fillings in your teeth?	No	6	54.5%	39	22.8%	33	16.6%	36	12.0%	3	13.6%
	Yes	5	45.5%	132	77.2%	166	83.4%	264	88.0%	19	86.4%
Do you have teeth treated with root canal treatment?	No	6	60.0%	82	47.4%	91	45.3%	101	33.7%	7	31.8%
	Yes	4	40.0%	91	52.6%	110	54.7%	199	66.3%	15	68.2%
Do you have any tooth deficiency?	No	2	18.2%	84	48.6%	87	43.9%	115	38.1%	12	54.5%
	Yes	9	81.8%	89	51.4%	111	56.1%	187	61.9%	10	45.5%
Do you have a prosthesis which you use within the mouth?	No	7	63.6%	128	74.0%	156	77.6%	215	71.4%	15	68.2%
	Yes	4	36.4%	45	26.0%	45	22.4%	86	28.6%	7	31.8%
Have you ever got a dental implant treatment?	No	8	80.0%	156	90.2%	168	83.6%	214	71.1%	14	63.6%
	Yes	2	20.0%	17	9.8%	33	16.4%	87	28.9%	8	36.4%

Discussion

Occupation, education, and financial status of individuals mostly indicate their social status. Social status also plays a role in oral and general health. Regular oral hygiene habits have an important role in the prevention of gingival diseases and dental cavities.¹⁰⁻¹² Therefore, inadequate oral hygiene causes results such as tooth deficiency, root canal treatment, filling, and prosthetic restoration needs. In ensuring oral hygiene, the frequency of cleaning of oral tissues as well as the selection of tools used for this cleaning may be affected by socioeconomic

situations.¹³ These variables were analyzed in this study where we evaluated the effect of socioeconomic status on oral hygiene habits.

Studies regarding the negative effect of smoking on mouth mucosa, teeth, and gingivae demonstrated that individuals who have low socioeconomic status have higher smoking habits.^{14,15} The reason for this may be that individuals who have low socioeconomic status have a social circle that includes smokers and financial income problems.^{16,17} It can be seen in our study that individuals who have low and high socioeconomic status have a lower

rate of smoking in comparison with other groups. In this point, this situation may be evaluated in different opinions. This may be due to the individuals of low socioeconomic status having economic incompetence and the individuals in high socioeconomic status having high education levels.

Different results were suggested in the studies evaluating the relationship between toothbrushing, being one of the most effective tools in the insurance of oral hygiene, and socioeconomic status.^{18,19,20} It has been observed in our study that the rate of daily toothbrushing rate statistically and meaningfully increased from low socioeconomic group to high socioeconomic group. The reason for this may be that as the education level increases, the awareness of the importance of oral hygiene increases and as the financial income level increases, the access to toothbrushes and toothpaste increases. In addition, in our study, the fact that the price of the material is the most important reason for preference in individuals with low socioeconomic status when choosing toothpaste confirms this. Participants who based their toothpaste selection on dentist advice were largely in the high socioeconomic status group. The reason for this may be related to education level and financial income.

Socioeconomic factors have a role in the formation of inequality in terms of access to and use of dental services. Individuals who have low socioeconomic status have a higher risk of having bad oral health results and therefore they generally need professional dental treatment services more. However, although they need this service more, they generally have limited access to them.^{21,22} It has been observed in our study that the frequency of examination statistically and meaningfully increases from low socioeconomic group to high socioeconomic group.

In a study in which the effect of economic conditions on oral health was analyzed, it was found that students whose families have high incomes or lived in cities before university have lower frequencies of filling.²³ As a result of our study, the rate of filling and root canal treatment was found to be statistically significantly lower in individuals with low socioeconomic status. The reason for this may be a lack of treatment for decayed teeth rather than good oral hygiene habits and a low caries rate. The reason for high instances of root canal treatment presence especially in high socioeconomic status groups might result from the fact that individuals try to save their natural teeth by the recommendation of their dentists. In this context, this can be associated with the high education levels of these individuals. In a study, it was observed that individuals over the age of 65 with high income and education levels had more teeth that had root canal treatment compared to individuals with low income and education levels.²⁴ The results of our study are compatible with the results of this study.

Different results occurred in studies analyzing the relationship between socioeconomic status and tooth loss.^{25,26} In a study in which the relationship between dental implant treatment and socioeconomic status was

evaluated, higher rates of dental implant treatment were seen in individuals who have high financial income and low education levels.²⁷ In another study, it was demonstrated that the prevalence of implants increased with the increase in socioeconomic status.²⁸ In our study, although there was no statistical and meaningful difference between socioeconomic status and tooth loss, a meaningful difference was observed in the presence of dental implants within the mouth. The rate of implant presence was higher in individuals who have the highest socioeconomic status. The reason for this may be that tooth loss was not different in comparison with other socioeconomic status groups, however, oral health awareness is higher which is associated with high education levels and the economic status that can afford the cost of implant treatment is present.

Conclusions

In the consequence of our study, the obtained data shows that it is difficult to give definite judgement about the effect of socioeconomic factors on oral hygiene habits and oral health occurring as a result of these habits. Considering the oral hygiene habits of adults starting in childhood years and the individuals who have changeable socioeconomic status in adulthood, it seems challenging to define any definite conclusion. Previous studies and the study that we have conducted show us that further studies with different populations and more participants are needed so that the effect of socioeconomic status on oral hygiene habits may be understood more clearly.

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Conflict of interest

The authors declare no conflict of interest.

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