

The Relationship Between the Demographic Data and Periodontal Health Awareness

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ABSTRACT

This study aims to determine the awareness levels of the individuals about gum health, gum diseases and periodontology and to correlate these values with their demographic and socio-economic characteristics. This cross-sectional epidemiological study included 428 volunteers, who were asked to participate in a specially designed online survey consisting of 6 multiple choice questions through a mobile application. The questionnaire evaluated the socio-demographic, and socio-economic profiles of the participants, their educational status, whether they had any systemic diseases, and their knowledge about periodontal diseases and periodontology. In addition, the patients' perceptions of self-care were also examined. Frequency tables and Chi-square analysis were used for the statistical analysis of the data, where the level of statistical significance was set at $p < 0.05$. A statistically significant relationship was found between gender and tooth brushing ($p < 0.01$). While the prevalence of the habit of tooth brushing at least once a day was 92% in women, this rate was 83.4% for men. There was no statistically significant association between the number of dentist visits and gender, education, or income levels ($p > 0.05$). Although this study demonstrates the presence of basic awareness of oral hygiene in the population with higher education and income levels; the knowledge regarding oral hygiene is still limited in the general population. Thus, comprehensive training programs are needed to improve dental and gum health. Our results also show that it is necessary to ensure that the general population including individuals with higher education and income levels participate in these programs.

Keywords: Demographic Data, Dentistry, Oral Health, Periodontal Health

Introduction

Periodontology is a science that examines periodontal tissues and the diseases of these tissues (1). Periodontal diseases are one of the most common oral health problems (2). Epidemiological studies show that the prevalence of the periodontal diseases is especially high among adults (3). Determining the prevalence of a disease is very important for the improvement of public health (4). Since periodontal diseases do not cause serious complaints in patients until they are severely affected (such as tissue and tooth loss), the patient awareness is poor even though they are quite common (5). The World Health Organization reported that oral diseases constitute serious health problems and therefore oral health awareness should be increased among the general public (6). Early diagnosis and treatment of periodontal diseases are important due to their high prevalence, their social, psychological, and economic effects on individuals, communities, and health services (7).

Although the primary etiological factor for periodontal diseases is microbial dental plaque, there are also other risk factors affecting the onset and progression of these diseases (8,9). One of these is the socio-economic factor, which is directly related to disease awareness (9). In order to maintain good periodontal health and prevent disease, the patients must be able to identify periodontal problems (10). This awareness was observed to be not prevalent enough especially in developing or underdeveloped societies with poor socio-economic status (11). Having sufficient knowledge on how to identify and prevent periodontal diseases is a prerequisite for wellness (12), and the education of the public on oral health is an important step for achieving this purpose. However, prior to establishing these education programs, it is important to determine the general level of knowledge of the society on these issues (13). One way of determining the level of knowledge in the general public is through the self-report method.

In the self-report technique, feelings, attitudes, or awareness of individuals are evaluated through

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questionnaires or interviews. Self-reporting can be used to assess various medical conditions and patients' level of knowledge on specific issues (14). In this study, we utilized the self-reporting method for evaluating the periodontal awareness of the patients in association with their socio-demographic and socio-economic profiles and status.

Materials and Methods

The ethics committee approval for this study was obtained from Van Yuzuncu Yil University Non-Interventional Ethics Committee with the number 2019/14-08. The study group consisted of 428 volunteers, who applied to the Periodontology Clinic of Faculty of Dentistry at the Van Yuzuncu Yil University, with at least primary school education. 187 of these patients were female while 241 were male.

A validated personal questionnaire consisting of 6 multiple-choice questions (Appendix-1) was distributed to individuals via a mobile application. Since all the data regarding demographic features and survey questions were categorical, the findings were expressed as the number of observations (n) and the ratio (%). The Pearson Chi-square test was used to examine whether there was a statistically significant relationship between the categorical data. For the tables where the expected value was below 5, close categories were combined for Chi-square analysis. Linear-by-linear association test was utilized for assessing whether there is a linear relationship between age, income, and education levels; however, only Pearson Chi-square statistics are shown in the tables. The data was analyzed by SPSS 25.0 version (IBM Corp., NY, USA) and a p value of <0.05 was accepted as statistically significant.

Demographic data of the participants are shown in Table 1.

A statistically significant association was found between gender and tooth brushing ($p<0.01$). While the rate of brushing teeth at least once a day was observed to be 92% among women, this rate was 83.4% for men. There was also a significant relationship between the age groups and tooth brushing habits ($p<0.01$): the habit of brushing teeth twice a day was highest in the 18-24 years old group, while this number was found to be the lowest among people who were 45 or older. A statistically significant relationship was found between income levels and tooth brushing habits ($p<0.05$), where the tooth brushing frequency increases with respect to the income level. There

was also a statistically significant relationship between education level and tooth brushing ($p<0.01$): as the education level increases, the frequency of tooth brushing also increases. (Table 2)

There was no statistically significant association between the demographic data and the answers given to the question "When would you visit the dentist?" ($p>0.05$). (Table 3)

There was no statistically significant association between gender, income level, and education level ($p>0.05$) and the answers given to the question of "Does smoking cause gum disease?". The quite well-known that smoking causes gum disease in all three demographic groups. A statistically significant correlation was found between the awareness of the fact that smoking causes gum disease and age groups ($p<0.05$). While the individuals aged 18-24 years exhibited the highest prevalence of awareness on this subject, the belief that smoking will not cause gum disease increased with advancing age. (Table 4)

A statistically significant difference was found between the awareness of men and women with respect to the relationship between gingival diseases and tooth loss ($p<0.05$). While most individuals from both genders who responded that they were aware of this relationship stated that they learned about it from their dentist, this rate of this answer was higher among women than men. On the other hand, there was no statistically significant relationship between age groups, income levels, education levels, and "gum disease might cause tooth loss" awareness ($p>0.05$). (Table 5)

The level of knowledge about the poor oral hygiene causing health problems displayed a similar distribution among different groups with regards to gender, income levels, and education levels, and no statistically significant difference was found between demographic groups ($p>0.05$). A statistically significant relationship was found between age groups and the awareness of the importance of oral hygiene ($p<0.05$), where the individuals aged between 18-24 years had the highest level of knowledge on this subject. (Table 6)

It was observed that the women had more information about periodontology than men and this difference was statistically significant ($p<0.01$). The knowledge of women on this issue was 2.954 times higher than men (odds ratio = 2.954, 95% CI: 1.94-4.77, $p<0.01$). Although no statistically significant relationship was found

Table 1. Demographic Characteristics of The Participants

Variable	Category	n	%
Age (years)	18-24	47	11
	25-34	176	41.1
	35-44	147	34.3
	45 and over	58	13.6
Gender	Female	187	43.7
	Male	241	56.3
Education	Elementary School	23	5.4
	High School	54	12.6
	College	236	55.1
	Graduate School	115	26.9
Monthly Income	<2000 TL	62	14.5
	2001-4000 TL	89	20.8
	4001-6000 TL	73	17.1
	6001-8000 TL	72	16.8
	8000 TL and over	132	30.8

Table 2. The relationship Between Tooth Brushing Frequency and Demographic Data

Demographic Characteristic	Category	Tooth Brushing Frequency						Chi-Square	p value
		Once a Day	Twice a Day	1-2 Times a Week	Only when aches	Do not brush	Total		
		n(%)	n(%)	n(%)	n(%)	n(%)	n(%)		
Gender	Female	65(34.80)	107(57.20)	11(5.9)	3(1.6)	1(0.5)	187(100)	19.778	0.001**
	Male	112(46.5)	89(36.9)	33(13.70)	4(1.7)	3(1.2)	241(100)		
Age (years)	18-24	11(23.4)	29(61.7)	4(8.5)	1(2.1)	2(4.3)	47(100)	29.387	0.003**
	25-34	73(41.5)	90(51.1)	10(5.7)	2(1.1)	1(0.6)	176(100)		
	35-44	72(49)	49(33.3)	22(15)	3(2)	1(0.7)	147(100)		
	>45	21(36.2)	28(48.3)	8(13.8)	1(1.7)	0(0)	58(100)		
Monthly Income (TL)	<2000	23(37.1)	28(45.2)	8(12.9)	2(3.2)	1(1.6)	62(100)	28.932	0.024*
	2001-4000	38(42.7)	35(39.3)	8(9)	5(5.6)	3(3.4)	89(100)		
	4001-6000	35(47.9)	33(45.2)	5(6.8)	0(0)	0(0)	73(100)		
	6001-8000	24(33.3)	38(52.8)	10(13.9)	0(0)	0(0)	72(100)		
Education	>8000	57(43.2)	62(47)	13(9.8)	0(0)	0(0)	132(100)	32.976	0.001**
	Elementary-High School	31(40.3)	26(33.8)	13(16.9)	5(6.5)	2(2.6)	77(100)		
	University	101(42.8)	108(45.8)	24(10.2)	1(0.4)	2(0.8)	236(100)		
	Graduate Level	45(39.1)	62(53.9)	7(6.1)	1(0.9)	0(0)	115(100)		
	Total	177(41.4)	196(45.8)	44(10.3)	7(1.6)	4(0.9)	428(100)		

*p<0.05, **p<0.01

between age and knowledge of periodontology by using the Pearson Chi-square approach, it was evident that the rate of “Yes” answer to “Do you know that there is a branch of dentistry that

studies gum diseases and treatment (periodontology)?” question decreases with age. This relationship was found to be statistically significant by the linear-by-linear association

Table 3. The Association Between The Answer To “When Would You Visit A Dentist?” Question and The Demographic Data

Demographic Characteristic	Category	When would you visit a dentist?				Total	Chi-square	p-value
		When my gums bleed	Almost never	When my tooth hurts	I visit a dentist twice a year even if I don't have a complaint			
		n(%)	n(%)	n(%)	n(%)			
Gender	Female	13(7)	4(2.1)	130(69.5)	40(21.4)	187(100)	2.076	0.557
	Male	20(8.3)	10(4.1)	167(69.3)	44(18.3)			
Age (years)	18-24	2(4.3)	2(4.3)	32(68.1)	11(23.4)	47(100)	4.835	0.848
	25-34	17(9.7)	6(3.4)	118(67)	35(19.9)	176(100)		
	35-44	12(4.3)	5(4.3)	102(68.1)	28(23.4)	147(100)		
	>45	2(3.4)	1(1.7)	45(77.6)	10(17.2)	58(100)		
	<2000	3(4.8)	5(8.1)	41(66.1)	13(21)	62(100)		
Monthly Income (TL)	2001-4000	6(6.7)	2(2.2)	69(77.5)	12(13.5)	89(100)	11.903	0.453
	4001-6000	5(6.8)	2(2.7)	52(71.2)	14(19.2)	73(100)		
	6001-8000	6(8.3)	3(4.2)	49(68.1)	14(19.4)	72(100)		
	>8000	13(9.8)	2(1.5)	86(65.2)	31(23.5)	132(100)		
Education	Elementary-High School	6(7.8)	4(5.2)	58(75.3)	9(11.7)	77(100)	8.137	0.228
	University	14(5.9)	7(3)	166(70.3)	49(20.8)	236(100)		
	Graduate Level	13(11.3)	3(2.6)	73(63.5)	26(22.6)	115(100)		
	Total	33(7.7)	14(3.3)	297(69.4)	84(19.6)	428(100)		

*p<0.05, **p<0.01

(p<0.05). A similar relationship was also observed between awareness of periodontology and income levels. While the rate of those who said “yes” was highest in the group with the lowest income level, this rate decreased as the income level increased, and this relationship was found to be statistically significant by linear-by-linear association analyses (p<0.05). There was no statistically significant relationship between education levels and knowledge of periodontology (p>0.05). The rate of those who answered “yes” was found to be higher than those who answered “no” within all education levels.

Discussion

It is important for society to be knowledgeable about periodontal health and disease for efficient preventive dental care (4). Because individuals generally visit the dentists at the advanced stages of periodontal diseases (5), increasing awareness on this subject would enable early diagnosis and economical treatment of periodontal diseases (7).

In this study, we aimed to determine the awareness level of the society with regards to periodontal health and diseases by using multiple choice questions in accordance with the literature.

When we evaluated the demographic data, we found that the level of awareness in the society was variable between different demographic groups. For example, the awareness level about periodontal health and disease conditions was higher in the 18-24 years old age group compared to the other age groups, and this result was consistent with various studies in the literature (15-17). When we evaluated the association between the awareness level and gender, the women were found to be more knowledgeable on periodontal health and disease than the male population. Some of the studies in the literature are consistent with our study results (16,18), while others are not (19). We also found that people with higher income and education levels have more knowledge about periodontal health and disease, which is also supported by the results in the literature (15,16,20,21).

Table 4. The Relationship Between The Answers To The Question "Does Smoking Cause Gum Disease?" and Demographic Variables

Demographic Characteristic	Category	Does smoking cause gum disease?			Chi-square	p-value
		Yes	No	Total		
		n(%)	n(%)	n(%)		
Gender	Female	141(75.4)	46(24.6)	187(100)	0.211	0.646
	Male	177(73.4)	64(26.6)	241(100)		
Age (years)	18-24	39(83)	8(17)	47(100)	8.637	0.035*
	25-34	136(77.3)	40(22.7)	176(100)		
	35-44	108(73.5)	39(26.5)	147(100)		
	>45	35(60.3)	23(39.7)	58(100)		
Monthly Income (TL)	<2000	53(85.5)	9(14.5)	62(100)	7.627	0.106
	2001-4000	63(70.8)	26(29.2)	89(100)		
	4001-6000	48(65.8)	25(34.2)	73(100)		
	6001-8000	55(76.4)	17(23.6)	72(100)		
Education	>8000	99(75)	33(25)	132(100)	0.375	0.829
	Elementary-High School	58(75.3)	19(24.7)	77(100)		
	University	177(75)	59(25)	236(100)		
	Graduate Level	83(72.2)	32(27.8)	115(100)		
	Total	318(74.3)	110(25.7)	428(100)		

*p<0.05, **p<0.01

Several studies have reported that factors such as tooth brushing, professional mechanical dental cleaning, and diet which are associated with oral health are dependent on both lifestyle and socioeconomic conditions (22-24). In one study (25), women were found to be more knowledgeable on the relationship between smoking and periodontal diseases compared to men and people in the 20-50 years old age group were more aware of this condition compared to other age groups. The same study also reported that individuals with university/college degrees were more knowledgeable than individuals with less education. Our results showed a similar pattern with respect to gender, education, and income levels. However, we found that the opinion that smoking is harmful decreases in the older population.

In our study, the rate of individuals who said they would only visit their dentists when they felt pain was 69.4%, and this result is consistent with the literature (16,26,27). The high prevalence of delaying dentist visits until having toothache shows that there is still a lack of awareness on the importance of dental health in society in general and also suggests the cost of dental treatment might be the reason for delaying treatment.

The fact that 49.3% of the participants do not know that oral hygiene deficiency may cause systemic diseases, emphasizes the necessity of educating the society on this subject, which is in line with the literature (28,29). 45.6% of the participants stated that their dentist informed them that untreated gingival disease may cause tooth loss, while 30.8% of the participants said that they learned this information from intermediaries such as the internet. This result clearly shows the necessity of dentistry professionals to more widely inform their patients. In one study, Zemanovich et al. observed that the rate of women going to periodontists was found to be higher than men (30). In line with these observations, in our study, the awareness of patients on periodontology was higher among women (more than twice) than men. Zemanovich et al. (30) also reported that the rate of going to the periodontist in the 40-59 age group was higher than the other age groups. In our study, it was found that knowledge about periodontology decreased in the older age groups. In terms of the relationship between the educational level and knowledge of periodontology, although there was no statistically significant difference between groups with different education levels, there was a tendency that the awareness on this issue increases

Table 5. Relationship Between The Question "Untreated Gingival Disease May Result In Tooth Loss" and Demographic Data

		Untreated gingival diseases may result in tooth loss.						
Demographic Characteristic	Category	I am not aware of this fact.	My dentist informed me about this.	I learned about this through internet/ social media/journals/ TV etc.	Total	Chi-square	p-value	
		n(%)	n(%)	n(%)	n(%)			
Gender	Female	38(20.3)	99(52.9)	50(26.7)	187(100)	7.295	0.026*	
	Male	63(26.1)	96(39.8)	82(34)	241(100)			
Age (years)	18-24	9(19.1)	29(61.7)	9(19.1)	47(100)	12.095	0.060	
	25-34	43(24.4)	74(42)	59(33.5)	176(100)			
	35-44	34(23.1)	60(40.8)	53(36.1)	147(100)			
	>45	15(25.9)	32(55.2)	11(19)	58(100)			
Monthly Income (TL)	<2000	14(22.6)	35(56.5)	13(21)	62(100)	10.456	0.234	
	2001-4000	27(30.3)	40(44.9)	22(24.7)	89(100)			
	4001-6000	18(24.7)	31(42.5)	24(32.9)	73(100)			
	6001-8000	14(19.4)	35(48.6)	23(31.9)	72(100)			
Education	>8000	28(21.2)	54(40.9)	50(37.9)	132(100)	5.225	0.265	
	Elementary-School	19(24.7)	41(53.2)	17(22.1)	77(100)			
	University	58(24.6)	98(41.5)	80(33.9)	236(100)			
	Graduate Level	24(20.9)	56(48.7)	35(30.4)	115(100)			
Total		101(23.6)	195(45.6)	132(30.8)	428(100)			

*p<0.05, **p<0.01

Table 6. Relationships Between The Question "Do You Know That Oral Hygiene Problems Are Associated With Many Diseases Affecting Systemic/General Health?" and Demographic Characteristics

		Do you know that oral hygiene problems are associated with many diseases affecting systemic/general health (e.g. diabetes, cardiovascular diseases, lower fetal weight, etc.)?					
Demographic Characteristic	Category	Yes	No	No idea	Total	Chi-square	P-value
		n(%)	n(%)	n(%)	n(%)		
Gender	Female	103(55.1)	20(10.7)	64(34.2)	187(100)	3.848	0.146
	Male	114(47.3)	22(9.1)	105(43.6)	241(100)		
Age (years)	18-24	30(63.8)	8(17)	9(19.1)	47(100)	13.048	0.042*
	25-34	84(47.7)	16(9.1)	76(43.2)	176(100)		
	35-44	73(49.7)	16(10.9)	58(39.5)	147(100)		
	>45	30(51.7)	2(3.4)	26(44.8)	58(100)		
Monthly Income (TL)	<2000	33(53.2)	11(17.7)	18(29)	62(100)	13.512	0.095
	2001-4000	39(43.8)	11(12.4)	39(43.8)	89(100)		
	4001-6000	35(47.9)	5(6.8)	33(45.2)	73(100)		
	6001-8000	34(47.2)	8(11.1)	30(41.7)	72(100)		
Education	>8000	76(57.6)	7(5.3)	49(37.1)	132(100)	6.063	0.194
	Elementary-High School	34(44.2)	13(16.9)	30(39)	77(100)		
	University	120(50.8)	20(8.5)	96(40.7)	236(100)		
	Graduate Level	63(54.8)	9(7.8)	43(37.4)	115(100)		
Total		217(50.7)	42(9.8)	169(39.5)	428(100)		

*p<0.05, **p<0.01

with increasing education level. Interestingly, our study showed that as the income level increases, the awareness of periodontology decreases.

In conclusion, the present study showed that although the awareness of dental health among individuals with high education and income levels was found to be evident, dental health awareness is still limited in the general population. Therefore, comprehensive oral hygiene education programs are needed to improve dental and gum health. It is necessary to ensure that everyone including individuals with high education and income levels participate in these programs. In addition, further studies with larger sample sizes are needed to obtain more reliable data on this subject.

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