

The impact of socioeconomic factors and oral hygiene habits on knowledge level of oral health and procedures: The questionnaire based research

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ABSTRACT

Objective: The purpose of this study is to describe oral health behaviour of the individuals and determine the relationship level of knowledge of the participants about dental health and procedures and their personal variables.

Methods: The total number of participants who answered the questionnaire was 575. Oral health behaviours were assessed according to tooth brushing frequency, dental floss or interdental brush use, when was the last time he/she went to dentist and their reason for going to the dentist. Also, the eight dental health knowledge items were selected to determine the individual's dental health knowledge status.

Results: There was no statistical difference between the ages of the participants and the knowledge levels of dental health and procedures ($p=0.089$, $p>0.05$). There was statistical difference between level of education and the knowledge levels of dental health and procedures ($p=0.001$, $p<0.05$). There was statistical difference between level of family income and the knowledge levels of dental health and procedures ($p=0.001$, $p<0.05$). There was statistical difference between dental floss or interdental brush using and the knowledge levels of dental health and procedures ($p=0.001$, $p<0.05$).

Conclusion: The findings of the present study showed that Oral hygiene habits and oral and dental health knowledge level is insufficient in our society. Preventive and educational programs should be developed in order to both improve and inform individuals about oral care.

Keywords: Knowledge, oral health, socioeconomic factors, tooth brushing

1. INTRODUCTION

Dental problems are common in both primary and permanent teeth reaching about four million people worldwide (1). It is accepted that the most important etiological factor that impairs oral and dental health is microbial dental plaque (2). Although microbial dental plaque is accepted as the primary factor in etiology, it has been shown that individuals' factors such as age, gender, race, habits, systemic disease, socioeconomic and cultural conditions also affect oral and dental health (3-5). The maintenance and improvement of oral health status depends on correctional care behaviours (6). Advanced oral health behaviour is known to provide a better oral health status (7-9). Therefore, oral health behaviours certainly must be improved.

The impact of socioeconomic status on oral health has been investigated for a long time. Socioeconomic impossibilities can reduce oral and dental care given by individuals. Also, investigating and determining of social inequalities is fundamental to obtain knowledge about population differences in oral health care needs, conservative application and oral health recruiting (8,9).

Oral health behaviour in adults is known to be associated with various factors, such as age, sexual differences (10-11), educational and socioeconomic status (12-14). Family income and education status are the most widely used markers for socioeconomic status assessment in epidemiologic studies (15-19).

Earlier researches have reported that socioeconomic status is adversely related with poor oral health behaviour and dental disease. The researches demonstrated that people with higher socioeconomic level are more concerned about oral health and less experience dental diseases (15-17). Also families with better socioeconomic level are more aware of oral and dental health. As a result of this statement, they can guide their children about oral and dental care. It has been observed that families with high education level and monthly income perform more frequently oral and dental health applications and their knowledge level is better (20). It is stated that families who take more seriously the oral and dental care habits of their children and their routine dental controls, have higher awareness about dental procedures

and preventive methods. Also it has been reported that their children have higher dental knowledge than the children of other families (21).

In our study, different from these studies, we want to evaluate the effect of socioeconomic conditions on knowledge of dental procedure terms as well as oral health behavior. In addition, we aimed to determine that knowledge of the participants about pedodontic procedures.

In the present study, we examined a sample of adults aged 18–80 living in. The purpose of this study is to describe their oral health behaviour; and determine the relationship between dental health and procedure knowledge levels and their personal variables (such as age, gender, socio-economic status, education status, toothbrushing frequency, using dental floss, and reason and frequency of dental check-ups etc).

2. METHODS

This research is based on data collected from a questionnaire that assessed dental health knowledge and oral health behaviour of dental patients who applied to Karabük Oral and Dental Health Hospital from Karabük and neighboring provinces from February to April, 2020. All participants were informed before completing the questionnaire and signed the informed consent forms. This study was approved by the Ethics Committee of Karabük University (2020/170). This study was conducted in compliance with the Helsinki Declaration.

2.1. Participants

The total number of questionnaires distributed patients who applied to Karabük Oral and Dental Health Hospital from Karabük and neighboring provinces was 750 of which the total number of participants who answered the questionnaire was 575. Therefore, the participation rate was calculated as 76.66%.

The participants are individuals older than 18 years, which is considered that have the ability of assessing their dental health behaviour and knowledge. The inclusion criteria were as follows: agreement to participate in the study, aged older than 18 years and having cognitive ability to respond the questions in the survey. The exclusion criteria were as follows: not willing to participate in the study, aged younger than 18 years and individuals lacking cognitive ability to respond the questions in the questionnaire.

2.2 Questionnaire

Socioeconomic variables were assessed according to age group (18-30, 31-44 and 45-80), gender, level of education (primary school, high school, university, post graduate), and family income (<minimum wage, minimum wage, minimum wage-3000 TL, 3000-4000 TL, 4000-6000 TL, above 6000 TL, whether she/he has a child and general health condition (systemic disease state and medication continuously).

Oral health behaviours were assessed according to toothbrushing frequency (never, sometimes, once a day, twice or more in a day), dental floss or interdental brush use (use, not use), when was the last time he/she went to dentist (in the past three months, 3-6 months ago, 6-month 1 year ago, dont remember) and their reason for going to the dentist (for dental check-up, because of toothache, for treatment).

The eight dental health knowledge items (calculus, prosthesis, fissure sealant, gingival recession, fluor, implant, space maintainer and panoramic radiography) were selected to determine the individual's dental health knowledge status. Responses to items were 'know the meaning' and 'dont know the meaning'. Total number of 'know the meaning' responses were collected and then collapsed into three categories of low (0-2), middle (3-5) and high (6-8).

2.3 Statistical Analysis

The statistical analysis of the data was performed using MiniTab 17 Statistical Software (Statistical Software Release, Version 17.3.1. Minitab Inc. USA). Descriptive statics were obtained in frequency and percentage. T test was used for multiple comparisons of normally distributed variables with continuous variation. Kruskal Wallis test was used for non normally distributed variables. Mann-Whitney test and Chi-square test were used in the evaluation of the binary comparisons. P values <0.05 were used for indication of statistical significance for all tests.

3. RESULTS

The mean age of 575 participants was 34.7±11.52. The demographic data of the participants are shown in Table 1 and oral health behaviours of the participants are shown in Table 2. The participants included in the study were divided into 3 groups by age such as 18-30, 31-44 and 45-80. There was no statistically difference between the ages of the participants and the knowledge levels of the about dental health and procedures ($p=0.089$, $p>0.05$) (Table 3).

335 of the 575 participants were women and 240 were men. There was no statistically difference between the gender of the participants and the knowledge levels about dental health and procedures ($p=0.520$, $p>0.05$) (Table 3).

171 of the participants were primary school (E1), 171 were high school (E2), 219 were university (E3), and 14 were post graduates (E4). There was statistical difference between level of education and the frequency of tooth brush. It was found that there was no significant difference in terms of frequency of teeth brushing only between the participants with university and postgraduate education levels ($p=0,3712$), while there was a significant difference between the participants with other education levels (E1-E2, $p=0,0236$; E1-E3, $p=0$; E1-E4, $p=0,0023$; E2-E3, $p=0,0014$) (Table 4). The frequency of tooth brushing increased as the education level increased. There was statistical difference between level

of education and the knowledge levels of the about dental health and procedures ($p=0.001$, $p<0.05$) (Table 3). As the level of education increases, the knowledge levels of the about dental health and procedures increase significantly. Binary comparisons of education levels among themselves are shown in Table 3.

Table 1. The demographic data of the participants

		Number	Percent (%)
Gender	Male	240	41.7
	Female	335	58.3
Age	18-30	227	39.5
	31-44	234	40.7
	45-80	114	19.8
Education level	primary school	171	29.7
	high school	171	29.7
	university	219	38.1
	post graduate	14	2.5
Family income	<minimum wage	219	38.1
	minimum wage	118	20.5
	minimum wage-3000	85	14.7
	3000-4000	67	11.7
	4000-6000	70	12.2
	above 6000	16	2.8
Whether she/he has a child	Yes	351	61.1
	No	224	38.9
Sistemic disease state	Yes	95	16.5
	No	480	83.5
Medication continuously	Yes	89	15.5
	No	486	84.5

Table 2. Oral health behaviours of the participants

		Number (n)	Percent (%)
Toothbrushing frequency	never	10	1.8
	sometimes	108	18.8
	once a day	272	47.3
	twice or more in a day	185	32.1
Dental floss or interdental brush use	use	116	20.1
	not use	459	79.9
When was the last time he/she went to dentist	in the past three months	246	42.8
	95	95	16.5
	3-6 months ago,	107	18.6
	6-month 1 year ago, dont remember	127	22.1
Reason for going to the dentist	for dental check-up	73	12.6
	because of toothache	312	54.3
	for treatment	190	33.1

There was statistical difference between level of family income and the knowledge levels of the about dental health and procedures ($p=0.001$, $p<0.05$) (Table 3). As the amount of family income increases, the knowledge levels of the about dental health and procedures increase significantly. Binary comparisons of family income amounts among themselves are shown in Table 3. Also it was found that there was no significant difference in terms of frequency of teeth brushing between the participants with FI1 and FI2 ($p=0,0751$), and

FI5 and FI6 ($p=0.3838$). There was a significant difference between the participants with other family incomes ($p<0.05$) (Table 5). Apart from the participants with the lowest and the two highest income levels, the frequency of brushing increases significantly as the income level increases.

When the participants who participated in our study were evaluated in terms of their general health conditions, it was determined that 95 of them had systemic disease and 89 of them constantly take medication. There was no statistically difference between the general health conditions ($p=0.213$), constanly taking medication ($p=0.09$) of the participants and the knowledge levels about dental health and procedures ($p>0.05$) (Table 3).

Table 3. The dental knowledge levels of the participants

		low middle high	p
Gender	Male	72 128 40	0.520 ¹
	Female	105 155 75	
Age	18-30	81 107 39	0.089 ¹
	31-44	65 120 49	
	45-80	31 56 27	
Education level	primary school	86 77 8	0.001* ²
	high school	48 95 28	
	university	43 107 69	
	post graduate	0 4 10	
Family income	<minimum wage	84 100 35	0.001* ²
	minimum wage	52 48 18	
	minimum wage<3000	24 50 11	
	3000-4000	12 39 16	
	4000-6000	5 36 29	
	above 6000	0 10 6	
Whether she/he has a child	Yes	116 165 70	0.295 ¹
	No	61 118 45	
Sistemic disease state	Yes	34 45 16	0.213 ¹
	No	143 238 99	
Medication continuously	Yes	33 43 13	0.09 ¹
	No	144 240 102	
Toothbrushing frequency	never	8 2 0	0.001* ²
	sometimes	60 39 9	
	once a day	81 140 51	
	twice or more in a day	30 100 55	
Dental floss or interdental brush use	Use	17 56 43	0.001 ¹
	not use	163 225 71	
When was the last time he/she went to dentist	in the past 3 months	76 124 46	0.001* ²
	21 49 25	21 49 25	
	3-6 months ago	24 54 29	
	6-month-1year ago no remember	59 54 14	
Reason for going to the dentist	dental check-up	15 27 31	0.043* ²
	toothache	114 154 44	
	treatment	51 100 39	

¹ Chi-square test, ² Mann Whitney U test

Table 4. The relationship between education level and tooth brushing frequency

		Never	Sometimes	Once a day	Twice or more in a day	p value*
Primary School (E1)	n	2	49	86	34	E1-E2; 0.0236
	%	1,16	28,65	50,29	19,88	
High School (E2)	n	2	35	84	50	E1-E3; <0.001
	%	1,16	20,46	49,12	29,23	
Universtiy (E3)	n	2	26	96	95	E1-E4; 0.0023
	%	0,91	11,87	43,83	43,37	
Post Graduate (E4)	n	0	0	7	7	E2-E3; 0.0014
	%	0	0	50	50	

*Mann Whitney U test

Table 5. The relationship between family income and tooth brushing frequency

		Never	Sometimes	Once in a day	Twice in a day	p value*
< minimum wage (F1)	n	2	58	113	46	F1-F2; 0.0751
	%	0,91	26,48	51,59	21	
minimum wage (F2)	n	2	25	54	37	F1-F3; 0.0251
	%	1,69	21,18	45,76	31,35	
minimum wage-3000 TL (F3)	n	0	10	36	39	F2-F3; 0.0452
	%	0	11,76	42,35	45,88	
3000-4000 TL (F4)	n	2	9	35	21	F1-F4; 0.0357
	%	2,98	13,43	52,23	31,34	
4000-6000 TL (F5)	n	0	8	28	34	F4-F5; 0.0341
	%	0	11,42	40	48,57	
above 6000 TL (F6)	n	0	0	7	9	F5-F6; 0.3838
	%	0	0	43,75	56,25	

*Mann Whitney U test

The participants were evaluated in terms of oral health behaviours such as tooth brushing frequency (never, sometimes, once a day, twice or more in a day), using dental floss or interdental brush (use, not use), when was the last time he/she went to dentist (in the past three months, 3-6 months ago, 6-month 1 year ago, more than 1 year, dont remember) and their reason for going to the dentist (for dental check-up, because of toothache, for treatment). Descriptive statistics are summarized in Table 3. There was statistically difference between tooth brushing frequency

and the knowledge levels about dental health and procedures (p=0.001, p<0.05). There was statistically difference between “never” and “sometimes” groups in terms of the knowledge levels about dental health and procedures (p=0.001, p<0.05) (Table 3). Also there was statistically difference between “once a day” and “twice or more in a day” groups in terms of the knowledge levels about dental health and procedures (p=0.0002, p<0.05) (Table 3).

There was statistically difference between using dental floss or interdental brush and the knowledge levels about dental health and procedures (p=0.001, p<0.05) (Table 3). In brief; as the frequency of brushing and flossing increase, the knowledge levels about dental health and procedures increase.

There was statistical difference between when was the last time he/she went to dentist and the family income of the participants (p=0,0004) (Table 6). There was statistical difference between when was the last time he/she went to dentist and the education level of the participants (p=0,024) (Table 7). It has been concluded that individuals with low socio-economic level and low education level have longer periods to go to the dentist. Also there was statistical difference between when was the last time he/she went to dentist and the knowledge levels of the about dental health and procedures (p=0.001, p<0.05) (Table 3). There was statistical difference between “dont remember” and other groups (in the past three months, 3-6 months ago, 6-month 1 year ago, more than 1 year) in terms of the knowledge levels of the about dental health and procedures (p=0.001, p<0.05) (Table 3).

Table 6. The relationship between the family income and when was the last time he/she went to dentist

		In the past three months	3-6 months ago	6-month 1 year ago	Don't remember
< minimum wage	n	79	28	46	66
	%	36,07	12,78	21	30,13
minimum wage	n	51	25	19	23
	%	43,22	21,18	16,10	19,49
minimum wage-3000 TL	n	33	20	15	17
	%	38,82	23,52	17,64	20
3000-4000 TL	n	39	11	9	8
	%	58,2	16,41	13,43	11,94
4000-6000 TL	n	38	8	12	12
	%	54,28	11,42	17,14	17,14
above 6000 TL	n	6	3	6	1
	%	37,5	18,75	37,5	6,25

p= 0,0004*

*Mann Whitney U test

There was statistically difference between reason for going to the dentist and the knowledge levels about dental health and procedures ($p=0.043$, $p<0.05$) (Table 3). Participants who went to the dentists for dental check-up – although their number is the least (73) – had significantly higher knowledge levels about dental health and procedures than other groups (because of toothache (312), for treatment (190) (Table 3).

The participants’ knowledge levels about dental health and procedures did not show a statistically difference in terms of whether they have children or not ($p=0.295$ $p>0.05$) (Table 3). In addition, we investigated the knowledge levels of the participants with and without children about the terms concerning pediatric dentistry (fluor, fissur sealant and space maintaner). The results were surprising, in general, the knowledge levels of this terms was very very low, and no significant difference was found between those with and without children. In addition, when participating parents were evaluated in terms of knowing the terms of pediatric dentistry, no significant difference was found between the genders ($p>0.05$) (Table 8).

Table 7. The relationship educational level and when was the last time he/she went to dentist

		In the past three months	3-6 months ago	6-month 1 year ago	Don't remember
Primary school	n	65	21	33	52
	%	38,01	12,28	19,29	30,4
High school	n	66	32	33	40
	%	38,59	18,71	19,29	23,39
University	n	110	40	35	34
	%	50,22	18,26	15,98	15,52
Post graduate	n	5	2	6	1
	%	35,71	14,28	42,85	7,14
$p=0,024^*$					

*Mann Whitney U test

Table 8. The knowledge levels of the participants with and without children about the terms concerning child dentistry

	Male/ knowledge(n)	Female/ knowledge(n)	P
flüör	138/36	215/70	0.19 ¹
fissur sealant	138/11	215/15	0.72 ¹
space maintaner	138/19	215/27	0.74 ¹

¹Chi-square test

4. DISCUSSION

Epidemiological studies have always been useful in determining the importance given to oral and dental health by individuals and their level of knowledge (22). It is known

that oral hygiene education and preventive programs have an important role in reducing the prevalence of dental caries and periodontal disease in children and young people. It was reported that the role of the teacher and friends was more important than the dentists as the age grew older, while the effect of the family was dominant in gaining oral hygiene habits at a younger age (23). In elderly adults, dentists play an active role in informing the community about oral and dental care.

In our study, data was collected with a questionnaire evaluating the oral hygiene habits and dental knowledge levels of patients who applied to Karabük Oral and Dental Health Hospital from Karabük and neighboring provinces, and the deficiencies in the region were tried to be eliminated in the light of the data obtained.

The frequency of tooth brushing in our study was found 1.8% in those who never brush, 18.8 % who brush sometimes, 47.3% who brush once a day and 32.1% who brush two or more time in a day. In a study conducted by Koçak N, similarly to our study, it was reported that 34.6% of individuals brushed their teeth two or more times a day and 63.9% brushed their teeth rarely (24). Also in another study conducted in Brazil, it was reported that 96.6% of participants who are students aged 14-19 years, brush their teeth everyday. It means they brush teeth more than our society (25). On the other hand in a study investigating the oral and dental health knowledge among African Americans, it was reported that 50% of the participants brushed their teeth every day, that means African Americans brushing frequency lower than us (26).

In our study, in accordance with other studies, tooth brushing frequency was found higher in female sex (27-29). However, when the relationship between gender and dental knowledge levels of patients was examined, no difference was found between female and male in terms of dental knowledge level. This situation can be explained by the fact that the rate of informing women and men by dentists is similar, but due to the fact that females’ social and aesthetic concerns are higher than males, females pay more attention to oral care (28, 30, 31).

There was no statistically difference between the ages of the patients and tooth brushing frequency. Also there was no difference in dental knowledge levels of patients with age. This situation may occur because of the majority of patients participating in the study may have applied to our hospital with the need for dental treatment regardless of age group. During their treatment, dentists may be increasing this rate in all ages groups, both by mentioning the importance of brushing teeth and informing patients about treatments.

In previous studies, it is stated that one of the important markers of oral and dental health is the socioeconomic status of individuals. The ability of individuals to purchase equipment necessary for oral and dental care and the ability to go to routine dental controls are associated with economic conditions (30-33).

Peltzer K et al. (30) reported that the frequency of brushing teeth is higher in individuals living in better economic conditions. Also Küçükeşme et al. (34) reported that low socio-economic situation negatively affects oral hygiene and nutrition, increases the risk of caries and reduces the importance given to oral hygiene. In accordance with their study, it was observed that there was a significant relationship between the monthly income level of the families and their brushing frequency in our study. The frequency of tooth brushing significantly increases as the family income level increases.

In our study it was found that, there was statistically difference between tooth brushing frequency and the dental knowledge levels. Also there was statistical difference between dental floss or interdental brushing and the dental knowledge levels. In brief; as the dental knowledge level increases, the frequency of brushing and using floss will increase.

In the results of our study, it was found that there was a significant relationship between using dental floss and monthly family income and education levels. Participants with higher income and education level used dental floss more. In accordance with our study, Freddo et al. (31) reported that, individuals with higher socioeconomic levels had higher frequency of dental floss use than those with lower socioeconomic levels. It was suggested that the reason for this situation might be high floss prices or low dental knowledge levels of patients. In another study conducted by Bordin D et al. (27) was stated that the level of education is more effective than the purchasing power of individuals and that it is more effective on the level of dental knowledge.

In our study, a hypothesis was established that the level of dental knowledge may be better due to the fact that individuals with systemic diseases are found more in hospital settings. However, no significant difference was found between dental knowledge levels of those with and without systemic disease. It is thought that the reason for this situation might be, weak communication between patient and medical doctors about the relationship between dental diseases and systemic diseases. Therefore, patients with systemic disease do not care about oral and dental care more than others. Also other studies have reported that the relationship between systemic diseases and oral health is not fully known by their patients (26, 35).

According to the findings obtained in our study, dental knowledge levels of the patients were found to be 30.8% low, 49.2% medium, and 20% high. The reason for the number of patients with a high level of knowledge is less, may be due to the fact that dentists are too busy in daily practice, so that they do not have time to provide detailed information about oral and dental care and treatment methods to be applied. The habit of using dental floss/interdental brush with tooth brushing has been accepted as oral health behavior. When we compare oral health behavior and dental knowledge levels of patients; it was observed that as the dental knowledge level of the patients increased, the frequency of tooth brushing and the use of dental floss/interface brush increased.

When the reasons of the patients going to the dentist were examined, it was seen that the number of patients who went to dentist just dental check up lower than the others. However, when the dental knowledge levels of these patients were evaluated, it was seen that their knowledge level was quite high compared to the patients who went for dental pain or routine treatments. It is considered as the main reason for this situation that individuals with high awareness of oral and dental health know the importance of routine controls, which have an important role in maintaining oral and dental health.

Although the periods and causes of patients going to the dentist are part of their oral and dental health habits, they are also thought to be related to the dental knowledge levels of individuals. In our study, dental knowledge levels of patients who went to the dentist with large intervals were found to be lower than others. In parallel with our study, in earlier studies, it has been observed that individuals with low socio-economic level and low education level have longer periods to go to the dentist (28-30). Similar to our study, Woolfolk et al. (36) stated that the frequency of dental check-ups is also related to the monthly income levels of individuals.

While planning the study, it was emphasized that individuals with children may have more information about space maintainer, fluor and fissure sealant terms related to pediatric dentistry. However, no significant difference was found between families with or without children in terms of their level of knowing these terms related to pediatric dentistry. The reason for this situation may be that the pedodontist have just started in the hospitals where the study is carried out or the dentists who have been treating children before did not inform the families much about this topic.

The limitations of this study are as following;

1. The interpretation of our results should take into account the methodological limitation that the sample is not representative of the population in general. Because our study was carried out in a public hospital.
2. Also evaluating of socio-economics situations of participants just based on monthly income and education level. These criteria may not be enough to evaluate individuals socioeconomic situation.
3. It is possible that other types of conceptual knowledge, such as recommended self-care behaviors and previous dental treatments could have been associated with the oral health knowledge levels. But we evaluate participants level of knowledge regardless of previous treatments and recommendations of their dentist about their oral care behaviours.

5. CONCLUSION

The findings of the present study showed that oral hygiene habits and dental knowledge levels are not sufficient in our society. Preventive and educational programs should be developed in order to both improve and inform individuals

about oral care. In such a case, dentists have important responsibilities to inform their patients adequately and guide the planning of preventive oral programs.

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