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IMPACT OF SOCIOECONOMIC FACTORS IN ORAL AND DENTAL HEALTH CARE SERVICES: THE CASE OF TURKEY*

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Abstract: The importance given to oral and dental health is one of the developmental indicators of a society. Research has shown that social and economic factors have great effect in individuals accessing oral and dental health services. This study was performed in order to determine the relationship between the socio economical levels of individuals and their oral hygiene, exhibit the present situation, and make suggestions for protective oral and dental health services. This study was performed in a private dental clinic in Istanbul. No sample was selected in the study, and 150 patients who applied to the clinic within the relevant study duration and agreed to participate in the study were included in the study. According to study findings, the most important three factors affecting oral hygiene levels were found to be occupation, income level, and education status. It was determined that low education and socio economic status have important roles in decay formation. As education levels and socio economic status increased, so did awareness on oral and dental health. Tooth brushing rates also increased with socio economic status. Thus, oral hygiene was affected positively. In this direction, it can be said that so as to promote the oral and dental health level of the population, public should be raised the awareness about oral and dental health and it should become a state policy. Protective health care services should be included in first step health services and the definition of family dentist should be made.

Key Words: Oral and Dental Health, Protective Health Care Services, Health Care Services Management

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Introduction

Oral and dental health is one the most important issues in public health in connection with widespread public health problems and the high cost of health care in addition to affecting the daily lives of individuals (Sisson, 2007). Oral and dental health involves the health of the oral cavity and the teeth, gums, and mucosa (Nemati et al., 2016). One of the most critical indicators of oral and dental health is the dental cavities and tooth losses. Tooth decay is a multi-factorial and infectious disease that forms through the colonization of bacteria inside the mouth and their interactions with the host and diet factors in time. For a decay to be formed, it is generally accepted that a sensitive host, a cariogenic mouth flora, and cariogenic foodstuff should be together for a sufficient time (Koçanalı et al., 2014).

Oral and dental health is crucial for general health. Individuals with missing teeth were stated to change their nutritional habits because of chewing problems, not get sufficient nutrition, and have a trend towards bad general health alongside oral health (Keskin et al., 2012). Raisin awareness and the education level are the leading factors of decay prevention and protection works (Boran, 2009). Knowing the oral and dental health levels of societies plays an important role in the improvement of their oral and dental health (Gökalp et al., 2004).

Childhood has critical importance about having a healthy mouth and teeth and translating these healthy teeth and healthy lifestyle behavior to adulthood. However, access to protective and curative oral and dental health services have significant disparities besides the habits such as appropriate nutrition and tooth brushing to have healthy mouth and teeth. Factors such as education, income level, social class, employment, and rural-urban life create inequalities in access to oral and dental health services (Hassoy et al., 2013). According to studies, individuals with insufficient social and economic means suffer results such as inadequate management of chronic cases and disease management, inadequate skills for reaching the health system, increases in health care costs, medical and medicine errors, and mortality rates, and benefiting less from health care services (Çolakoğlu and Has, 2015).

The importance that the public gives to oral and dental health is largely related to economic and social factors. These factors are; income, education and cultural level, lifestyle, occupation, residence, population, nutrition types, and smoking. These factors are affected by the individual's level of understanding, processing, and provisioning basic health information and services in order to make correct decisions. The improvement of the oral and dental health of the public is only possible through making oral and dental health services more widespread. Protective oral and dental health services are an inseparable part of primary health care services, and an excellent oral and dental health is a fundamental human right. Therefore, protective oral and dental health services are among the most critical public health services that health managers should be trained about and give attention to. The provision of protective oral and dental health services should be accepted as the priority in comparison with the curative ones because of their lower costs and benefits for general health.

Oral and dental health are among the most important issues in public health in Turkey. The problems about the mouth and dental health are among the most significant public health

problems in Turkey. The oral, gingiva and dental disease affect 96% of the total population. The result that has revealed up to today is that a great majority of the population have poor in oral and dental health, and oral and dental diseases are prevalent according to oral and dental screenings made up to now. This situation also damages the national economy[2].

The mouth&dental health services in Turkey are predominantly provided as curative mouth&dental health services and denture; there is not a systematical application in protective mouth, and dental health services include the whole country population In Turkey, which is the country that spends the least of its gross national product to health services among OECD countries, 5% of health expenditures are made for oral and dental health services. Approximately 98% of this money spent on oral and dental health is directed to the curative oral and dental health services. (Akar, 2014). Alongside the budget for oral and dental health services, Turkey is also very far behind about the workforce. While the number of dentists per 100,000 people is 128 in Greece, this number is 28 in Turkey. The average of all EU countries is 67 in this regard (Solak, 2014).

This paper aims determine to reveal the current situation by specifying the relationship between the socio-economical levels of individuals and their oral hygiene and make suggestions towards protective oral and dental health services.

Methodology

The study was conducted in a private dental clinic in Istanbul. The population is composed of adult patients who applied to this dental clinic between June 15th and August 15th, 2015. 81 female and 69 male patients (for a total of 150) who agreed to participate in the survey formed the sample of the study. Patients under the age of 18, patients with mental disorders and those who didn't want to fill out the questionnaire were excluded from the study.

In the study, a questionnaire prepared by the researcher is used as a data collection tool. The survey consists of 4 sections. In the first section, questions regarding the socio-demographic characteristics and the oral and dental health of the patients were included. In the second section, the questions relating to the special examination of the dentists are included, bacterial plaques index values are placed in the third section, and DMTF indexes are included in the last part. While the first two sections included answers given by the patients, the third and fourth sections were filled out by the dentist as a result of the examination.

The Silness-löe Plaque Index (PI)

In measuring bacterial plaque, the Silness-Löe plaque index was used (Silness and Löe, 1964). Silness-Löe plaque index (PI) was developed in 1964 and estimates the quantity of plaque in terms of tooth area covered (Feier et al., 2009).Through this plaque index system, bacterial plaques directly in contact with the marginal gingiva and plaque thickness are evaluated. Index values between 0 and three are given to the four faces of the tooth, namely the mesial, distal,

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[2] (http://ailehekimligi.gov.tr/az-ve-di-sal/298-salk-bakanl-tarafndan-yueruetuelen-az-ve-di-sal-hizmetleri-.html).

facial, and buccal faces. The teeth are not painted in this index. The obtained values are placed on a mouth schematic. The plaque score of each tooth is computed by averaging of four faces reviewed; the plaque score belongs to the person is calculated as averaging of the teeth analyzed (Tuncer, 1994: 57).

0: 'No bacterial plaque in the marginal gingiva when looking by the aye and digging with a probe.'

1: The bacterial plaque can be hardly discerned with eyesight at the edge of the gingiva, it can only be seen with digging with the probe."

2: "There are soft accumulations that can be well seen at the edge of the gingiva. The Interdental area is not filled"

3: "There are so distinctive thick accumulations at the edge of the gingiva, and they developed towards the coronal. The interdental area is full".

In the analyses of data, those with scores of 0-1 (0-0,999) were classified as good oral hygiene, those with 1-2 were (1-1,999) classified as medium oral hygiene, and those with 2-3 were classified as bad oral hygiene. In data evaluation, results from these three classes and general average levels were used. Low averages refer to good oral hygiene.

The DMFT Index

The DMFT index is used to measure the severity level of the dental cavities in society. In epidemiological surveys of oral health. The most widespread method of determining the severity of tooth decay in a community is to calculate the numbers of total Decayed-D, Missing-M, and Filled-F teeth (Clara et al., 2012; Burt, 1997). DMFT or DMFS indexes are determined as the result of these calculations (DMFS=decayed, missing, filled surfaces) (Clara, Bourgeois, Muller-Bolla, 2012; Burt, 1997: 36-41). These decays are calculated for permanent tooth and show the numbers of decayed teeth per person, filled teeth, and teeth pulled because of decay. A high DMFT average shows a negative situation about dental health.

It is recommended by the World Health Organization (WHO) for measuring and comparing the experience of dental caries in populations (Cypriano et al., 2005). The index aims at measuring the severity of dental decay in society.

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The statistical analyses in this study were performed using the NCSS (Number Cruncher Statistical System) 2007 Statistical Software (Utah, USA) package program. In data analysis, beside descriptive statistical methods (averages, standard deviation), one-way variance analysis, the Tukey multiple comparisons test, independent t-test, and the chi-squared test were also used. Results were evaluated at a $p<0,05$ significance level.

Analysis And Findings

Table 1 shows the findings relating to the sociodemographic characteristics and oral and dental health care of the attendees

Table 1. Findings regarding sociodemographic characteristics

	n	%		n	%
Age			**Monthly total income**		
18-25	40	26,67	0-1000 TL	47	31,33
26-33	39	26,00	1001-2000 TL	52	34,67
34-41	37	24,67	2001-3000 TL	38	25,33
42-49	23	15,33	>3000 TL	13	8,67
>50	11	7,33	**Educational Status**		
Gender			Primary School	36	24,00
Female	81	54,00	Secondary School	25	16,67
Male	69	46,00	High School	48	32,00
Marital Status			University	41	27,33
Married	87	58,00	**Number of people live in family**		
Single	63	42,00	0-2 Persons	9	6,00
Occupation			3-5 Persons	70	46,67
Employee	46	30,67	6-7 Persons	53	35,33
Officer	19	12,67	>7 Persons	18	12,00
Retired	12	8,00			
Freelance	33	22,00			
Unemployed	40	26,67			

When the relationship levels between the oral hygiene levels and socio-demographic characteristics of the patients are examined, statistically significant relationships can be seen between occupation, monthly income, and educational background. Accordingly, those who work as officers of the state had better oral hygiene, while those who worked as laborers have worse oral hygiene (p=0,0001). The oral hygiene level increases in direct proportion to the educational status. Similarly, oral hygiene was found to increase with increasing education levels (p=0,001). There is no statistically significant relationships regarding age, gender, marital status, and the number of people in the family (p>0,05).

As a result of the analysis performed between the DMFT scores and socio-demographic characteristics of the patients, meaningful relationships between the age, gender, marital status, occupation, and education variables and the DMFT scores are found. A statistically significant difference between all age groups and DMFT averages is found (p=0,0001). The DMFT averages of people in the 18-25 age group are found as statistically lower than the averages of the 34-41, 42-29, and >50 age groups (p=0,001). There is not observed a statistically significant

difference among other groups (p>0,05). The DMFT averages of male patients are found as statistically higher than the female patients (p=0,016). The DMFT averages of married patients are found as statistically higher in comparison with the single patients (p=0,002). A statistically meaningful difference between the laborer, officer, retired, free agent, and unemployed groups and DMFT averages are confirmed (p=0,002). The DMFT averages of the officer group were found to be lower in a statistically significant manner compared to the retired and laborer groups (p=0,002), with no statistically significant differences among the other groups (p>0,05). A statistically meaningful difference between elementary school graduates, middle school graduates, high school graduates, university graduate groups and DMFT averages are found (p=0,0001). The DMFT averages of the university groups are statistically lower than the elementary, middle, and high school graduate groups (p=0,0001), also no statistically significant differences are seen among the other groups (p>0,05).

Table 2 shows the findings related to the oral and dental health of the patients. There are statistically significant relationships between dentist visit frequency, tooth brushing habits, toothbrush changing frequency, status regarding the use of other dental tools, smoking, status regarding information on oral and dental health, belief regarding the necessity of oral hygiene and the mouth hygiene. As the result of the paired comparison analyses, those who visited the dentist more often (p=0,001), brushed teeth more often (p=0,0001), changed toothbrushes more often (p=0,0001), used other dental tools (p=0,0001), didn't smoke (p=0,005), stated that they have sufficient knowledge on oral and dental health (p=0,0001), and the attendees who believe in the necessity of oral hygiene (p=0,0001) have better oral hygiene as well

When the DMFT averages of the patients were examined according to their dentist visit frequency, a significant relationship between only the frequency of dentist visits and DMFT index averages is detected (p=0,019). It is determined attendees who visit the dentist more often have lower DMFT averages. No statistically significant relationships are found with the other variables (p>0,05).

Table 2. Findings regarding oral and dental health

	n	%		n	%
Dentist visiting frequency			**Status of using other dental tools**		
Quarterly	5	3,33	Dental floss	20	13,33
Once every six months	24	16,00	Interdental brush	3	2,00
Yearly	54	36,00	Mouthwash	36	24,00
As needed	67	44,67	I do not use	91	60,67

Status of brushing teeth regularly			I have enough information on the mouth and dental health		
When it comes to my mind	29	19,33	Absolutely no	6	4,00
Every Seconds Days	22	14,67	No	34	22,67
Once a day	50	33,33	I have no idea	26	17,33
Twice a day	49	32,67	Yes	45	30,00
Toothbrush change frequency			Absolutely yes	39	26,00
I do not change	3	2,00	Do you believe in the necessity of oral hygiene		
Once a month/two months	21	14,00	I absolutely don't	0	0,00
Once every 3/4 months	48	32,00	I don't	3	2,00
Once every 5/6 months	38	25,33	I have no idea	28	18,67
>Seven months	40	26,67	I believe	65	43,33
Smoking			I absolutely believe	54	36,00
Yes	68	45,33			
No	82	54,67			

Findings regarding dentist examination are shown in Table 3. Statistically significant relationships between the presence of missing, decayed, and treated teeth in the mouth and oral hygiene are found. (p=0,0001). Those with missing, decayed, or treated teeth in their mouths are observed to have worse oral hygiene compared to others. No relationships are found between the presence of oral hygiene and crooked teeth or whether the patient has his own toothbrush were found (p>0,05).

Table 3. Findings regarding dentist examination*

	n	%
Is there deviancy in teeth?		

Yes	**53**	**35,33**
No	**97**	**64,67**
Is there any missing teeth in mouth?		
Yes	**99**	**66,00**
No	**51**	**33,33**
Is there any decayed teeth in the mouth?		
Yes	**93**	**62,00**
No	**57**	**38,00**
Is there any cured tooth in the mouth?		
Yes	**113**	**75,33**
No	**37**	**24,67**
Does the patient have personal toothbrush?		
Yes	**147**	**98,00**
No	**3**	**2,00**

* Evaluated by a dentist

Findings regarding the plaque index and the DMFT index are given in Table 4. The average plaque index score is 1,65, and the average DMFT index score is 6,87.

Table 4. Plaque Index and DMFT Index averages

	N	Min.	Max.	Avr.	Sd
Plaque Index	150	0,57	2,97	1,65	0,61
DMFT Index	150	0	23	6,87	4,22

Results and Discussion

Three most important factors affect the oral hygiene levels are found as occupation, income level, and education status. As a result of the analysis performed between the DMFT scores and socio-demographic characteristics of the patients, meaningful relationships are determined between the variables of age, gender, marital status, occupation, education and the DMFT scores.

When the findings regarding the oral and dental health of the patients are reviewed, statistically significant differences can be seen between oral hygiene levels and dentist visit frequency, tooth brushing status, toothbrush changing frequency, status regarding use of other dental tools, smoking, status regarding information on oral and dental health, and belief regarding the necessity of oral hygiene. When the DMFT averages of the patients are analyzed, according to their dentist visit frequency, a significant relationship is found between only the frequency of

dentist visits and DMFT index averages. This finding shows that the attendees who visit the dentist more often have lower DMFT index averages, meaning that they have less decayed, filled, or missing teeth.

When the findings regarding the dentist examination are considered, statistically significant relationships can be observed between the presence of missing, decayed, and treated teeth in the mouth and oral hygiene. Those who with missing, decayed or treated teeth in their mouths have worse oral hygiene in comparison with others who have not.

As a result, it is known that low education and socioeconomic status have essential roles in decay formation. As education levels and socioeconomic status increase, the awareness on oral and dental health increase at the same time. Tooth brushing rates also increased with socioeconomic status. Thus, oral hygiene is affected positively. In this direction, the preventive medicine that is the important title in protecting the mouth and dental health should be made into a government policy. Preventive medicine services are included in the first step health services, and the concept of family dentist should be defined.

This study was conducted only with the patients applied at the determined dental clinic in the relevant study duration. Therefore, it is impossible to generalize the results. To increase the reliability of the study and generalize the results, it is suggested that the study should be applied to a broader sample group.

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