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Correlation between oral health-related quality of life (OHQoL) and oral disorders in a Turkish patient population

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Abstract

Objectives: The purpose of the present study is to determine the nature of the complaints that bring patients to our clinic and to what degree these complaints affect their quality of life (QoL). We also aimed to determine any associations between gender, education or harmful habits and each patient's oral health-related quality of life (OHQoL). Methods: A total of 1090 patients, consisting of 651 females (59.7 %) and 439 males (40.3 %), were included in this study. Of these patients, 220 constituted healthy controls. Two patient-centered outcome measures, the 14 item OHIP-14 and the 16 item OHQoL-UK measures were used. Results: Most of the patients presented with toothache and caries (50.1 %), 11.2 % had suffered tooth loss and had denture needs, 9.2 % had periodontal problems, 1.8 % had temporomandibular joint (TMJ) disorders, 3.8 % had buried third molars, 2.4 % had orthodontic and aesthetic disorders, 1.3 % had suffered injury due to trauma, and 20.2 % came only for control checkups. OHQoL was best in the control group and the worst in patients who had suffered trauma. In addition, we noted correlations between gender, education and harmful habits, and that of the patient's oral health-related quality of life. Conclusion: According to our results, OHQoL is associated with the oral complaints of patients. Furthermore, OHQoL may not only be associated with the oral health status of patients, but factors such as gender, education and harmful habits may also play a role.

Key words: *Oral health, quality of life.*

Introduction

Patient-centered approaches have been receiving increasingly more attention in recent years. It is important to determine the nature of the complaints that cause patients to seek treatment and to what degree these affect patients' quality of life (QoL). There is an increasing recognition that oral health has a significant impact on not only physical, but also social and psychological well-being. As in general medicine, perceptions of dental patients are also important in the assessment of treatment need, in planning of appropriate therapy and in clinical outcome. The patient-centered outcome measures may therefore also be utilized in oral medicine. While the majority of oral diseases are not fatal, they can give rise to significant morbidity, resulting in physical, social and psychological consequences which affect patients' QoL (1).

Interest in the idea of quality of life is growing rapidly. More than 1000 new articles are indexed each year under this heading (2). QoL is affected by oral health in some way in the majority of people (3). A variety of patient-centered outcome measures termed '*oral health related quality of life measures'* (OHQoL) have been developed to assess the extent to which oral health problems affect not only physical functioning and pain, but broader constructs such as psycho-social functioning and life satisfaction (1).

A number of OHQoL measures have been developed and are presently being evaluated. Eleven OHQoL measures were reviewed at an international meeting held at the University of North Carolina in 1996 (4). It was mentioned that two measures which had received particular attention were the Oral Health Impact Profile (OHIP-14) and the UK Oral Health Related Quality of Life (OHQoL-UK©) questionnaires (5,6). These measures are based on two conceptually distinct models of oral health. The OHIP-14 consists of self-reported measurements of the adverse impacts of oral conditions on daily life. Originally developed in Australia, it is based on a conceptual model of oral health that uses the World Health Organization (WHO) International Classification of Impairments, Disabilities and Handicaps framework (7). The original 49-item questionnaire has been shortened to 14 items by Slade and has allowed use of a validated index of the impact of oral health (5). Since its development, the OHIP-14 is preferred to the OHIP-49 by a number of researchers due to its practicality.

OHQoL-UK, recently developed in the United Kingdom, is based on the WHO model of "structure-function-ability-participation", which incorporates both negative and positive influences on health (8).

The purpose of the present study is to determine which complaints cause patients to come to our clinic and to what degree these complaints affect their QoL. Furthermore, we aimed to determine if there was a possible association between gender, education, harmful habits and their oral health QoL.

Materials and Methods

Study population

This clinical-based descriptive study was carried out in the Oral Diagnosis and Radiology Department of the Faculty of Dentistry, Ataturk University. Consecutive 1090 patients were included the study. 220 of these constituted healthy controls. Patients less than 18 years old and patients who could not give adequate data were not included the study.

The examination of patients and application of questionnaires were carried out by three researchers. Firstly, each patient's name, surname, age, gender, place of birth and educational status were recorded, and a medical history was taken. Any systemic disease or drug use was noted. Clinical and radiographic examinations were performed. After intra-oral examination, dental outpatients were asked to complete patient-centered outcome measures. For standardization of the study, the first researcher trained the other two researchers in the clinical assessment and implementation of the questionnaires. All researchers agreed upon which questionnaires would be included or excluded in the study. The questionnaires were implemented in a face to face interview.

Data Collection

Two patient-centered outcome measures, the 14 item OHIP-14 and the 16 item OHQoL measure (OHQoL-UK) were used in this study. The questionnaires were translated into Turkish, in accordance with cross-cultural adaptation guidelines, to produce a Turkish version of the OHIP-14 and the OHQoL (9,10). Both measures had been previously validated with Turkish dental outpatients (9).

Data Analysis

Scores were derived from both questionnaires by summing the responses to each of the individual questions within the measures. The questions for OHIP-14 were asked as "……..because of your teeth, mouth or denture?" For the OHIP-14, each item was scored: 'never'- score 0, 'hardly ever'- score 1, 'occasionally'- score 2, 'fairly often'- score 3, 'very often'- score 4. Higher scores indicate poorer oral health-related quality of life. The questions for OHQoL-UK were asked as "What effect does your oral health have on your……" For the OHQoL-UK, the response categories were 'very bad effect'-score 1, 'bad effect'- score 2, 'no effect'- score 3, 'good effect'- score 4, 'very good effect'- score 5. Lower scores indicate poorer oral health-related quality of life. Thus, better OHQoL was indicated with lower scores in OHIP-14, and with higher scores in OHQoL-UK questionnaires.

The collected data were analyzed by SPSS 10.0 soft-

ware program. The Mann-Whitney test was used to compare the OHQoL of females and males. Kruskal-Wallis test was used to identify differences in OHQoL with patients' complaints, education, and harmful habits. The OHIP-14 and OHQoL-UK scores of groups are expressed as median (interquartile range). $p<0.05$ was considered statistically significant.

Results

The demographic characteristics of the subjects, their educational status, their oral health complaints and the distributions of their habits (smoking and alcohol intake) are shown in Table 1. According to these 651 (59.7 %) females and 439 (40.3 %) males, a total of 1090 patients were included in the study. Mean age was 29.61 ± 11.03, and patients between age 18-27 (56.4 %) comprised a large part of it. Most of the patients generally came to the clinic with the complaint of caries and toothache (50.1%), 11.2 % tooth loss and denture need, 9.2 % periodontal complaints, 1.8 % TMJ complaints, 3.8 % buried third molars, 2.4 % orthodontic and aesthetic defects, 1.3 % trauma, and 20.2 % for only control. While 77.6 % of the patients have no harmful habits, 20.9 % of them were smokers, 0.6% was drinking alcohol and 0.9% was both smokers and drinking alcohol.

The median scores of patients' answers to OHIP-14 and OHQoL-UK questionnaires are shown in Figure 1 and Figure 2. The main difference between OHQoL-UK

Table 1. Demographic characteristics of subjects.

	n (%)
Gender	
Female	651 (59.7)
Male	439 (40.3)
Age	
18-27	618 (56.4)
28-37	234 (21.4)
38-47	140 (12.7)
48-57	72 (7.0)
58-67	26 (2.5)
Education	
None	22 (2.0)
Primary	286 (26.2)
High school	290 (26.6)
University	480 (44.1)
Master	12 (1.1)
Complaints of patients	
Caries, toothache	546 (50.1)
Periodontal problems	100 (9.2)
Toothless, dentures	122 (11.2)
TMJ problems	20 (1.8)
Third molars	42 (3.8)
Trauma	14 (1.3)
Orthodontic/aesthetic	26 (2.4)
Control	220 (20.2)
Habits	
No habit	846 (77.6)
Smoking	228 (20.9)
Alcohol intake	6 (0.6)
Both smoking and alcohol	10 (0.9)

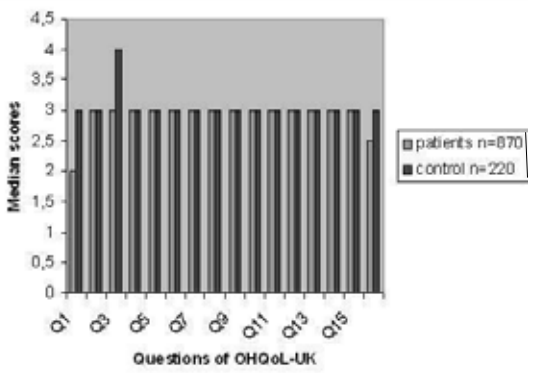

Fig. 1. The questions and median scores of OHQoL-UK. (Q1: Eating enjoyment of food, Q2: Appearance, Q3: Speech, Q4: General health, Q5: Ability to relax, Q6: Social life, Q7: Romance, Q8: Smiling/laughing, Q9: Confidence, Q10: Carefree manner, Q11: Mood, Q12: Work/usual duties, Q13: Finances, Q14: Personality, Q15: Comfort, Q16: Breath odor).

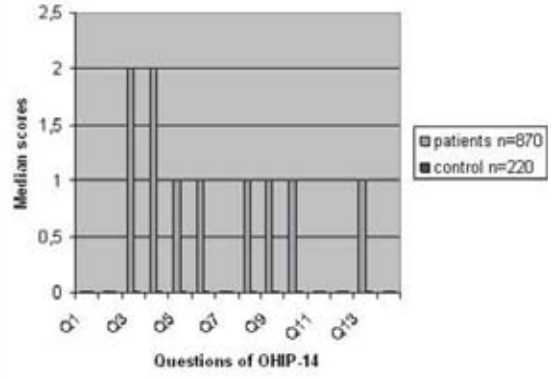

Fig. 2. The questions and median scores of OHIP-14. (Q1: Trouble pronouncing words, Q2: Taste worse, Q3: Painful aching, Q4: Uncomfortable to eat, Q5: Self-conscious, Q6: Tense, Q7: Diet unsatisfactory, Q8: Interrupt meals, Q9: Difficult to relax, Q10: Embarrassed, Q11: Irritable, Q12: Difficult doing your usual jobs, Q13: Life less satisfying, Q14: Totally unable to function).

Table 2. OHQoL-UK and OHIP-14 scores according to gender, complaint, education and habits.

	n	OHQOL-UK Median (interquartile range)	*P value*	OHIP-14 Median (interquartile range)	*P value*
Gender					
Female	651	2.87 (0.81)	0.292	0.86 (1.00)	0.010*
Male	439	2.87 (1.00)		0.64 (1.00)	
Complaint					
Caries, toothache	546	2.81 (0.78)	0.000**	0.93 (1.07)	0.000**
Periodontal problems	100	2.91 (0.69)		0.68 (1.07)	
Toothless, dentures	122	2.69 (0.50)		0.86 (0.86)	
TMJ problems	20	2.87 (1.19)		1.11 (0.71)	
Third molars	42	2.75 (1.14)		0.93 (0.53)	
Trauma	14	2.44 (0.89)		1.25 (1.71)	
Orthodontic/aesthetic	26	2.81 (0.50)		0.43 (0.61)	
Control	220	3.18 (1.12)		0.21 (0.64)	
Education					
None	22	2.68 (0.62)	0.000**	0.93 (0.58)	0.000**
Primary	286	2.81 (0.56)		0.93 (1.14)	
High school	290	2.87 (0.75)		0.71 (1.00)	
University	480	2.94 (1.19)		0.64 (0.86)	
Master	12	2.97 (1.58)		0.61 (0.41)	
Harmful habits					
No habit	846	2.94 (0.94)	0.001**	0.71 (0.93)	0.000**
Smoking	228	2.75 (0.62)		0.93 (1.00)	
Alcohol	6	2.87 (0.62)		0.57 (2.14)	
Smoking and alcohol	10	2.75 (0.50)		0.71 (0.66)	

scores of patients and controls were found in Q1, Q4 and Q16, representing eating, general health and breathe odor respectively. And the main difference between the OHIP-14 scores of patients and controls were found in Q3, Q4 representing painful aching and uncomfortable to eat respectively. That is, eating was the common problem affected by oral complaints in both questionnaires.

Table 2 illustrates the scores of OHIP-14 and OHQoL-UK with respect to the patients'complaints, gender, education and harmful habits. There was no statistically significant association between gender and OHQoL-UK ($p>0.05$). The median OHQoL-UK score of females was 2.87 (0.81) and males 2.87 (1.00). However, OHIP-14 scores of females were higher than those of males ($p<0.05$). The median OHIP-14 score of females was 0.86 (1.00), males 0.64 (1.00).

There was a significant difference in OHQoL-UK ($p<0.001$) and OHIP-14 ($p<0.001$) scores of controls and patients according to complaints. The median OHQoL-UK score of patients was 2.81(0.75) and controls 3.18 (1.12). The median OHIP-14 score of patients was 0.86 (0.93) and controls 0.21 (0.64). OHIP-14 scores were highest and OHQoL-UK scores were lowest in patients who came with trauma. OHIP-14 scores were lowest and OHQoL-UK scores were highest in patients who came for checkups.

There was a significant association between education and OHQoL-UK ($P<0.001$) and OHIP-14 ($P<0.001$).

When education level was promoted, OHQoL also became better. There was also a significant association between harmful habits and QHQoL. Patients who had no harmful habits had higher QHQoL-UK ($P<0.01$) scores and lower OHIP-14 scores ($P<0.001$) than patients who were smokers or drinking alcohol.

Discussion

The impact of health on the quality of life (QoL) has received increased attention in both medicine and dentistry. Locker and Gibson defined positive health as the absence of negative health states, positively worded items, positive outcomes of oral health, a set of psychological and social attributes, and positive outcomes of chronic conditions such as oro- and craniofacial differences (11). Mc Grath *et al*. claimed that positive and negative health states and experiences are distinct, in that "the absence of a negative does not necessarily imply a positive and a positive state can coexist with a negative state" (12). The QHQoL-UK attempts to asses both positive and negative effects of oral health, while the OHIP-14 assesses only negative effects of oral health (11). So this is a limitation for OHIP-14 in capturing the global conception of health and well-being.

Kushnir et al. mentioned that oral health status was closely associated with QoL, and that a problem in oral health might seriously decrease a patient's QoL (13). On the other hand, Gregory et al. mentioned that quality of life could be variable, according to patient perceptions (14). Therefore, the associations between quality of life and clinical status can be weak or non-existent. In the present study, we tried to handle the issue from the patient's perspective and we used each patient's first complaint which made them to come to our clinic. First of all, we determined the nature of their complaints and then if there was an association between these complaints and their OHQoL. Unfortunately, in our society, people do not tend to care about their oral and dental health problems, as long as these problems do not result in aching or are otherwise disturbing them. While the rate of the patients who came to the clinic for only checkups without any complaints was 20.2 %, the rate of the patients who came with a complaint was 79.8 %. Quality of life was the highest in patients who came to our clinic for only dental control. OHIP-14 scores were the lowest but OHQoL-UK scores were the highest in these patients, representing a better OHQoL.

Tooth decay and toothache are the foremost complaints among patients, with range of 50.1 %. According to our results, OHQoL of patients with caries and toothache was poorer than control group. Similarly Ng et al. found out that QoL of patients without toothache was better than that of patients with toothache (2).

In this study, the rate of patients who were referred to our clinic because of periodontal problems was 9.2 %. Ng et al. found that periodontal problems affect the QoL in a negative way (2). We have found OHIP-14 values high and OHQoL-UK values low in patients who have periodontal complaints compared to the patients who refer to our clinic for checkups, indicating a lower QoL.

There are no studies reported in the literature concerning the impact of maxillofacial trauma on OHQoL in adult patients, although a high prevalence of traumatic injuries in childhood and adolescence has been described in the literature. Cortes et al. found that children with untreated dental fracture of permanent teeth had more impacts on their daily living than did children without any dental trauma (15). According to our results, trauma was the complaint that had the most negative effect on QoL. While the OHIP-14 values were the highest in patients who came with trauma, the OHQoL-UK values were the lowest. OHIP-14 may not be useful to asses the impact of acute and severe trauma on OHQoL indeed. Because, OHIP-14 assess the quality of life in terms of frequency (from never to very often) and traumatic injuries, are acute and severe events that should not be properly assessed by this sort of instruments unless subjects confound frequency with severity. But as we mentioned above, we did not include patients who gave inadequate data. The trauma patients included in our study were the ones who underwent maxillofacial trauma previously and had not treated suitable. Gianetti et al. found out that dental avulsion impaired OHQoL in patients under 18 years old by using OHIP-14 (16).

Tooth loss affects general health and well being, in addition to oral health related QoL. Steele reported that QoL is increasingly affected as the number of missing teeth increases (3). We have also found that OHIP-14 values are higher and OHQoL-UK values are lower in patients who have complaints of tooth loss than are those of patients who were referred to our clinic for checkups, indicating a poorer OHQoL associated with tooth loss.

There are indications that many patients suffering from TMJ disorders may also show a reduced OHQoL (17). We have also found low OHQoL-UK values and high OHIP-14 values in patients with TMJ disorders in comparison with patients who came for checkups, again representing a poorer OHQoL in TMJ patients. Malocclusion also has negative effects on QoL (18). In the present study, we have also found that OHQoL is lower in patients who were referred to us for orthodontic and aesthetic disorders. According to our results, OHQoL of patients with buried third molars and pericoronitis was also reduced, in agreement with a study by Mc Grath et al., who also pointed out that pericoronitis impaired the QoL (19).

According to our results, there was no significant difference between the OHQoL-UK scores of males and females. However, OHIP-14 scores of females were higher than were those of males. Fernandes et al. found no significant difference between the OHIP-14 scores of

males and females (20). However, Steele et al. found the OHIP-14 scores of females to be higher in the United Kingdom and Australia, in agreement with our study (3). That is to say, QoL of females appeared to be more susceptible to disruption by oral disorders.

Fernandes et al. found that OHIP-14 scores of patients who were smokers to be higher, similar to the results of the present study (20). The negative effect of smoking to OHQoL is probably due to the harmful effects of smoking on oral tissues. Fernandes et al. found OHQoL to be better in patients who drank alcohol in the same study (20). We also found OHQoL of patients who drank alcohol to be better than patients who both drank alcohol and smoked.

In this study, we have also found OHQoL-UK values to be higher in patients who have low OHIP-14 scores, in agreement with the literature. While low OHIP-14 values indicate good QoL, low OHQoL-UK values indicate poor QoL (1,9) and vice versa. This is the first study that has been carried out that considers patient complaints and the effect of these complaints on their QoL in our society. The conclusion we have reached is that OHQoL is poorer in patients who have complaints of oral disorders, and that this is associated with oral health status. Furthermore, OHQoL is associated with gender, educational status, smoking and alcohol intake.

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