

ORAL HEALTH-RELATED QUALITY OF LIFE AND TREATMENT NEEDS IN A GROUP OF IRANIAN DENTAL PATIENTS

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Abstract

To assess oral health-related quality of life and dental treatment needs in dental patients by means of Farsi version of Oral Health Impact Profile Questionnaire-14.

In a cross-sectional study, dental patients not necessarily having oral/systemic conditions underwent oral examination to determine treatment needs and number of remaining teeth. Patients were asked to fill out Farsi version of Oral health Impact Profile- 14 questionnaire thereafter. Chi-square test, Student's t-test, Spearman and Pearson coefficients were used to analyze the data.

Totally 330 patients including 148 men (44.8%) and 182 women (55.2%) were examined. The mean score of Oral health Impact Profile-14 was 28.74 ± 10.21 . The score was significantly higher (worse oral health-related quality of life) among patients needing removable prosthodontics (33.73 $p=0.04$) and oral surgery (31.74 $p=0.001$). Psychological discomfort had the highest oral health impact among domains and queries of the questionnaire. Regarding treatment needs, 61.6% of patients needed restorative care. The mean number of remaining teeth was 25.08 ± 6.24 . A weakly negative correlation was found between questionnaire score and number of remaining teeth ($rs = -0.22$, $p = 0.01$).

Oral problems caused more psychological problems than physical ones. Restorative cares were mostly needed by dental patients.

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Introduction

According to definition of World Health Organization (WHO), quality of life (QoL) is how people evaluate their life condition according to

their cultural criteria. Recently introduced descriptions about QoL accentuate on the difference between one's prospects and the reality¹. Although oral disorders are rarely life threatening they can have a dramatic impact on peoples' well-being². That is why research about oral health-related quality of life (OHRQoL) and dental treatment needs have recently drawn a significant amount of attention^{3,4}. OHRQoL assesses the extent to which oral problems disrupt an individual's normal function and life quality^{5,6}.

Identification of dental treatment needs has been mentioned as an essential step in the development and planning of oral health care programs. Having a clear view of the burden of oral problems and treatment needs help dental

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practitioners and policy makers prevent top-down approach to provide dental services and compare current dental care with actual community needs⁷.

It has been demonstrated that quality of life can be affected by factors such as gender, age, tooth loss, cultural background, socioeconomic status, and anxiety about dental procedures⁸. Hence, a variety of questionnaires have been developed to evaluate functional and psychological impacts of oral diseases such as Oral Health Impact Profile (OHIP-49), Oral Impacts on Daily Performance (OIDP), and Geriatric Oral Health Assessment Index (GOHAI)^{2,7,9}. OHIP-49 contains 49 questions addressing seven conceptual dimensions of oral health-related quality of life including functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap¹⁰. OHIP-14 is a shorter version of OHIP-49 which has been used generally in different countries and disciplines^{2,3,7,10-14}. The newly validated Farsi version of this questionnaire (OHIP-14-per)⁸ was recently used in Iran to assess OHRQoL among patients with oral lichen planus¹⁵. There are few studies in Iran to organize social health services according to demands of dental patients. Meanwhile, previous studies in Iran addressed special groups of dental patients such as diabetics or those having oral mucosal lesions^{13,15}. This study aimed to assess OHRQoL and treatment needs in dental patients attending at Shahid Beheshti Dental School.

Methods

In a cross-sectional study, we used the validated Farsi version of OHIP-14 questionnaire (OHIP-14-per)⁸ to evaluate patients' oral health-related quality of life. By using software of "power and sample size calculation" version 2.1.31, significance level lower than 0.05, and study power of 80% the sample size was measured 320. All literate dental patients attending at Oral Medicine Department, Dental School, Shahid Beheshti University of Medical Sciences (which regarded as the second most authenticated dental school in Tehran, capital of Iran) since October 2014 to 2015. All patients aging 19 or more (to ensure adequate understanding of queries) entered the study. Sampling was based on a non-probable simple method, and totally 330 patients were enrolled. Treatment needs

were assessed by means of a data form including name of departments where patients would refer to, and number of remaining teeth patients had. In this study, departments of oral pathology, oral radiology, and community oral health were omitted from data form, because no treatment procedures were done there; therefore data form showed referral to departments of endodontics, periodontics, oral surgery, operative dentistry, orthodontics, removable, and fixed prosthodontics. Patients with incomplete questionnaires or data forms were excluded from the study.

All eligible patients underwent oral examination by a senior dental student under the supervision of an oral medicine professor, and results of examination were recorded in data forms. Patients were asked to fill out Farsi version of OHIP-14 questionnaire thereafter. The questionnaire contains 14 questions, which each two consecutive queries are indicative of one aspect of oral health-related quality of life. Therefore, seven aspects of functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability, and handicap were covered by the questionnaire. Each query was scored according to Lickert's scale (never: 1, often: 2, usually: 3, sometimes: 4, always: 5), so that total score of the questionnaire varies between 14 and 70. Of note, the higher the score of questionnaire the worse the oral health-related quality of life is.

All procedures performed in this study were in accordance with Helsinki declaration (version 2008), and Medical Ethics Committee of Shahid Beheshti University of Medical Sciences (Institutional Review Board). In this study data forms were filled out anonymously; all participants were informed about the aim of the study prior to their inclusion in the study, and informed written consent was obtained from all individuals taking part in this study.

Chi-square test and Student's t-test were used to analyze qualitative and quantitative variables. To show correlation between variable, Spearman and Pearson coefficients were used. SPSS software version 18.0 was used to analyze the data.

Results

Totally 330 patients attending at oral medicine department were assessed in terms of

oral health- related quality of life and dental treatment needs. They were 148 men (44.8%) and 182 women (55.2%), with the mean age of 37.94.

The mean score of OHIP-14 among our patients was 28.74± 10.21 with the range of 14-63.

Mean score of OHIP-14 in men and women were 29.39± 10.27 and 28.20± 9.83 with no significant difference between them (P=0.52) according to Student's t- test. Meanwhile, in regard with treatment needs, 61.6% of our patients needed restorative dentistry, followed by periodontics (54.8%), endodontics (52%), oral surgery (49.5%), fixed prosthodontics (24.7%), removable prosthodontics (12.2%), and orthodontics (7.2%).

Table 1 shows score of OHIP-14 in terms of patients' treatment needs to different specialty departments. As table 1 demonstrates, mean score of OHIP-14 among patients needing removable prosthodontics (33.73) and oral surgery (31.74), was significantly higher than other patients.

Treatment needs		N*	Mean	SD†	Mean difference	P value (t-test)
Periodontics	Yes	68	27.12	10.18	3.54	0.05
	No	57	30.67	10.00		
Oral surgery	Yes	61	31.74	10.29	-5.86	0.001
	No	64	25.88	9.35		
Endodontics	Yes	64	29.81	9.04	-2.20	0.22
	No	61	27.61	11.28		
Operative dentistry	Yes	77	28.22	9.72	1.34	0.47
	No	48	29.56	11.01		
Fixed prosthodontics	Yes	30	28.77	10.01	-0.04	0.98
	No	95	28.73	10.33		
Removable prosthodontics	Yes	15	33.73	13.36	-5.67	0.04
	No	110	28.05	9.59		
Orthodontics	Yes	9	23.22	10.81	5.94	0.09
	No	116	29.16	10.09		

* Number

† Standard deviation

Table 1. OHIP-14 score among patients with different treatment needs

In this study, score of different aspects of OHIP-14 were measured and demonstrated in Table 2. According to Table 2 aspects of psychological discomfort and physical pain had the highest score among our patients. In addition, men and women showed no significant difference in terms of OHIP-14 aspects.

We measured rate of answering to queries of OHIP-14 questionnaire in 330 patients, and summarized the results in Table 3. Among our patients, the most frequent aspect of OHIP-14 was been self-cautious (78.4%), which was related to aspect of psychological discomfort.

Moreover, 13.25% of patients were always involved by irritability with others, followed by difficult to relax (9.6%), and been self-cautious (6.4%). None of our patients experienced sense of taste worse always; however 3.2% of them had the problem often.

OHIP-14 aspects	Total patients		Men		Women		P value (t-test)
	Mean	SD *	Mean	SD	Mean	SD	
Functional limitation	3.16	1.48	3.32	1.63	3.03	1.35	0.27
Physical pain	4.74	1.75	4.66	1.63	4.81	1.85	0.63
Psychological discomfort	4.98	2.05	4.82	2.12	5.10	2.00	0.45
Physical disability	4.22	1.99	4.57	2.28	3.94	1.68	0.07
Psychological disability	4.16	1.82	4.43	1.86	4.01	1.79	0.32
Social disability	3.74	1.98	3.82	1.98	3.67	1.99	0.66
Handicap	3.74	2.01	3.86	2.10	3.64	1.95	0.54

* Standard deviation

Table 2. Score of different aspects of OHIP-14

Query number	Aspect	Content	Never	Seldom	Sometimes	Often	Always	Total percent of impact
1	Functional limitation	Trouble pronouncing words	70.4	18.4	4.8	4.8	1.6	29.6
2		Sense of taste worse	56.8	22.4	17.6	3.2	0	43.2
3	Physical pain	Painful aching in mouth	23.2	16.8	44.8	14.4	0.8	76.8
4		Uncomfortable to eat foods	36	20	32	10.4	1.6	64
5	Psychological discomfort	Been self-cautious	21.6	20.8	31.2	20	6.4	78.4
6		Felt tense	28.8	32	25.6	8.8	4.8	71.2
7	Physical disability	Unsatisfactory diet	39.2	22.4	27.2	7.2	4	60.8
8		Had to interrupt meals	37.6	33.6	14.4	12	2.4	62.4
9	Psychological disability	Difficult to relax	23.2	28.8	28	10.4	9.6	76.8
10		Been embarrassed	61.6	21.6	12.8	1.6	2.4	38.4
11	Social disability	Irritability with others	53.6	23.2	14.4	5.6	13.2	46.4
12		Difficulty doing usual jobs	48.8	20.8	22.4	5.6	2.4	51.2
13	Handicap	Felt life is less satisfying	43.2	24.8	14.4	12.8	4.8	56.8
14		Totally unable to function	56.6	15.2	11.2	7.2	0.8	43.4

Table 3. Frequency distribution of responses for OHIP-14 aspects

We assessed number of remaining teeth as an objective indicator of oral health and dental treatment needs. The mean number of remaining teeth among 330 patients was 25.08(± 6.24). The mean number of remaining teeth among men was 23.96 ± 7.74, and in women was 25.99± 4.56. The difference between men and women in this regard was borderline significant (p=0.07). Moreover, the mean number of remaining teeth among patients in terms of different treatment needs (referral to specialty disciplines) were measured and summarized in Table 4. As Table 4 shows patients needing removable prosthodontics had significantly fewer remaining teeth compared to other patients (p=0.001).

In order to show correlations between variables, Spearman and Pearson coefficients

were used, which showed no correlation between mean score of OHIP-14 and number of departments patients had to refer to ($r=0.09$, $P=0.3$; $rs=0.08$, $P=0.35$). In addition, no correlation was found between mean score of OHIP-14 and patients' age ($r=0.04$, $P=0.67$; $rs=0.04$, $P=0.63$).

Treatment needs		N *	Mean	SD†	Mean difference	P value (t-test)
Periodontics	Yes	68	24.93	6.102	0.34	0.76
	No	57	25.26	6.468		
Oral surgery	Yes	61	24.20	6.460	1.72	0.12
	No	64	25.92	5.969		
Endodontics	Yes	77	25.83	4.663	-1.95	0.08
	No	48	23.88	8.089		
Operative dentistry	Yes	64	25.20	4.380	-0.25	0.82
	No	61	24.95	7.779		
Fixed prosthodontics	Yes	30	24.93	5.258	0.19	0.88
	No	95	25.13	6.555		
Removable prosthodontics	Yes	15	14.60	7.376	11.91	0.001
	No	110	26.51	4.500		
Orthodontics	Yes	9	28.56	5.126	-3.74	0.08
	No	116	24.81	6.265		

* Number

† Standard deviation

Table 4. Number of remaining teeth among patients with different treatment needs

Table 5 shows correlation between number of remaining teeth with age, and number of referrals to specialty departments. Spearman coefficient revealed a highly negative correlation between age and number of remaining teeth ($rs=-0.67$, $p=0.001$), so that as patients got older number of their remaining teeth decreased. Moreover, there was a weakly negative correlation between number of referrals to different disciplines and number of remaining teeth, in a way that having fewer teeth necessitated more referrals to departments ($rs=-0.23$, $p=0.009$).

			Number of teeth	Number of referrals	Age
Spearman correlation coefficient	Number of teeth	Correlation coefficient	1.000	-0.231	-0.672
		P value	0	0.009	0.001
		number	125	125	125
	Number of referrals	Correlation coefficient	-.0231	1.000	0.178
		P value	0.009	0	0.04
		number	125	125	125
	Age	Correlation coefficient	-.0672	0.178	1.000
		P value	0.001	0.04	0
		number	125	125	125

Table 5. Correlation between remaining teeth, age and referral to departments

In order to measure correlation between OHIP-14 score and number of remaining teeth as

two indicators of oral health status, Spearman correlation coefficient was used. A weakly negative correlation was found between OHIP-14 score and number of remaining teeth ($rs=-0.22$, $p=0.01$). Hence fewer remaining teeth resulted in higher OHIP-14 score.

Discussion

In this study oral health-related quality of life and dental treatment needs were assessed among 330 Iranian dental patients consisting of 148 men and 182 women with the mean age of 37.73.

Mean of OHIP-14 score among our patients was roughly 29. Meanwhile, women had better OHRQoL compared to men. McGrath found that women consider oral health as having more impact on their life quality generally and specifically on their sense of pain, embarrassment, and even financial affairs compared to men¹⁶.

In addition, Ostberg demonstrated that females were more willing to keep their oral health than males. Hence, in our study better OHRQoL in women might be due to timely seeking dental care¹⁷.

Moreover, we found that as patients got older, their OHRQoL became poorer, because aging causes loss of teeth, periodontal problems, dry mouth, and oral complications due to systemic disease¹⁸.

Results showed that patients needing removable prosthodontics and oral surgery had worse OHRQoL probably due to losing teeth or having non-functional teeth.

We measured score of seven domains of OHIP-14 in our patients as well. Psychological domain of OHIP-14 showed the highest score, so OHRQoL was mostly disturbed in terms of psychological aspect compared to other domains. Meanwhile, men had worse OHRQoL in terms of physical disability, which might be attributed to later seeking of dental care services.

Rate of responses to items of OHIP-14 questionnaire showed that the most prevalently affected OHIP item among our patients was self-conscious, which is related to domain of psychological discomfort.

Moreover, the most frequent problem patients always encountered was irritability with others (domain of social disability) followed by difficulty to relax (domain of psychological

disability). These findings demonstrated that oral, teeth, and denture problems caused psychological insult to our patients.

Review of the literature yielded a few studies regarding OHRQoL usage among dental patients^{14, 19}. On the other hand, most of previous studies assessed OHRQoL in special populations such as elderly^{2, 4, 9, 11, 20}, children³, diabetic patients¹³, cancerous patients^{21, 22}, and patients with oral mucosal disease^{15, 23}.

Hagglin in a study in general and specialists' settings of dental care in Sweden reported OHIP-14 score of 22.6, which was nearly comparable to ours¹⁹.

Nikbin and co-workers assessed OHRQoL by means of OHIP-14-per in diabetic patients in Iran, and reported mean score of 62¹³. As higher scores of OHIP-14 indicate worse OHRQoL, our patients had better OHRQoL compared to theirs. Diabetes causes dry mouth, burning mouth, periodontal disease, halitosis, candidiasis, and increased caries²⁴, therefore low QoL might be attributed to complication of diabetes among patients.

Rodakowska in a study on elderly patients in Poland reported an OHIP-14 score of 17.6, which means higher QoL in spite of their older age¹¹. That might be due to their better level of oral health status.

Ikebe in a study on elderly Japanese found that mean of OHIP-14 score was 10.0²⁰, which was much better than ours. Japanese society is regarded as one of the frontiers in medical care²⁵. Desirable status of OHRQoL in the study by Ikebe was possibly as a result of higher levels of oral health services. Regarding responses to different questions of OHIP-14 questionnaire, Montero-Martin observed that psychological discomfort was the highest oral health impact among an adult population in Spain, which was similar to our results²⁶. Meanwhile, Khalifa demonstrated psychological discomfort as the most frequently observed oral health impact among Sudanese adults, which was similar to our results²⁷.

El Osta found that uncomfortable to eat (domain of physical pain) was the most frequently observed oral impact in the elderly in Lebanon⁹. Brennan reported similar results in dental settings in Australia as well¹⁴.

Ikebe in a study in Japan reported that painful aching in mouth and uncomfortable to eat (both related to physical pain) were most

common among patients²⁰. The mean age of their patient was 66(older than ours), and probably due to losing teeth or having non-functional teeth they had problems in the domain of physical pain, which was different from our results. Unlike our study, Rodakowska found that the most common problem among patients was uncomfortable to eat(domain of physical pain)¹¹, may be due to higher mean of age (71 years) in comparison to ours.

Nikbin in a study on diabetic patients with the mean age of 55 concluded that most of patients suffered from sense of taste worse (domain of functional limitation)¹³ possibly due to diabetic neuropathy, dry mouth, and wearing dentures in over 30% of patients. Barrios studied OHRQoL among patients under cancer therapy in Spain, and demonstrated that patients mostly encountered problems in domain of physical pain²¹, which might be due to cancer and its complications.

As ability of OHRQoL instruments to evaluate oral health might also vary depending on the type of population⁹ differences between the above-mentioned studies seem inevitable.

Regarding treatment needs, we used clinically determined standards such as need to refer to specialty disciplines and number of remaining teeth in patients as objective indices of oral health status rather than self-report. Many of our patients needed restorative treatments followed by periodontal and root canal therapy, which reflects frequency of dental caries and its consequences and inadequate attention to tooth-supporting tissues among our patients.

The mean number of remaining teeth was 25 in our patients. Moreover, men had fewer teeth than women significantly, which might be due to delayed seeking of dental care. Results showed that the older the patients the fewer their remaining teeth were. Aging causes loss of teeth due to caries, periodontal disease, and trauma¹⁸. In addition, we found that patients having fewer remaining teeth needed more referrals to different disciplines especially to prosthodontic treatments. In a study by Rodakowska¹¹, mean number of remaining teeth was 6.2. The mean age of their patients was 70.7, and 89% of them wear partial dentures. Ramraj in a nationwide survey in Canada concluded that the most needed dental treatments were restorative and preventive care, which was nearly similar to our results⁷.

Finally, we found that patients with fewer teeth had worse OHRQoL probably due to loss of function and resultant physical and psychological consequences.

Conclusions

Oral and teeth problems caused more psychological problems than physical ones. In addition, restorative and periodontal treatments are mostly needed by dental patients.

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Declaration of Interest

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