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## Association between number and type of tooth loss on Oral Health Related Quality of life in 35-44 year olds in southeastern Iran.

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### ABSTRACT

Oral diseases can affect oral health related quality of life (OHRQoL). The aim of the present study was to determine the association between the number and type of tooth loss on OHRQoL in 35-44 year old individuals. This cross-sectional descriptive study conducted on 400, 35-44 year old people who visited Kerman clinics. Data were collected by using demographic and oral health behavior questionnaires, clinical examination (DMFT index) and the OHRQoL questionnaire (OHIP-14). Data were analyzed in SPSS18, by t-test,  $\chi^2$  at 5% significance level. In the present study 206 (51.5%) were men, the mean age was  $39.22 \pm 4.98$  years and 52.0% had university education. The mean of DMFT and OHIP-14 scores were  $13.3 \pm 4.5$  and  $18.6 \pm 8.3$  (from 56) respectively. Men had lower OHRQoL than women, but the difference was not significant. There was significant relation between educational level, oral health behavior, number and type of tooth loss and the OHRQoL score. OHRQoL was acceptable in this study and had a significant correlation with number and type of tooth loss. Further studies on other age groups is recommended.

**Keywords:** oral health, quality of life, tooth loss, type of tooth loss, 35-44 years old, southeastern Iran.

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## INTRODUCTION

Oral diseases such as untreated caries, severe periodontitis and severe tooth loss were among the first one hundred costly diseases in the world in 2010 (1). Oral health is part of general health (2) and is not only the absence of oral disease and malfunction, but it also includes the absence of the negative effects of oral conditions on social life and the presence of positive effects such as self-confidence from a good looking face and teeth (3).

Clinical criteria are not enough for describing health and it has been reported that people with chronic debilitating disease's understanding of quality of life can be better than healthy people and being unhealthy or diseased does not necessarily mean low quality of life (4). An individual's personal assessment of how functional and psychological factors, pain experience and oral hygiene problems affect his life has been defined as oral health related quality of life (OHRQoL) (5). Dental and oral diseases can affect quality of life related to oral health. Dental cavities and periodontal diseases are two common oral diseases that do not have symptoms in the initial stages, but after progress and lack of treatment lead to tooth loss. Tooth loss can affect beauty and the function of the occlusion and can eventually affect the quality of life of people (4).

Quality of life related to dental health is a special quality of life model, which is used for assessing the effect of oral diseases (6). Locker described a model according to the classification of the World Health Organization about malfunction, disability and paralysis (7) and the Oral Health Impact Profile (OHIP-14), which is one of the most common criteria for assessing quality of life related to oral health was built based on this model (8). It has been shown that teeth loss is in contrary with oral health related quality of life. In addition to the number, the position and distribution of teeth loss also affects the strength of dysfunction. The number of teeth that are in contact with the confronting teeth is also a predicting factor for OHRQoL and OHRQoL decreases seriously in patients whom their number of teeth is less than 20 (4).

In one study in Finland, people who had replaced less than 20 teeth with removable prostheses had a better quality of life (9). Zhang et al showed that OHRQoL was significantly related to the presence of ten teeth in each jaw (10). The results of a study from Pallegedara about the effect of teeth loss and dentures on OHRQoL in elderly people in Sri Lanka showed that their OHIP-14 index was significantly affected by the number and position of the lost teeth (11).

As there is a shortage of data about OHRQoL in adults in Iran, this study was conducted for the first time in Kerman, Iran; to evaluate the effect of type and number of teeth loss on OHRQoL in 35-44 year old individuals which are among the target groups of the WHO.

## METHODS

This study was a descriptive and analytical cross-sectional study performed in 400,35-44 year old individuals visiting the Health Centers of Kerman, Iran. In this study multi-stage random sampling was done. In order to increase the variation and precision and also to include people with different cultural and social backgrounds; the city population was divided into 5 regions (north, south, central, east and west) and from each region 2 health centers were selected. In each center, patients were selected by simple random sampling. After acquiring permission for data collecting, a senior trained dentistry student visited the centers on three mornings and three afternoons and after explaining the objectives of the research for patients, and inquiring their consent, enrolled them in the study.

In this study, data was gathered using the OHIP-14 questionnaire. The demographic questions included age, education level, job, and questions about oral hygiene including the frequency of brushing teeth, using dental floss, last dental visit and reason for seeing the dentist and result of physical exam. The questionnaire used for OHRQoL was the persian version of the OHIP-14 questionnaire which included 7 concepts including functional limitation, physical discomfort, psychological discomfort, physical disability, psychological disability, social disability, and complete disability.

The validity and reliability of the Persian version of this questionnaire has been evaluated and confirmed in previous research (12). The questions were scored based on the Likert 5-point-scale, as never=0,

rarely=1, sometimes=2, often=3, almost always=4. As there were 14 questions, the score of the questionnaire was from 0 to 56. In this questionnaire lower scores show a better and higher score show a worse OHRQoL.

Patient's physical exam to determine DMFT (decayed, missing or filled teeth) was performed based on the WHO index (13). In order to determine the type of dental loss, Eichner's classification was used (10, 14). In this classification, edentulism has been classified into 3 categories. Class A represents contact in all four support zones. Class B represents contact in three to one zone or in the frontal region only. Class C represents an absence of tooth contact.

The criteria for people entering this study was consenting to participate, 35-44 years age, being mentally and physical healthy and able to take care of his/her dental hygiene, not being addicted, not smoking, having at least 15 normal teeth and being able to answer the questions. Illiterate people, pregnant woman, those who had jobs related to dentistry and patients with advanced tooth and oral diseases and also people who had replaced their lost teeth with prosthesis and implants did not enter the study.

Data was entered into SPSS 21. t-test,  $\chi^2$  was performed for determining the relation between demographic variables and OHRQoL. The significance level was set at 5%.

This project was approval by Ethic Committee of Kerman University of Medical Sciences (Registration number IR.KMU.REC.1394.335).

## RESULTS

In this study, 206 men (51.5%) and 195 women (48.5%) with the average age of  $39.22 \pm 4.89$  years participated; 52% of these participants had university education and 129 patients (32.2%) brushed their teeth 2 times a day. 249 people (62.4%) did not use dental floss at all, and 255 (63.9%) patients had never seen a dentist to check their teeth. 146 patients (36.6%) had seen a dentist in the previous year and 93 patients (23.3%) had seen a dentist when they had a tooth ache. Peoples dental behavior and its relation with DMFT has been shown in table 1.

**Table1. The relation between hygiene and DMFT**

Type of Behaviour		Frequency		DMFT		p-value
		No	%	mean	sd	
Brushing teeth	Never	12	3.0	20.8	1.6	0.03
	Sometimes	75	18.8	15.0	3.7	
	Once a day	113	28.2	14.0	4.1	
	Twice a day	133	33.2	11.9	4.5	
	Three times a day	67	16.8	11.5	3.9	
Using dental floss	Yes	150	37.6	10.5	3.7	0.001
	No	250	62.8	15.0	4.0	
Visiting the dentist	6 months ago	122	30.6	11.7	4.5	0.04
	One year ago	146	36.6	13.9	3.9	
	More than one year	132	32.7	14.2	4.6	
Visiting for decayed teeth	Yes	142	35.6	10.4	3.4	0.05
	No	258	63.9	14.9	4.2	
Reason for seeing dentist	Check up	50	12.4	9.8	3.4	0.001
	Pain	93	23.3	14.2	3.9	
	Pulling teeth	129	32.2	15.2	4.2	
	Filling teeth	128	32.7	10.9	4.2	

The mean $\pm$ sd of D (decayed teeth) was  $5.4 \pm 2.3$ , M (missing teeth) was  $4.3 \pm 2.8$ , F (filled teeth) was  $3.5 \pm 1.7$  and DMFT was  $13.3 \pm 4.5$ . The mean score of quality of life in this study was  $18.6 \pm 8.3$  from 56. According to the type of tooth loss, 168 people (42.0%) were in class A, 157 (39.2%) class B and 75 (18.8%) in class C.

The OHRQoL questionnaire showed that 108 people (27.2%) often felt pain in their mouth, and 87 (21.8%) were unhappy about their oral situation. According to classification for performing oral hygiene, 99 patients (24.8%) had bad, 60 (14.9%) had moderate and 240 (60.4%) had good oral health. There was a significant association between education level and oral hygiene, and also type of edentulism and number of teeth loss with OHRQoL (table 2). There was no significant relation between DMFT with OHRQoL.

**Table2. The relation between gender, level of education, hygiene, number and type of edentulism with OHRQoL**

Variable		Frequency		OHRQoL		p-value
		No	%	Mean	SD	
Gender	Male	206	51.5	20.4	8.4	>0.5%
	Female	194	48.5	16.6	7.8	
Education level	Primary	87	21.8	26.3	6.5	0.02
	Secondary	105	26.2	18.5	4.9	
	Tertiary	208	52.0	11.3	5.7	
Hygiene situation	Good	240	60.4	14.2	3.8	>0.5%
	Average	60	14.9	17.4	5.1	
	Weak	99	24.8	25.1	2.9	
Number of lost teeth	<5	252	63.0	13.8	3.2	>0.5%
	5-8	107	26.7	18.4	2.9	
	>8	31	7.7	23.9	6.4	
Type of tooth loss	Class A	168	42.0	13.7	7.0	0.001
	Class B	157	39.2	20.3	7.4	
	Class C	75	18.8	25.3	6.6	

## DISCUSSION

This study showed that clinical criteria alone are not enough for describing patients' health status. This issue is specifically important in oral diseases and their consequences on OHRQoL (16, 15). The aim of this study was determining the effect of the qualitative DMFT index on OHRQoL by using the OHIP-14 questionnaire. In the present research, the mean of DMFT was  $13.3 \pm 4.5$ . Patients in the 35-44 age range were categorized into 3 groups of low ( $DMFT < 5$ ), average ( $9 < DMFT < 13.9$ ) and high ( $DMFT > 13.9$ ) (17, 18). Therefore, the DMFT index in this study was average. Costa et al (19) reported the DMFT index of 35-44 year old people in Brazil was  $20.1 \pm 4.5$ , which higher than our study.

DMFT was reported to be  $7.64 \pm 5.11$  in 35-44 year old people in Valencia, which is less than this study (20). The reason for this difference is probably the population under study and the probable education they received about oral hygiene and also the type of access or the level of dental services.

Torabi et al reported the DMFT index in 33-44 year old people in 2001 in Kerman was  $10.88 \pm 6.47$  (21) which is less than the present study. The reason for this increase over the years is probably less access to dental facilities because of economic problems or lack of proper insurance for dental services.

In the present study a significant relation was seen between hygiene and the DMFT index. These results are in line with the results of Costa et al (19) and Petry et al (21) which showed that routine use of dental services decreases tooth decay. Evidence shows that people, who visit the dentist only for relieving dental problems, suffer more from dental problems and teeth loss than people who routinely visit dentists and have a worse OHRQoL (23).

In the present study more than half of the people did not use dental floss. In a study about the risk factors of dental loss by Batista et al (24), the presence of observable biofilm on the teeth was related to teeth loss. Therefore, using dental floss for cleaning the proximal surface of teeth and decreasing microbial flora seems necessary. In the present study there was a significant relation between the DMFT index and education level. It seems like people with higher education have acquired more knowledge about the prevention of dental caries. The other reason is probably the fact that people with more education, due to better income enjoy better dental services.

In our study a significant association was not seen between DMFT and OHRQoL which was in contrast to Costa et al studies (25) which showed a significant association between DMFT and quality of life. The reason for this difference is probably the age range under study and the type of questionnaire used in Costa et al's study. In this study the D part (decayed teeth) makes up the most part of the DMFT index. Therefore, probably this fact and hope for restoring the decayed teeth in patients prevented a negative effect on their quality of life. It has been shown that decayed, lost and filled teeth can take away healthy feeling from people (26).

In this study a significant association was seen between the number of teeth loss and OHIP-14. The results were in line with the results of studies from in Sri Lanka by Pallegedara and Taiwan by Yen et al which showed that people with more natural teeth have a better OHRQoL (11, 27). In the present study there was a significant association between type of edentulism according to the Eichrer's classification and OHRQoL and the results were in line with the Tsakos et al study (18) which showed that the number of remaining teeth in contact with teeth in the other jaw is significantly related to OHRQoL in British elderly people. In a study done on 7 to 50 year old Swedish people about the relation between OHRQoL and oral condition and prostheses, the number of remaining teeth had a more significant effect on OHRQoL than the type of artificial teeth used in place of the lost teeth (28).

Zhang et al showed that the type of edentulism has an effect on OHRQoL in people above 40 years in China (10). Also in other studies a positive association has been reported between the number of teeth in contact with teeth in the opposite jaw and OHRQoL (29,30, 31).

### CONCLUSION

The results of this study showed the significant effect of number and type of edentulism on OHRQoL in people 35-44 years old. In this study assessment of personal hygiene indices was according to people's own responses and it is suggested that in future studies indexes related to assessment of dental plaques be used for evaluating the level of oral health. The result of this research is not generalizable to all 35-44 year old people in Kerman. Therefore, more studies in different age groups is recommended.

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