Original Article

Self-Reported Oral Health and Quality of Life in the Elderly

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A B S T R A C T

Introduction: Given growing elderly population and high prevalence of oral and dental diseases in this age group, this study was conducted to investigate oral health status and related quality of life among older adults in Yazd located in central Iran.

Methods: The cross sectional study was carried out on 210 elderly people aged ≥ 60 years under the guise of Yazd health care centers who entered the study via cluster random sampling. Oral health was assessed by DMFT index; and self-reported oral and dental health scale was also tested. Further, to measure the oral health-related quality of life, the Geriatric Oral Health Assessment Index was applied. Data were then analyzed by SPSS software through descriptive statistics, *t*-test, ANOVA, and Pearson correlation coefficient.

Results: The mean score of age for the studied population was 67.22 ± 5.62 years. Of whom 60.48% were women, 79.05% were married and 42.4% were edentulous. The oral health-related quality of life mean score was 42.46 ± 5.76 (possible rang 12-60) and the DMFT index mean score was 20.33 ± 4.76. The correlation of oral health-related quality of life score with age ($r = -0.213$, $p = 0.002$) and DMFT index ($r = -0.542$, $p < 0.001$) was inversely significant. Further, that had a direct significant correlation with self-reported oral health score ($r = 0.302$, $p < 0.001$).

Conclusion: Elderly people's oral health-related quality of life, self-reported oral and dental health status was not desirable. These factors have significant relationships with each other so that increase in DMFT index was associated with decrease in self-reported oral and dental health.

Keywords: Oral Health, Quality of Life, Aging, Dental Health

Introduction

Through the last three decades, health related quality of life has been applied increasingly in researches which shows that the aim is not only to prolong the life and treat disease, but also, to live better (1, 2). One of the important aspects of general health assessment is investigation of people's oral health status and its impact on their quality of life (3). Oral health of the elderly is crucial. First of all, transfer of global population means that the number of elderly people is increasing in most communities. In addition, the effects of risk factors and diseases of the mouth and teeth are cumulative over the lifetime, thus

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threatening public health, quality of life, and well-being (4).

One of the problems of the elderly caused by increase of age and incidence of multiple diseases in the mouth (5) is the loss of natural teeth (5, 6). Tooth loss can be effective on oral health, chewing, food choices (7- 9), enjoying meals, confidence (6, 10, 11), communication (11), and generally quality of life (7). Oral health includes the oral cavity health and its related tissues which prepare a person for desirable eating, speaking, and social encounters without active disease, discomfort, and feeling of dissatisfaction (12). Today, it has been recognized that use of routine clinical assessments alone to determine people's oral health status and also to check their health needs is not enough (3, 13), because in clinical assessments, the participants' personal comments about their oral health status and care needs are not considered (3, 14). Therefore, in evaluating oral health, physical, mental, and social aspects of well-being should also be considered (15).

Assessment of oral health-related quality of life (OHRQoL) allows a change from the medical/dental traditional standards towards assessment and care in a person's social and emotional experience and his/her physical functioning, targeting a focus at proper treatment outcomes (16). Currently, OHRQoL is an important tool in assessing health needs and setting priorities in oral health programs (17). In this regard, few studies have been conducted in Iran. For example, in the study carried out by Khadem et al. (6), the average score of OHRQoL in the elderly was 36.3 ± 21.65 (range 0-48), and in Faezi et al. study (11), which was carried out on the elderly patients referring to dental school, Tehran, the elderly OHRQoL score was calculated as 39.36 ± 10.72 (range in 12-60). At the international level, in a study by Rebelo et al. (4), the average score of DMFT was 29.24 ± 3.96 and the OHRQoL mean score was 33.90 ± 2.70. Low education level was associated with the poor state of dental and oral health and low OHRQoL. The results of another study conducted by Piuvezam et al. (18), showed that 75% of participants had moderate quality of life level and the average score of DMFT was 28.8 ± 5.5 which means a poor state of dental and oral health. In addition, Gerritsen et al. (13), reported that tooth loss is associated with poor score of OHRQoL. So, considering the importance of oral health and its role in elderly people's health, welfare, and quality of life, this study aimed to determine oral health status by clinical examination, self-reported oral and dental health (SRO&DH), and its' related-quality of life which assessed with Geriatric Oral Health Assessment Index (GOHAI) in ageing people under the guise of health care centers in Yazd, Iran.

Methods

Procedure and sampling

This cross sectional study was conducted on seniors of 60 years and older of home resident under the guise of health care centers of Yazd in 2016, which entered the study by cluster random sampling.

By taking into account α = 0.05, d = 1.5, and SD of OHRQoL score = 10.2 from a previous study (19), the required number of samples was determined as 182 patients, but for more confidence 210 patients were enrolled in this study. To do this, in coordination with the Yazd provincial health center and urban health care centers, 6 health care centers were randomly selected out of the 20 urban health care centers. The samples were randomly extracted from the existing files according to the population size. Then, the selected eligible participants were examined and asked to answer the questions as private interviews to fill out the questionnaires. Older people who could not refer to health care centers were visited in their homes, their teeth were examined, and then their questionnaires were completed.

Measures

A questionnaire including demographic information and three tools for assessing oral and dental health status, both objectively and subjectively were applied. Demographic information included age, gender, education level, marital status, employment status, retirement, income, lifestyle, insurance, and also a history of problems or chronic conditions.

Objective assessment: To assess the oral health, DMFT index recommended by the World Health Organization was used (20). Higher scores in DMFT indicate the worse oral health status (4). All participants were examined clinically through catheter and mirrors in natural light by a dental student.

Subjective assessment: 1. GOHAI. It is a self-report questionnaire and commonly used to assess OHRQoL (21). The index is comprised of 12 items covering three domains of physical functioning, psychosocial functioning, and pain which evaluate them during the last 3 months. Physical domain deal with topics such as chewing, swallowing, and speaking; psychosocial domain represent ideas like dental appearance satisfaction, worried for teeth, restrictions in social relations because of the mouth appearance, and discomfort in eating with others; pain domain is concerned with using drugs for mouth problems, sensitivity to cold, heat, and sweetness deals. The response to items is based on a 5-point Likert scale, i.e., "never," "rarely," "sometimes", "often", and "always". The total score of each individual (a score in the range of 12-60) was calculated as the sum of scores taken from 12 questions, so that the "never" option got 5 points and the "always" option was given 1 point (11, 22, 23). Scoring is reversed in item number 7 (4). OHRQoL scores between 57-60 were considered as desirable, scores between 51-56 represented average quality, and scores less than 50 reflected poor quality of life (24, 25). The discriminant validity (p < 0.01) and reliability (Cronbach's α = 0.92 and ICC = 0.91) of the Persian version is approved in previous studies (11, 19). 2. SRO&DH scale: This self-report questionnaire of 16 items is designed on the basis of previous studies and experience of periodontics experts working with patients. The questionnaire included questions about

the oral health status and mouth health behaviors. The maximum obtainable score from this questionnaire is 45 and higher scores indicate better oral health status (26). Cronbach's alpha of this scale was calculated as 0.73 by the developer of the scale (26). Validity and reliability of Persian version of this questionnaire was investigated and confirmed in a previous study (27).

Ethical considerations

The institutional review board in Shahid Sadoughi University of Medical Sciences, Yazd, Iran, approved the study (IR.SSU.SPH.REC.1395.14). Moreover, oral informed consent was obtained from the participants after explaining the aim of the study. Also they were insured for the confidentiality of their information and also they were informed that the participation in the study is voluntary. Also older people who could not refer to health care centers were visited in their homes.

Data analysis

The data were analyzed by SPSS software using student *t*-test, ANOVA and Pearson correlation coefficient.

Results

The mean age of the participants was 67.22 ± 5.62 years. Women consisted of 60.48% of participants, among whom 79.05% were married. Other demographic information is presented in Table 1.

Table 1. The demographic information of study participants

Variable		N	%
Gender	Male	83	39.52
	Female	127	60.48
Education	Illiterate	90	42.86
	Primary school	73	34.76
	Middle school	17	8.09
	High school and diploma	22	10.48
	Academic	8	3.81
Marital status	With spouse	166	79.05
	Passed away spouse	44	20.95
Job	Employed	67	31.9
	House wife	143	68.1
	Unemployed	23	10.95
Retirement	Yes	67	31.9
	No	143	68.1
Smoking	Yes	9	4.3
	No	201	95.7
Edentulous	Yes	89	42.4
	No	121	57.6
Number of teeth	> 20	111	91.7
	≤ 20	10	8.3

Mean score of OHRQoL was equal to 42.46 ± 5.76. Mean scores of OHRQoL, SRO&DH, and DMFT index are tabulated in Table 2.

Table 2. Mean scores of OHRQoL, SRO&DH, and DMFT index

	Mean	SD	Possible range
OHRQoL	42.46	5.76	12-60
SRO&DH	19.51	9.32	0-45
DMFT	20.33	4.76	0-32

There was a statistically significant difference in mean score of OHRQoL by gender, education level, marital status, retirement, job, cardiovascular disease, vision problems, joint pain, osteoporosis, sleep disorders, digestive problems ($p < 0.001$), dyslipidemia ($p = 0.004$), and hearing problem ($p = 0.001$). But there was no statistically significant difference in the mean score among the smokers and non-smokers. (Table 3)

There was also a statistically significant difference in the mean score of SRO&DH by gender ($p = 0.043$), level of education, marital status, smoking ($p < 0.001$), job ($p = 0.020$), vision problems ($p = 0.037$), hearing problems ($p = 0.001$), gastrointestinal problems ($p = 0.020$), dyslipidemia ($p = 0.010$), and malnutrition ($p = 0.030$), while there was no statistically significant difference in the SRO&DH mean score by other variables. Table 3 presents the scores of SRO&DH and OHRQoL by demographic variables. (Table 3)

In the mean score of DMFT index, a statistically significant difference was observed by marital status ($p = 0.009$), vision problems ($p = 0.037$), and hearing problems ($p = 0.043$), but based on other variables, no significant difference was observed.

There was a positive significant correlation between OHRQoL and SRO&DH scores, however a negative significant correlation between them and DMFT scores. Also there was a negative significant correlation between OHRQoL and SRO&DH scores with age but a positive significant correlation between DMFT scores and age. (Table 4)

Discussion

Due to the growing number of elderly population and the high prevalence of oral and dental diseases in this age group, this study was conducted to investigate oral health and related quality of life of these people living in Yazd.

The mean score of OHRQoL was 42.62 ± 5.76 that indicates low OHRQoL in the studied population. Studies conducted by Khadem et al. (6), Faezi et al.(11), Motallebnejad et al. (10), Sánchez-García et al. (23), and Rebelo et al. (4), showed that OHRQoL is undesirable in the elderly which is consistent with the current research. The lowness of this index in the current study can be due to the fact that most of older people have problems in chewing various foods caused by artificial teeth, absence of healthy teeth in the mouth, or rotten and unhealthy teeth.

Table 3. **The distribution of SRO&DH and OHRQoL mean scores based on demographic variables**

Variable		OHRQoL Mean± SD	p	SRO&DH Mean± SD	p
Gender	Male	44.5 ± 5.08	< 0.001	21.12 ± 9.40	0.043
	Female	41.13 ± 5.81		18.46 ± 9.15	
Education	Illiterate	41.14 ± 5.18		15.34 ± 6.96	
	Primary school and Literacy Movement	42.49 ± 6.06	0.005	20.80 ± 9.28	< 0.001
	Middle school	44.58 ± 4.25		20.70 ± 8.34	
	High school and diploma	45.81 ± 5.09		28.60 ± 9.03	
	Academic	43.25 ± 9.19		27.12 ± 9.32	
Marital status	With spouse	43.13 ± 5.77	< 0.001	20.93 ± 9.40	< 0.001
	Passed away spouse	39.90 ± 4.99		14.13 ± 6.76	
Job	Employed	45.95 ± 4.42		24.34 ± 9.67	
	House wife	41.11 ± 5.89	< 0.001	18.47 ± 9.23	0.020
	Unemployed	43.46 ± 5.15		19.75 ± 8.94	
Retirement	Yes	44.85 ± 5.46	< 0.001	20.73 ± 9.85	0.196
	No	41.34 ± 5.57		18.94 ± 9.04	
Smoking	Yes	43.33 ± 2.64	0.369	15.33 ± 5.38	0.045
	No	42.42 ± 5.86		19.70 ± 9.42	
Edentulous	Yes	42.64 ± 4.71	0.688	11.16 ± 2.01	0.729
	No	42.33 ± 6.44		25.65 ± 7.66	
Number of teeth	> 20	41.55 ± 6.08	< 0.001	24.26 ± 6.25	< 0.001
	≤ 20	50.09 ± 3.47		41.10 ± 4.14	

Table 4. Correlation coefficient between studied measures and age

Variables	OHRQoL		SRO&DH		DMFT	
	p	r	p	r	p	r
SRO&DH	<0.001	0.302				
DMFT	<0.001	-0.542	< 0.001	-0.809		
Age	0.002	-0.213	< 0.001	-0.415	< 0.001	0.327

Thus, they most of the time limit their type of food and meals which in turn is effective in reducing their OHRQoL.

The mean score of SRO&DH was 19.51 ± 9.32 which reflects the weakness of this index in the elderly participated in the current study and is consistent with Faezi et al. (11) and Murphy et al. (26). It seems that since the elderly do not show health behaviors like brushing, proper use of dental floss, and frequent visits to the dentist, therefore, gums and teeth problems such as bleeding, infections, gingivitis outbreak more among them and consequently has led to a decrease in this index.

SRO&DH score in the men, those who were living with spouse and those with a higher education level was significantly higher than others which confirms results achieved by Dable et al. (28) and Redakowska et al. (29). In the studies carried out by Rebelo et al. (4), the OHRQoL scores were low in older, illiterate, low educated and female adults. Educated participants seemed to have more information and awareness about health behavior and dental care; therefore, they pay more respect for this type of behavior in caring for their teeth. Living with spouse and receiving psychological support and encouragement from wives,

has led to enhancement in quality of life in married elderly.

The correlation between SRO&DH score and OHRQoL score and DMFT index and age were statistically significant. In studies conducted by Sánchez-García et al. (23), Rebelo et al. (4), Enoki et al. (30) and Motallebnejad et al. (10), the correlation between OHRQoL score and DMFT index was negative which is consistent with the results of the current study. Redakowska et al. (29), reported, however, that no relationship was found between age and OHRQoL score. With the increase of age the oral health status gets worse. Gums get more sensitive, teeth rot and loose which consequently must be extracted. All these factors cause an increase in DMFT index which in turn decreases OHRQoL and also SRO&DH status.

Prevalence of Edentulous in this study was 42.4% which is lower than Rashidi et al. (31), (66.1%) and Piuvezam et al. (18), (54.5%) and higher than the rate reported by Redakowska et al. (29), (23.5%) study. In Rashidi et al. (31) study, individuals were suffering from intolerable dental problems, thus there was more prevalence of edentulous. Also, Redakowska et al. (29) studied elderly residents of nursing homes among

whom edentulous was more prevalent because of health, physical, and psychological problems, which may reflect worse outcomes than our more healthy subjects.

DMFT index in the present study was 20.33 ± 4.76 which, as it was also reported by Mottalebnejad et al. (10) and Singh et al. (32), indicates improper condition of oral health. Most elderly due to financial difficulties and the high costs of dental care only refer to dentists in emergencies and sometimes insist to extract the tooth causing substantial increase in dental and oral problems, reduction in their quality of life and self-reported oral health.

Conclusion

The elderly people's OHRQoL, SRO&DH, and DMFT index are not in desirable condition. These indexes have significant relationships with each other so that by the increase of DMFT index, the SRO&DH as well as OHRQoL decreases. Therefore, paying more attention to this age group in planning and delivery of health and dental facilities is needed. Proper services and training are necessary to maintain oral and dental health in the elderly.

Study limitations

The study accomplished in Yazd, Iran which has a traditional family context and it is famous as a religious community that should be considered in using the result. More over only dose elderlies under the guise of health care centers of Yazd entered the study.

Conflict of interest

The authors declare that there is no conflict of interests.

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