

Factors Related to Oral Health-Related Quality of Life

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Abstract: The purpose of this study is to examine the general characteristics of local adults and the impact of objective and subjective oral health status on oral health-related quality of life. A survey has been conducted with patients at the scaling center of the dental hospital. Including research study of oral health written by the dental hygienist. A total of 305 questionnaires have been analyzed except for the questionnaires with insincere answers. The collected data have been analyzed by R project program. Based on them, frequency, cross, the mean and standard deviation, t-test and multiple linear regression analysis have been conducted. The average level of oral health related quality of life was 3.75 out of 5, the average level of simplified oral hygiene index was 2.30 out of 5. Also, the average number of natural teeth was 26.73 except for third molars, the average number of missing teeth was 2.48 and the average number of implants was 2.52. Diagnosis (gingivitis, periodontitis), the number of missing teeth and the number of natural teeth make significant differences in oral health related quality of life ($p < 0.05$). As result of the study, it was shown that oral health related quality of life was decreased by more chewing difficulty and more pronunciation difficulty. Whereas it was increased by more natural teeth and less scaling fear. In conclusion, it has been confirmed that negative subjective awareness of dental health status and critical oral symptom had a negative effect on oral health related quality of life. Moreover, the result is that subjective oral symptom has been a major influential factor in oral health related quality of life.

Key words: Dental hygiene, oral health impact profile, oral health status, quality of life, influential

INTRODUCTION

The meaning of health is being expanded from the concept of consultation without disease to the broader health concept (Lee and Kim, 2016). Oral health is an essential element of health in digestion and nutrition and health without oral health is not a complete health (Dumitrescu *et al.*, 2009). Dental disease is easy to be neglected because it does not involve pain or discomfort at the early stage of development and the main diseases are dental caries and periodontal diseases (Kanzigg and Hunt, 2016).

Periodontal disease was reported to be the main cause of tooth loss in all teeth except upper and lower third molars teeth in adults. In particular, 86% of adults aged 35-44 suffer periodontal disease and 7 out of 10 adults have periodontal disease (Choi *et al.*, 2012; Han *et al.*, 2012). Despite the fact that >64.5% of the population feel discomfort in daily life due to periodontal disease because the initial treatment is insufficient, periodontal disease worsens and the teeth are shaken or lost in most cases. Loss of teeth can narrow the range of

food choices and reduce the amount and quality of meals, making it difficult to maintain health and fitness. In addition, tooth loss affects pronunciation and appearance, thereby limiting social relations and interpersonal relationships, thereby promoting social isolation. The inconvenience of losing teeth is directly related to the quality of life by taking away happiness that comes from eating (Kwon and Choi, 2016; Yoshida *et al.*, 2016).

Therefore, this study aims to investigate the effects of the characteristics of the research members and their oral health status on oral health-related quality of life. Based on these results, this study aims to provide the data necessary for education and policy establishment for prevention of oral diseases and to be the basis of research data to find ways to for oral health related quality of life to contribute to improvement of human life quality.

MATERIALS AND METHODS

Subject of study: This study was carried out on 323 adult patients aged 20 years or older who came to the dental

clinic in the D area for medical treatment. The questionnaire survey was conducted by those who understood the purpose of the study and agreed to participate in the study. The final analysis was 305 out of the questionnaires, 18 of which were unsatisfactory or inadequate.

Method of study: A structured self-filling questionnaire survey study was developed and used after observing tools used in previous researches. The questionnaire consisted of 29 questions including 5 general questions, 4 subjective oral health status questions, 6 oral condition questions for dental hygienists and 14 questions of oral health-related quality of life. The collected questionnaires were analyzed using the R project program. Frequency analysis, cross over analysis and χ^2 -test were conducted on the variables of the study subjects. In order to investigate the impacts on oral health related quality of life of study subjects, multiple linear regression analysis was conducted.

Research variable: In this study, general characteristics were gender, age, education level, monthly income and occupation. If subjective oral health status questions were answered as very healthy, healthy and normal, they were categorized as “good”. If the answers were very bad and bad, they were categorized as “bad”. For questions about how much do you care oral health, answers such as “do not care at all”, “care a little” and “normal” were classified as “not interested” and answers such as “care a lot” and “care very much” were classified as “interested”.

Oral status variables were diagnosis names, systemic diseases, implant, missing teeth, natural teeth and oral hygiene index. The diagnoses were classified into gingivitis and periodontitis after confirmation of pre-treatment screening. Systemic diseases were indicated as “present” if there were more than one systemic disease. The number of implants was classified as “having” if there were more than one implant. The number of missing teeth was classified as “present” if there were more than one missing tooth in the mouth except the upper and lower third molars. Based on 28 teeth except for upper and lower third molar, missing teeth and implants, the natural teeth variables were classified as “defective” if there were more than one defect and “retention” if there was no defect. For the oral hygiene index variable, the oral hygiene index was measured as “good” from 0-1.2, “normal” from 1.3-3.0 and “bad” from 3.1-6.0.

RESULTS

Oral health related quality of life according to general characteristics: The quality of life related to oral health according to age was 3.74 points for below 40 and

Table 1: Oral health related quality of life according to general characteristics

Variables/Division	Oral health-related quality of life	p-values*
Age		
Under 40	3.74±0.74	0.811
Over 40	3.76±0.69	
Education level		
High school graduate or lower	3.77±0.73	0.829
College graduate or higher	3.75±0.71	
Monthly income		
<2 million won	3.65±0.71	0.226
From 2-4 million won	3.81±0.69	
>4 million won	3.78±0.76	
Occupation		
Specialized, technical, office, administrative	3.79±0.71	0.286
Service, sales, self-employed business, business	3.63±0.60	
Student, housewife, unemployed, etc.	3.78±0.78	
Total	3.75±0.71	

*p<0.05

3.76 points for over 40. Statistically, there were no significant differences. The level of education was 3.77 points below high school which was higher than university score of 3.75 but it was not statistically significant. The monthly average income was 3.81 for >2 million won ~4 million won and showed the highest score on life quality related to oral health. However, there was no statistically significant difference. Professionals, technical workers and office workers showed the highest score on oral health related quality of life among other occupations but it was not statistically notable (Table 1).

Oral health related quality of life according to subjective oral health status:

People with good subjective oral health status scored 3.90 showing they enjoy higher level of oral health related quality of life than those with bad subjective oral health status who scored 3.55. This showed statistically significant difference (p<0.001). People with eating problems by oral disorders scored 3.16 while people with no such discomfort scored 4.07 showing statistically significant difference (p<0.001). Subjects with pronouncing problems by oral disorders scored 2.98 while people with no such disorders scored 3.85 meaning people without oral disorders enjoy higher level of oral health related quality of life. This also showed statistically notable difference (p<0.001) (Table 2).

Oral health related quality of life according to oral status:

According to the diagnosis, gingivitis scored 3.79 points and periodontitis scored 3.55 points which was statistically significant (p = 0.034) regarding oral health related quality of life. There was a statistically significant difference (p = 0.025) in the quality of life related to oral health among patients who had missing teeth and scored 3.60 while other patients without missing teeth scored 3.81 points. People maintaining natural teeth scored 3.83 while people with loss of natural teeth scored

Table 2: Oral health related quality of life according to subjective oral health status

Variables/Division	Oral health-related quality of life	p-values*
Subjective oral health status		
Good	3.90±0.68	<0.001*
Bad	3.55±0.71	
Oral health care level		
Interested	3.74±0.73	0.613
Not interested	3.79±0.67	
Masticating problems by oral disorders		
Yes	3.16±0.51	<0.001*
No	4.07±0.60	
Pronouncing problems by oral disorders		
Yes	2.98±0.53	<0.001*
No	3.85±0.68	
Total	3.75±0.71	

Table 3: Oral health related quality of life according to oral status

Variables/Division	Oral health-related quality of life	p-values*
Diagnosis		
Gingivitis	3.79±0.69	0.034*
Periodontitis	3.55±0.79	
Systemic disease		
Presence	3.80±0.73	0.669
None	3.75±0.71	
Implant		
Presence	3.66±0.79	0.224
None	3.78±0.69	
Missing teeth		
Missing	3.60±0.69	0.025*
Remaining	3.81±0.72	
Natural teeth		
Remaining	3.83±0.70	0.024*
Missing	3.64±0.73	
Simplified oral hygiene index		
Good	3.91±0.75	0.142
Usually	3.71±0.69	
Defective	3.71±0.72	
Total	3.75±0.71	

p<0.05

Table 4: Variables of oral health-related quality of life

Characteristics (reference)	Division	B	β	p-values*
Subjective oral health status (good)	Bad	-0.119	0.062	0.058
Masticating problems by oral disorders (No)	Yes	-0.720	0.066	<0.001*
Pronouncing problems by oral disorders (No)	Yes	-0.438	0.097	<0.001*
Name of diagnosis (gingivitis)	Periodontitis	0.031	0.086	0.717
Simplified oral hygiene index ¹		-0.029	0.025	0.239
Number of natural teeth		0.056	0.015	<0.001*
Number of missing teeth		-0.084	0.083	0.317

R² = 0.545, Adjust R² = 0.530, F-value = 37.473, B: non-standardized coefficient, β: standardized coefficient, ¹Higher simplified oral hygiene index means negative oral health status, *Multiple linear regression was used (p<0.001)

3.64 meaning people with natural teeth enjoy higher level of oral health related quality of life. This showed statistically significant difference (p = 0.024) (Table 3).

Variables of oral health-related quality of life: The results of multiple liner regression are shown in Table 4 to

identify variables affecting quality of life related to oral health. Variables of oral health related quality of life were eating discomfort from oral disorders (p<0.001), pronouncing problems by oral disorders (p<0.001) and number of natural teeth (p<0.001). Its effectiveness was 54.5%. People with eating discomfort from oral disorders (β = 0.066) showed lower oral health related quality of life than who do not suffer any kind of them. People with pronouncing discomfort from oral disorders (β = 0.097) also showed lower quality of life related to oral health. Greater number of natural teeth (β = 0.015) showed higher level of oral health related quality of life (Table 4).

DISCUSSION

In the modern society, health has become one of the most important concerns. In particular, oral health is closely related to pronunciation and aesthetic appreciation as well as nutrition in order to maintain a healthy interpersonal relationship and social life (Yu *et al.*, 2010). Therefore, oral health is very important for general improvement of quality of life. While the quality of life is variously being studied throughout the medical field, it is meaningful to examine the variables affecting the quality of life related to oral health in a multifaceted way. This study sought to compare the oral status and scaling fear of some local adults with subjective oral health-related quality of life (Lee and Kim, 2014).

The purpose of this study was to analyze the relationship between these variables and to contribute to the future improvement of oral health related quality of life. The research of characteristics of oral health-related quality of life resulted as follows: female for gender, older for age, lower level of education, better subjective oral health status and capable of eating and pronouncing comfortably showed better quality of life (Barbe *et al.*, 2017; Cho *et al.*, 2011; Jung and Woo, 2015; Peruzzo and Gimenes, 2016). This results were similar to the results by Kim (2012). Additionally, periodontitis lowered quality of life while less systemic disease, less implant and loss of teeth, more natural teeth and lower oral hygiene index showed better quality of life (Allen, 2003; Kikuchi, 2006; Locker *et al.*, 2002; Moon *et al.*, 2015).

CONCLUSION

Results of this study indicate that negative subjective oral health status and worse symptoms of oral disorders negatively affect oral health related quality of life. Subjective oral health status was analyzed to be a variable which greatly affects quality of life related to oral health.

LIMITATIONS

The limitations of this study are as follows: first, the validity of the survey can be pointed out due to limitations of the self-filling questionnaire survey. However, by using some measure of reliability, there will be no problem in identifying the influencing variables. Secondly, because this study is a cross-sectional study, it is not possible to know the choices of independent variables and the true causal relationship between the parameters and dependent variables. However, this study is expected to be a reference to other studies in the future since this study corresponds to previous studies. In order to overcome these limitations, longitudinal studies should be conducted. Third, there are limitations in generalizing the results of research because the subjects were limited to certain areas.

RECOMMENDATIONS

Future researches should further investigate the variables of oral health related quality of life in a multifaceted way. In order to promote oral health, it will be necessary to develop various oral health education materials and to expand oral hygiene businesses for oral health education.

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