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A Convergence Study about Influences of Subjective Oral Health Status and Oral Health Literacy on Oral Health-related Quality of Life among Elderly in Community

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지역사회거주 노인의 주관적 구강건강상태와 구강건강문해력이 구강건강관련 삶의 질에 미치는 영향에 대한 융합 연구

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Abstract This study was conducted to identify an influence of subjective oral health status and oral health literacy on oral health-related quality of life (OHRQoL) in elderly. Participants in this cross-sectional survey were 248 aged over 65 older people in Jecheon city. Data were collected from July. 3 to 21, 2016 using the self-report questionnaire. Subjective oral health status, oral health literacy and oral health-related quality of life were measured. The results of multiple regression analysis showed that subjective oral health status, oral health literacy, cohabitant, the number of teeth, education level and religion significantly predicted OHRQoL in the elderly people, explaining 44.3% of the variance. Therefore, health care providers should consider that interventions preventing tooth loss and improving oral health status and oral health literacy are required to enhance the OHRQoL in the elderly people.

• Key Words : Convergence, Subjective oral health status, Oral health literacy, Oral health-related quality of life, Elderly, Community.

요 약 이 연구는 노인의 주관적 구강건강상태와 구강건강문해력이 구강건강관련 삶의 질에 미치는 영향을 파악하기 위하여 시행되었다. 충북 제천시에 거주하는 65세 이상 노인 248명을 대상으로 단면조사를 실시하였다. 주관적 구강건강상태, 구강건강문해력 및 구강건강관련 삶의 질을 자가보고 설문지를 사용하여 2016년 7월 3일부터 21일까지 자료를 수집하였다. 다중회귀분석결과, 노인의 구강건강관련 삶의 질에 영향을 주는 유의한 변수로 주관적 구강건강상태, 구강건강문해력, 동거인 유무, 치아 수, 교육수준 및 종교 등으로 나타났고 이들 변수들은 노인의 구강건강관련 삶의 질을 44.3% 설명했다. 따라서 건강관리 제공자는 노인의 구강건강관련 삶의 질을 증진시키기 위하여 치아 상실을 예방하고 구강건강상태와 구강건강문해력을 향상시키는 중재 프로그램을 고려할 필요가 있다.

• 주제어 : 융합, 주관적 구강건강상태, 구강건강문해력, 구강건강관련 삶의 질, 노인, 지역사회.

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1. Introduction

The rising elderly population has become an issue all over the world. According to Statistics Korea, the number of korean elderly reached 6,569,082 in 2015, which amounts to 13.2 % of the entire citizen population[1]. As the elderly increases, medical costs incurred by the elderly in Korea due to health problems go up enough[2].

In particular oral health of the elderly has an effect on general health condition and quality of life[3,4,5,6].

According to the statistics of health behavior and chronic disease of 2015 in Korea [7], in aged, over 70, the prevalence of periodontal disease was 54.6% of male, 42.9% of female, the prevalence of caries in permanent teeth was 28.2% of male, 22.5% of female. The rate of chewing discomfort was 43.3% of aged over 65 and possession of 20 or more teeth was 65.5% of 65-74 years old.

WHO recommends that countries adopt certain strategies for improving the oral health of the elderly[4].

Subjective oral health status is a useful summary measure of people's oral health[5,8]. According to the study, self-rated oral health had an independent effect on current and future self-rated general health[3,9] and had a great impact on their oral health-related quality of life(OHRQoL)[10].

Oral health literacy is defined as "the degree to which individuals have the capacity to obtain, process and understand basic oral health information and services needed to make appropriate health decisions"[11]. Oral health literacy is required to promote oral health and prevent oral disease[12,13]. It is important because it is closely related to oral health outcomes, such as oral health status and OHRQoL[14,15]. Poor oral health literacy may be a barrier to the use of information and may result in poor dental outcomes[16]. Individuals with limited health literacy are prone to have difficulties finding out the dental health care system and caring their oral health[17].

OHRQoL represents the effect of oral health on an individual's daily function, well-being and quality of life[18,19]. Individuals' subjective perceptions of their oral health status had a greater impact on their health-related quality of life[10]. Previous studies of OHRQoL in the elderly reported that OHRQoL was associated with socioeconomic status, self-perceived oral health, regular dental visits, treatment-seeking behaviors, impairment of daily activities[20], masticatory performance and dry mouth among elderly[21,22]. Although the studies of OHRQoL have been reported frequently in older people, relatively little attention has been paid to the relation of oral health literacy[16]. Also, the individuals' subjective perceptions concerning the impact of their oral health on their daily lives have been rarely addressed[10] Thus this study is to find out whether or not the older peoples' subjective perception of their oral health and oral health literacy have an influence on their OHRQoL.

2. Materials and Methods

2.1 Design and Participants

A cross-sectional descriptive survey was used. Participants were 248 aged over 65 elder in the community.

2.2 Research Instruments

Subjective oral health status was measured using the instrument developed by Lee[23]. It has a total 2 items with 5-point Likert scale (very poor=1, poor=2, moderate=3, good=4, very good=5). A high score means a better subjective oral health status. The Cronbach's alpha reliability coefficient was .885.

Oral health literacy was measured using the instrument of Richman et al.[24] modified by Ju et al.[25] It consists of 66 words with a dichotomized scale (understanding=1, not understanding=0). The higher the total score, the better the subject is indicated to have oral health literacy. The Cronbach's alpha

reliability coefficient was .946.

Oral health-related quality of life (OHRQoL) was measured using the instrument an oral health impact profile (OHIP-14) developed by Slade[26]. It is one of a number of self-reported measurements of the adverse impacts of oral conditions on daily life. It has a total of 14 items, which has two questions in each domain including seven domains. It was applied with 5-point Likert scale (never=0, rarely=1, sometimes=2, very often=3, always=4). A high score indicates a negative influence of oral health on quality of life. The Cronbach's alpha reliability coefficient was .907.

3. Results

3.1 General characteristics and difference in oral health-related quality of life

As shown in table 1, of 248 elderly persons, 52.4% of participants were males. Mean age was 75.59 years (±6.52). 36.7% were the elderly living alone. 39.5% graduated from elementary school. 61.3% had a chronic disease. 21.4% did not have teeth and mean of the number of remaining teeth was 19.82 (±8.37) and 19.0% use an artificial tooth.

As a result of examining the differences in the OHRQoL according to the characteristics of the participants, there were significant differences by sex (t=-2.60, p= .010), spouse (t=-2.93, p= .004), cohabitant (t=4.30, p< .001), religion (t=2.78, p= .006), education level (F=9.95, p< .001), chronic disease (t=2.20, p= .029) and remaining teeth (t=3.81, p< .001).

<Table 1> General characteristics and difference in oral health-related quality of life (N=248)

	Categories	n(%)	Mean(±SD)	t or F	Post hoc
Sex	Male	130(52.4)	11.18(9.43)	-2.60*	
	Female	118(47.6)	14.50(10.63)		
Age	65-69 [a]	59(23.8)	10.55(9.35)	2.01	
	70-74 [b]	43(17.3)	11.55(9.58)		
	75-79 [c]	69(27.8)	12.88(9.98)		
	80-84 [d]	57(23.0)	14.45(10.70)		
	≥85[f]	20(8.1)	16.65(11.39)		
Spouse	Have	140(56.5)	11.08(8.89)	-2.93**	
	Not have	108(43.5)	14.94(11.23)		
Cohabitant	Yes	157(63.3)	10.59(8.71)	-4.30***	
	No	91(36.7)	16.51(11.31)		
Education level	No formal education[a]	26(10.5)	16.07(10.44)	9.95***	a, b> c, e
	Elementary school[b]	98(39.5)	16.54(11.11)		
	Middle school[c]	47(19.0)	9.34(8.09)		
	High school[d]	53(21.4)	10.05(7.82)		
	≥College[e]	24(9.7)	6.45(6.32)		
Religion	Yes	155(62.5)	11.32(9.09)	-2.78**	
	No	93(37.5)	15.17(11.32)		
Monthly income	Yes	159(64.1)	12.22(9.91)	-1.13	
	No	89(35.9)	13.74(10.52)		
Current job	Yes	44(17.7)	10.29(9.91)	-1.78	
	No	204(82.3)	13.29(10.13)		
Chronic disease	Have	152(61.3)	13.84(10.59)	2.20*	
	Not have	96(38.7)	11.05(9.18)		
Smoking	Yes	42(16.9)	11.38(10.15)	- .97	
	No	206(83.1)	13.04(10.14)		
Drinking	Yes	74(29.8)	12.66(10.22)	- .10	
	No	174(70.2)	12.81(10.13)		
Tooth	Have	195(78.6)	11.33(9.14)	-3.81***	
	Not have	53(21.4)	18.03(11.86)		
Number of tooth	≤9[a]	35(17.9)	15.71(9.82)	10.08***	a, b> d
	10-19[b]	38(19.5)	15.34(10.78)		
	20-25[c]	47(24.1)	10.31(8.58)		
	≥26[d]	75(38.5)	7.89(6.39)		
Use of artificial tooth	Yes	47(19.0)	13.76(9.93)	.76	
	No	201(81.0)	12.53(10.20)		

* p<.05, ** p<.01, *** p<.001

3.2 Mean of subjective oral health status, oral health literacy and oral health-related quality of life

As shown in table 2, mean of subjective oral health status, oral health literacy and OHRQoL were 5.98(±1.94), 34.50(±15.03) and 12.76(±10.14) respectively.

<Table 2> Mean of subjective oral health status, oral health literacy and oral health- related quality of life (N=248)

	Min.	Max.	Mean(±SD)
Subjective oral health status	2.0	10.0	5.98(1.94)
Oral health literacy	0.0	66.0	34.50(15.03)
Oral health-related quality of life	0.0	43.0	12.76(10.14)

3.3 Correlation between Subjective oral health status, Oral health literacy and Oral health-related quality of life

As shown in table 3, OHRQoL (OHIP-14 scores)

was correlated negatively with subjective oral health status (r=-0.542, $p<$ .01) and oral health literacy (r=-0.431, $p<$ .01). A significant positive correlation was found between subjective oral health status and oral health literacy (r= .290, $p<$ .01).

<Table 3> Correlation between Subjective oral health status, Oral health literacy and Oral health-related quality of life (N=248)

	SOHS	OHL
OHL	.290**	
OHRQoL	-.542**	-.431**

** p<.01
SOHS: Subjective oral health status
OHL: Oral health literacy
OHRQoL: Oral health-related quality of life

3.4 Factors affecting the OHRQL in elderly people

As shown in table 4, the factors influencing the OHRQoL were analyzed by using a hierarchical multiple regression analysis. The results of Model 1 showed that the OHRQoL was significantly influenced by cohabitant (β=-0.325), religion (β=-0.162) and education level (β=-0.162). In Model 2, subjective oral health status (β=-0.429), cohabitant (β=-0.226), number of the tooth (β=-0.187), religion (β=-0.136), and sex (β =0.125) were significant predictors of OHRQL. In Model 3, subjective oral health status (β=-0.381), oral health literacy (β=-0.302), cohabitant (β=-0.263), number of remaining tooth ((β=-0.165), education level (β=0.151) and religion (β=-0.120) were significant predictors of OHRQoL. 44.3% of the variance in the OHRQoL was explained by these six variables, and the overall F score of the multiple regression Model 3 was significant (F=22.81, $p<$.001).

<Table 4> Factors affecting the oral health related quality of life (N=248)

Variables	Model I		Model II		Model III	
	ß	t	ß	t	ß	t
Constant		9.54***		14.72***		16.21***
Sex	.089	1.35	.125	2.22*	.104	1.94
Spouse	-.152	-1.61	- .076	- .93	-.115	-1.48
Cohabitant	-.325	-3.62***	- .226	-2.94**	-.263	-3.60***
Education level	-.162	-2.44*	.016	.27	.151	2.40*
Religion	-.162	-2.73**	- .136	-2.69**	-.120	-2.50*
Chronic disease			- .048	- .93	-.062	-1.25
Number of teeth			- .187	-3.27**	-.165	-3.03**
Subjective oral health status			-4.290	-7.71***	-.381	-7.10***
Oral health literacy					-.302	-5.17***
	R^2=.138 F=7.59***		R^2=.383 F=20.15***		R^2=.443 F=22.81***	

* p<.05, ** p<.01, *** p<.001

4. Discussion

The purpose of this study was to identify the factors affecting an OHRQoL among elderly.

The mean score of OHIP-14 to elderly differed significantly by gender in this study. Female older people showed a higher mean score than male. This result is consistent with prior studies[27,28,29] that female elderly people is inferior to OHRQoL of the male. It indicates that female elderly would be likely to be having difficulty on their well-being incurred in oral disorders.

Also, the mean score of OHIP-14 of participants in this study was 12.7. This result is similar to the level found in Gagliardi et al (13.6)[30], lower than in Park et al (16.3-18.1)[22] and higher than in Ikebe et al(11.9)[31]. This discrepancy in finding illustrates how perceptions of OHRQoL may have a cultural dimension [32] and include socio-economic factors related to different participants[33].

This study found a significant association of OHRQoL with subjective oral health status, it was found to be the most effective factor of OHRQoL. This result is consistent with prior studies[5,10] that poor self-reported oral health had a negative impact on their OHRQoL. Self-rated oral health is a useful summary measure of people's oral health and it can differ from the information derived from objective clinical examinations[10]. It seems important for health care providers to examine their perceptions of elderly's oral health as a part of their assessment of elderly's

OHRQoL. As a result, they can plan an oral health care service for the elderly and promote them to perform to oral health behavior.

The present study demonstrated oral health literacy was negatively associated with OHRQoL (OHIP-14 scores) and it was identified as a significantly influencing factor to OHRQoL. It indicates that elderly who had lower oral health literacy would be likely to encounter difficulties managing their oral health and their OHRQoL is lower in comparison with elderly who had higher oral health literacy. It is corresponding to previous studies[12,34] which reported that oral health literacy was significant related to OHRQoL. Oral health literacy is important because it is correlated with oral health outcome such as OHRQoL[14]. Health care providers identify elderly with low oral health literacy and help them understand information related to oral health.

The result of the current study showed the number of remaining tooth was a significant predictor of OHRQoL. The studies of a factor associated with OHRQoL among the elderly [20,31,32,35] have reported that missing teeth was related to levels of impact on well-being and a poorer OHRQoL was related to fewer residual teeth. Teeth have various functions such as eating, speech and contributing to facial appearance. Tooth loss is relatively common and continues to occur in the elderly [3]. It is thought to cause loss of willingness in keeping company with others or participating in social activities[36]. When it was a study of elderly's functional level, investigated the number of remaining teeth as evaluation of oral health status[36]. Therefore, it needs strategies to enhance awareness of dental health to increase the retention of natural teeth among the elderly.

This study has a limitation to generalize this result because the subjects of study are old people residing in a region. There has been little study about OHRQoL in nursing. Thus, repeated studies are necessary to examine another factor influencing OHRQoL and related to the domain of OHRQoL.

5. Conclusion

The objective of this work is to examine the correlation between subjective oral health status, oral health literacy and oral health-related quality of life and to identify factors related to oral health-related quality of life of elderly in community-dwelling. Subjective oral health status, oral health literacy, cohabitant, the number of teeth, education level and religion significantly predicted OHRQoL in the elderly people. Therefore, these findings suggest that improving OHROoL among older requires not only promoting oral health status and preventing tooth loss through proper oral management but also increasing oral health literacy.

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