

Association of Gender, Education, Income and Self-Perceived Oral Health Status among the Koreans; The 6th Korea National Health and Nutrition Examination Survey (KNHANES)

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Abstract

Objectives: This study was conducted to know about the association between socio-demographic determinants and self-perceived oral health status among the Korean adults. **Methods/Statistical Analysis:** A cross-sectional, examination data of 4,267 subjects was used as variables of self-perceived oral health and socio-demographic factors. We analyzed the available data using multi-logistic regression with complex sampling for identifying the relation of gender, education, income and self-perceived oral health. **Findings:** Good Self-Perceived Oral Health(SPOH) was significantly more associated among well-educated subjects (OR 1.68; 95% CI; 0.5-0.8, p<.001), female(OR 1.35; 95% CI; 0.6-0.9, p<.001), subjects with spouse (OR 1.25; 95% CI; 1.0-1.5, p<.039), and subjects with middle-high income group (OR 1.04; 95% CI; 0.6-0.9, p<.001) than among the overall group."CI" indicates Confidence Interval, "OR" indicates Odd Ratios and "P" indicates P-value. **Improvements/Applications:** These findings report that lower education levels, aging, gender (male), non-spouse and low income have a big influence on the poor SPOHS of Koreans significantly.

Keywords: Age, Education, Gender, Income, Korea, Oral Health

1. Introduction

SPOHS Self-Perceived Oral Health Status has been reported as a strong indicator of the general health worldwide. Also, many health and social factors are connected to self-perceived oral health as well as Self-Perceived Health (SPH)¹⁻⁴. Furthermore, SPOHS has been reported to have much difference with age, gender, race, poverty level, area and ethnicity etc⁵⁻⁷. According to recent studies by Canada and the United States, inequality of oral health have continued for 35 years and have been identified in association with age, sex, education and income⁸. But, the relevant studies on the general characteristics and SPOHS are rare compared to its greater importance in Korea.

And that oral health status was very closely connected with general health of the public as well as affecting the

health of the older people¹. To our knowledge, none have reported the association of age, education, income, gender as individual factors and living area as community level one and SPOHS.

So, this study focused to investigate the association of socio-demographic structural determinants such as age, sex, income, education etc. and self-perceived oral health status in the adults of Korea.

2. Materials and Methods

2.1 The Database

We used the database from the 6th KNHANES which is reported to be the representative one in Korea available

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online. We selected and used the variables from this database as socio-demographic determinants and used the structured questionnaire for oral health variables.

2.2 Selection of the Subject

The questionnaire with missing variables were excluded and the questionnaire of 4,267 subjects of age 20 and above on SPOHS from the 6th KNHANES were selected.

2.3 Statistical Analysis

We analyzed the data of 4,267 subjects of 20 years age and above with complex sampling method for demographic characteristics with weighted frequencies and percentages. To identify the related factors on self-perceived oral health status, we used multi-level logistic regressions with Statistical Package for Social Sciences (SPSS) (ver. 21.0).

3. Results

3.1 The Result of Logistic Regression

The results showed that the variables such as age, gender, income, education, marital status and living area were significantly related with SPOHS as shown in Table 1. The study results reported that good SPOHS was significantly more related with university educated subjects (OR 1.75; 95% CI; 1.5-2.1, $p < .001$), high income group (OR 1.59; 95% CI; 1.3-1.9, $p = .035$), 20-34 age group (OR 1.51; 95% CI; 1.2-1.9, $p < .001$), subjects with spouse (OR 1.34; 95% CI; 1.1-1.6, $p < .001$), living area (urban) (OR 1.22; 95% CI; 1.0-1.4, $p = .015$), and female (OR 1.19; 95% CI; 1.1-1.4, $p = .007$) in order. The most affecting factor of good SPOHS was the education level, which was well-known as the attributing factor of the general health⁸. And one of the next variable affecting good SPOHS was income and this means that the affordable ability is an important key issue to get and to keep good oral health status⁸. Also, 20-34 age group, the age in especially young adults. Also young adults of age group 20 to 34 was the relating factor to keep good SPOHS. The adults living with spouse were in good SPOHS compared to those living without and it is thought to be well explained for more regular life-style in some aspects. Female gender showed to be more in good SPOHS than male and this gender difference⁸ could

be explained for life style factors such as smoking and drinking of men in Korea.

Table 1. SPOHS (Self-Perceived Oral Health Status) among the Korean adults by logistic regression

Variable	OR(96% CI)	p
Age		
20-34	1.507(1.2-1.9)	.000
35-64	1.298(1.1-1.6)	.005
more than 65	reference	
Gender		
Male	reference	
Female	1.192(1.1-1.4)	.007
Income		
Lowest	reference	
middle-lowest	1.086(0.9-1.3)	.000
middle-Highest	1.296(1.1-1.6)	.000
Highest	1.590(1.3-1.9)	.035
Education		
Elementary	reference	
middle	1.195(0.9-1.5)	.000
High	1.198(1.0-1.4)	.001
university	1.752(1.5-2.1)	.000
marital status		
non-spouse	reference	
spouse	1.34(1.1-1.6)	.001
living area		
urban	1.224(1.0-1.4)	.015
rural	reference	

3.2 The Result of Multi-Level Logistic Regression

The results suggest that the factors such as higher education level, female gender, presence of spouse and higher income were significantly connected with good SPOHS after adjusting as shown in Table 2. The factors of living area of the community which means the unique environmental factors were not significantly related with SPOHS. The study results showed that good SPOHS was significantly more related with well-educated subjects (OR 1.68; 95% CI; 0.5-0.8, $p < .001$), female (OR 1.35; 95% CI; 0.6-0.9, $p < .001$), subjects with spouse (OR 1.25; 95% CI; 1.0-1.5, $p < .039$), and subjects with middle

to high income group (OR 1.04; 95% CI; 0.6-0.9, $p < .001$) than those of the other groups.

Table 2. Indicators of predicting self-perceived oral health status in Korean adults

variable		OR(96% CI)	P
Age	20-34	1.407(0.5-1.0)	.037
	35-64	1.455(0.8-1.2)	.755
	65-	reference	
Gender	M	Reference	
	F	1.348(0.6-0.9)	<.001
Income	low	reference	
	middle-low	0.885(0.6-1.1)	.149
	middle-high	1.035(0.6-0.9)	<.001
	high	1.214(0.7-1.0)	.130
Education	elementary	reference	
	middle	1.143(0.5-0.8)	.000
	high	1.066(0.5-0.9)	.002
	university	1.682(0.5-0.8)	.000
Marital status	non-spouse	reference	
	spouse	1.248(1.0-1.5)	.039
Area	urban	reference	
	rural	1.1(0.9-1.3)	.330

4. Conclusion

The results meant that higher education level, female, presence of spouse and higher income were identified as major influencing factors among socio-demographic determinants in associated with good SPOHS. According to recent studies in Brazil and Chile, gender differences were evident in self-rated health and that was showed in our results⁷. By recent study by Iran, inequality of perceived oral health did not exist in adults and those results have much difference in one of our studies⁹. And that result of recent study of the the United States, supports result one of our study. Lower income and poor elderly with bad oral health were more tended to not use dental services usually and caused expensive medical costs in the future¹⁰. In Asia, by Japan's recent longitudinal cohort study, those living in rich community were associated with lower tooth loss incidence in the elderly¹¹. According to European study, it was reported that the subjects with higher education level were reporting more dental visits and

taking preventive care and this is evident from our results¹². Therefore, this study was indispensable one for the developing of general health indicators as well as oral health because self-perceived oral health has reported differently in the view of age, gender and race¹³. However, our limitation of this study was not to deal with the psychological aspects like depression or psychological stress because of insufficient related variables, even if the chronic depressive signs and symptoms are connected with poor oral health in the elderly, new release of the U.S study^{14,15}. And that in our past study it was identified that personalized and tailored plans for the Korean elderly were necessary to keep and improve their oral health as well as to prevent chronic disease^{16,17}. It is recommended that appropriate socio-demographic determinants such as educational level, gender, marital status and income etc. should be considered in planning oral health programs to enhance general health status in the Korean population. On the other hand, further research should be continued to identify the underlying mechanisms such as remarkable rising of income inequality and psychological problems in Korean society and to improve the conditions for better understanding on their structural factors of SPOHS in addition to their socio-demographic factors.

5. References

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