



**SUBJECTIVE ORAL HEALTH PERCEPTION AND CHEWING DISCOMFORT  
DEPENDING ON ORAL HEALTH CARE BEHAVIOR**

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**ABSTRACT**

In order to provide the baseline data for reducing chewing discomfort and improving the level of subjective oral health perception by grasping the correlation among oral health care behavior, subjective oral health status and chewing discomfort, this study utilized the data from 2015 Community Health Survey of the Gyeongnam region, which has been conducted annually by the Korea Centers for Disease Control and Prevention since 2008. As for the oral health care behavior, the examination rate was 22%, the experience rate for brushing after lunch was 46.7%, the scaling experience rate was 32.1%, and the rate of experiencing no dental treatment was 24.6%. The subjective oral health status depending on the oral health care behavior was higher for those who go through oral examinations, brush after lunch, and have experiences of scaling and dental treatment. The level of chewing discomfort depending on the oral health care behavior was higher for those who go through oral examinations, do not brush after lunch, and have no experiences of scaling and dental treatment. Since the levels of subjective health perception and chewing discomfort are higher when the age group is older and the area of residence is the rural area, the medical institution accessibility should be improved and methodical educational system should be established to allow for regular and continuous education.

**KEYWORDS:** Oral health, chewing discomfort, oral health care behavior.

**INTRODUCTION**

Due to the advance of modern medical science, people's average life expectancy has been extended by more than 20 years during the approximate period of 40 years since 1970, and that trend is continuing around the globe<sup>[1]</sup>. The increase in the average life expectancy had led to the rapid growth of interest in health, and interest in oral health, in particular, is also growing. Therefore, unlike the past, the modern definition of oral health is now 'not feeling discomfort in daily life'.<sup>[1,2]</sup> Thus, the ideology of promoting oral health, which represents a big part of health promotion overall, is changing as well.

When dental diseases occur, they mostly turn into cumulative or irreversible illnesses instead of getting completely cured. This causes various issues that can have diverse effects on chronic illnesses and quality of life.<sup>[3-5]</sup> Not managing oral health at appropriate times is the biggest cause behind the loss of teeth in the middle-aged class, and according to the 2015 Korea National Health and Nutrition Examination Survey, the prevalence rate of periodontal diseases in the adults over the age of 50 was close to 50%, and that rate was higher for male adults.<sup>[6]</sup> In order to prevent such illnesses and promote oral health for adults, oral health education and management appropriate for all ages are necessary. However, due to various reasons, the proportion of those

who go through oral examinations is merely 30%, and the proportion of those who obtain oral health education is also very low as well.<sup>[7,8]</sup>

Oral related illnesses are annually increasing the individual and government burdens, and also causing major socio-economic losses. For individuals, oral illnesses lead to problems in social life due to chewing, pronunciation and aesthetic issues. This leads to reduced productivity as a society, and causes the deterioration in the overall quality of life.<sup>[4, 9-12]</sup> Therefore, this study aims to grasp the relationship between the level of subjective oral health perception and chewing discomfort depending on the oral health care behaviors by targeting adults, and provide the baseline data for the preparation of solution plans.

**MATERIALS AND METHODS**

**1. Subject of Study**

This study utilized the data from the Community Health Survey, which has been conducted annually by the Korea Centers for Disease Control and Prevention since 2008. This is a national sample survey and targets adults over the age of 19 in 254 cities, counties and boroughs (health centers). Based on the 2015 Community Health Survey of the Gyeongnam region that targeted 18,037 respondents, 13,599 respondents were selected as the

subject of study after choosing variables that are appropriate for the research design and excluding non-response parts.

## 2. Research Method

The research method included 6 questions on the general characteristics (gender, age group, area of residence, level of education, level of income, participation in economic activity), and 4 questions on the oral health care behaviors (oral examination experience within 1 year, brushing after teeth, scaling experience within 1 year, having no dental treatment experience). The levels of subjective oral health perception and chewing discomfort both used the scales from 1 to 5. For the level of subjective oral health perception, a higher scale meant a better level of subjective oral health perception, with 5 being excellent, 4 being good, 3 being average, 2 being poor and 1 being very poor. For the level of chewing discomfort, a higher scale meant bigger discomfort, with 5 being very uncomfortable, 4 being uncomfortable, 3 being average, 2 being not too uncomfortable, and 1 being not uncomfortable at all.

## 3. Statistical Analysis

By using the SPSS (ver. 250 for windows, Chicago, IL, USA) statistical program, frequency analysis was conducted in order to examine the general characteristics and oral health care behaviors. Then, t-test and one-way analysis of variance were carried out to investigate the level of subjective oral health perception and chewing discomfort depending on the oral health care behaviors, and the statistical significance level was set as 0.05.

## RESULTS

### 1. General characteristics of Research Subjects

The general characteristics of research subjects are shown in Table 1. As for the gender, females took up 53.4%, followed by males with 46.6%. As for the age group, 23.9% was in their 50s, followed by 19.8% in their 40s and 18.6% in their 60s. In case of the area of residence, the city region was 51.3%, followed by 48.7% in the county regions. As for the level of education, middle to high school education was the most frequent response with 45.7%, and below elementary school education was the least frequent response with 22.5%. In case of the level of income, less than 2 million won was the most frequent response with 39.4%, followed by 2~3 million won with 18.7%, and 3~4 million won with

17.6%. As for the participation in economic activities, 68.7% responded that they are participating, while 31.3% responded that they were not.

**Table 1: General characteristics of Research Subjects.**

Variable	Categories	N	%
Gender	Male	6332	46.6
	Female	7267	53.4
Age Group	20s	1247	9.2
	30s	1902	14.0
	40s	2686	19.8
	50s	3246	23.9
	60s	2529	18.6
	over 70	1989	14.6
Area of Residence	City Region	6979	51.3
	County Region	6623	48.7
Level of Education	Below elementary school	3057	22.5
	Middle to high school	6221	45.7
	College or higher	4321	31.8
Level of Income	Less than 2 million won	5364	39.4
	2 ~ 3 million won	2549	18.7
	3 ~ 4 million won	2394	17.6
	4 ~ 5 million won	1548	11.4
	5 million won or more	1744	12.8
Participation in Economic activity	Yes	9346	68.7
	No	4253	31.3

### 2. Oral health care behavior

Oral health care behaviors are shown in Table 2. As for having oral examination experience, 22.0% answered "Yes" and 78.0% answered "No". In case of brushing after lunch, 46.7% answered "Yes" and 53.5% answered "No". As for having the scaling experience, 32.1% answered "Yes" and 67.9% answered "No". In case of having no dental treatment experience, 24.6% answered "Yes – no experience" and 75.4% answered "No – have experience".

**Table 2: Oral health care behavior.**

Variable	Categories	N	%
Oral examination experience	Yes	2997	22.0
	No	10602	78.0
Brushing after lunch	Yes	6348	46.7
	No	7251	53.3
Scaling experience	Yes	4359	32.1
	No	9240	67.9
no dental treatment experience	Yes(no experience)	3340	24.6
	No(have experience)	10259	75.4

### 3. The level of subjective oral health and chewing discomfort depending on general characteristics

The level of subjective oral health and chewing discomfort depending on general characteristics is shown in Table 3. As for the level of subjective oral health, the perception level was higher for the younger age group ( $p<0.001$ ), and as for the area of residence, the perception level was higher in the city region (2.83) compared to the county region (2.77) ( $p<0.001$ ). In case of the level of education, the perception level was higher for the higher levels of education ( $p<0.001$ ), and as for the level of income, the perception level was higher for the higher income groups ( $p<0.001$ ). In case of the participation in the economic activities, those that participated in the economic activities (2.83) showed a

higher perception level compared to those that did not participate (2.75) ( $p<0.001$ ).

In case of chewing discomfort, females (2.25) showed a higher level of discomfort compared to males (2.20) ( $p=0.023$ ), and as for the age, the older age group showed a higher level of discomfort ( $p<0.001$ ). In case of the area of residence, the level of discomfort was higher for the county region (2.42) compared to the city region (2.05). As for the level of education, the level of discomfort was higher for the lower level of education ( $p<0.001$ ) and lower level of income ( $p<0.001$ ). As for the participation in economic activities, those that did not participate (2.31) showed a higher level of discomfort compared to those that did participate (2.20).

**Table 3: The level of subjective oral health and chewing discomfort depending on general characteristics.**

Variable	Categories	Level of Subjective Oral Health	Chewing Discomfort
Gender	Male	2.81 ± 0.99	2.20 ± 1.27
	Female	2.80 ± 0.93	2.25 ± 1.28
	t(p)	0.63(0.527)	-2.28(0.023)
Age Group	20s	3.22 ± 0.89 <sup>d</sup>	1.57 ± 0.94 <sup>a</sup>
	30s	3.01 ± 0.83 <sup>c</sup>	1.71 ± 0.98 <sup>b</sup>
	40s	2.94 ± 0.88 <sup>c</sup>	1.92 ± 1.12 <sup>c</sup>
	50s	2.72 ± 0.97 <sup>b</sup>	2.27 ± 1.23 <sup>d</sup>
	60s	<b>2.65 ± 0.96<sup>b</sup></b>	2.55 ± 1.30 <sup>e</sup>
	over 70	2.48 ± 1.03 <sup>a</sup>	3.08 ± 1.37 <sup>f</sup>
	F(p)	145.89(<0.001)	424.99(<0.001)
Area of Residence	City Region	2.83 ± 0.92	2.05 ± 1.18
	County Region	2.77 ± 0.99	2.42 ± 1.35
	t(p)	3.98(<0.001)	-17.21(<0.001)
Level of Education	Below elementary school	2.51 ± 0.99 <sup>a</sup>	2.98 ± 1.37 <sup>c</sup>
	Middle to high school	2.79 ± 0.94 <sup>b</sup>	2.17 ± 1.22 <sup>b</sup>
	College or higher	3.03 ± 0.89 <sup>c</sup>	1.78 ± 1.03 <sup>a</sup>
	F(p)	274.97(<0.001)	902.91(<0.001)
Level of Income	Less than 2 million won	2.63 ± 0.99 <sup>a</sup>	2.65 ± 1.38 <sup>c</sup>
	2 ~ 3 million won	2.85 ± 0.94 <sup>b</sup>	2.07 ± 1.17 <sup>b</sup>
	3 ~ 4 million won	2.93 ± 0.90 <sup>bc</sup>	1.93 ± 1.10 <sup>a</sup>
	4 ~ 5 million won	2.91 ± 0.90 <sup>cd</sup>	1.91 ± 1.09 <sup>a</sup>
	More than 5 million won	2.99 ± 0.93 <sup>d</sup>	1.85 ± 1.08 <sup>a</sup>
	F(p)	303.76(<0.001)	601.60(<0.001)
Participation in Economic activity	Yes	2.83 ± 0.94	2.20 ± 1.25
	No	2.75 ± 0.99	2.31 ± 1.36
	t(p)	4.61(<0.001)	-4.36(<0.001)

### 4. The level of subjective and chewing discomfort depending on oral health care behaviors oral health

The level of subjective oral health and chewing discomfort depending on oral health care behaviors is shown in Table 4. In regard to having oral examination experiences, the level of subjective oral health was higher for those that answered "Yes" (2.92) than those that answered "No" (2.77) ( $p<0.001$ ). In case of brushing after lunch, those that answered "Yes" (2.90) had a

higher level of subjective oral health than those that answered "No" (2.77). In regard to having the scaling experience, those that answered "Yes" (2.92) had a higher level of subjective oral health than those that answered "No" (2.75) ( $p<0.001$ ). In case of having no dental treatment experience, those that answered "Yes – no experience" (2.35) showed a higher level of subjective oral health than those that answered "No – have experience" (2.95) ( $p<0.001$ ).

As for having the oral examination experience, the level of chewing discomfort was higher for those that answered "Yes" (1.95) than those that answered "No" (1.31) ( $p < 0.001$ ). In case of brushing after lunch, those that answered "No" (2.39) had a higher level of chewing discomfort than those that answered "Yes" (2.04). As for having the scaling experience, those that answered "No"

(2.33) had a higher level of subjective oral health than those that answered "Yes" (2.01) ( $p < 0.001$ ). In case of having no dental treatment experience, those that answered "Yes – no experience" (2.84) showed a higher level of chewing discomfort than those that answered "No – have experience" (2.03) ( $p < 0.001$ ).

**Table 4: The level of subjective oral health and chewing discomfort depending on oral health care behavior**

Variable	Categories	Level of Subjective Oral Health	Chewing Discomfort
Oral examination experience	Yes	2.92 ± 0.95	1.95 ± 1.13
	No	2.77 ± 0.96	1.31 ± 1.30
	t(p)	7.38(<0.001)	-14.43(<0.001)
Brushing after lunch	Yes	2.90 ± 0.94	2.04 ± 1.19
	No	2.72 ± 0.96	2.39 ± 1.33
	t(p)	10.87(<0.001)	-16.10(<0.001)
Scaling experience	Yes	2.92 ± 0.93	2.01 ± 1.17
	No	2.75 ± 0.96	2.33 ± 1.31
	t(p)	10.02(<0.001)	-14.42(<0.001)
no dental treatment experience	Yes(no experience)	2.35 ± 0.85	2.84 ± 1.36
	No(have experience)	2.95 ± 0.94	2.03 ± 1.18
	t(p)	-32.79(<0.001)	30.83(<0.001)

## CONCLUSION

Even though our society is becoming a super-aged society, the level of oral health perception is reportedly low, and this trend is intensified when getting older with low levels of education and income.<sup>[4, 3]</sup> Therefore, this study aims to lower the level of chewing discomfort and improve the level of subjective oral health perception by grasping the correlation among oral health care behaviors, subjective oral health status and chewing discomfort.

As for the oral health care behavior, the examination rate was 22%, the experience rate for brushing after lunch was 46.7%, the scaling experience rate was 32.1%, and the rate of experiencing no dental treatment was 24.6%. The experience rate of oral examinations in 2014 was 35.5% in the study by Jang et al.<sup>[14]</sup>, which was lower than the findings of this study, and the scaling experience rate was steadily increasing, which is similar to the findings of this study. The cause of this increase is believed to be the implementation of the national health insurance coverage of scaling that started in 2015, along with publicity activities for regular examinations. However, the loss of teeth in adults due to periodontal diseases is not decreasing, which implies that systematic preparation of countermeasures is necessary.

As for the level of subjective oral health depending on general characteristics, the level was lower for the younger age group, residing in the city regions, with higher levels of education and income while participating in economic activities. This is similar to the findings of the study by Won and Park<sup>[15]</sup>, which showed that the level of subjective oral health was lower for the older age

groups with lower levels of education and income. In case of chewing discomfort depending on general characteristics, the level of discomfort was high for females, in the older age group, residing in county regions, with lower levels of education and income while not participating in economic activities. This is similar to the findings of the study by Yoon and Chae<sup>[16]</sup>, which showed that the level of chewing discomfort was higher for the older age groups residing in county regions, with a lower level of education. To enhance the level of subjective oral health perception and reduce chewing discomfort, oral hygiene education programs tailored to different life stages need to be prepared for continuous education, and efforts should be made to improve the medical institution accessibility and expand health services.

The level of subjective oral health depending on oral health care behaviors was higher when going through oral examinations, brushing after lunch, and having scaling and dental treatment experiences. This result is similar to the findings of the study by Song and Kim<sup>[17]</sup>, which showed that 70.7% of the subjects that did not go through oral examinations recognized that their oral health status was poor, and also similar to the findings of the study by Won and Park<sup>[15]</sup>, which showed that the subjects with oral examinations experiences recognized that their subjective level of oral health was satisfactory. Considering the fact that the rate of oral examination in adults is merely 50% of the general examination rate, it is believed that the measures that can institutionalize regular oral examinations are necessary.

As for the chewing discomfort depending on the oral health care behavior, the level of discomfort was high when going through oral examinations, not brushing after lunch, and having no scaling and dental treatment experiences. This result is similar to the findings of the study by Yoon and Chae<sup>[16]</sup>, which showed that chewing discomfort is reduced when having experiences of oral examination and scaling. Chewing discomfort reportedly affects the nutrient intake, health of the whole body and ultimately the overall quality of life, in addition to causing discomfort when chewing.<sup>[3,18-20]</sup>

In addition to simply enhancing oral health, oral health care behaviors improve the level of subjective oral health perception and positively affect the overall quality of life. In particular, the level of subjective health perception and chewing discomfort is high for the older age groups with the rural areas as the area of residence, and in order to improve such shortcomings, the medical institution accessibility should be improved and regular and continuous education should take place by establishing the methodical educational system.

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