

## A Study on the Relationship Oral Health Belief and Oral Health Practice of Chinese Student's Studying in Korea

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### Abstract

*This study is based on oral health knowledge and oral health belief, oral health behaviors are processed of Chinese Students' Studying in Korea. This research was based on self questionnaire survey which 217 Chinese students Studying in Korea. As to oral health belief according to general characteristics, benefit was 2.77 points ( $p=0.014$ ) in male students. Oral health beliefs and health of the sensitivity of the seriousness and barrier increasing the motivation to increase susceptibility showed a positive correlation. In this study, Chinese students` learn proper oral health knowledge will be required to be properly trained, improving oral health, oral health education beliefs lead to action would be to help.*

**Keywords:** Chinese students, Oral health belief, Oral health practice

### 1. Introduction

In 2014, restructuring of universities is the biggest issue in both the academia and universities in Korea, and an increasing number of Korean universities are expected to be closed if the current university admission limit is maintained due to the decrease in school age population. As a solution to this issue, universities are actively attracting foreign students, which will contribute to global competitiveness and enrollment rate of universities. Since the announcement of Study Korea Project in 2011, the number of foreign students studying in Korea has rapidly increased. Chinese students account for more than 60% of foreign students studying in Korea [1], which is larger than the number of foreign students from other countries than China. Although attracting Chinese students is positive in terms of maintaining university evaluation and standard on the surface, many problems have arisen, including the issue of multi-cultures [2]. Due to cultural difference, Chinese students are in a poor condition in terms of health issue and, especially, their oral health is relatively less cared compared to their general health [3]. Oral health is related not only to their oral function, but various factors as well, including their general health, sociality, confidence and quality of life, and is a prerequisite for healthy life [4]. Oral health belief is a model that understands and describes health related behaviors as a psychosocial process. In this model, belief is decided by psychological readiness and behavior of individuals, which becomes a prerequisite for attitude, belief, and behavior of individuals. Most of studies on foreign students in Korea have examined cultural adaptation or use of medical institutions in Korea, and no study has been conducted with regard to oral health belief so far. This study aims to provide the basic data for ideal oral care behavior by identifying oral health behavior and oral health belief for Chinese students in Korea.

## **2. Subjects and Method**

### **2.1. Study Population**

A cross-sectional study was performed on Chinese students at universities in Busan Metropolitan City with structured self-administered questionnaires. A total of 231 students who understood and agreed to the purpose of this study participated in the survey, and a total of 217 questionnaires were used for the final analysis, excluding 14 questionnaires with incomplete responses.

### **2.2. Questionnaire**

The questionnaires included gender, grade, year of entry to Korea, year of admission to universities in Korea, regional status before coming to Korea, economic condition for the subjects. Also, smoking status, drinking frequency, fluency in Korean, and overall satisfaction with campus life were asked. Questionnaire items regarding oral health behaviors included frequency of daily tooth brushing, use of oral care products, experience of toothache and gum bleeding for the past 1 year, and oral health education. Also asked were if they had experience of dental treatment for the past 1 year. If they answered 'yes' to this question, then they were asked about the reason for the treatment. They were also asked if they had experience of not being treated, even if they thought it necessary, for the past 1 year, and why they couldn't receive the treatment. They were also asked about the areas to be improved when they used dental institutes in Korea.

### **2.3. Data Analysis**

Statistical analyses were employed for the general characteristics of participants, oral health behavior, and the areas to be improved when they used dental institutes in Korea. In order to identify the general characteristics and oral health behaviors affecting the 5 items of oral health belief, independent samples t-test and one-way ANOVA were performed. Collected data were analyzed using SPSS (SPSS 19.0 for windows, SPSS Inc., Chicago, IL., USA), with the significance level at 0.05.

## **3. Results**

### **3.1. General Characteristics of Subjects of All Subjects**

The number of study subjects was 217, with male students accounting for 50.7% and female students 49.3%. The students who entered Korea before 2009 were 66.8%, while those who entered after 2010 were 32.3%. The subjects who were admitted universities in Korea before 2009 accounted for 55.8%, while those who were admitted after 2010 were 44.2%. As for fluency in Korean, 23.9% were good, 38.1% were fair, and 38.1% were poor. Regarding overall satisfaction with campus life in Korea, 47.2% were satisfied, 29.9% were moderately satisfied and 14.5% were dissatisfied. As for smoking status, 27.6% were smoker, 66.4% were non-smoker and 6.0% were former smoker. For drinking frequency per month, 42.0% drank once or less and 58.0% drank more than twice <Table 1>.

**Table 1. General Characteristics of Study Subjects**

|                             | Variable        | N   | %    |
|-----------------------------|-----------------|-----|------|
| Gender                      | Male            | 117 | 50.6 |
|                             | Female          | 114 | 49.4 |
| Year of entry               | ≤2009           | 130 | 56.3 |
|                             | ≥2010           | 98  | 42.4 |
| Year of admission           | ≤2009           | 120 | 55.8 |
|                             | ≥2010           | 95  | 44.2 |
| Grade                       | 1 grade         | 24  | 11.2 |
|                             | 2 grade         | 39  | 18.1 |
|                             | 3 grade         | 52  | 24.2 |
|                             | 4 grade         | 100 | 46.5 |
| Economic status             | High            | 31  | 14.3 |
|                             | Middle          | 183 | 84.3 |
|                             | Low             | 3   | 1.4  |
| Proficiency in Korean       | Good            | 47  | 23.9 |
|                             | Usually         | 75  | 38.1 |
|                             | Difficult       | 75  | 38.1 |
| School satisfaction         | Satisfaction    | 101 | 47.2 |
|                             | Usually         | 64  | 29.9 |
| Smoking                     | Dissatisfaction | 49  | 14.5 |
|                             | Current         | 60  | 27.6 |
|                             | No              | 144 | 66.4 |
| Alcohol consumption (month) | Former          | 13  | 6.0  |
|                             | ≤1              | 76  | 42.0 |
| Residence type              | ≥2              | 105 | 58.0 |
|                             | Mertopolitan    | 69  | 31.8 |
|                             | City            | 115 | 53.0 |
|                             | Rural           | 33  | 12.9 |

### 3.2. Distribution of Oral Health Belief by Sociodemographic Characteristics

The benefit of male students was higher than that of female students ( $p < 0.014$ ), the sensitivity of those who entered Korea before 2009 was higher than that of those who entered after 2009 ( $p < 0.014$ ), and the severity of the subjects who were admitted before 2009 was higher than that of those who were admitted after 2009 ( $p < 0.019$ ). The sensitivity of those who were moderately fluent and not fluent in Korean was higher than that of those who were fluent ( $p < 0.001$ ), and the severity of those who were satisfied and moderately satisfied was higher than that of those who were not satisfied ( $p < 0.001$ ). As for smoking status, the salience of current smokers was higher than that of former smokers ( $p < 0.003$ ), and the sensitivity and barrier of those who drank more than twice were higher than those who drank once or less per month ( $p < 0.009$ ,  $p < 0.004$ ) <Table 2>.

**Table 2. Oral Health Belief According General Characteristics**

|                             | Susceptibility         | <i>p</i> -value  | Seriousness | <i>p</i> -value | Benefit   | <i>p</i> -value | Barrier   | <i>p</i> -value | Saliency               | <i>p</i> -value |
|-----------------------------|------------------------|------------------|-------------|-----------------|-----------|-----------------|-----------|-----------------|------------------------|-----------------|
| Gender                      |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| Male                        | 3.09±1.06              | 0.121            | 2.93±1.14   | 0.64            | 2.77±1.09 | <b>0.014</b>    | 3.19±1.09 | 0.484           | 3.19±0.95              | 0.028           |
| Female                      | 3.32±1.09              |                  | 2.86±1.13   |                 | 2.39±1.13 |                 | 3.09±1.10 |                 | 3.09±1.10              |                 |
| Grade                       |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| 1 grade                     | 2.77±1.17              | 0.169            | 3.02±1.01   | 0.054           | 2.35±1.02 | 0.2             | 3.11±1.08 | 0.421           | 2.54±1.11              | 0.36            |
| 2 grade                     | 3.17±1.06              |                  | 3.21±0.92   |                 | 2.85±1.12 |                 | 3.32±0.97 |                 | 2.91±0.96              |                 |
| 3 grade                     | 3.20±1.21              |                  | 3.02±1.11   |                 | 2.71±1.03 |                 | 3.24±0.84 |                 | 2.98±0.87              |                 |
| 4 grade                     | 3.32±0.98              |                  | 2.68±1.22   |                 | 2.48±1.18 |                 | 3.03±1.12 |                 | 2.78±1.16              |                 |
| Year of entry               |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| ≤2009                       | 3.34±1.01              | <b>0.014</b>     | 2.91±1.19   | 0.95            | 2.59±1.16 | 0.978           | 3.16±1.07 | 0.743           | 2.86±1.11              | 0.466           |
| ≥2010                       | 2.93±1.18              |                  | 2.90±1.00   |                 | 2.60±1.04 |                 | 3.11±0.93 |                 | 2.75±0.96              |                 |
| Year of admission.          |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| ≤2009                       | 3.24±1.03              | 0.618            | 2.75±1.19   | <b>0.019</b>    | 2.51±1.16 | 0.25            | 3.14±1.12 | 0.915           | 2.81±1.14              | 0.831           |
| ≥2010                       | 3.16±1.15              |                  | 3.11±1.01   |                 | 2.69±1.06 |                 | 3.15±0.90 |                 | 2.84±0.96              |                 |
| Proficiency in Korean       |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| Good                        | 2.54±1.11 <sup>a</sup> | <b>&lt;0.001</b> | 2.93±1.01   | 0.936           | 2.76±1.05 | 0.596           | 3.27±0.84 | 0.102           | 2.98±0.92 <sup>a</sup> | <b>0.042</b>    |
| Usually                     | 3.40±1.06 <sup>b</sup> |                  | 2.96±1.16   |                 | 2.56±1.20 |                 | 3.27±1.07 |                 | 2.62±1.08 <sup>a</sup> |                 |
| Difficult                   | 3.36±0.96 <sup>b</sup> |                  | 2.89±1.14   |                 | 2.60±1.04 |                 | 2.95±1.05 |                 | 3.02±1.85 <sup>a</sup> |                 |
| School satisfaction         |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| Satisfaction                | 3.32±1.02 <sup>a</sup> | <b>&lt;0.001</b> | 2.87±1.21   | 0.222           | 2.44±1.03 | 0.303           | 3.00±0.94 | 0.163           | 2.74±1.17              | 0.653           |
| Usually                     | 3.46±0.86 <sup>a</sup> |                  | 3.05±1.09   |                 | 2.65±1.12 |                 | 3.30±0.93 |                 | 2.86±1.00              |                 |
| Dissatisfaction             | 2.61±1.23 <sup>b</sup> |                  | 2.68±0.99   |                 | 2.70±1.15 |                 | 3.20±1.12 |                 | 2.89±0.89              |                 |
| Smoking                     |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| Current                     | 2.93±1.12              | 0.075            | 2.74±1.11   | 0.188           | 2.54±1.01 | 0.056           | 2.96±0.94 | 0.11            | 2.87±0.86 <sup>a</sup> | <b>0.003</b>    |
| No                          | 3.31±1.05              |                  | 2.92±1.14   |                 | 2.53±1.13 |                 | 3.19±1.08 |                 | 2.73±1.12 <sup>a</sup> |                 |
| Former                      | 3.23±1.01              |                  | 3.35±1.07   |                 | 3.36±1.27 |                 | 3.44±0.71 |                 | 3.63±0.81 <sup>b</sup> |                 |
| Alcohol consumption (month) |                        |                  |             |                 |           |                 |           |                 |                        |                 |
| ≤1                          | 3.06±1.02              | <b>0.009</b>     | 2.83±1.08   | 0.214           | 2.59±1.05 | 0.97            | 3.00±0.99 | <b>0.004</b>    | 2.91±1.02              | 0.112           |
| ≥2                          | 3.46±1.13              |                  | 3.04±1.23   |                 | 2.59±1.24 |                 | 3.43±1.06 |                 | 2.67±1.12              |                 |

*p*-value obtained by t-test

<sup>a,b</sup>*p*-value obtained by One-way ANOVA

### 3.3. Distribution of Oral Health Belief by Oral Health Behavior

The barrier of those who used oral care products was higher than that of those who did not use the products ( $p < 0.007$ ). The severity of the group who received oral health education was higher than that of the group without the education ( $p < 0.036$ ). The severity of those who experienced toothache for the past 1 year was higher than that of those without toothache experience ( $p < 0.001$ ), and the saliency of those who with toothache was higher ( $p < 0.013$ ). Also, the sensitivity and barrier were higher in those who didn't experience gum bleeding were higher ( $p < 0.043$ ,  $p < 0.046$ ) < Table 3>.

**Table 3.**

|   | Susceptibility | <i>p</i> -value  | Seriousness | <i>p</i> -value | Benefit   | <i>p</i> -value | Barrier   | <i>p</i> -value | Saliency  | <i>p</i> -value |
|---|----------------|------------------|-------------|-----------------|-----------|-----------------|-----------|-----------------|-----------|-----------------|
| Daily toothbrushing                                   |                |                  |             |                 |           |                 |           |                 |           |                 |
| ≤2  | 3.13±1.17      | 0.071            | 2.91±1.14   | 0.846           | 2.60±1.16 | 0.755           | 3.21±1.05 | 0.094           | 2.80±1.11 | 0.557           |
| ≥3  | 3.38±0.80      |                  | 2.87±1.12   |                 | 2.55±1.02 |                 | 2.96±0.95 |                 | 2.89±0.92 |                 |
| Personal oral hygiene items                           |                |                  |             |                 |           |                 |           |                 |           |                 |
| Yes   | 3.37±0.86      | 0.061            | 2.89±1.06   | 0.930           | 2.64±1.02 | 0.566           | 2.90±1.00 | <b>0.007</b>    | 3.00±1.13 | 0.063           |
| No  | 3.11±1.18      |                  | 2.90±1.17   |                 | 2.55±1.18 |                 | 3.28±1.01 |                 | 2.72±1.00 |                 |
| Oral health education                                 |                |                  |             |                 |           |                 |           |                 |           |                 |
| Yes   | 3.02±0.98      | 0.104            | 2.64±1.11   | <b>0.036</b>    | 2.52±0.91 | 0.600           | 2.97±0.78 | 0.080           | 2.78±0.90 | 0.712           |
| No  | 3.28±1.10      |                  | 3.00±1.12   |                 | 2.60±1.20 |                 | 3.20±1.10 |                 | 2.83±1.11 |                 |
| Experience of toothache for the past one year         |                |                  |             |                 |           |                 |           |                 |           |                 |
| Yes   | 2.88±0.96      | <b>&lt;0.001</b> | 2.97±0.87   | 0.368           | 2.70±1.00 | 0.414           | 3.11±0.81 | 0.739           | 3.01±0.86 | <b>0.013</b>    |
| No  | 3.48±1.08      |                  | 2.84±1.30   |                 | 2.48±1.20 |                 | 3.16±1.17 |                 | 2.66±1.17 |                 |
| Experience of gingival bleeding for the past one year |                |                  |             |                 |           |                 |           |                 |           |                 |
| Yes   | 3.05±0.95      | <b>0.043</b>     | 2.84±1.00   | 0.444           | 2.45±1.01 | 0.133           | 2.99±0.89 | <b>0.046</b>    | 2.96±0.91 | 0.077           |
| No  | 3.34±1.15      |                  | 2.95±1.22   |                 | 2.68±1.20 |                 | 3.26±1.11 |                 | 2.71±1.15 |                 |

*p*-value obtained by t-test

### 3.4 Correlation between Oral Health Beliefs

The sensitivity of oral health belief in Chinese students had a positive correlation with severity and barrier ( $p < 0.01$ ) and a negative correlation with a cue to action ( $p < 0.01$ ). Severity had a positive correlation with benefit, barrier and a cue to action, while benefit had a positive correlation with barrier and a cue to action ( $p < 0.01$ ) (Table 4).

**Table 4. Correlation between Belief and Practice About Oral Health Care**

|                | Susceptibility | Seriousness | Benefit | Barrier | Saliency |
|----------------|----------------|-------------|---------|---------|----------|
| Susceptibility | 1              |             |         |         |          |
| Seriousness    | 0.322**        | 1           |         |         |          |
| Benefit        | 0.015          | 0.574**     | 1       |         |          |
| Barrier        | 0.302**        | 0.287**     | 0.217** | 1       |          |
| Saliency       | -0.052         | 0.357**     | 0.585** | -0.037  | 1        |

\*\* $P < 0.01$

## 4. Discussion

This study aimed to provide basic materials of oral health program for international students by investigating the relationship between oral health belief and oral health promotional behaviors in Chinese international students. With the decrease in the number of school-age population, Korea has been actively promoting the attraction of international students to fill the deficient capacity of universities. Although Chinese students constitute a considerable portion of Korean university students, plans to improve their quality of life are almost nonexistent. Therefore, this study analyzed

oral health, which is the basic part of health management, of subjects susceptible to disease and the results of the study are as follows; in oral health belief by socio-demographic trait, female students were higher in benefit than male students, which seems to originate from higher interest of female students in outer appearance, and similarly in Park's preceding study, female students had also higher quality of life related to oral health [5]. Susceptibility and seriousness varied depending on the year of entry into Korea, which appears to show that, as students adapt better to university life in Korea with passing year, they feel differently about oral health belief[6]. Susceptibility differed depending on Korean language capability and satisfaction with Korean universities, which seems to be affected by the adaptation to life in Korea. Past smokers had higher salience while those with more than twice of drinking per week had higher susceptibility and barrier. This corresponds with preceding studies, which is translated that smoking and drinking are the variables which can have effect on oral health [7]. Those who have not used auxiliary oral care products had higher barrier while those who have not received oral health education had higher seriousness with negative effect of getting oral disease than those who have received it, which corresponds with Park & Moon's study on Korean university students [8]. Korean university students exhibited the same results showing that they are always aware of oral health status when oral problems take place. And yet, Chinese international students feel inconvenient to use domestic medical institutions and had difficulty maintaining oral health since they are not obligated to acquire health insurance in Korea. Oral health belief is models which understands and explains oral health behaviors as socio-psychological process and it is possible to predict individual oral health patterns with oral health belief. Therefore, it is necessary to provide Chinese students with knowledge on the prevention and treatment of oral diseases by using oral health programs and change their attitude and behavior patterns on oral health management to a positive direction. The limitation of this study is that as this study was conducted on Chinese students in only a couple of universities in one region, it lacks representativeness, and thus it is necessary to compare this study with the ones on Korean students. Even with this limitation, however, this study has its meaning in that it can provide basic materials for the development of oral health management programs for Chinese international students when there is literally little study in Korea on their health.

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