

## Relationship on the Type A/B Personality, Attitudes and Behaviors to Oral Care in Intensive Care Unit Nurses

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### Abstract

*In this study, type A/B personality, attitude and behavior on oral care in intensive care unit nurses are investigated in which it is a descriptive investigation research attempted to provide basic data to prepare strategies to enhance attitude and behavior on oral care.*

*160 nurses working in intensive care units in 4 general hospitals located in D metropolitan city were selected as the research subjects and the period of data collection was from July 1<sup>st</sup> to July 15<sup>th</sup> 2014.*

*Regarding the research tools, FTA (Framingham Type A Behavior Pattern) that Haynes et al. (1978) developed and adapted by Son Yeo Jin et al. (2001) was used to measure type A/B personality, the oral care attitude measuring tool developed by Kim Seuk Hee (2012) based on the health improvement model by Pender (1996) was used to measure attitude on oral care, and the behavior measuring tool based on oral care guidelines developed by Ahn Jin Hee (2006) was used to measure behavior about oral care. SPSS PC \*20.0 for Windows program was used for analysis by real number, percentage, mean, standard deviation, t-test, ANOVA, Scheffé, and Pearson correlation coefficient.*

*The research results are as follow. For the personality type of the research subjects, 79 subjects were in the type A group (49.4%), 81 subjects were in the type B group (50.6%), the attitude on oral care showed score of  $2.83 \pm 0.27$  points from a total of 4 points, and the behavior about oral care showed score of  $2.81 \pm 0.29$  points from a total of 4 points. Attitude on oral care by general characteristics in the subjects showed statistically significant difference according to age, marital status, education level, religion, total clinical career, clinical career in intensive care units, and position, behavior about oral care by general characteristics in the subjects showed statistically significant difference according to total clinical career and clinical career in intensive care units, and correlation between attitude and behavior on oral care showed statistically significant positive correlation between attitude and behavior on oral care.*

*From the results above, attitude on oral care must be positively acquired to enhance behavior about oral care in nurses in intensive care units and benefits on oral care should be emphasized to reduce barriers and increase self-efficacy to make this possible*

**Keywords:** Personality, Oral care, Attitude, Behavior

## 1. Introduction

Occurrence of medical related infection in ICU occupiers approximately 10.3~39.7% of hospitalized patients in which 1.7~7 times higher percentage is shown compared to general wards (Korean Society for Healthcare-associated Infection Control and Prevention, 2011) that VAP (ventilator associated pneumonia) is common followed by indwelling urethral catheter related urinary infection [1]. Patients without consciousness, with oxygen inhalation, with oro-pharyngeal endotracheal intubation, with tracheotomy experience, and with intubation feeding have low saliva secretion stimulation in which normal reaction of the salivary glands does not occur that opportunities to cleanse intra-oral regions by saliva and oropharyngeal colonization is formed due to growing germs [2]. Severe underlying diseases, lowering of immunity, various invasive operation, and multiple drug resistant pathogens that most intensive care unit patients have especially aggravate the risk of exposure that VAP occurs [3]. VAP which is the main cause of deaths in patients who are hospitalized in ICU extends the period of hospitalization in ICU of patients by a maximum of 13 days [4] and about 20~70% patients with machine respiration due to VAP occurrence eventually die [5]. Also, VAP causes cost loss of 10,000~40,000 dollars per patients in the USA by complications in which the main goal in ICU is reducing ventilator related pneumonia [6]. The main cause of VAP is known to be due to the clustering of germs in oral regions and the penetrating germs in the oral region and lung at 76% were shown to be identical [7] in which VAP can be prevented to block the clustering of germs in oral regions which shows the significance of oral care [8].

Sensitivity on oral infections increases due to the weakening of immune reactions even in patients who do not have ventilators in ICU and reduction of therapeutic water supply, which is used to improve respiration, kidney and hear functions can deteriorate xerostoma. Also, frequent use of antibiotics causes infection issues such as candidiasis [9].

Oral care provided to patients in ICU are in the basic nursing area [10], but the quality of practical oral care varies depending on the level of knowledge and awareness of significance on oral care in nurses [11]. However, maintaining healthy oral environment in patients sometimes accompanies difficulty due to provided medical treatment or patient condition [12]. Although risk of VAP occurrence is very high in actual ICU, oral care in patients with endotracheal intubation have restriction in observing or approaching oral conditions in which it is not easy to provide oral care to patients with endotracheal intubation because nurses are reluctant to manipulate tubes due to the risk of changing the tube location or making it fall [13]. Also, there are many nursing duties directly connected to life due to severe health problems of patients besides oral care in ICU and the priority of oral care is relatively lower than other nursing areas due to the environment with high stress in which arbitration is difficult to perform despite the highly recognized responsibility [14].

However, it is reported in previous researches that oral care enhances the oral health of patients hospitalized in ICU, lowers occurrence of medical related infection including pneumonia, and reduces stomatitis and oral complications [15].

Robbins(1986) defined personality as 'the overall whole of methods that makes an individual react and interact' and personality types are referred to as distinguishing thinking, emotion, and behavior form that differentiates one from others through various aspects and situations [16].

Nurses themselves are the main aiding tool that can be actually used that the personality of nurses allows understanding and prediction of one's behavior, dominates the motion, attitude, thinking, behavior or method of expression in which it becomes a very good variables to explain the difference of behavior that shows emotional labor [17, 18]. Also, nursing work have very close relevance with the personality of nurses that it is

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already being used as a significant variable to predict and explain job attitude such as job satisfaction, organizational immersion, and stress [19]. Therefore, it can be predicted that the behavior about oral care in ICU nurses has relevance with the personality that nurses have and the attitude on oral care.

In this study, personality types, level of attitude and behavior on oral care in ICU nurses are understood and the relation between these variables are investigated to propose basic data for preparation of efficient performance strategies for critical patients

## 2. Methods

### 2.1. Research Design

This research is a descriptive investigation research to understand the attitude and behavior on oral care, type A/B personality of intensive care unit nurses, and investigate the relation between the variables.

### 2.2. Research Subjects

For the subjects of this study, nurses working in intensive care units in 4 general hospitals located in D metropolitan city were randomly sampled and only subjects who understood the purpose of this study and agreed to participate responded to the survey. G\*power program 3.1.9.2 [20] was used for the number of research subjects, the number of samples was calculated to 138 subjects by setting significant level to .05, medium effect size to .30, test power to .95, 174 subjects were investigated considering rate of elimination in which the data from a total of 160 subjects (91.95%) excluding 154 subjects with lacked response was used for analysis.

### 2.3. Research Tool

**2.3.1 Type A/B Personality Measuring Tool:** For type A/B personality, the FTA (Framingham Type A Behavior Pattern) that Haynes *et al.* (1978) developed and Son Yeo Jin *et al.* (2001) adapted was used for the scale in this study. FTA is composed of 5 items on personality, 4 items on the emotion that is sensed during work or after daily work, and 1 items related to characteristics pressed for time with a total of 10 items. Items for personality were given 0, 0.33, 0.67, and 1 points with a scale of 1-4 points and the 5 items on emotion were given 1, 0 points with two answers 'yes' or 'no' to use the Framingham Value that adds the values. Standard to the median valued, the high group was determined as type A and the low group was classified as type B.

Regarding reliability of the tool, the Kuder-Richardson coefficient of the 5 true or false items was .83 when the tool was developed and the Cronbach's  $\alpha$  of other items was .57 and in the research by Son Yeo Jin (2001), Kuder-Richardson coefficient of the 5 true or false items was .73 and the Cronbach's  $\alpha$  of other items was .57. In this study, the Kuder-Richardson coefficient of the 5 true or false items was .83 and the Cronbach's  $\alpha$  of other items was .74.

**2.3.2 Attitude on Oral Care of Intensive Care Unit Nurses:** For the attitude on oral care of intensive care unit nurses, the attitude on oral care measuring tool that Kim Sook Hee (2012) developed was used. The tool is composed of 4 items on the perceived benefit on oral care area, 6 items on the perceived barrier area, and 7 items on the perceived self-efficacy area with a total of 17 items. Each items were measured with a Likert 4 scale with 4 points for 'very true,' 3 points for 'true,' 2 points for 'not true,' and 1 point for 'very not true' with a total of 17-68 points. Higher measured score means that the attitude on oral care of intensive care unit nurses is positive. The reliability of the tool when developed was Cronbach's  $\alpha$ = .81 and the Cronbach's  $\alpha$ = .67 in this study.

**2.3.3 Behavior on Oral Care of Intensive Care Unit Nurses:** For behavior on oral care of intensive unit nurses, the behavior on oral care measuring tool that Ahn Jin Hee (2006) developed was used. The toll is composed of 9 items on general behavior, 7 items on behavior without endotracheal intubation. And 7 items on behavior with endotracheal intubation with a total of 22 items. Each items were measured with a Likert 4 scale with 4 points for 'always,' 3 points for 'most of the time,' 2 points for 'usually not,' and 1 point for 'never' with a total of 22~88 points. Higher measured score means high level of behavior on oral care of intensive care unit nurses. The 6 items on perceived barrier area which were negatively worded items were reverse conversed for process. The reliability of the tool was Cronbach's  $\alpha=.97$  when developed and was Cronbach's  $\alpha=.85$  in this study.

## 2.4. Data Collection Method

The period of data collection in this research was from July 1<sup>st</sup> to July 15<sup>th</sup> 2014. The purpose and method of the research was explained to the nursing unit manager to receive organization approval in which the structuralized survey was distributed after approval and the survey investigation was in self-report format. Also, the research purpose, anonymity, and possibility of withdrawal were explained to the subjects before the survey investigation in which written agreements were received through agreement of participation.

## 2.5. Data Analysis Method

SPSS PC+20.0 for Windows was used on the collected data and the analysis methods are as follow. Frequency, percentage, mean, and standard deviation were calculated for general characteristics of the subjects, and type A/B personality, attitude and behavior on oral care were calculated by mean and standard deviation. T-test and one-way ANOVA were used for the difference of attitude and behavior on oral care according to the general characteristics of the subjects and Scheffé test was used for the post-test. The difference of attitude and behavior on oral care according to type A/B personality of the subjects was analyzed by t-test. The correlation between the attitude and behavior on oral care according to personality types of the subjects were calculated using Pearson correlation coefficient.

## 3. Results

### 3.1. General Characteristics of Subjects

The general characteristics of the research subjects are shown as follow (Table 1). A total of 160 research subjects were selected with mean value age of  $27.9\pm 5.10$  years old in which age distribution showed 109 subjects in the 20~29 years old range (68.2%) to be most common, with 46 subjects in the 30~39 years old range (28.7%), and 5 subjects in the 40 years old or older range (3.1%) in order. 12 males (7.5%) and 148 females (92.5%) were shown regarding gender, 135 single subjects (85.3%) and 25 married subjects (14.7%) were shown regarding marital status, and 60 college graduates (37.5%), 68 4-year university graduates (42.5%), and 32 graduate school or higher graduates (20.0%) were shown regarding educational level. 75 subjects (46.9%) had religion and 85 subjects (53.1%) did not have religion.

For total clinical career, the mean value was  $5.4\pm 5.10$  years with 69 subjects in the 3 years~10 years range (43.1%) to be most common, 50 subjects in the 1 year~3 years range (31.3%), 24 subjects in the 10 years or longer range (15%), and 17 subjects in the shorter than 1 year range (10.6%) in order. For clinical career in ICU, the mean value was  $4.6\pm 3.74$  years with 78 subjects in the 3 years~10 years range (48.7%) to be most common, 44 subjects in the 1 year~3 years range (27.5%), 24 subjects in the shorter than

1 year range (15.0%), and 14 subjects in the 10 years or longer range (8.8%) in order. For position, 149 subjects were shown to be general nurses (93.1%), and 11 subjects were charge nurses or above nursing unit managers (6.9%). For working unit, 57 subjects were in the MICU (35.6%) to be most common, 45 subjects were in the NCU (28.1%), 31 subjects were in the SICU (19.4%), and 17 subjects were in the CCU (10.6%) in order. Regarding health condition, results showed 90 normal subjects (56.3%), 52 healthy subjects (32.5%), 18 not healthy subjects (11.2%) in order, and regarding job satisfaction, results showed that 91 subjects were ordinary (56.9%), 52 subjects were not satisfied (32.5%), 17 subjects were satisfied (10.6%) in order.

**Table 1. General Characteristics of Subjects**

<b>Variables</b>		<b>n</b>	<b>%</b>	<b>M±SD</b>
<b>Age(yr)</b>	20-29 <sup>a</sup>	109	68.2	
	30-39 <sup>b</sup>	46	28.7	27.9±5.10
	40≤ <sup>c</sup>	5	3.1	
<b>Gender</b>	male	12	7.5	
	Female	148	92.5	
<b>Marital status</b>	Unmarried	135	85.3	
	married	25	14.7	
<b>Education level</b>	Junior college <sup>a</sup>	60	37.5	
	University <sup>b</sup>	68	42.5	
	Graduate school <sup>c</sup>	32	20.0	
<b>Religion</b>	Yes	75	46.9	
	No	85	53.1	
<b>Clinical career(yr)</b>	<1 <sup>a</sup>	17	10.6	
	1-3 <sup>b</sup>	50	31.3	
	3-10 <sup>c</sup>	69	43.1	5.4±5.10
	10≤ <sup>d</sup>	24	15.0	
<b>Clinical career in ICU(yr)</b>	<1 <sup>a</sup>	24	15.0	
	1-3 <sup>b</sup>	44	27.5	
	3-10 <sup>c</sup>	78	48.7	4.6±3.74
	10≤ <sup>d</sup>	14	8.8	
<b>Position</b>	General nurse <sup>a</sup>	149	93.1	
	Charge nurse <sup>b</sup>	9	5.6	
	Above nursing unit manager <sup>c</sup>	2	1.3	
<b>Working unit</b>	NCU	45	28.1	
	CCU	17	10.6	
	MICU	57	35.6	
	SICU	31	19.4	

### 3.2. Type A/B Personality of Intensive Care Unit Nurses

Looking into the type A/B personality of the research subjects, 79 subjects were in the A type group (49.4%) and 81 subjects were in the B type group (50.6%)(Table 2).

**Table 2. Type A/B Personality of Intensive Care Unit Nurses**

Category	n (%)
A Type	79(49.4)
B Type	81(50.6)

### 3.3. Attitude on Oral Care of Intensive Care Unit Nurses

Attitude on oral care of the research subjects showed mean value of  $2.83 \pm 0.27$  points from a total of 4 points in which subordinate areas showed  $2.85 \pm 0.37$  points for the perceived barrier area,  $2.84 \pm 0.33$  points for the perceived benefit area, and  $2.73 \pm 0.53$  points for the perceived self-efficacy area in order(Table 3).

**Table 3. Attitudes and Behaviors about Oral Care by General Characteristics in ICU Nurses (N 160)**

Category	Sub-category	Mean $\pm$ SD	Total mean $\pm$ SD
<b>Attitudes about oral care</b>	Recognizing the barriers	$2.85 \pm 0.37$	$2.83 \pm 0.27$
	Recognizing the benefits	$2.84 \pm 0.33$	
	Recognizing the self-effectiveness	$2.73 \pm 0.53$	
<b>Behaviors about oral care</b>	General oral care	$3.02 \pm 0.55$	$2.81 \pm 0.29$
	oral care in patient with endotracheal intubation	$2.72 \pm 0.36$	
	oral care in patient without endotracheal intubation	$2.68 \pm 0.33$	

### 3.4. Behavior about Oral Care of Intensive Care Unit Nurses

Behavior about oral care of the research subjects showed mean value of  $2.81 \pm 0.29$  points from a total of 4 points in which subordinate areas showed  $3.02 \pm 0.55$  points for the general behavior area,  $2.72 \pm 0.36$  points for the behavior with endotracheal intubation area, and  $2.68 \pm 0.33$  points for the behavior without endotracheal intubation area in order(Table 3).

### 3.5. Differences of Attitude and Behavior on Oral Care by General Characteristics in ICU Nurses

The differences of attitude and behavior on oral care by general characteristics in the subjects of this research are as follow (Table 4). The attitude on oral care by general characteristics in the subjects of this research showed statistically significant difference according to general characteristics such as age ( $F=7.48$ ,  $p=.001$ ), marital status ( $t=-2.63$ ,  $p=.009$ ), education level ( $F=3.12$ ,  $p=.047$ ), religion ( $t=3.37$ ,  $p=.001$ ), total clinical career ( $F=3.79$ ,  $p=.012$ ), clinical career in ICU ( $F=4.46$ ,  $p=.005$ ), and position ( $F=5.15$ ,  $p=.007$ ). Married subjects showed higher score than single subjects and subjects with religion showed higher score than subjects without religion. As result of the post-test, nurses with clinical career of 10 years or longer showed higher scores than nurses with career of 1 year or shorter and charge nurse or above nursing unit manager nurses showed higher

score than general nurses. On the other hand, the differences by general characteristics such as gender or working unit were not statistically significant.

The differences of level of behavior about oral care by general characteristics in the subjects of this research showed statistically significant difference according to general characteristics such as clinical career ( $F=3.49$ ,  $p=.017$ ) and clinical career in ICU ( $F=3.84$ ,  $p=.011$ ) (Table 5). As result of the post-test, clinical career of 10 years or longer showed higher scores than clinical career of 1 year or shorter and clinical career in ICU of 5 years or longer showed higher score than clinical career in ICU of 1 year or shorter. On the other hand, general characteristics such as age, gender, and marital status were not statistically significant.

**Table 4. Differences of Attitudes about Oral Care by General Characteristics in ICU Nurses (N 160)**

Variables		M±SD	t/F	(p)/Scheffé
Age(yr)	20-29 <sup>a</sup>	43.5±3.57	7.48	(.001) a<c
	30-39 <sup>b</sup>	44.7±3.57		
	40≤ <sup>c</sup>	49.6±2.07		
Gender	male	44.3±4.27	-0.39	(.701)
	Female	43.8±3.64		
Marital status	Unmarried	43.5±3.61	-2.63	(.009)
	married	45.6±3.63		
Education level	Junior college <sup>a</sup>	44.1±3.72	3.12	(.047) a<c
	University <sup>b</sup>	43.1±3.57		
	Graduate school <sup>c</sup>	45.0±3.57		
Religion	Yes	44.9±3.64	3.37	(.001)
	No	42.9±3.49		
Clinical career(yr)	<1 <sup>a</sup>	41.9±3.23	3.79	(.012) a<d
	1-3 <sup>b</sup>	43.8±3.40		
	3-10 <sup>c</sup>	43.7±3.57		
	10≤ <sup>d</sup>	45.7±4.18		
Clinical career in ICU(yr)	<1 <sup>a</sup>	41.9±3.65	4.46	(.005) a<d
	1-3 <sup>b</sup>	43.9±3.12		
	3-10 <sup>c</sup>	44.0±3.82		
	10≤ <sup>d</sup>	46.1±3.16		
Position	General nurse <sup>a</sup>	43.6±3.60	5.15	(.007) a< b, c
	Charge nurse <sup>b</sup>	45.9±3.52		
	Above nursing unit manager <sup>c</sup>	50.5±0.71		
Working unit	NCU	43.8±3.90	0.66	(.622)
	CCU	43.1±2.90		
	MICU	44.2±3.85		

SICU

44.1±3.60

**Table 5. Differences of Behaviors about Oral Care by General Characteristics in ICU Nurses (N 160)**

Variables		M±SD	t/F	(p)/Scheffé
Age(yr)	20-29 <sup>a</sup>	61.4±6.27	1.52	(.221)
	30-39 <sup>b</sup>	62.8±5.94		
	40≤ <sup>c</sup>	65.0±9.00		
Gender	male	61.4±8.51	0.27	(.786)
	Female	61.9±6.11		
Marital status	Unmarried	61.7±6.46	-0.96	(.340)
	married	63.0±5.22		
Education level	Junior college <sup>a</sup>	61.2±6.01	0.68	(.507)
	University <sup>b</sup>	62.5±6.95		
	Graduate school <sup>c</sup>	61.8±5.26		
Religion	Yes	62.1±6.25	0.90	(.652)
	No	61.7±6.34		
Clinical career(yr)	<1 <sup>a</sup>	58.1±6.26	3.49	(.017) a< c, d
	1-3 <sup>b</sup>	61.1±5.54		
	3-10 <sup>c</sup>	62.9±6.63		
	10≤ <sup>d</sup>	63.4±5.78		
Clinical career in ICU(yr)	<1 <sup>a</sup>	58.2±5.36	3.84	(.011) a<c, d
	1-3 <sup>b</sup>	62.2±6.11		
	3-10 <sup>c</sup>	62.4±6.48		
	10≤ <sup>d</sup>	64.3±5.17		
Position	General nurse <sup>a</sup>	61.8±6.31	0.73	(.484)
	Charge nurse <sup>b</sup>	62.6±6.43		
	Above nursing unit manager <sup>c</sup>	67.0±1.41		
Working unit	NCU	59.7±5.76	2.13	(.079)
	CCU	63.5±5.00		
	MICU	62.3±6.54		
	SICU	63.2±6.83		

### 3.6. Differences of Attitude and Behavior on Oral Care by Type A/B Personality in ICU Nurses

The differences of attitude and behavior on oral care by type A/B personality in the subjects of this research are as follow (Table 6). Regarding the attitude on oral care in ICU, type A showed mean value of 2.82±0.26 points and type B showed mean value of 2.81±0.2 points from a total of 4 points, but there was no statistically significant



difference ( $t=-.45$ ,  $p=.653$ ). Regarding the behavior about oral care, type A showed mean value of  $2.80\pm 0.29$  points and type B showed mean value of  $2.84\pm 0.29$  points from a total of 4 points, but there was no statistically significant difference ( $t=.16$ ,  $p=.871$ ).

**Table 6. Differences of Attitude and Behavior about Oral Care by Type A/B Personality in ICU Nurses (N 160)**

Category	Attitude on Oral Care		Behaviors about Oral Care	
	M±SD	t(p)	M±SD	t(p)
Type A	2.82±0.26	-.45	2.80±0.29	.16
Type B	2.81±0.29	(.653)	2.84±0.29	(.871)

### 3.7. Relation between Type A/B Personality, Attitude and Behavior on Oral Care in ICU Nurses

The results of correlation between type A/B personality, attitude and behavior on oral care in the research subjects are shown as follow (Table 7). Type A/B personality of ICU nurses did not show statistically significant correlation between the level of behavior ( $r=-.01$ ,  $p=.871$ ), and attitude and behavior on oral care showed positive correlation ( $r=.34$ ,  $p<.001$ ).

Category	Type A/B Personality	Attitude on Oral Care
	r(p)	
Behaviors about oral care	-0.1 (.871)	.34 (<.001)

## 4. Discussion

In this study, type A/B personality, attitude and behavior on oral care in ICU nurses are understood and the relation between these variables are investigated to reduce medical related infection of ICU nurses and prepare efficient performance strategies.

In this study, there were 79 type A personality subjects (49.4%) and 81 type B personality subjects (50.6%).

The attitude on oral care in the research subjects showed mean value of  $2.83\pm 0.27$  points from a total of 4 points to show level of normal or higher and the attitude on oral care by general characteristics in the subjects were statistically significant according to age, marital status, education level, religion, total clinical career, clinical career in ICU, and position. This shows partially similar results from the research by Seo Ok Im (2008) [20] on attitude on falling in nurses showing difference by education level, research by Lee In Gyung (2011) [21] showing difference in age, career, and education level, research by Choi Ae Sin (2013) [22], research by Kim Jung Yoon (2004) and Jang Eun Sook (2008) [24] showing significant difference by age, marital status, final education level, career, and position subject to nurse practitioners, and research by No Seon Sook (2010) [23] subject to nurses taking care of cancer patients. In this study, the age range of 40 years or older, married status, graduate school graduation, possessing religion, clinical career of 10 years or longer, and above nursing unit manager showed high scores in attitude on oral care. The reason married subjects with religion show high attitude on oral care is considered to be due to the social role of adapting to give more consideration to others. Also, higher age, longer career, higher nurse position, and higher education level showed positive attitude on oral care in which age, position, clinical career, and education level has the common property of the passage of time in which working environments are effectively adapted and acquisition of work enhances due to various work experience as

time passes as the professional attitude and value satisfaction as an expert is considered to have positive influence on attitude of oral care.

Looking into the subordinate areas of attitude on oral care, they were shown in order of perceived barrier, perceived benefit, and perceived self-efficacy. Self-efficacy is the origin of motivation for behavior improving health conditions in which higher perceived self-efficacy shows lower perceived barrier and has indirect influence on performance or maintenance of health improvement behavior. In this study, perceived barrier was shown to be the highest and perceived self-efficacy was shown to be the lowest in which self-efficacy can relatively increase when perceived barrier factors are solved when the subject performs oral care to have positive attitude on oral care. In the research by Choi Geum Bong *et al.* (2008) [11], difficulty of cleansing the mouth of patients who have received endotracheal intubation was shown in 50% or more nurses. This can correspond to the perceived barrier that was shown highest in this study and it is considered that it is important for subjects to understand the perceived barrier in oral care of a patient with endotracheal intubation. Also, among the items on perceived barrier area, 'I think I do not need to perform because there is no number that is regulated for oral care' being the highest has the tendency of subjects performing number displacement of nursing activities to show relatively low performance of oral care. In the research by Sung Young Hee, Song Mi Sook, and Park Jung Ho (2007) [24], nursing time is the direct cost factor that occupies the highest percentage in hospital costs and the nursing time consumed for patients is absolutely long in the ICU compared to ordinary nursing units and difference was shown in composition ratio of nursing time that is consumed by care areas by care demand of critical patients. Despite this, the currently enforced nursing cost is being applied restricted to nursing units and the nursing fee in intensive care unit includes various technique fees in treatment items in which it is said that nursing cost is said not to be fairly accepted. Therefore, if oral care considering the specificity of care unit of intensive care unit is not included in the cost regulation of hygiene care area and for high-risk patients requiring VAP prevention oral care activities, it is considered that the role of reducing the perceived barrier area of subjects can be established if cost regulation on oral care is prepared.

In this study, behavior about oral care in ICU nurses showed mean value of  $3.17 \pm 0.38$  points from a total of 4 points to have level of normal or higher and behavior about oral care by total clinical career and clinical career in ICU showed statistically significant difference. This was similar to the results of the research by Won Jae Hee (2008) [25] reporting that oral health performance showed difference by career although the subjects were different subject to visiting health care providers. ICU nurses with total clinical career of 1 year or shorter especially showed lower level of oral care behavior in which systematic and organizational education programs should be provided to new nurses to increase the level of VAP prevention oral care activity performance.

Looking into the subordinate areas of behavior about oral care, general behavior area, behavior with endotracheal intubation area, and behavior without endotracheal intubation area were shown in order. In this study, the behavior without endotracheal intubation area was shown to be the lowest in which this was similar to the results shown in the research by Ahn Hee Jin (2006) [26]. Among oral care behaviors of the subjects in this study, the behavior of 'I use a toothbrush for infants during oral care' was shown to be the lowest in which this corresponds to the result reported in previous domestic and foreign researches [11] [13]. There is evidence that brushing is effective in removing tartar and controlling complications related to tartar in which it is known to reduce costs to be recommended as a cost-effective choice for oral care [13]. There is no need to change the location of endotracheal intubation when using a toothbrush for infants endotracheal intubation intensive care patients [11] in which it is considered that the difficulty of ICU nurses will also be reduced. Therefore, evidence based practical oral care education program development using toothbrush for infants should be in first priority by classification into

cases with and without endotracheal intubation in professional oral care curriculums for ICU nurses. It is considered that plan should be prepared to establish web-based oral care simulation videos within hospital programs for subjects to relieve difficulty for easy oral care

## Acknowledgements

This article is a revision of the first author's master's thesis from Konyang University.

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