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Analysis of satisfaction with clinical training in dental hygiene students

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치위생(학)과 학생의 임상실습 만족도 분석

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Abstract This study examined satisfaction with clinical training according to school system and school-related characteristics and analyzed the effect of satisfaction by clinical training task on the overall satisfaction with clinical training. Participants were convenience sampled from students of K University in Gangwon-do (n=279) and K University in Gyeonggi-do (n=154) who have undergone clinical training. The overall satisfaction with clinical training in dental hygiene students differed according to the school system, school-related characteristics, satisfaction by clinical training topic, and satisfaction by clinical training task. Satisfaction by clinical training task had an effect on overall satisfaction with clinical training. Thus, substantial effort, such as ensuring appropriate contents and methods of training.

Key Words : Clinical training, Satisfaction with clinical training, Satisfaction by clinical training task, Satisfaction by clinical training topic, School-related characteristics

요 약 본 연구는 치위생(학)과 학생들에게 보다 나은 임상실습교육을 제공하기 위해 학제와 재학특성에 따른 임상실습 만족을 파악하고, 임상실습 업무별 만족이 전반적인 임상실습 만족도에 미치는 영향을 분석하였다. 연구대상은 임상실습 경험이 있는 강원도 소재의 K 대학(279명)과 경기도 소재의 K 대학(154명)을 편의추출 하였다. 임상실습에 대한 치위생(학)과 학생들의 전반적인 만족도는 학제, 재학특성, 임상실습 내용별 만족, 임상실습 업무별 만족에 따라 차이가 있었다. 또한, 임상실습 업무별 만족도는 임상실습 전반적 만족도에 영향을 주는 것으로 나타났다. 이에 체계적인 실습교육을 제공하기 위한 실습 내용과 방법의 적절성을 확보하는 등의 적극적인 노력이 요구되며, 임상실습 만족도에 대한 지속적인 후속연구가 필요할 것이다.

주제어 : 임상실습, 임상실습 만족도, 임상실습 업무별 만족도, 임상실습 내용별 만족도, 재학특성

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1. Introduction

Dental hygienists are professionals in charge of preventive treatment and oral health education in dental institutions[1]. Growing interest and demands for oral health in recent years have highlighted the importance of professional competency of dental hygienists [2]. Therefore, colleges that train dental hygienists offer clinical training in order to equip students with systematic clinical competency [3].

Clinical training is an essential part of the formal curriculum for dental hygiene, and it not only provides an opportunity for students to unlock their potential but also directly helps students to perform the duty of dental hygienists [4-6]. Through clinical training, students apply knowledge they have acquired in lectures to identify their problems, serve as moderators to solve problems, and assess the outcomes of intervention and readjust accordingly [7, 8].

Students' experiences during clinical training have an impact on their values. Choi [9] reported that employment intention increases with increasing learning performance during clinical training, and that it has a positive effect on students' values pertaining to their occupation. In contrast, Park [10] reported that low learning performance during clinical training has an adverse impact on carrying out the duties of dental hygienists, as well as pushing students away from the department, such as diminishing their interest in their major and impair academic performance.

Therefore, students' learning performance in clinical training must be appropriately utilized, and it can be divided into satisfaction and educational outcomes. Students' educational outcomes can be assessed by the professor or training instructor based on their clinical performance. Although educational outcomes are certainly important as learning performance, understanding students' satisfaction with clinical training through self-evaluation and identifying the factors that influence their satisfaction is also essential for manage the quality of clinical training outcomes [11, 12]. Students are able to understand their strengths and weaknesses through this process and explore ways to improve [13], while schools can utilize this as baseline data for enhancing the quality of clinical education.

Park [14] argued that school education and training instruction must be mutually systematized in order to effectively apply theoretical education given in school in clinical training. Chang [15] and Noh [16] proposed the desirable direction of a clinical training program by analyzing clinical training contents and examining satisfaction according to degree of performance training, while Park [17] reestablished the direction of clinical training contents by investigating satisfaction by clinical training facility. Although prior studies have examined satisfaction as baseline data to systematize clinical training contents, studies investigating how students' School-related characteristics or satisfaction with each of the clinical training tasks impact the overall satisfaction with clinical training are lacking.

Hence, this study aims to investigate satisfaction with clinical training according to school system and School-related characteristics and analyze the effects of satisfaction for each clinical training task on the overall satisfaction with clinical training, in an attempt to devise specific measures to provide better clinical training instruction to dental hygiene students.

2. Methods

2.1 Participants

Current dental hygiene students were set as the target population, and students from K

University in Gangwondo and K University in Gyeonggido were convenience sampled. The specific inclusion criteria were as follows:

1) Dental hygiene students who have undergone dental clinical training
2) Students who understood the purpose of this study and provided an informed consent

The survey was administered for about three months from April 6, 2019 to July 12, 2019 using a structured, self-reported online questionnaire. A total of 490 students submitted the survey, and after excluding 57 questionnaires with missing and insincere responses, 433 (88.4%) were included in the final analysis.

2.2 Instruments

The instrument used in this study was developed and modified by Park [14], and it consists of school system, school-related characteristics, satisfaction by clinical training topic, and satisfaction by clinical training task. School system was classified into three-year and four-year systems. For school-related characteristics, motive for choosing the major, average grades, satisfaction with major, length of clinical training, and person who assigns the training facility. Satisfaction by clinical training topic consisted of satisfaction with interestingness of training and increased understanding, satisfaction with pride in the roles of dental hygienists, satisfaction with understanding of patients, and dental care and understanding. Satisfaction by clinical training task consisted of satisfaction with preventive dental care, satisfaction with oral health education, satisfaction with dental care cooperation, and satisfaction with hospital and patient management. Each item was rated on a five-point Likert scale.

The Cronbach alpha in Park's [14] study was 0.89, and that in this study was 0.78.

2.3 Data analysis

The collected data were analyzed using the IBM SPSS Statistics ver. 23.0 (IBM Co., Armonk, NY, USA).

The reliability of each variable was examined using the Cronbach's alpha for internal consistency among measures. Satisfaction with clinical training according to clinical training facility was assessed with chi-square test in multiple response analysis. Differences in overall satisfaction with clinical training, satisfaction by clinical training topic, and satisfaction by clinical training task according to school system and school-related characteristics were analyzed with independent sample t-test and one-way ANOVA. The association between satisfaction by clinical training task and satisfaction with clinical training was analyzed with Pearson correlation, and the effects of satisfaction by clinical training task on satisfaction with clinical training were identified with multiple regression. Statistical significance was set at 0.05.

3. Results

3.1 Clinical training facility

Participants' clinical training facilities were identified with multiple response chi-square analysis. Clinical training in dental clinics was the most common among students in three-year colleges (69.2%). Of students who did their clinical training in a dental clinic, 44.0% were "moderately" satisfied with major, and 45.9% were "extremely satisfied" with clinical training. Clinical training in dental hospitals was the most common among students in four-year colleges (55.3%). Of students who did their clinical training in a dental hospital, 42.8% were "moderately" satisfied with major (42.8%) and 46.7% were "extremely satisfied" with clinical training. Clinical training in university hospitals

was the most common among students in four-year colleges (60.4%). Of students who did their clinical training in a university hospital, 44.8% were "moderately" satisfied with major and 39.9% were "moderate" with clinical training. Clinical training in public health centers was the most common among students in four-year colleges (72.5%). The most common responses for satisfaction with major was "relatively satisfied" (40.0%) and that for satisfaction with clinical training was "moderate" (37.5%). Only students in four-year colleges did their clinical training in school oral health center. Of these students, 60% were "relatively satisfied" with major and 60.0% were "moderate" with clinical training. Clinical training in dentistry-related enterprises was the most common among students in four-year colleges (77.8%). The most common responses for satisfaction with major was "relatively satisfied" (44.4%) and that for satisfaction with clinical training was "extremely satisfied" (33.3%) and "moderate" (33.3%) (see Table 1).

3.2 Differences in satisfaction with clinical training according to school system

Differences in satisfaction with clinical training according to participants' school systems were analyzed with independent sample t-tests. Overall satisfaction with clinical training was significantly higher among students in three-year colleges (4.07) than among students in four-year colleges (3.56). Regarding satisfaction by clinical training topic, satisfaction with "helpful for improving expertise" was higher among students in four-year colleges (3.80) than among students in three-year colleges (3.64) (F=5.104, p=0.024). Regarding satisfaction by clinical training task, satisfaction with preventive dental care (F=4.473, p=0.035), oral health education (F=4.453, p=0.035), dental care cooperation (F=18.054, p=0.000) and hospital and patient management (F=6.911, p=0.009) were significantly higher among students in three-year colleges than among those in four-year colleges (see Table 2).

3.3 Satisfaction with clinical training according to school-related characteristics

Differences in satisfaction with clinical training according to motive for choosing major, average grades, satisfaction with major, length of clinical training, and person who assigns the training facility were examined with independent

Table 1. Clinical training facility

Clinical training facilities	School system		Satisfaction with major					Overall satisfaction by clinical training					Sum
	Four-year colleges (%)	Three-year colleges (%)	Extremely satisfied (%)	Relatively satisfied (%)	Moderate (%)	Relatively unsatisfied (%)	Extremely unsatisfied (%)	Extremely satisfied (%)	Relatively satisfied (%)	Moderate (%)	Relatively unsatisfied (%)	Extremely unsatisfied (%)	
Dental clinic	49 (30.8)	110 (69.2)	60 (37.7)	18 (11.3)	70 (44.0)	8 (5.0)	3 (1.9)	73 (45.9)	18 (11.3)	57 (35.8)	7 (4.4)	4 (2.5)	159
Dental hospital	119 (55.3)	96 (44.7)	56 (26.0)	43 (20.0)	92 (42.8)	18 (8.4)	6 (2.8)	79 (46.7)	34 (15.8)	83 (38.6)	13 (6.0)	6 (2.8)	215
University hospital	197 (60.4)	129 (39.6)	84 (25.8)	64 (19.6)	146 (44.8)	27 (8.3)	5 (1.5)	110 (33.7)	57 (17.5)	130 (39.9)	23 (7.1)	6 (1.8)	326
Public health center	29 (72.5)	11 (27.5)	6 (15.0)	16 (40.0)	15 (37.5)	3 (7.5)	0 (0.0)	14 (35.0)	11 (27.5)	15 (37.5)	0 (0.0)	0 (0.0)	40
School oral health center	5 (100.0)	0 (0.0)	0 (0.0)	3 (60.0)	2 (40.0)	0 (0.0)	0 (0.0)	1 (20.0)	1 (20.0)	3 (60.0)	0 (0.0)	0 (0.0)	5
Business	14 (77.8)	4 (22.2)	4 (22.2)	8 (44.4)	3 (16.7)	2 (11.1)	1 (5.6)	6 (33.3)	5 (27.8)	6 (33.3)	1 (5.6)	0 (0.0)	18
Total	279	154	111	87	191	34	10	148	76	168	31	10	433

Table 2. Differences in satisfaction with clinical training according to school system

Characteristics	Division	Three-year colleges(n=279) M±SD	Four-year colleges(n=154) M±SD	*t*	*p*
	Overall satisfaction with clinical training	4.07±1.16	3.56±0.98	23.04	0.000*
Regarding satisfaction by clinical training topic	Differences in satisfaction with interestingness of training and increased understanding	3.62±0.75	3.53±0.77	1.595	0.207
	Satisfaction with pride in the roles of dental hygienists	3.39±0.80	3.40±0.81	0.010	0.919
	Satisfaction with understanding of patients	3.60±0.68	3.58±0.71	0.057	0.812
	Satisfaction with understanding of dental care	3.62±0.65	3.61±0.73	0.003	0.955
	Helpful for improving expertise	3.64±0.76	3.80±0.70	5.104	0.024*
Regarding satisfaction by clinical training task	Satisfaction with preventive dental care	3.71±1.07	3.51±0.88	4.473	0.035*
	Oral health education	3.62±1.07	3.42±0.93	4.453	0.035*
	Dental care cooperation	4.06±1.04	3.66±0.91	18.054	0.000*
	Hospital and patient management	3.78±1.04	3.53±0.91	6.911	0.009*

*p-value were obtained by Independent T-test ($p<0.05$)

sample t-tests and one-way ANOVA. There were statistically significant differences according to average grades (F=3.886, p=0.009), satisfaction with major (F=20.07, p=0.001), and length of clinical training (F=4.032, p=0.018). Post-hoc analysis showed that the mean satisfaction score was higher among students with a 4.0 GPA or higher than among those with a 2.0 GPA or higher. The mean satisfaction score was higher among those who are "extremely satisfied" with their major than among those who are "relatively satisfied" or "moderate," and the mean satisfaction score was low among those who are "relatively unsatisfied" or "extremely unsatisfied" with their major. The mean satisfaction score was higher among students who have completed 10-20 weeks of clinical training than among those who have completed 10 weeks of clinical training or less (see Table 3).

3.4 Satisfaction by clinical training topic according to school-related characteristics

Differences in satisfaction with interestingness of training and increased understanding, satisfaction with pride in the roles of dental hygienists, satisfaction with understanding of patients, and dental care and understanding

Table 3. Satisfaction with clinical training according to school-related characteristics

Characteristics	Satisfaction by clinical training: Division	n	M±SD	*t/F*	*p*
Motive for choosing major	Good for employment	270	3.71±1.08	1.44	0.218
	Helpful for improving expertise	37	3.86±1.08		
	Personality	33	3.88±1.02		
	Others recommend	71	3.87±1.03		
	Others	22	3.32±1.17		
Average grades	4.0 GPA or higher	80	4.01±1.09[a]	3.886	0.009*
	3.0~3.9	217	3.78±1.04[ab]		
	2.0~2.9	117	3.51±1.08[b]		
	2.0 GPA or lower	19	3.53±1.17[ab]		
Satisfaction with major	Extremely satisfied	111	4.29±1.06[a]	20.07	0.000*
	Relatively satisfied	87	3.86±0.82[b]		
	Moderate	191	3.58±1.03[b]		
	Relatively unsatisfied	34	2.94±0.81[c]		
	Extremely unsatisfied	10	2.40±1.35[c]		
Length of clinical training	10 weeks or less	184	3.63±1.13[b]	4.032	0.018*
	10-20 weeks	185	3.93±1.05[a]		
	20 weeks or more	84	3.62±0.96[ab]		
Atraining facility	School	251	3.81±1.11	2.348	0.126
	Themselves	182	3.65±1.03		

*p-value were obtained by Independent T-test, One-Way ANOVA ($p<0.05$), abcThe same superscript letter denotes the same subgroup by post-hoc Scheffe test

according to participants' school-related characteristics were analyzed with independent t-tests and one-way ANOVA. Satisfaction with interestingness of training and increased understanding statistically significantly differed according to motive for choosing major (F=3.424, p=0.009) and satisfaction with major (F=21.08, p=0.000). Post-hoc analysis showed that the mean satisfaction score was higher among those who are "extremely satisfied" and "relatively satisfied" with major than those who are "moderate" and "extremely unsatisfied" with major.

Pride in the roles of dental hygienists statistically significantly differed according to motive for choosing major (F=3.999, p=0.003) and satisfaction with major (F=42.39, p=0.000). Post-hoc test showed that the mean score was higher among those who chose their major because it was "right for them" than among those who chose the major because it was "good for employment" or for "other reasons." The mean score was higher among those who are "extremely satisfied" and "relatively satisfied" with their major than among those who are "moderate." The mean score was higher among those who are "moderate" with their major than among those who are "relatively unsatisfied" and "extremely unsatisfied." The mean score was higher among those who are "satisfied" and "relatively satisfied" with their major than among those who are "moderate."

There were statistically significant differences in satisfaction with understanding of patients according to motive for choosing major (F=5.514, p=0.000) and satisfaction with major (F=11.55, p=0.000). Post-hoc analysis showed that the mean score was higher among those who chose their major because "it is right for them," "others recommended it," and "it is good for employment" than among those who chose the major for "other reasons." The mean score was higher among those who are "extremely satisfied" and "relatively satisfied" with their major than among those who are "moderate," "relatively unsatisfied," and "extremely unsatisfied."

Satisfaction with understanding of dental care statistically significantly differed according to motive for choosing major (F=5.163, p=0.000), average grades (F=4.204, p=0.006), satisfaction with major (F=15.55, p=0.000), and person who assigns the training facility (F=3.907, p=0.049). The mean score was higher among students whose training facility was chosen by "themselves" than those whose facility was chosen by their "schools." Post-hoc test showed that the mean score was higher among those who chose their major because "it is right for them" than among those who chose the major because "it is good for employment" or chose the major "in consideration of their personality." Regarding average grades, students with a 4.0 GPA or higher showed a higher score than those with a 2.0 GPA or lower. Regarding satisfaction with major, those who were "extremely satisfied" and "relatively satisfied" with their major showed a higher mean score than those who are "moderate" and "relatively unsatisfied."

Satisfaction with "helpful for improving expertise" statistically significantly differed according to motive for choosing major (F=4.762, p=0.001) and satisfaction with major (F=10.84, p=0.000). Post-hoc test revealed that the mean score was higher for students who chose their major because "others recommended it" than for students who chose the major because "it is good for employment." Post-hoc test for satisfaction with major showed that the mean score was higher for those who are "extremely satisfied" and "relatively satisfied" with their major than those who are "moderate" and "relatively unsatisfied" with their major (see Table 4).

3.5 Satisfaction by clinical training task according to school-related characteristics

Differences in satisfaction with preventive dental care, oral health education, dental care cooperation, and hospital and patient management

Table 4. Satisfaction by clinical training topic according to school-related characteristics

Characteristics	Division	n	Differences in satisfaction with interestingness of training and increased understanding			Satisfaction with pride in the roles of dental hygienists			Satisfaction with understanding of patients			Satisfaction with understanding of dental care			Helpful for improving expertise		
			M±SD	*t/F*	*p*	M±SD	*t/F*	*p*	M±SD	*t/F*	*p*	M±SD	*t/F*	*p*	M±SD	*t/F*	*p*
Motive for choosing major	Good for employment	270	3.51 ±0.75	3.424	0.009*	3.35 ±0.78^{b}	3.999	0.003*	3.58 ±0.66^{a}	5.514	0.000*	3.55 ±0.66^{b}	5.163	0.000*	3.67 ±0.72^{b}	4.762	0.001*
	Helpful for improving expertise	37	3.89 ±0.38			3.84 ±0.93^{a}			3.92 ±0.68^{a}			4.00 ±0.67^{a}			3.97 ±0.69^{ab}		
	Personality	33	3.48 ±0.67			3.27 ±0.63^{ab}			3.45 ±0.71^{ab}			3.45 ±0.71^{b}			3.70 ±0.12^{ab}		
	Others recommend	71	3.70 ±0.78			3.46 ±0.86^{ab}			3.65 ±0.74^{a}			3.77 ±0.78^{ab}			4.00 ±0.86^{a}		
	Others	22	3.32 ±0.84			3.14 ±0.71^{b}			3.09 ±0.70^{b}			3.45 ±0.67^{ab}			3.74 ±0.72^{ab}		
Average grades	4.0 GPA or higher	80	3.63 ±0.82	1.835	0.140	3.46 ±0.92	0.313	0.816	3.68 ±0.74	1.458	0.225	3.76 ±0.80^{a}	4.204	0.006*	3.75 ±0.77	1.946	0.121
	3.0~3.9	217	3.59 ±0.74			3.40 ±0.78			3.61 ±0.64			3.65 ±0.66^{ab}			3.80 ±0.71		
	2.0~2.9	117	3.51 ±0.70			3.35 ±0.77			3.52 ±0.75			3.52 ±0.66^{ab}			3.68 ±0.69		
	2.0 GPA or lower	19	3.21 ±1.03			3.37 ±0.90			3.37 ±0.83			3.21 ±0.79^{b}			3.42 ±0.77		
Satisfaction with major	Extremely satisfied	111	3.94 ±0.73^{a}	21.08	0.000*	3.77 ±0.80^{a}	42.39	0.000*	3.82 ±0.64^{a}	11.55	0.000*	3.92 ±0.66^{a}	15.55	0.000*	3.95 ±0.73^{a}	10.84	0.000*
	Relatively satisfied	87	3.78 ±0.62^{a}			3.89 ±0.62^{a}			3.82 ±0.66^{a}			3.84 ±0.65^{a}			3.98 ±0.65^{a}		
	Moderate	191	3.37 ±0.67^{b}			3.13 ±0.62^{b}			3.41 ±0.66^{b}			3.39 ±0.62^{b}			3.60 ±0.69^{b}		
	Relatively unsatisfied	34	3.12 ±0.81^{b}			2.74 ±0.71^{c}			3.35 ±0.69^{b}			3.35 ±0.81^{b}			3.32 ±0.68^{b}		
	Extremely unsatisfied	10	2.70 ±1.16^{b}			2.20 ±1.14^{c}			3.10 ±1.10^{b}			3.50 ±0.85^{ab}			3.40 ±0.22^{ab}		
Length of clinical training	10 weeks or less	184	3.55 ±0.81	0.114	0.892	3.40 ±0.82	0.12	0.887	3.54 ±0.75	1.284	0.278	3.55 ±0.74	1.919	0.148	3.78 ±0.75	1.783	0.169
	10-20 weeks	185	3.58 ±0.67			3.38 ±078			3.58 ±0.63			3.63 ±0.63			3.65 ±0.68		
	20 weeks or more	84	3.54 ±0.83			3.43 ±0.84			3.69 ±0.73			3.73 ±0.75			3.82 ±0.75		
Assigns the training facility	School	251	3.55 ±0.80	0.134	0.715	3.33 ±0.81	3.835	0.051	3.55 ±0.71	1.318	0.252	3.56 ±0.72	3.907	0.049*	3.75 ±0.72	0.015	0.901
	Themselves	182	3.58 ±0.71			3.48 ±0.79			3.63 ±0.68			3.69 ±0.68			3.74 ±0.73		

*p-value were obtained by Independent T-test, One-Way ANOVA ($p<0.05$)
[abc]The same superscript letter denotes the same subgroup by post-hoc Scheffe test

according to participants' school-related characteristics were analyzed with independent t-tests and one-way ANOVA. Satisfaction with preventive dental care statistically significantly differed according to average grades (F=4.85, p=0.002) and satisfaction with major (F=17.101, p=0.000). Post-hoc test showed that the mean score was higher among students with a 4.0 GPA or higher than those with a 2.0 GPA or higher and those with a 2.0 GPA or lower.

Regarding satisfaction with major, the mean score was higher for students who are "extremely satisfied" than those who are "relatively satisfied," "moderate," "relatively unsatisfied," and "extremely unsatisfied," and the mean score was higher for students who are "relatively satisfied" than for

those who are “relatively unsatisfied.”

Satisfaction with oral health education statistically significantly differed according to average grades (F=2.957, p=0.032) and satisfaction with major (F=10.153, p=0.000). Post-hoc test for satisfaction with major showed that the mean score was higher for students who are “extremely satisfied” than those who are “relatively satisfied,” “moderate,” “relatively unsatisfied,” and “extremely unsatisfied,” and the mean score was higher for students who are “relatively satisfied” than for those who are “relatively unsatisfied.”

Satisfaction with dental care cooperation statistically significantly differed according to satisfaction with major (F=10.153, p=0.000). Post-hoc test for satisfaction with major showed that the mean score was higher for those who are “extremely satisfied” than for those who are “relatively satisfied,” “moderate,” “relatively unsatisfied,” and “extremely unsatisfied,” and the mean score was higher for those who are “relatively satisfied” than for those who are “extremely unsatisfied.”

Satisfaction with hospital and patient management statistically significantly differed according to satisfaction with major (F=8.978, p=0.000). Post-hoc test for satisfaction with major showed that the mean score was higher for students who are “extremely satisfied” than those who are “moderate,” “relatively satisfied,” “relatively unsatisfied,” and “extremely unsatisfied,” and the mean score was higher for students who are “relatively satisfied” than for those who are “relatively unsatisfied.” (see Table 5)

3.6 Correlation between satisfaction by clinical training task and overall satisfaction with clinical training

Table 5. Satisfaction by clinical training task according to school-related characteristics

Characteristics	Division	n	Preventive dental care			Oral health education			Dental care cooperation			Hospital and patient management		
			M±SD	*F*	*p*	M±SD	*F*	*p*	M±SD	*F*	*p*	M±SD	*F*	*p*
Average grades	4.0 GPA or higher	80	3.89 ±1.04^{a}	4.85	0.002*	3.65 ±1.06	2.957	0.032*	3.95 ±1.03	1.421	0.236	3.69 ±1.01	0.785	0.503
	3.0~3.9	217	3.59 ±0.96^{ab}			3.55 ±0.95			3.82 ±0.96			3.56 ±0.92		
	2.0~2.9	117	3.43 ±0.86^{b}			3.33 ±0.98			3.72 ±0.99			3.56 ±1.03		
	2.0 GPA or lower	19	3.21 ±0.63^{b}			3.11 ±0.88			3.53 ±0.84			3.37 ±0.76		
Satisfaction with major	Extremely satisfied	111	4.10 ±1.03^{a}	17.101	0.000*	3.89 ±1.12^{a}	10.153	0.000*	4.32 ±0.94^{a}	15.984	0.000*	3.94 ±1.07^{a}	8.978	0.000*
	Relatively satisfied	87	3.70 ±0.79^{b}			3.64 ±0.88^{ab}			3.89 ±0.83^{b}			3.76 ±0.75^{ab}		
	Moderate	191	3.36 ±0.83^{bc}			3.28 ±0.86^{bc}			3.57 ±0.95^{bc}			3.50 ±0.92^{bc}		
	Relatively unsatisfied	34	3.06 ±0.85^{c}			3.03 ±0.90^{c}			3.44 ±0.89^{bc}			3.12 ±0.88^{c}		
	Extremely unsatisfied	10	2.90 ±1.20^{bc}			3.20 ±1.23^{abc}			2.90 ±0.88^{c}			2.80 ±0.92^{bc}		
Length of clinical training	10 weeks or less	184	3.63 ±0.94	0.422	0.656	3.49 ±1.00	0.098	0.907	3.76 ±0.97	1.829	0.162	3.63 ±0.98	0.807	0.447
	10-20 weeks	185	3.56 ±1.03			3.47 ±1.07			3.91 ±1.02			3.66 ±0.98		
	20 weeks or more	84	3.52 ±0.84			3.52 ±0.77			3.68 ±0.89			3.50 ±0.89		

*p-value were obtained by Independent T-test, One-Way ANOVA (p<0.05)
^{abc}The same superscript letter denotes the same subgroup by post-hoc Scheffe test

Pearson correlation analysis was performed to examine the association between satisfaction by clinical training task and overall satisfaction with clinical training. Overall satisfaction with clinical training was positively correlated with satisfaction with preventive dental care, oral health education, dental care cooperation, and hospital and patient management, to a statistically significant extent. (see Table 6)

3.7 Effects of satisfaction by clinical training task on overall satisfaction with clinical training

The effects of satisfaction by clinical training task on overall satisfaction with clinical training were examined using multiple regressions with satisfaction by clinical training task as the independent variable and the effect on overall satisfaction with clinical training as the dependent variable. The regression model was statistically significant (F=40.221, p<0.001), with an explanatory power of 26.6% (adjusted R^2=0.266). Satisfaction with oral health education (p=0.044), satisfaction with dental care cooperation (p=0.000), and satisfaction with hospital and patient management (p=0.041) were found to have statistically significant effects on overall satisfaction with clinical training. Satisfaction with dental care cooperation (β=0.334), satisfaction with hospital and patient management (β=0.128), and satisfaction with oral health education (β=0.112) all have a positive effect. In other words, overall satisfaction with clinical training increased with increasing satisfaction with dental care cooperation, satisfaction with hospital and patient management, and satisfaction with oral health education. Satisfaction with dental care cooperation had the greatest effect (β=0.334), followed by satisfaction with hospital and patient management (β=0.128) and satisfaction with oral health education (β=0.112) (see Table 7).

Table 6. Correlation between satisfaction by clinical training task and overall satisfaction with clinical training

	Satisfaction with preventive dental care	Satisfaction with oral health education	Satisfaction with dental care cooperation	Satisfaction with hospital and patient management	Overall satisfaction with clinical training
Satisfaction with preventive dental care	1				
Satisfaction with oral health education	0.649*	1			
Satisfaction with dental care cooperation	0.547*	0.431*	1		
Satisfaction with hospital and patient management	0.519*	0.445*	0.640*	1	
Overall satisfaction with clinical training	0.393*	0.356*	0.483*	0.411*	1

* p-value were obtained by pearson correlation coefficient(p<0.05)

Table 7. Effects of satisfaction by clinical training task on overall satisfaction with clinical training

		B	SE	β	*t*	*p-value*
Overall satisfaction with clinical training	Constant	1.2	0.2		5.6	0.000*
	Satisfaction with preventive dental care	0.1	0.1	0.1	1.5	0.100
	Satisfaction with oral health education	0.1	0.1	0.1	2	0.044*
	Satisfaction with dental care cooperation	0.3	0.1	0.3	5.5	0.000*
	Satisfaction with hospital and patient management	0.1	0.1	0.1	2	0.041*
		R^2=0.273, Adj R^2=0.266, F=40.221, p<0.05*				

β: standardized beta
* p-value were obtained by multipleregressionanalysis(p<0.05)

4. Discussion

In this study, clinical training in dental clinics was more common among students in three-year colleges (69.2%), while that in dental hospitals, university hospitals, public health centers, school's oral health centers, and dentistry-related enterprises was more common among students in four-year colleges. These results are in line with the findings of Hwang [18] and suggest that students in four-year colleges undergo clinical training in a more variety of facilities compared to their counterparts in three-year colleges.

Students in four-year colleges showed a significantly higher satisfaction with "improvement of expertise" during clinical training than did students in three-year colleges. In a study examining satisfaction with training facility and training tasks, Park [19] reported that students who underwent clinical training in general hospitals and university hospitals showed a significantly greater satisfaction with "helpful for curriculum" than students who had clinical training in a dental clinic. Further, Kim [20], who examined dental hygiene students' professional values, reported that students who want to land a job in a general hospital or university hospital show greater professional values, which were similar to our findings.

On the other hand, students in three-year colleges showed a significantly higher overall satisfaction with clinical training than their counterparts in four-year colleges. Further, it is notable that students in three-year colleges also showed higher satisfaction with individual clinical training task, such as dental care cooperation (4.06), hospital and patient management (3.78), preventive dental care (3.71), and oral health education (3.62). Park [22] and Jeon [23] reported that students in three-year colleges show a higher satisfaction with major than students in four-year colleges, which was consistent with our results. Oh [24] reported that clinical training experience is associated with academic performance and satisfaction with major. Therefore, additional studies are needed to further examine satisfaction by clinical training task and satisfaction with major among dental hygiene students according to school system and training facility.

In terms of average grades, students with a 4.0 GPA or higher had the highest score for satisfaction with clinical training (4.01), while those with a GAP of between 2.0-2.9 had the lowest satisfaction (3.51). This is consistent with the findings of Kim [20] and Bae [21], and it is speculated that students with higher average grades would have had greater satisfaction with the clinical training program conducted in clinical training facilities as they have a higher understanding of the academic material.

In terms of satisfaction with major, those who are "extremely satisfied" with their major showed the highest satisfaction with clinical training (4.29), followed by those who are "relatively satisfied" (3.86) and "moderate" (3.58). These scores were higher than those reported by Chung [25] (3.51) and Chung [26] (3.11) ho investigated satisfaction with clinical training using a similar tool as ours. This could be interpreted as that students who are more satisfied with their major are more satisfied with clinical training [14,27] and that students who are more satisfied with their major demonstrate more active attitudes in clinical training.

In terms of the length of clinical training, students who have completed 10-20 weeks of clinical training showed the highest satisfaction with clinical training (3.93), followed by those who completed 10 weeks or less (3.63) and 20 weeks or more (3.62). Our results show the appropriate length of a clinical training program that leads to highest student satisfaction.

Regarding satisfaction for each clinical training task according to satisfaction with major, students who were "extremely satisfied"

with their majors showed the highest satisfaction with preventive dental care (4.10), oral health education (3.89), dental care cooperation (4.32), and hospital and patient management (3.94). This suggests that students were satisfied with the opportunity to actually observe and learn the work of dental hygienists in a clinical training facility in addition to the theories they have learned in school.

In the multiple regressions performed to identify the effects of satisfaction by clinical training task on the overall satisfaction with clinical training, overall satisfaction with clinical training significantly increased with increasing satisfaction with oral health education, dental care cooperation, and hospital and patient management, but satisfaction with preventive dental care did not significantly affect overall satisfaction. According to Park [19], who examined the frequency of each of the domains of clinical training, the frequency of preventive dental care was lower (2.21) than that of preparation of basic appliances (3.40) and simple assistance with care (3.82) (dental care cooperation) and tooth brushing education (3.36) (oral health education), which is consistent with our findings. The low satisfaction with preventive dental care is presumed to be due to the fact that application of sealants and fluoride must be performed by a dental hygienist and thus students were only able to observe. Satisfaction by clinical training task is not irrelevant to students' occupational values and desired field of employment, so approaches such as devising systems to boost students' satisfaction are needed. Schools should actively explore measures to substitute the content for preventive dental care with mutual practice based on a discussion with the training facility.

As a means to promote active student participation in clinical training and boost satisfaction, the clinical training process should be appropriately improved based on a satisfaction survey for the contents and overall process of clinical training and schools' evaluation of clinical training facilities. In the future, great effort should be channeled into providing systematic training education, such as by ensuring the appropriateness of training contents and methods.

As this study was conducted on dental hygiene students of a few regions, the satisfaction data is not representative of the entire dental hygiene student population. Based on our findings, further studies are needed on satisfaction with clinical training and satisfaction for specific clinical training topics.

5. Conclusion

This study aimed to investigate the effects of satisfaction with clinical training according to school-related characteristics and satisfaction by clinical training task on overall satisfaction with clinical training in order to promote better clinical training education. The following results were obtained:

1. Clinical training in dental clinics was more common among students in third-year colleges than students in four-year colleges, and clinical training in dental hospitals, university hospitals, public health centers, school's oral health centers, and dentistry-related enterprises was more common among students in four-year colleges than among students in three-year colleges.
2. Overall satisfaction with clinical training, satisfaction with "helpful for improving expertise," and satisfaction with preventive dental care, oral health education, dental care cooperation, and hospital and patient management significantly differed according to school system ($p=0.05$).

3. Satisfaction with clinical training significantly differed according to average grades, satisfaction with major, and length of clinical training (p=0.05).
4. Among satisfaction by clinical training topic, satisfaction with “interestingness of training and increased understanding,” “pride in the roles of dental hygienists,” and “understanding of patients” significantly differed according to motive for choosing major (p=0.05). Satisfaction with “dental care and understanding” significantly differed according to motive for choosing major and average grades, and satisfaction with “helpful for improving expertise” significantly differed according to motive for choosing major (p=0.05).
5. Among satisfaction by clinical training task, satisfaction with “preventive dental care,” “oral health education,” and “dental care cooperation” significantly differed according to average grades and satisfaction with major (p=0.05). Satisfaction with “hospital and patient management” significantly differed according to satisfaction with major (p=0.05).
6. All satisfaction by clinical training task items were positively correlated with overall satisfaction with clinical training (p=0.05).
7. Satisfaction with “oral health education,” “dental care cooperation,” and “hospital and patient management” had statistically significant effects on the overall satisfaction with clinical training (p=0.05).

These results show that dental hygiene students’ satisfaction with clinical training differed according to school system, school-related characteristics, satisfaction by clinical training topic, and satisfaction by clinical training task. Further, satisfaction by clinical training task had an impact on the overall satisfaction with clinical training.

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