

Analysis of Dental Hygiene Curriculum in Korea and the United States

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ABSTRACT

Objectives: This study aims to develop dental hygienist education and basic studies by deriving influential subjects through comparative analysis of dental hygiene curriculum in Korea and the United States. **Methods:** This study was conducted from March to May 2024 to derive influential topics by comparing and analyzing the curriculum of dental hygienists in the United States and Korea. The research method used the curriculum and existing data posted on the websites of universities in the United States and Korea. The contents of the dental hygienist curriculum were analyzed through the website of the U.S. university, and the contents of the dental hygienist curriculum were analyzed through the domestic university website. The basic fields of dental hygienist education in the United States and Korea were compared, and other subjects were opened focusing on the contents of the three-year and four-year curriculum. The literature review was conducted on 13 universities in the United States and 47 universities in the four-year system, and the curriculum of 59 universities and 25 universities in the three-year and 25 universities in 84 universities in Korea was investigated. In addition, among the basic subjects, the most opened universities were investigated, and the universities including similar names of basic subjects opened in Korea were investigated. **Results:** Dental hygienists say that Korean dental hygienists supervise oral health education, preventive dental treatment, medical cooperation, and management support and contribute to the improvement of oral health, but clinical dental hygiene is not standardized, so each school is composed of different subjects and educational goals. The dental hygiene department curriculum is conducted around gaining practical experience in the dental clinical field, and students conduct technical training on actual patients. Health center practice is also underway. The dental hygiene department curriculum is an important process to acquire the necessary competencies and expertise as a dental hygienist. **Conclusions:** The U.S. dental hygiene curriculum included more subjects representing a successful career in dental hygiene. To improve Korean students' clinical practice skills, the evaluation method and evaluation items need to be improved in the clinical dentistry curriculum in Korea

Keywords: Dental Hygienists, Investigation and Analysis, University, Oral Health Education, Oral Pathology, Dental Hygienist, Dental Hygiene Curriculum, Integrated Curriculum.

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INTRODUCTION

The Korean Dental Hygiene Curriculum has been continuously developed along with the reorganization of the interdisciplinary system in the Department of Dental Hygiene (Dental Hygiene). From the opening of a professional bachelor's course in 1977, the extension of the education period from two years to three years in 1994, and the opening of a four-year bachelor's degree course in 2002, to today's master's and doctoral courses, the dental hygiene curriculum has developed from the role of dental hygienists based on problem-solving ability in fragmentary knowledge and technical education centered on dental medicine [1-3]. As the education period was extended, the number of subjects increased, which led to the expansion of the work of dental hygienists and changes in national tests, and curriculum research was conducted in response to this [4,5]. In particular, with the opening of the bachelor's degree course, curriculum research was conducted centering on foreign cases such as the United States and Canada, where the dental hygiene academic system was already established [6,7], and various theories for the development of the dental hygiene curriculum were applied and implemented as research for standardization of the curriculum and the dental hygiene academic system suitable for the situation in Korea [8,9] were conducted. As a result, as the education of the dental hygiene work process is carried out, the area is expanding from simple work to comprehensive work [10]. The curriculum should be reflected in the changes of the times and society, and Kohn [11] suggested the influence of the community on the decision of the curriculum [12]. The Korean government is demanding the National Qualifications Framework (NQF) and the National Competency Standards (NCS) as the curriculum policy of junior colleges. The NQF aims to implement a competency-based society in the labor market by reorganizing and interconnecting school education, vocational training, lifelong learning system, and qualification system based on the NCS (National Competency Standards) to link education and employment. NCS represents the job competence required for a company to perform, and systematically analyzes and presents the job demand of industrial sites to link work, education, training, and qualifications and standardize job competency required for all jobs at the national level [13,14].

The Korean Dental Hygiene Curriculum is a curriculum for acquiring knowledge and skills necessary as a dental hygienist. This curriculum aims to prepare dental hygienists to play an important role in dental treatment. The Korean

Dental Hygiene Curriculum is provided by universities or junior colleges and generally lasts for three or four years. The curriculum consists of theoretical classes and practices and is designed to help students acquire the skills and knowledge necessary for dental treatment. The theory class deals with a variety of dental-related topics such as dental hygiene, oral anatomy, oral physiology, oral microbiology, prevention dentistry, oral health education, dental materials, and dental radiography. In addition, students learn laws, ethics, and communication skills necessary as a dental hygienist. The practice focuses on gaining direct experience in the field of dental treatment. Students treat patients at dental hospitals and practice the skills and procedures necessary as dental hygienists. Students practice under the supervision of an instructor in an actual dental environment, and practice dental prevention treatment, dental scaling, dental radiography, and oral health education.

Through this, students can improve their understanding and practical skills in the actual dental treatment environment. The Korean Dental Hygiene Curriculum is an important course to acquire the necessary competencies and expertise as a dental hygienist. Through this curriculum, students can contribute to improving patients' oral health by acquiring a deep understanding and skills in dental treatment. This curriculum helps build a career as a dental hygienist and provides employment opportunities in various fields such as dental hospitals, dental clinics, health centers, schools, and research institutes. In addition, dental hygienists can contribute to the improvement of oral health in the community by participating in oral health education and preventive activities. The Korean Dental Hygiene Curriculum is an essential course to acquire expertise and competence as a dental hygienist, and students can acquire knowledge and skills in dental treatment and contribute to improving the oral health of patients [15].

Since its establishment in 1923, the American Dental Hygienists' Association (ADHA) has supported more than 140,000 dental hygienists. The main goal of ADHA is to promote cooperation and communication between dental hygienists and patients. Through this, it is contributing to maintaining oral health and improving the full-body health of the people. Dental hygienists work in a variety of fields and perform a variety of tasks, including education, clinical, research, administration, and treatment. In the United States, the dental hygienist education system consists of junior college, undergraduate, and graduate programs. As of 2002, there are about 250 dental hygienists' education

programs in the United States, of which 70 percent are vocational college programs and the remaining 30 percent are undergraduate programs. Undergraduate programs are available in two forms, one is to obtain a bachelor's degree (BS) in dental hygienists, and the other is to obtain a science (AS) degree in dental hygienists. Through these educational programs, dental hygienists acquire specialized knowledge and skills and contribute to maintaining the oral health of patients [16].

The Dental Hygiene Curriculum is a curriculum for acquiring the necessary skills and knowledge as a dental hygienist. In this curriculum, students learn a variety of topics and skills to build a successful career in dental hygiene. American Dental Hygiene Curriculum is offered at a university or junior college and typically includes a two-year, three-year, or four-year degree program. A two-year, three-year program can acquire a quasi-bachelor's degree, and a four-year program can acquire a bachelor's degree. The curriculum consists of theoretical classes and clinical practice, and students can gain hands-on experience to improve their practical skills in the field of dental hygiene.

The purpose of this research committee is to compare and analyze the dental hygiene curriculum in Korea and the United States, derive courses that have clinical impact, and use them as data for developing dental hygienists and basic studies in the future. In other words, we would like to provide basic data that can be used to improve the comprehensive dental hygiene process in Korea by incorporating the U.S. clinical dental hygiene curriculum, which is a highly influential subject in clinical practice.

STUDY POPULATION AND METHODOLOGY

This study was conducted to analyze the curriculum in dental hygiene department educational institutions in the United States and Korea. The method of selecting participating schools in this study was simple and random sampling.

The study was conducted for two months from March to May 2024. The research method used the curriculum posted on the website of each university and the existing data that have already been analyzed to analyze the curriculum of dental hygiene department educational institutions in the United States and Korea. In the case of domestic dental hygiene department educational institutions, a list of domestic universities was prepared, and the curriculum was collected by visiting the website to analyze the curriculum of each university. To prepare a list of American universities and analyze the curriculum of each university, the curriculum

of the domestic dental hygiene department was analyzed, and a comparative analysis of the basic fields of the US and Korean dental hygiene department was conducted. 84 universities in Korea investigated the curriculum for dental hygienists, and the curriculum of 59 three-year colleges and 25 four-year colleges was investigated. In 60 US universities, literature was reviewed in 13 departments of dental hygiene and 47 schools of four-year colleges. The universities that were opened, including similar names of basic subjects opened in Korea, were investigated, and the universities of the most selected subjects among each basic subject were also investigated.

Research Tools

Examination of Dental Hygiene Curriculum and Basic

According to the status of the opening of the 3-4-year curriculum in the Department of Dental Hygiene at Korea University, out of 59 three-year universities, 31 schools operate advanced courses, and 25 four-year universities, a total of 84 schools are open. The Korean dental hygiene curriculum is provided by universities or junior colleges and is generally conducted for 3 or 4 years. The curriculum consists of theoretical classes and practices and is designed to help students acquire the skills and knowledge necessary for dental treatment. The theory class deals with various dental-related topics such as oral anatomy, oral physiology, oral microbiology, preventive dentistry, oral health education, dental materials, and dental radiography. In addition, acquire laws, ethics, and communication skills necessary as a dental hygienist. The practice is centered on gaining direct experience in the dental medical field. Students treat patients at dental hospitals and practice the skills and procedures necessary as dental hygienists. Through this, students can improve their understanding and practice skills of the actual dental treatment environment (Table 1).

In this study, 13 two- and three-year U.S. Dental Hygiene Department and 47 four-year undergraduate schools were reviewed. Four-year undergraduate courses are opened in two forms. U.S. dental hygienists perform a variety of tasks in the field of education, clinical, academic research, administrative, and therapeutic. The U.S. dental hygienist education system is largely divided into a two-year vocational college program, a four-year undergraduate program, and a graduate program. As of 2002, there are about 250 dental hygiene departments in the United States recognized by the American Dental Association (ADA), of which about 70% are two-year vocational college courses, and the remaining 30% are four-year undergraduate courses. One is opened at the

Table 1. Current Status of the 3-4-Year Curriculum for the Dental Hygiene in Korea---84 schools

3-year university (Grade/ School name)	4-year university (Grade/School name)	
Gangneung Yeongdong University	Catholic Sangji College Advanced course	Gachon University
Kyungbuk College	Gangdong University Advanced course	Catholic Kwandong University
Naju College	Kyungnam College of Information & Technology Advanced course	Gangneung Wonju National University
Gwangyang Health Sciences University	Taegu Science University Advanced course	Konyang University
Gumi University	Daegu Health College Advanced course	Kyungdong University
Gimcheon University	Dongnam Health University Advanced course	Kyungpook National University
Daewon University College	Busan Health University Advanced course	Kwangju Women's University
Daejeon Institute of Science and Technology	Masan University Advanced course	Namseoul University
Mokpo Science University	Baekseok Culture University Advanced course	Dankook University
Busan Women's College	Busan Institute of Science and Technology Advanced course	Dongseo University
Sorabol University	Sahmyook Health University Advanced course	Dong-eui University
Songho University	Suwon Women's University Advanced course	Baekseok University
Suseong University	Shingu College Advanced course	Sunmoon University
Suwon Science College	Shinsung University Advanced course	Songwon University
Yeoju Institute of Technology	Yeungnam University College Advanced course	Silla University
Youngnam Foreign Language College	Ulsan College Advanced course	shinhan University
Chunnam Techno University	Jeonju Kijeon College Advanced course	Yonsei University
Jeonbuk Science College	Choonhae College Advanced course	Youngsan University
Jeju Tourism University	Chungbuk Health&Science University Advanced course	Eulji University
Jinju health college	Hanyang Women's University Advanced course	Cheongju University
Cheonam College	Kyungbok College Advanced course	Chodang University
Chungchong University	Gwangju Health University Advanced course	Honam University
Pohang university	Daejeon Health University Advanced course	Howon University
Hallym Polytechnic university	Seoyeong University Advanced course	
Haneso university	Andong Science Advanced course	
Hanyeong university	Wonkwang Health Science University Advanced course	
	U1 University Advanced course	
	Vision college of Jeonju Advanced course	
Total College 84 schools	3-year College 59 schools, Advanced Course 31 schools	4-year College 25 schools

same university, like other majors, to complete all elective courses for liberal arts, basic sciences, dental and dental hygiene from the first grade to the fourth grade, and to obtain a bachelor's degree in dental hygiene or dental hygiene. In the other form, Dree-Completion Programs, which allow dental hygienists who have graduated from a two-year dental

Table 2. Dental Hygiene Department of the U.S. University of America's 2, 3, 4-year system

2,3-year university (Grade/School name)	4-year university (Grade/School name)
<ul style="list-style-type: none"> -Bergen Community College -Central Community College - Easten Washington university -Louisiana collage -Massachusetts College of Pharmacy and Health Sciences -Medical College of Georgia -Mount Ido College -Oregon Institute of Technology -Pennsylvania Collage of technology -SUNY—Farmingdale -Thomas Edison state Collage -West Liberty State College 	<ul style="list-style-type: none"> -NYU College of Dentistry Department of Dental Hygiene and Dental Assisting -Massachusetts College of Pharmacy and Health Sciences -Fones School Dental Hygiene Curriculum -Armstrong Atlantic State university -Clayton State university -Dahlhaus university -East Tennessee State university -Idaho university -Midwestern State university -Minnesota State University Mankato -Northern Arizona university -Ohio State University Columbus -Old Dominion university -Tennessee state university -Texas Woman's university - University of Detroit Mercy - University of Hawaii—Manoa - University of Louisiana—Lafayette - University of Louisiana --Monroe - University of Louisville - University of Maine—Augusta - University of Maryland—Baltimore - University of—Eastern Shore - University of—Ann Arbor - University of Minnesota—Twin Cities - University of Missouri—Kansas City - University of New England - University of New Haven - University of New Mexico - University of North Carolina—Chapel Hill - University of Oklahoma - University of Pittsburgh - University of Rhode Island - University of south California - University of Southern Indiana - University of Tennessee - University of Washington - University of Wyoming - University of Pacific -Verginia of Commonwealth University -Weber State University - West Verginia university -Western Kentucky university -Wichita State university -University of Bridgeport -University of British Columbia - University of Colorado –Denver and Health Sciences Center
2,3-year university (Grade/School name): 13university (Grade/School name)	4-year university:47 university (Grade/School name)
Total	60 university

hygiene department and obtained an associate degree and a dental hygienist's license to transfer to a four-year university. When comparing the three- to four-year curriculum at home and abroad, liberal arts courses are opened from 14 to 36 credits in Korea, and the number of basic science credits is high from 31 to 54 credits in the United States. In the case of major credits, Korea has a high opening from 100 to 129 credits, and the US major credits are relatively low from 50 to 95. In addition, the number of subjects is 50 to 70 in Korea, but 19 to 30 in the United States, and the total number of credits completed was also 120 to 130 in Korea, significantly higher than 123 credits in 87 credits in the United States (Table 3).

Processing statistics

The data collection of this study used references such as

prior research, various statistical data, and government publications, as well as Internet searches through the relevant institution's website, such as the American Association of Dental Examiners (AADE), the National Dental Hygiene Certification Board (NDCB), and the ADHA (Australian Dental Hygiene Association), and more specific details were collected through e-mail with related parties. In addition, the curriculum of dental hygiene in Korea and the United States surveyed was compared, and similar names were confirmed for each subject for basic domestic subjects. For statistical processing, the SPSS 24.0 (IBM Corp. Armonk, NY, USA) program was used, and the statistical significance level was $P < .05$.

THE RESULTS OF THE STUDY

Comprehensive data on Korean dental hygiene In this

Korean and U.S. Dental Hygiene Department Programming and Completion of 3-4 Year Curriculum

Table 3. Korean and U.S. Department of Dental Hygiene in Korea 3~4 years of curriculum organization and completion credits

Sortation	The number of universities	General/basic liberal arts	Major	Number of subjects	A total of credits completed
Republic of Korea	84	14~36	100~129	50~70	120~130
the United States	60	31~54	50~95	19~30	120~130

study, the Korean Dental Hygiene Curriculum is a curriculum for acquiring knowledge and skills necessary as a dental hygienist. This curriculum aims to prepare dental hygienists to play an important role in dental treatment. The Korean Dental Hygiene Curriculum is provided by universities or junior colleges and is generally conducted for 3 or 4 years. The curriculum consists of theoretical classes and practice and is designed so that students can acquire the skills and In this study, the Korean Dental Hygiene Curriculum is a curriculum for acquiring knowledge and skills necessary as a dental hygienist. This curriculum aims to prepare dental hygienists to play an important role in dental treatment. The Korean Dental Hygiene Curriculum is provided by universities or junior colleges and is generally conducted for 3 or 4 years. The curriculum consists of theoretical classes and practices and is designed to help students acquire the skills and knowledge necessary for dental treatment. Basic dental hygiene consists of human anatomy, oral internal medicine, dental pharmacology, dental terminology, oral anatomy and practice, oral anatomy and practice, dental

morphology and practice, oral microbiology and practice, oral pathology and practice, oral histology and practice, and dental clinical psychology. The introduction to oral hygiene includes public oral health and practice, oral health education and practice, infection prevention, dental hygiene introduction, prevention and practice, dental hygiene theory and practice, oral health statistics, and dental hygiene seminars. Dental clinical studies include periodontology, dental homology, correction, dental prosthesis, oral surgery, pediatric dentistry, dental materials and practice, radiology, dental insurance practice, dental care, dental first aid, pre-dental practice, and extracurricular clinical practice. Liberal arts subjects include dental ethics, hospital coordinator, oral diagnosis, oral hygiene, hospital management, and practice, courses such as nutrition, research methodology, oral health, medical law, understanding college life and majors, competency development, career design, thinking and expression, implant science, oral rehabilitation for the elderly, clinical psychology, oral health system, English, public oral health, and chemistry/physics are available. It

Table 4. Comprehensive data on Korean dental hygiene department curriculum analysis (3,4 years)

Domain	Subject	Class	Credit	Credit	
Basic dental hygiene	Dental pharmacology	1	2	major selection	
	Dental terminology	1	2	major selection	
	Oral Physiology and Practice	1	2	major selection	
	Oral Anatomy and Practice	1	2	major selection	
	Dental morphology and Practice	1	2	major selection	
	Oral Microbiology and Practice	1	2	major selection	
	Oral Pathology and Practice	1	3	major required	
	Oral Histology and Practice	2	2	major selection	
	Dental clinical psychology	2	2	major selection	
	Public oral health and Practice	2	2	major selection	
Oral Hygiene	Oral health pedagogy and Practice	2	2	major selection	
	Infection prevention	3	2	major selection	
	Introduction to Dental Hygiene	3	3	major required	
	Prophylaxis and Practice	1	2	major selection	
	Oral Prophylaxis and Practice	1	2	major selection	
	Dental Statistics	2	3	major required	
	Dental Hygiene Seminar	2	3	major required	
	Dental clinical	Periodontology	3	2	major selection
		Conservative Dentistry	4	1	major selection
		Orthodontics	2	2	major required
Dental Prosthetics		3	2	major required	
Oral Surgery		3	2	major required	
Pediatric Dentistry		3	2	major required	
Dental Materials and practice		3	2	major selection	
Radiology		3	2	major required	
Radiology and Practice		3	2	major selection	
Dental health insurance		3	2	major required	
Basic dental hygiene	Dental health insurance practice	3	2	major required	
	Dental care management	3	2	major selection	
	Dental first aid	3	2	major selection	
	Pre-dental practice	3	2	major selection	
	Suburban clinical practice	1	2	major selection	
		3	2	major selection	
	2	1	major selection		

focuses on gaining first-hand experience in the field of dental treatment. Students treat patients at dental hospitals and practice the skills and procedures necessary as dental hygienists. Through this, students can improve their

understanding and practical skills of the actual dental treatment environment. They are also practicing in public health centers. The Korean Dental Hygiene Curriculum is an important process to acquire the necessary competencies

Table 5. Korean Dental Hygiene and Liberal Arts (3,4 years)

Subject	Class	Credit	Category
Dental ethics	3	3	liberal arts
Hospital coordinator ology	3	1	liberal arts
Oral diagnostics	2	2	liberal arts
Oral hygiene	2	2	liberal arts
Hospital management and practice	2	2	liberal arts
Dietetics	2	2	liberal arts
Investigation methodology	3	2	liberal arts
Oral Health administration	3	2	liberal arts
Medical laws and regulations	4	2	liberal arts
Understanding college life and major	1	0.5	liberal arts
Competency development	2	0.5	liberal arts
career planning	3	0.5	liberal arts
Thinking and Expression	3	3	liberal arts
Implantology	3	2	liberal arts
Geriatric Oral Rehabilitation	2	2	liberal arts
Clinical Psychology	2	2	liberal arts
Oral health system	2	2	liberal arts
English	1	3	liberal arts
Public Oral Health	1	3	liberal arts
Chemistry/physics select 1	1	3	liberal arts

and expertise as a dental hygienist. Through this curriculum, students can learn a deep understanding and skills in dental treatment and contribute to improving the patient's oral health. This curriculum helps build a career as a dental hygienist and provides job opportunities in various fields such as dental hospitals, dental hospitals, health centers, Table 6, 7, 8, 9, 10, 11, 12, 13, and 14 are presented for the similar name distribution of each basic subject, the number of universities opened, and for the reference of basic data for the most similar names and standards. Table 6 was used in the order of Oral Anatomy, Oral Anatomy and Practice, Head and Neck Anatomy, and Table 7 Current status of Oral Tissue Embryology similar names used as Oral issue embryology, Oral issue embryology and practice, and Oral histology in Table 8. In the status of Oral Pathology similar names, Oral Pathology, Oral Pathology, Oral Pathology and Practice, General and Oral Pathology was being used as. Table 9. Status

of Oral Physiology similar names opened in Oral physiology, Anatomy physiology, Physiology, Dentistry and Oral Anatomy and Physiology, Human Anatomy Physiology and Practice in use as, Table 10. Status of Oral Microbiology similar names to Oral health administration, Oral Health Administration, Public Oral Health Administration, Dental administration practice It was used as. Table 11 to Health Statistics, Oral health statistics, Health Statistics and Practice, Oral health research and health statistics, Dental hygiene research and statistics in use as Table 12, Oral Health Education, Oral health education and practice, Oral health education practice, Introduction to Education, Education Dental Hygiene Community Practice, Oral health education practice project, Health education methodology It was used as. Table 13 to Oral Health Education, Oral health education and practice, Oral health education practice, Introduction to, Education Dental Hygiene Community Practice, Oral health education

practice project, Health education methodology I used it as a Table 14 to Health care laws and regulations, The American Dental Hygienists' Association (ADHA) was established in 1923 to cooperate with dental hygienists and deliver information and is currently in charge of representing the rights and interests of more than 140,000 certified dental

hygienists (RDHs) as of 2002. It sets goals to maintain the full-body health of the people through oral health promotion, and U.S. dental hygienists are performing various tasks in the field of education, clinical, academic research, administrative, and therapeutic treatment. The U.S. dental hygienist education system is largely divided into two-year vocational

Table 6. Currently using names opened for Oral Anatomy

1	Oral anatomy	30	32.96
2	Orofacial Anatomy, Histology and embryology	1	1.09
3	Oral Anatomy and Practice	16	17.58
4	Head and Neck Anatomy	14	15.38
5	Head and Neck Anatomy and Practice	12	13.18
6	Head and neck anatomy practice	1	1.09
7	Anatomy of the Head and Neck	1	1.09
8	Human anatomy	8	8.79
9	Dentistry and Oral Anatomy and Physiology	1	1.09
10	Dental Anatomy, Embryology and Histology	1	1.09
11	Anatomy and Physiology 1	3	3.29
12	Anatomy and Physiology 2	3	3.29
Sum		91	

Table 7. Status of Oral Tissue Embryology similar names

1	Oral Embryology and Histology	2	2.4
2	Orofacial Anatomy, Histology and embryology	1	1.2
3	Oral tissue and embryology	8	9.63
4	Oral tissue and development	1	1.2
5	Oral tissue development	3	3.61
6	Oral tissue embryology	50	60.24
7	Oral tissue embryology and practice	3	3.61
8	Advanced oral tissue embryology	1	1.2
9	Oral histology	6	7.22
10	Oral histology	2	2.4
11	Tissue embryology	3	3.61
12	Histology and Embryology	1	1.2
12	Dental Anatomy and Histology	1	1.2
12	Dental Anatomy, Embryology and Histology	1	1.2
Sum		83	

Table 8. Status of Oral Pathology similar names

1	Oral pathology	1	1.19
2	Oral pathology	68	80.95
3	Oral Pathology and Practice	4	4.76
4	Advanced oral pathology	1	1.19
5	Pathology	4	4.76
6	General and Oral Pathology	4	4.76
7	Dental hygiene pathology	2	2.38
Sum		84	

Table 9. Status of Oral Physiology similar names opened

1	Oral physiology	2	1.19
2	Oral physiology	59	80.95
3	Oral physiology	2	2.22
4	Physiology	6	6.66
5	Human Anatomy Physiology and Practice	1	1.11
6	General Anatomy and Physiology 1	1	1.11
7	General Anatomy and Physiology 2	1	1.11
8	Dentistry and Oral Anatomy and Physiology	1	1.11
9	Dental Hygiene Physiology	2	2.22
10	Anatomy physiology	9	10
11	Anatomy and Physiology 1	3	3.33
12	Anatomy and Physiology 2	3	3.33
Sum		90	

Table 10. Status of Oral Microbiology similar names

1	oral microorganisms	2	2.4
2	Oral microorganisms and immunity	1	1.2
3	Oral microbiology and immunology practice	1	1.2
4	Oral microbiology	50	60.24
5	Oral Microbiology and Immunology	8	9.63
6	Oral Microbiology and Practice	5	6.02
7	Oral Microbiology and Infection Control	1	1.2
8	Oral physiology and microorganisms	1	1.2
9	Microbiology and infection control	1	1.2
10	Microbiology and Immunology	1	1.2
11	Microbiology and Immunology Lab	1	1.2
12	Microbiology	5	6.02
13	Microbiology and Immunology	1	1.2
14	Medical microbiology	1	1.2
15	Human Microbiology 1	1	1.2
16	Human Microbiology 2	1	1.2
17	Dental Hygiene Microbiology	2	2.4
Sum		83	

Table 11. Status of opening similar names for Oral Health Administration

1	Public oral health administration	1	7.14
2	Public Oral Health Administration	1	7.14
3	Oral health administration	6	42.85
4	Oral Health Administration	5	35.71
5	Dental administration practice	1	7.14
Sum		14	

Table 12. Status of Oral Health Statistics similar titles

1	Oral health research and health statistics	1	1.61
2	Oral health statistics	2	3.22
3	Oral Health Statistics	28	45.16
4	Oral health statistics and practice	5	8.06
5	Oral health statistics and research methodology	1	1.61
6	Oral health statistics practice	1	1.61
7	Oral statistics	1	1.61
8	Health statistics	10	16.12
9	Health Statistics and Practice	6	9.67
10	Health Statistics Practice	1	1.61
11	Advanced health statistics	1	1.61
12	Dental hygiene research and statistics	1	1.61
13	Dental hygiene statistics and thesis research	1	1.61
14	Statistics	2	3.22
15	Statistics 1	1	1.61
Sum		62	

Table 13. Status of opening similar names for Oral Health Education

1	Education Dental Hygiene Community Practice	1	0.83
2	Education Dental Hygiene	2	1.66
3	Education Dental Hygiene and Practice	2	1.66
4	Introduction to Education	2	1.66
5	Oral health education	1	0.83
6	Oral health education practice project	1	0.83
7	Oral health education practice	5	4.16
8	Oral health education practice capstone design	2	1.66
9	Oral Health Education	35	29.16
10	Oral health education and practice	34	28.33
11	Oral Health Education and Practice II	10	8.33
12	Oral health education practice	19	15.83
13	Health education methodology	2	1.66
14	Health Education	4	3.33
Sum		120	

Table 14. Status of establishment of similar names in Health and Medical Regulations

1	Oral medical laws and regulations	1	1.26
2	Health regulations	2	2.53
4	Health care laws and regulations	9	11.39
5	Health care law 2	35	44.3
6	Health care laws and ethics	2	2.53
7	Health care law theory	1	1.26
8	Health care ethics and laws	1	1.26
9	Medical related laws and regulations	1	1.26
10	Medical laws and medical ethics	21	26.58
11	Medical related laws and regulations practice	1	1.26
12	Medical regulations	2	2.53
13	Clinical health care laws and regulations	1	1.26
14	Dental hygiene ethics and health laws	1	1.26
Sum		79	

college programs, four-year undergraduate programs, and graduate programs. As of 2002, there are about 250 dental hygiene departments in the U.S. certified by the ADA (American Dental Association), of which about The four-year undergraduate program comes in two forms. One, like other majors, is designed to complete all elective courses for liberal arts, basic sciences, dental and dental hygiene from the first grade to the fourth grade, and to obtain a bachelor's degree in dental hygiene or dental hygiene. In the other form, Dree-Completion Programs, which allow dental hygienists who have graduated from a two-year dental hygiene department and obtained an associate degree and a dental hygienist's license to transfer to a four-year university to obtain a bachelor's degree, are also opened in many universities' dental hygiene departments. As for graduate courses, the

Department of Dental Hygiene Education (MSDH) is opened in eight graduate schools, and six graduate schools are also open to award master's degrees in basic sciences, marketing and public health, and business administration, which are related to dental hygiene. It is partly different from university to university, but in general, in order to enter a two-year or four-year dental hygiene department at an American university, liberal arts subjects such as English, speaking ability (Speech), psychology and sociology and basic science-related subjects such as general chemistry, anatomy, physiology, biochemistry, microbiology and nutrition must be completed before entering the dental hygiene department, so it can be said to be a three-year course. Basic science subjects, dental-related and dental hygiene-related subjects that should be included in the curriculum of the

Comprehensive data on the analysis of the curriculum of the U.S. Department of Dental Hygiene (3,4 years)

Table 15. Comprehensive data on the analysis of the curriculum of the Department of Dental Hygiene in the United States (3,4 years)

Course Name	Grade	Credit	Major Selection
Biology 1: Cell and Molecular Biology	1	3	Major Selection
Biology 1 Lab 11	1	1	Major Selection
Chemistry Principal 1	1	4	Major Selection
Introduction to Major 1	1	1	Major Selection
Commentary Writing1	1	3	Major Selection
Calculus1	1	3	Major Selection
Biology 2: Biology	1	4	Major Selection
Biology 2: Biology	1	4	Major Selection
Chemical Principles 2	1	3	Major Selection
Differential calculus 2	1	3	Major Selection
Introduction to Psychology	1	3	Major Selection
Anatomy and physiology1	1	4	Major Selection
Anatomy and physiology2	1	4	Major Selection
HUM Deployment Elective Course	1	3	Major Selection
Introduction to Interpersonal Communication for Health Experts	1	3	Major Selection
organic chemistry	2	4	Major Selection
American culture, identity, and public life	2	3	Major Selection
health psychology	2	3	Major Selection
Fundamentals of Physics 1	2	3	Major Selection
Foundation of Physics Laboratory 1	2	1	Major Selection
Organic Chemistry 2	2	3	Major Selection
Laboratory 2 of Organic Chemistry	2	1	Major Selection
cultural anthropology	2	3	Major Selection
medical ethics	2	3	Major Selection
Fundamentals of Physics 2	2	4	Major Selection
medical microbiology	2	4	Major Selection
Statistics	2	3	Major Selection
biochemistry	2	3	Major Selection
Nutrition	2	3	Major Selection
Dental anatomy and histology	3	2	Major Selection
head and neck anatomy	3	2	Major Selection
Dental Hygiene Treatment Course 1	3	4	Major Selection
a dental hygiene preclinical laboratory	3	2	Major Selection
Dental radiology department	3	3	Major Selection
dental materials	3	3	Major Selection
Dental Hygiene Treatment Course 2	3	3	Major Selection
Clinic 1	3	3	Major Selection
periodontology	3	3	Major Selection
pathology	3	3	Major Selection
pain management	3	2	Major Selection
a pain management lab	3	1	Major Selection

Dental Hygiene Treatment Course 3	3	3	Major Selection
community oral health	3	3	Major Selection
An oral health study	3	3	Major Selection
Clinical Dental Hygiene 2	3	4	Major Selection
Dental Hygiene Treatment Course 4	4	2	Major Selection
Clinical Dental Hygiene 3	4	4	Major Selection
pharmacology	4	3	Major Selection
Capstone Leadership in Dental Hygiene	4	3	Major Selection
Practice and career management	4	2	Major Selection
			Major Selection

U.S.-recognized dental hygiene department (equivalent to two-year and four-year courses) are as follows. Basic science courses General chemistry, Anatomy, Physiology, Biochemistry, Microbiology, Pathology, Nutrition and Pharmacology is opened as Dental science courses Dental anatomy, Head and neck anatomy, Oral embryology and histology, Oral pathology, Radiography, Periodontology, Pain control and Dental materials is open to Dental hygiene

science courses counseling, Patient management, Community dental health, Medical and dental emergencies, and Legal and ethical aspects supervised instruction in pre-clinical and clinical practice. Most of the U.S. dental hygienists, along with general dentists and dentists, mainly perform clinical and public health work for patients at dental clinics and hospitals, and some perform clinical and public health work at public health-related institutions, hospitals, community

African student dental hygiene education program recognition evaluation (ASDHEP)

Table 16. American student dental hygiene education program recognition evaluation (ASDHEP: Accreditation of Dental Hygiene Education Program in the United States)

Course Name	Grade	Credit	Major Selection
Anatomy	2	3	Major Selection
physiology	2	3	Major Selection
chemistry	2	3	Major Selection
biochemistry	1	3	Major Selection
Microbiology (Microbiology and Immunology)	1	3	Major Selection
Immunology	1	3	Major Selection
General pathology (General oral pathology)	2	3	Major Selection
Nutrition (Dental Nutrition)	1	3	Major Selection
pharmacology	1	3	Major Selection
the morphology of teeth	1	3	Major Selection
Head and neck and oral anatomy	2	3	Major Selection
Oral development and histology	2	3	Major Selection
oral pathology	2	3	Major Selection
Communication Management	2	3	Major Selection

health clinics, and nursing homes. In addition, they oversee education in elementary, middle, and high schools, dental colleges, and educational institutions in the dental hygiene department, and are active in various fields such as research, dental management and management, consumer spokespeople, dental equipment and equipment companies, and oral hygiene product development, promotion and public relations. U.S. dental hygienists in the clinical field are responsible for medical history review, Vital Signs, Oral Examination, Scaling and Root Plan, Oral Hygiene Instruction, Fluoride and Sealant Application, Radiography imaging and reading, Temporary dressings application and removal, Suture removal, polishing and re-contour of Amalgam fillings. In addition, local anesthetics and nitrous oxide/oxygen analgesia are also performed by dental hygienists in many states as one of their clinical tasks. The U.S. dental hygienist license exam consists of a written test (Written National Board Dental Hygiene Examination) and a clinical state or regional board examination, and the necessary conditions to take the license examination are graduation from the dental hygienists' department recognized by the American Dental Association [17] (Table 15,16).

DISCUSSION

Dental hygiene is a technological science that provides behavioral management, prevention, and oral health care for the prevention and health promotion of oral diseases. For this purpose, the Korean dental hygiene curriculum is being developed focusing on theories and technologies such as oral health education, preventive dental treatment, dental treatment cooperation, and management support [18]. Currently, the Korean dental hygienists work is faithful to its role and acquires theories and skills necessary for performance. However, there is a growing demand for a developmental role in the work of dental hygienists. In the case of the United States, the dental hygiene process is carried out by presenting 'performance required of new dental hygienists' as an educational goal, and the state has established standards for recognizing dental hygiene curriculum and operates detailed majors as an integrated subject [15,19].

As there is a developmental demand for the role of dental hygienists in Korea, it is necessary to develop a curriculum by grasping the work contents and demands of dental hygienists [20]. In addition, when developing the curriculum for dental hygienists, it is important to reflect on the latest knowledge and skills. As there is a developmental demand for the role

of dental hygienists, it is necessary to develop a curriculum by grasping the job performance and educational needs of dental hygienists. To this end, it is necessary to analyze the job contents of clinicians and develop a curriculum that can strengthen the capabilities of dental hygienists. In addition, when developing a curriculum, it is necessary to reflect the job performance and educational needs of dental hygienists so that dental hygienists have the necessary competencies in the field. In Korea, the standardization of clinical dentistry has not been made with different subject names and educational goals such as dental pedagogy, comprehensive dental hygiene, and preventive dentistry for each school or school [20].

Integrated clinical dentistry based on dental competency should be standardized through efforts such as implementing a certification system to evaluate the dental hygiene curriculum in line with the demand for the integration of subjects centered on the dental hygiene management process in the Korean curriculum. The dental hygiene community has led quantitative changes over the past few decades. Improving the quality of education and approving it as an international curriculum are considered key tasks that Korean dental hygiene education must solve, and most urgently, it is judged that it is very important to recognize the necessity and share information among educators regarding the standardization of the clinical dental hygiene curriculum (Table 4 & 5).

Bae SM, et al. [21]. As a result of analyzing the curriculum according to dental hygiene competency, it is necessary to further subdivide and define the concept of dental hygiene competency in the future because the dental hygiene competency to be achieved is operated somewhat inefficiently in the fields of basic dental hygiene, dental clinical studies, and clinical dental hygiene. In addition, it was suggested that educational methods such as problem-based learning, case-based learning, project-based learning, and team-based learning need to be developed and applied to the clinical dentistry curriculum, rather than the existing lecture-style education method so that students can think and judge the learning contents of the pre-subject in an integrated manner, such as Clinical Dental Hygiene and Practice III to VI. The clinical dental hygiene practice in Korea is operated by one professor and 22 students as a team and operates 3 to 5 hours per week. Therefore, standardization and guidelines should be presented at the national level for the clinical practice capabilities of dental hygienists in accordance with the domestic situation, and each school needs to present

the core competencies and detailed competencies of dental hygienists at the time of graduation and open and operate an integrated clinical dental hygiene course centered on the dental hygiene management process to achieve them.

Clinical dental hygiene education in the United States and Korea aims to provide a variety of subjects with an appropriate process of dental hygiene management. In the United States, theory and practice prepare for tasks to be performed in the actual field after graduation. This includes applying periodontal devices, coping methods in emergency situations, infection control, local anesthesia, prescription and education of self-mouth hygiene products, effective communication skills, dental hygiene management, and data collection to identify subject needs. However, Korea is sometimes not legally recognized for some tasks. In addition to knowledge and skills, the United States emphasizes humanities and social knowledge such as communication, cognition, and psychology. To this end, related knowledge is integrated through methods such as essays, discussions, and presentations, and creative and logical thinking skills are cultivated.

In the United States, clinical dental hygiene practice is conducted in a team of 1 professor and 5 students, with 14 to 21 hours of practice per week. In addition, a customer/patient contact confirmation and internship execution tracking form for each student are completed, reviewed and supplemented with the instructor. Through this, instructors can invest sufficient time to provide individual guidance and feedback to students and improve their clinical competence [22].

To improve the clinical practice capabilities of Korean students, the evaluation method and evaluation items need to be improved in the clinical dentistry curriculum in Korea. Through this, students' clinical skills can be accurately evaluated and improved, and students should acquire expertise as dental hygienists by integrating theories and practices. It is true that there has been a lot of development in the education of dental hygienists in Korea for about 38 years. In particular, the interdisciplinary system changed as the duration of class increased, and junior colleges are conducting a major intensive course and the subjects taken by the national examination dental hygienists are progressively improved to train dental hygienists. In this process, it was classified into basic subjects and clinical subjects, and the distribution of the number of questions by national examination subject also adjusted and developed. However, without the NCS being established, our efforts to

standardize basic subjects for each university seem to have been insufficient. As shown in this study, similar names for each basic subject are very diverse, and there are many mixed names centered on the professor's own major, so the identity of a single subject viewed from the perspective of students seems very low. In consideration of the problem of this perspective, I hope that a concise and clear subject that fits the eye level of students who are the parties to education demand will be presented. This is because, looking at the examples of names of each basic subject taken from Table 6,7,8,9,10,11,12,13 & 14, oral facial anatomy, histology and embryology, dental and oral anatomy and physiology, dental anatomy, embryology and histology, oral facial anatomy, histology and embryology, dental anatomy and histology, dental and oral anatomy and physiology, educational dental hygiene community practice, public oral health administration (Table 6,7,8,9,10,11,12,13 & 14).

In addition, just as the dental hygienist curriculum in the United States conducts training for various subjects such as children, adolescents, adults, the elderly, and special patients, it is necessary to strengthen training for various subjects in the Korean curriculum. Through this, students will be able to cope with various situations and demonstrate their ability as experts in clinical practice after graduation. In conclusion, in the clinical dentistry curriculum, the improvement of evaluation methods and evaluation items, and the practice for various subjects should be strengthened to improve students' clinical practice skills, and to equip them with expertise as dental hygienists. Through this, students can fulfill their roles and responsibilities as dental hygienists and contribute to the promotion of national oral health. Tables 15 and 16 suggest that when operating in higher grades such as clinical dentistry and practice III-VI, it is necessary to develop educational methods such as problem-based learning, case-based learning, project-based learning, and team-based learning to replace the existing lecture-style education methods. Through this, it helps to think and judge the learning contents of the prerequisite subject in an integrated manner. Standardization and guidelines should be presented at the national level for the clinical practice competency of dental hygienists in line with the domestic situation. Based on this, each school needs to present the core competencies and detailed competencies of dental hygienists at the time of graduation, and open and operate an integrated clinical dental hygiene course centered on the dental hygiene management process to achieve this. In the case of the United States, the curriculum of dental hygiene and other dentistry is evaluated through

a certification system called CODA. This system enables integrated education centered on competency to improve the performance ability of the dental hygiene (academic) curriculum centered on the dental hygiene management process. In Korea, the need for establishing the concept of the dental hygiene management process in the curriculum and for a transition from fragmentary clinical formulas to comprehensive dental hygiene management process services was raised [23].

This study has several limitations. To conduct an in-depth analysis of the U.S. clinical dentistry curriculum, it is difficult to regard it as a sample representing the U.S. clinical dentistry curriculum because only 60 universities where detailed information is available were targeted. The inability to compare and analyze cases of other countries in which the clinical dentistry curriculum is standardized and operated is a limitation of this study, and continuous research is needed for the development of the domestic dental hygiene curriculum and the development of an effective curriculum.

CONCLUSION

As a result of the study, it was confirmed that there were several differences between the Korean dental hygiene curriculum and the US dental hygiene curriculum. For example, the US dental hygiene curriculum included more subjects representing a successful career in dental hygiene. To improve Korean students' clinical practice competency, the clinical dental hygiene curriculum in Korea needs to improve evaluation methods and evaluation items. Through this, students' clinical skills can be accurately evaluated and improved, and students should acquire expertise as dental hygienists by integrating theories and practices.

CLINICAL RELEVANCE

Scientific rationale for the study

The Korean dental hygiene curriculum, strengthening subjects for a successful career, and improving evaluation items play an important role in training dental hygienists, contributing to improving students' clinical capacity and ensuring legal work.

Principal findings

There is a need to improve the evaluation methods and evaluation items of the Korean clinical dental curriculum to improve the clinical practice of Korean students

Practical implications

There is a need to improve the evaluation method and

evaluation items of clinical dentistry in Korea. An evaluation method that can substantially improve the clinical competence of students in the school curriculum should be introduced. Through this, students can identify their lack of competencies and find ways to improve them with instructors. In addition, evaluation in the school curriculum should be more specific, diverse and subdivided. Through this, an evaluation of literacy, knowledge, skills, and integrated performance ability in various areas that a dental hygienist must have as a health care professional should be made.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest.

AUTHOR CONTRIBUTION

The author approved the final version of this manuscript prior to submission and agreed to be responsible for all aspects of the work ensuring that questions relating to the accuracy or integrity of all parts of the question or task related to accuracy have been properly addressed. KNH, NHJ contributed to design, search and selection, analysis and interpretation, drafted manuscripts, contributed to concepts and design, search and selection, analysis and interpretation, and critically modified manuscripts. The NHJ contributed to the concept, design, analysis and interpretation, and critically modified the manuscript.

DATA AVAILABILITY STATEMENT

Research data are not shared.

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