Korean Dental Hygienists’ Job Description Based on Systematic Review

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Background: Korean dental hygienists perform various tasks under the supervision of dentists in addition to the tasks listed in the law. Many meaningful studies have been conducted to determine the actual tasks of dental hygienists, but these studies did not show common results due to the differences in research methods or designs. Hence, this study aimed to review the reported data on the tasks of dental hygienists in Korea and to clarify them based on a systematic literature review.

Methods: For the literature search, the CORe, Standard, and Ideal model presented by the National Library of Medicine was referenced. Seven databases were searched for literatures published in Korea, including PubMed, and Google Scholar. Of the 352 studies found using key words, titles, and abstracts, 46 were finally extracted based on the first and second exclusion criteria. After confirming the tasks of Korean dental hygienists in 46 literatures, 136 tasks were listed and calculated as appearance rate in the literature.

Results: The most common tasks in 46 studies were fluoride application (67.2%), radiography (65.4%), scaling (65.4%), sealant (60.7%), patient management and counseling (56.7%), tooth-brushing education (52.2%), impression taking with alginate (50.1%), and making temporary crowns (47.9%). The most mentioned tasks of dental hygienists in public health centers were fluoride application (100%), sealant (100%), oral health education (71.4%), public oral health program evaluation (71.4%), school fluoride mouth-rinsing program (71.4%), water fluoridation (57.1%), tooth-brushing education (57.1%), school oral health programs (57.1%), and public elderly oral health programs (57.1%).

Conclusion: This study showed that Korean dental hygienists had 136 tasks by reviewing 46 related studies and that the main job of Korean dental hygienists was oral disease prevention including scaling, sealant, and fluoride application.

Key Words: Dental hygienists, Job description, Systematic review

Introduction

The oral health workforce in Korea is composed of dentists, dental hygienists, and dental technicians, and dental hygienists contribute to the improvement of the publics oral health by providing treatment that prevents oral diseases1. Dental hygiene education in Korea began in 1965 and has made rapid progress since 2004, including the establishment of a 4-year curriculum2 and the world’s first doctoral course in dental hygiene3. The tasks of dental hygienists were legally prescribed in the Medical Technicians Act of 1973 and include promotion of oral health and prevention of oral diseases; however, in reality, dental hygienists perform various tasks in dental clinics...
such as dental treatment assistance and business management support. In the task description reported in 2000, the tasks of dental hygienists are divided into six classifications: oral health education, preventive dental treatment, dental treatment cooperation, public health business, business management support, and professional improvement. As such, dental hygienists perform various tasks under the direction and supervision of dentists in addition to the tasks listed in the law. In the last decades, some dentists delegate their duties to dental hygienists to ensure the continuous performance of their tasks. However, it is not clear whether the task is legitimate or not. In some cases, the tasks are not recognized as legitimate, and dental hygienists are oftentimes subject to administrative disposition. As a result, dental hygienists in Korea experience a feeling of deprivation along with a decrease in job satisfaction, and sometimes pursue a new career as they tend to have a negative perception about their job. Therefore, it is necessary to clearly confirm the tasks actually performed in the dental medical environment and conduct a job analysis accordingly. Based on this, the dental community should discuss the actual tasks performed by dental hygienists, and provision of institutional support is essential to ensure that the tasks performed are legitimate. In the meantime, many meaningful studies have been conducted to examine the actual tasks of dental hygienists in Korea, and many reference data have been obtained in order to establish an effective policy. These studies reflect the dental medical environment at the time of the investigation and propose the actual scope of responsibilities of dental hygienists. Nevertheless, it was not possible to reach a comprehensive conclusion as the finding of related research were consistent. Therefore, this study aimed to review the reported research data on the tasks, duties, and scope of tasks of dental hygienists in Korea and to clarify the tasks of dental hygienists based on a systematic literature review. Moreover, this study aimed to ensure that the tasks performed by dental hygienist are within their legal scope of practice and to our findings will serve as a basis for establishing policy agreements on the legal tasks of dental hygienists.

### Research Methods

1. **Literature search**

For literature search, the COSI (COre, Standard, Ideal) model presented by the National Library of Medicine was referenced. Based on the results of the discussions of researchers, PubMed (http://www.pubmed.gov), and

| Priority | Primary keyword                  | Secondary keyword                       |
|----------|----------------------------------|-----------------------------------------|
| 1        | Dental hygienist task            | Dental hygienist job                   |
| 2        | Dental hygienist job             | Dental hygienist job scope             |
| 3        | Dental hygienist job scope       | Dental hygienist job scope             |
| 4        | Dental hygienist task scope      | Dental hygienist job scope             |
| 5        | Role of dental hygienist         | Role of dental hygienist               |
| 6        | Dental hygienist task area       | Dental hygienist medical cooperation   |
| 7        | Dental hygienist medical cooperation | Dental hygienist medical assistance     |
| 8        | Dental hygienist medical assistance | Dental hygienist core competency      |
| 9        | Dental hygienist core competency | Dental hygienist medical personification |
| 10       | Dental hygienist medical personification | Dental hygienist medical practice |
| 11       | Dental hygienist business management support | Dental infection/Prevention of infection |
| 12       | Dental hygienist medical practice | Dental hygienist awareness             |
| 13       | Dental infection/prevention of infection | Dental hygienist image                 |
| 14       | Dental radiation safety          | Dental hygienist recognition           |
| 15       | Dental hygienist job analysis    | Dental medical dispute                 |
| 16       | Dental hygienist awareness       | Dental hygienist performance           |
| 17       | Dental hygienist image           |                                         |
| 18       | Dental hygienist recognition     |                                         |
| 19       | Medical law revision             |                                         |
| 20       | Dental medical dispute           |                                         |
| 21       | Oral health education            |                                         |
| 22       | Health promotion                 |                                         |
| 23       | Preventive dental treatment      |                                         |
| 24       | Dental hygienist performance     |                                         |
Google Scholar (https://scholar.google.co.kr), which is a foreign database that can be used for general literature search; another five databases, where literature published in Korea can be searched; and their own journal sites related to dental hygiene that are recognized in Korea, were used for the study. Selected domestic databases include Korean academic information (http://kiss.kstudy.com), academic research information service (http://www.riss.kr), paper search (http://www.papersearch.net), Academic Education Center (https://www.earticle.net), DBpia (http://www.dbpia.co.kr), Journal of Dental Hygiene Science (http://www.jkdhs.org), and Korean Dental Hygiene Society (http://www.jksdh.or.kr). In order to select the appropriate keywords to be used in the literature search, some previous studies were analyzed, and the first keyword was selected through a meeting with all of the researchers. After searching the literature using the primary keyword, the secondary keyword was extracted through deletion or correction of duplicates when searching the literature (Table 1).
2. Paper extraction

The literature search was only conducted from 2000 to 2019 to reflect the recent trend, and a total of 39,188 articles were searched. The numbers of searches by keyword were as follows: 18,024 (46.0%) for dental hygienist role, 4,635 (11.8%) for dental hygienist tasks, 2,508 (6.4%) for dental hygienist Jobs, and 2,368 (6.0%) for dental hygienist image. After screening the titles and abstracts of each article, those that did not match the research purpose were initially excluded; as a result, only 352 articles were extracted. Afterward, duplicate literatures and literatures that did not provide sufficient data on the tasks of dental hygienists were excluded during the 2nd and 3rd exclusion processes. Over 83 studies were extracted during the third selection process, and 37 studies that were judged to be insufficiently related to this study after screening the original text and reviewing the consensus of the researchers were further excluded (Fig. 1). A total of 46 literatures were finally selected (Table 2), of which 19 were conducted before 2010 and 27 after 2010. Of the total selected literature, 22 were journals (47.8%), 19 were dissertations (41.3%), and 5 were reports (10.9%).

3. Presentation of data

After confirming the tasks of Korean dental hygienists in 46 literatures, each task was listed in specific terms. Then, a mark was applied when the dental hygienist’s tasks appeared in each article, and the appearance rate in the entire literature was calculated. Most dental hygienists in Korea work in dental clinics, but more than 1,500 dental hygienists work in public health centers and implement public oral health programs. Therefore, it is necessary to classify the tasks of dental hygienists working in dental clinics and those working in public health centers. Of the 46 studies that were finally selected, 39 evaluated the tasks of clinicians, 6 evaluated the tasks of a public health center, and 1 evaluated the tasks of a clinical and dental hygienist at the same time. Therefore, based on 40 studies, including the tasks of a clinical dental hygienist and 7 literatures including the tasks of a health center dental hygienist, the rates of the appearance of the tasks of a clinical dental hygienist and a public health center dental hygienist were presented, respectively.

**Results**

A systematic literature review found that dental hygienists performed up to 136 tasks (Table 3). The most common tasks reported in 46 studies were fluoride application (67.2%), radiography (65.4%), scaling (65.4%), sealant (60.7%), patient management and counseling (56.7%), tooth-brushing education (52.2%), and impression taking (alginate) (50.1%). Preventive treatment-related tasks such as fluoride application, scaling, and sealant appeared more frequently, and oral health education tasks such as patient management and counseling, and tooth-brushing education also frequently appeared. In addition, studies related to general dental treatments such as alginate impression taking, temporary crowns making, setting of temporary crowns, and application of temporary filling were investigated in the literature. More than half of the 40 studies studied on clinical dental hygienists included scaling, internal/external radiography, temporary crowns making, sealant, tooth-brushing education, and temporary filling as the tasks of dental hygienists. The task with the highest frequency was scaling (74.4%), followed by intraoral radiography and panorama taking (71.8%), patient management and counseling (64.1%), and fluoride application (61.5%). In more than half of papers, impression taking (alginate, 56.4%), temporary crowns making (53.8%), setting of temporary crowns (53.8%), sealant (53.8%), tooth-brushing education (51.3%), and temporary filling (51.3%) were reported as the tasks of dental hygienists. In seven studies on dental hygienists working in public health centers, fluoride application and sealant accounted for 100% of the tasks performed by dental hygienists, oral health education, school fluoride mouth-rinsing program, public oral health program evaluation accounted for 71.4%, and tooth-brushing education, education to use oral health products, oral examination, public elderly oral health program, water fluoridation, school water fluoridation, school oral health program accounted for 57.1%. Dental hygienists working in public health centers perform 67 out of 136 tasks, and they are conducting oral disease prevention tasks as well
## Table 2. The 46 Literatures Selected Finally for Tasks Analysis of Korean Dental Hygienists

| Number | Main author | Publication year | Title | Publisher or journal | URL |
|--------|-------------|------------------|-------|----------------------|-----|
| 1      | JH Sung     | 2000             | A study on the roles of dental hygienists at the public health centers in Korea | Journal of Korean Academy of Dental Hygiene | http://kadh.or.kr/index.php?mid=board_CnLa25&category=2291&document_id=2330&listStyle=list |
| 2      | MY Hwang    | 2002             | A study on the Curriculums for the Department of Dental Hygiene - Based on the Tasks of Hygienists and the Courses For the National Qualification Examination | Bulletin of Dongnam Health University | https://kmbase.medric.or.kr/Main.aspx?d=KMBASE&i=0974620020200020123&m=VIEW |
| 3      | JH Yoo      | 2003             | Usefulness of dental hygiene education curriculum in the public oral health service performance | Yonsei University | http://ir.ymlib.yonsei.ac.kr/bitstream/222282913/128826/1/T008015.pdf |
| 4      | EH Kim      | 2004             | A study on the work of dental hygienists and nurse aides | Inje University | http://imgsvr.riss4u.net/contents3/t_d_content8/09865/664/09865664.pdf |
| 5      | JR Park     | 2004             | A research on the expansion of dental hygienists’ work | Korean Dental Hygienists Association | https://www.kdha.or.kr/news/report.aspx |
| 6      | MH Lim      | 2004             | A Study on Dentists’ Awareness About Dental Hygienists’ Works and Duty Division | Journal of Korean Academy of Dental Hygiene | http://kadh.or.kr/index.php?mid=board_CnLa25&category=2293&document_id=2385&listStyle=list |
| 7      | PK Cho      | 2004             | An analysis of the job performance in operative restoration by dental hygienists | Journal of Korean Academy Dental Hygiene Education | http://www.jksdh.or.kr/view/CHOSAB-04-2-11.pdf |
| 8      | KJ Won      | 2005             | A empirical study on job education of dental health administrative personnel | Gangneung National University | http://www.ri ss.kr/search/detail/DetailView.do?p_mat_type=be54d9b8bc7cd9b09&control_no=9af4767c6610f8e8d |
| 9      | SY Kim      | 2006             | (A) Study on the curriculum for dental hygienist education | Dankook University | http://www.ri ss.kr/search/detail/DetailView.do?p_mat_type=be54d9b8bc7cd9b09&control_no=a1fd5bf7709a242fe0bd3e48d419 |
| 10     | SS Bae      | 2006             | Development of role model for dental hygienist in the changed environment medical service | Yonsei University | http://www.ri ss.kr/search/detail/DetailView.do?p_mat_type=be54d9b8bc7cd9b09&control_no=b90c1a558a6da6dfcf0be3e48d419 |
| 11     | YS Ahn      | 2006             | Comparison of job description and turnover trend among dental hygienists and assistant nurses in dental clinics | Journal of Korean Academy of Oral Health | http://210.101.116.28/W_files/kiss61/21101049_pv.pdf |
| 12     | SJ Shin     | 2007             | A study on the estimation of the number of dental hygienist and their practice | Journal of Dental Hygiene Science | https://kmbase.medric.or.kr/KMID/102342007007010025 |
| 13     | SH Shim     | 2007             | A study on the job awareness of dental hygienists and their job performance | Journal of Korean Society of Dental Hygiene | http://kiss.kstuday.com/thesis/thesis-view.asp?key=2853967 |
| 14     | YA Cheng    | 2007             | A predictive study on the role and function of the dental hygienist in Taiwan | International Journal of Dental Hygiene | https://doi.org/10.1111/j.1601-5037.2007.00236.x |
| 15     | YJ Kang     | 2008             | An analysis of the completion and recognition of preceptorship course for fresh-dental hygienists | Gyeongsang National University | https://dcollection.gnu.ac.kr/public_resouce/pdf/000000011540_202011613226.pdf |
| Number | Main author | Publication year | Title | Publisher or journal | URL |
|--------|-------------|------------------|-------|----------------------|-----|
| 16     | YS Kim      | 2008             | A study on the current state and weight of dental hygienists' works | Journal of Korean Society of Dental Hygiene | http://www.jksdh.or.kr/view/CHOSAB-08-3-08.pdf |
| 17     | SS Park     | 2008             | A Study on Elaboration of Dental Hygienists’ Participated Items in Implant Treatment | Gyeongsang National University | http://www.riss.kr/search/detail/DetailView.do?p_mat_type=be54d9b8bc7cdh09&control_no=8121c9e1bb4df2d4f6e0bd3ef48d419 |
| 18     | MS Wang     | 2008             | The roles of dental hygienist in Korea | Dankook University | http://lib.dankook.ac.kr/dcollection/public_resource/pdf/00000032005_20201116133237.pdf |
| 19     | YH Cho      | 2008             | Recognition of the job jurisdiction and job satisfaction of the dental hygienists and nursing aids | Kyungwon University | http://gachon.dcollection.net/public_resource/pdf/000000035245_20201116141741.pdf |
| 20     | YN Park     | 2010             | Dental office manager current conditions by scale of Korean dental clinic | The Journal of the Korea Contents Association | https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE001543074&nodeId=NODE001543074&language=ko_KR |
| 21     | JH Park     | 2010             | Dentists’ opinions for dental hygienists’ roles in Korea | Journal of Korean Academy of Oral Health | http://journaleng.kstudy.com/ISS_Detail.asp?key=2844604&name=kiss2002&code=YqldZWtoSqVtNENsAJOCUmN/B%20%20aJITNEVHpZQ== |
| 22     | YJ Song     | 2010             | The working range analysis for the dental hygienists’ education program and legal system improvement | Yonsei University | https://ir.ymlib.yonsei.ac.kr/handle/22282913/137418 |
| 23     | MO Ha       | 2010             | A study on the job analysis of dental hygienist in Gwangju | Journal of Korean Society of Dental Hygiene | http://kiss.kstudy.com/thesis/thesis-view.asp?key=2884088 |
| 24     | GA Kang     | 2011             | A Study of Influential Factors on Dental Hygienists’ Duties and their Job Satisfaction | Journal of Korean Academy of Dental Hygiene | http://kadth.or.kr/index.php?mid=board_CnLa25&category=2274&document_search=2640&listStyle=list |
| 25     | HJ Noh      | 2011             | A Study on the Realization of Work of Dental Hygienists in Public Health Centers | Korean Dental Hygienists Association | https://www.kdha.or.kr/news/report.aspx |
| 26     | JR Park     | 2012             | The 2nd Job Analysis Study of Dental Hygienist | Korea Health Personnel Licensing Examination Institute | https://kiss.kstudy.com/public/public3-article?key=60013748 |
| 27     | YS Cho      | 2011             | Review: Clinical Dental Hygiene Education and Practice based on Dental Hygiene Process | Journal of Dental Hygiene Science | http://kiss.kstudy.com/thesis/thesis-view.asp?key=2935724 |
| 28     | YL Kwak     | 2013             | Dentists’ awareness of Dental hygienists’ work | KyungHee University | http://khu.dcollection.net/public_resource/pdf/200000063746_20201116154712.pdf |
| 29     | JH Kwon     | 2013             | The management efficiency between the oral health clinic and oral health center system | Dankook University | http://lib.dankook.ac.kr/dcollection/public_resource/pdf/000000176872_20201116154906.pdf |
| 30     | SY Ahn      | 2013             | Some dental hygienist by career expectations regarding clinical work done in the field of business studies | Journal of Korean Society of Dental Hygiene | http://www.dbpia.co.kr/ArticleDetail?nodeId=NODE08990380 |
| 31     | SK Park     | 2015             | Educational Needs on National Oral Health Project among Community Dental Hygienists | Yonsei University | https://dcollection.yonsei.ac.kr/public_resource/pdf/000000137689_20201116154615.pdf |
### Table 2, Continued 2

| Number | Main author | Publication year | Title | Publisher or journal | URL |
|--------|-------------|------------------|-------|----------------------|-----|
| 32     | SS Bae      | 2015             | The standard of Dental hygienists’ clinical job | Korean Dental Hygienists Association | https://www.kdha.or.kr/news/report.aspx |
| 33     | JY Kim      | 2016             | Associations of performance and perception on preventive dental care tasks with job satisfaction among some dental hygienists | Chosun University | http://chosun.dcollection.net/public_resource/pdf/200000266188_20201116162347.pdf |
| 34     | JS Lee      | 2016             | Organization Structure of Dental Hospital and Job Analysis of Dental Hygienists | Namseoul University | http://nsulib.dcollection.net/public_resource/pdf/200000196894_20201116162505.pdf |
| 35     | SH Chae     | 2016             | Research on dental hygienists’ clinical skill proficiency in core dental hygiene competency | Journal of Korean Society of Dental Hygiene | https://doi.org/10.13065/jksdh.2016.16.05.651 |
| 36     | Virtanen    | 2016             | The professional role of a dental hygienist in Finland – educators’ views | International Journal of Dental Hygiene | https://doi.org/10.1111/idh.12166 |
| 37     | CH Kim      | 2017             | The awareness of dental hygienist regarding the content of clinical practice education and importance of duty | Journal of Korean Society of Dental Hygiene | https://doi.org/10.13065/jksdh.2017.17.06.1067 |
| 38     | SE Moon     | 2017             | A study on the validity of the range of periodontal treatment by dental hygienists | Korean Dental Hygienists Association | https://www.kdha.or.kr/news/report.aspx |
| 39     | YH Ha       | 2017             | Mongolian and Korean dentists’ opinions about the role of dental auxiliary workforce | Dankook University | http://lib.dankook.ac.kr/dcollection/public_resource/pdf/000000188553_202011163918.pdf |
| 40     | SM Bae      | 2018             | Evaluation of Dental Hygienist Job Validity according to Judgment Standard of Medical Practice in Medical Law | Journal of Dental Hygiene Science | https://doi.org/10.17135/jdhs.2018.18.6.357 |
| 41     | CY Kang     | 2019             | Dental Hygienist’s Professionalism and Health Insurance in Korea | Yonsei University | https://dcollection.yonsei.ac.kr/public_resource/pdf/000000518344_20201116171430.pdf |
| 42     | KJ Kim      | 2019             | A survey of the working scope understanding between dental hygienists and chair-side dental assistants among dental students in Seoul | Seoul National University | https://dcollection.snu.ac.kr/public_resource/pdf/000000155246_20201116171600.pdf |
| 43     | AO Kim      | 2019             | A comparison of dental hygienists’ legal duties among nations: Korea, USA and Canada | Journal of Korean Society of Oral Health Science | http://www.riss.kr/search/detail/DetailView.do?p_mat_type=1a0202e37d52c72d&control_no=9c0d6ca37c49e012ab36097776a77665 |
| 44     | JW Yun      | 2019             | Improvement of legal system regarding the scope of practice of dental hygienist | Dongeui University | http://dongoeu.dcollection.net/public_resource/pdf/200000227795_20201116192350.pdf |
| 45     | YK Han      | 2019             | A survey of dentists’ opinions on the performance of dental hygienists | Journal of Korean Academy of Dental Administration | https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE09260727 |
| 46     | SJ Hwang    | 2019             | Frequency and time of actual duties of some dental hygienists | Journal of Korean Academy of Dental Administration | https://www.dbpia.co.kr/journal/articleDetail?nodeId=NODE09260728 |
## Table 3. Frequency of Appearance of Literature on Each Task of Dental Hygienists

| Number | Task                                                                 | Appearance rate (%) |
|--------|----------------------------------------------------------------------|---------------------|
|        |                                                                      | Total   Clinical dental hygienists Public dental hygienists |
| 1      | Fluoride application                                                 | 67.2    61.5          100                      |
| 2      | Intraoral radiography and panorama taking                            | 65.4    71.8          28.6                      |
| 3      | Scaling                                                              | 65.4    74.4          14.3                      |
| 4      | Sealant                                                              | 60.7    53.8          100                      |
| 5      | Patient management and counseling                                    | 56.7    64.1          14.3                      |
| 6      | Tooth-brushing education                                             | 52.2    51.3          57.1                      |
| 7      | Impression taking (alginate)                                         | 50.1    56.4          14.3                      |
| 8      | Temporary crowns making                                             | 47.9    53.8          14.3                      |
| 9      | Setting of temporary crowns                                          | 47.9    53.8          14.3                      |
| 10     | Temporary filling                                                    | 45.8    51.3          14.3                      |
| 11     | Diet education                                                       | 43.5    43.6          42.9                      |
| 12     | Impressions taking (precision)                                       | 41.4    46.2          14.3                      |
| 13     | Health insurance claim                                               | 41.4    46.2          14.3                      |
| 14     | Oral health education                                                | 39.0    33.3          71.4                      |
| 15     | Prevention of infection in the dental clinic                          | 37.1    43.6          0                         |
| 16     | Equipment and material management                                    | 37.1    43.6          0                         |
| 17     | Tooth prophylaxis                                                    | 37.0    38.5          28.6                      |
| 18     | Removal of excess cement                                             | 37.0    41.0          14.3                      |
| 19     | Materials/document management                                        | 34.9    38.5          14.3                      |
| 20     | Treatment assistance                                                 | 34.8    35.9          28.6                      |
| 21     | Taking the medical history                                           | 32.8    38.5          0                         |
| 22     | Gingival cord packing                                                | 32.8    38.5          0                         |
| 23     | Surgery preparation (extraction and implants, oral and maxillofacial minor surgery) | 32.8    38.5          0                        |
| 24     | Preparation of medical equipment                                     | 32.7    35.9          14.3                      |
| 25     | Teeth whitening                                                      | 32.7    35.9          14.3                      |
| 26     | Application of rubber dam                                            | 32.7    35.9          14.3                      |
| 27     | Education to use oral health products                                | 32.5    28.2          57.1                      |
| 28     | Vital sign check                                                     | 30.6    35.9          0                         |
| 29     | Application of the matrix band                                       | 30.6    35.9          0                         |
| 30     | Orthodontic wire ligation                                            | 30.6    35.9          0                         |
| 31     | Model making                                                         | 30.5    33.3          14.3                      |
| 32     | Radiographic management                                              | 28.3    30.8          14.3                      |
| 33     | Management and disinfection of instruments                           | 28.3    30.8          14.3                      |
| 34     | Manpower training and management                                     | 28.3    33.0          0                         |
| 35     | Oral examination                                                     | 28.2    23.1          57.1                      |
| 36     | Root planing                                                         | 26.2    30.8          0                         |
| 37     | Probing periodontal pocket                                           | 26.2    30.8          0                         |
| 38     | Application of orthodontic Elastics                                  | 26.2    30.8          0                         |
| 39     | Fabrication of tooth whitening tray                                  | 24.0    28.2          0                         |
| 40     | Instrument polishing                                                 | 24.0    28.2          0                         |
| 41     | Cement mixing                                                        | 24.0    28.2          0                         |
| 42     | Restorative material mixing                                          | 24.0    28.2          0                         |
| 43     | Individual tray making                                               | 24.0    28.2          0                         |
| 44     | Medical waste management                                             | 24.0    28.2          0                         |
| 45     | Oral hygiene treatment plan                                          | 23.9    25.6          14.3                      |
| 46     | Emergency treatment in the dental clinic                              | 21.8    23.1          14.3                      |
| 47     | Intramuscular injection                                              | 21.8    25.6          0                         |
| 48     | Periodical oral health care                                          | 21.8    23.1          14.3                      |
Table 3. Continued 1

| Number | Task                                                                 | Appearance rate (%) |
|--------|----------------------------------------------------------------------|---------------------|
|        |                                                                      | Total | Clinical dental hygienists | Public dental hygienists |
| 49     | Cavity filling                                                       | 21.8  | 23.1                      | 14.3                      |
| 50     | Bite registration                                                    | 21.8  | 25.6                      | 0                         |
| 51     | Assistance of extraction, implants, and oral and maxillofacial minor surgery | 21.8  | 25.6                      | 0                         |
| 52     | Precautions delivery before and after surgery                        | 21.8  | 25.6                      | 0                         |
| 53     | Receiving dental expenses                                           | 21.8  | 25.6                      | 0                         |
| 54     | Arrangement of equipment                                            | 21.8  | 25.6                      | 0                         |
| 55     | Topical anesthesia                                                  | 19.7  | 23.1                      | 0                         |
| 56     | Preparation for local anesthesia                                     | 19.7  | 23.1                      | 0                         |
| 57     | Sensitive tooth treatment                                            | 19.7  | 23.1                      | 0                         |
| 58     | Care of sedated patients                                            | 19.7  | 23.1                      | 0                         |
| 59     | Separating                                                          | 19.7  | 23.1                      | 0                         |
| 60     | Reception of target person                                          | 19.6  | 20.5                      | 14.3                      |
| 61     | Medical record management                                           | 19.6  | 20.5                      | 14.3                      |
| 62     | Oral microbial test                                                 | 19.5  | 15.4                      | 42.9                      |
| 63     | Bad breath measurement                                              | 19.5  | 17.9                      | 28.6                      |
| 64     | Dental caries activity test                                         | 19.5  | 17.9                      | 28.6                      |
| 65     | Taking cephalometric radiography                                    | 17.4  | 20.5                      | 0                         |
| 66     | Usage of intraoral camera                                           | 17.4  | 17.9                      | 14.3                      |
| 67     | Education of stretching head and neck muscles for TMD patients       | 17.4  | 20.5                      | 0                         |
| 68     | Intraoral and extraoral inspection                                   | 17.4  | 20.5                      | 0                         |
| 69     | Removal of Implant prosthetic screw                                  | 17.4  | 20.5                      | 0                         |
| 70     | Bonding of orthodontic bracket                                      | 17.4  | 20.5                      | 0                         |
| 71     | Disinfection of the surgery area                                    | 17.4  | 20.5                      | 0                         |
| 72     | Education of orthodontic devices usage                               | 17.4  | 20.5                      | 0                         |
| 73     | Dental plaque index measurement                                     | 15.2  | 15.4                      | 14.3                      |
| 74     | Professional dental plaque management                                | 15.2  | 12.8                      | 28.6                      |
| 75     | Deciduous teeth extraction                                           | 15.2  | 12.8                      | 28.6                      |
| 76     | Removal of fixed orthodontic device                                  | 15.2  | 17.9                      | 0                         |
| 77     | Precaution education after treatment                                 | 15.2  | 17.9                      | 0                         |
| 78     | Taking facial photograph                                            | 13.1  | 15.4                      | 0                         |
| 79     | Infiltration anesthesia                                             | 13.1  | 15.4                      | 0                         |
| 80     | Attachment/removal of periodontal pak                                | 13.1  | 15.4                      | 0                         |
| 81     | Electric test of pulp vitality                                      | 13.1  | 15.4                      | 0                         |
| 82     | Education for dental disease prevention                              | 13.0  | 12.8                      | 14.3                      |
| 83     | Making oral health education materials                               | 12.9  | 7.7                       | 42.9                      |
| 84     | Suction                                                             | 10.9  | 12.8                      | 0                         |
| 85     | Preparing for mini screw placement                                  | 10.9  | 12.8                      | 0                         |
| 86     | Sich-out                                                            | 10.9  | 12.8                      | 0                         |
| 87     | Smoking cessation guidance                                          | 10.9  | 12.8                      | 0                         |
| 88     | Public elderly oral health program                                  | 10.7  | 2.6                       | 57.1                      |
| 89     | School fluoride mouth-rinsing program                                | 10.6  | 0                        | 71.4                      |
| 90     | Public oral health program evaluation                                | 10.6  | 0                        | 71.4                      |
| 91     | Computed tomography taking                                          | 8.8   | 10.3                      | 0                         |
| 92     | Guide to unit chair                                                 | 8.8   | 10.3                      | 0                         |
| 93     | Oral hygiene management record                                      | 8.8   | 10.3                      | 0                         |
| 94     | Use of light curing unit                                            | 8.8   | 10.3                      | 0                         |
| 95     | Tooth shade selection                                               | 8.8   | 10.3                      | 0                         |
| 96     | Dressing after removing healing abutment                            | 8.8   | 10.3                      | 0                         |
Table 3. Continued 2

| Number | Task                                                                 | Total | Clinical dental hygienists | Public dental hygienists |
|--------|-----------------------------------------------------------------------|-------|----------------------------|--------------------------|
| 97     | Final polishing after occlusal adjustment                            | 8.8   | 10.3                       | 0                        |
| 98     | Radiograph reading                                                   | 8.8   | 7.7                        | 14.3                     |
| 99     | SP crown mounting                                                    | 8.8   | 10.3                       | 0                        |
| 100    | Public oral health program for the disabled                          | 8.6   | 2.6                        | 42.9                     |
| 101    | Water fluoridation                                                    | 8.5   | 0                          | 57.1                     |
| 102    | School water fluoridation                                             | 8.5   | 0                          | 57.1                     |
| 103    | School oral health program                                           | 8.5   | 0                          | 57.1                     |
| 104    | Other roles related to oral health care                              | 6.6   | 7.7                        | 0                        |
| 105    | Management the record and works related to dental technician         | 6.6   | 7.7                        | 0                        |
| 106    | Administrative management                                            | 6.5   | 5.1                        | 14.3                     |
| 107    | Public oral health promotion program                                 | 6.5   | 2.6                        | 28.6                     |
| 108    | Establishment of community oral health plan                          | 6.4   | 0                          | 42.9                     |
| 109    | Survey of community oral health program                              | 6.4   | 0                          | 42.9                     |
| 110    | Public oral health program for the infants                            | 6.4   | 0                          | 42.9                     |
| 111    | Removal of exogenous pigmentation                                    | 4.3   | 5.1                        | 0                        |
| 112    | Conservatory treatment                                               | 4.3   | 5.1                        | 0                        |
| 113    | Application of liner                                                 | 4.3   | 5.1                        | 0                        |
| 114    | Block out with wax to the interdental area                           | 4.3   | 5.1                        | 0                        |
| 115    | Impression coping connection                                         | 4.3   | 5.1                        | 0                        |
| 116    | Biopsy preparation                                                   | 4.3   | 5.1                        | 0                        |
| 117    | Public sealant program                                               | 4.3   | 0                          | 28.6                     |
| 118    | Public oral health program for the pregnant women                    | 4.3   | 0                          | 28.6                     |
| 119    | Handling laser equipment                                             | 2.2   | 2.6                        | 0                        |
| 120    | Ultrasound/ physical treatment and hot pack for TMD patients         | 2.2   | 2.6                        | 0                        |
| 121    | Apply adhesive inside the tray                                       | 2.2   | 2.6                        | 0                        |
| 122    | Interdental cleaning                                                 | 2.2   | 2.6                        | 0                        |
| 123    | Sedation anesthesia (N2O gas) management                             | 2.2   | 2.6                        | 0                        |
| 124    | Inlay setting                                                        | 2.2   | 2.6                        | 0                        |
| 125    | Public oral health center installation                               | 2.1   | 0                          | 14.3                     |
| 126    | Administrative work for public oral health program                   | 2.1   | 0                          | 14.3                     |
| 127    | Oral health statistics                                               | 2.1   | 0                          | 14.3                     |
| 128    | Survey for community oral health                                     | 2.1   | 0                          | 14.3                     |
| 129    | Evaluation of community oral health program                          | 2.1   | 0                          | 14.3                     |
| 130    | Public oral health program using vehicles with dental unit-chair     | 2.1   | 0                          | 14.3                     |
| 131    | Customized oral health program with visiting                         | 2.1   | 0                          | 14.3                     |
| 132    | School tooth-brushing program                                        | 2.1   | 0                          | 14.3                     |
| 133    | Public oral health program connected with other health programs      | 2.1   | 0                          | 14.3                     |
| 134    | Public oral disease prevention program                               | 2.1   | 0                          | 14.3                     |
| 135    | Other medical treatment program                                      | 2.1   | 0                          | 14.3                     |
| 136    | Other administrative civil affairs                                   | 2.1   | 0                          | 14.3                     |

TMD: temporomandibular joint dysfunction, SP: stainless steel primary.

as planning, execution, managing, and evaluation oral health programs in the community. Of the 67 tasks performed by dental hygienists in public health centers, 33 tasks were not performed by clinical dental hygienists.

Discussion

Clarifying the tasks of dental hygienists ensured that these tasks are efficiently performed, and a high-quality dental medical service is provided by accurately indicating
Dental hygienists not only assist with implant surgery, but also perform tasks before and after implant surgery and prosthetics such as removal of implant prosthetic screws, dressing after removal of healing abatement, and removal of sutures. Therefore, it is necessary to recognize the tasks that reflect this situation. In orthodontic treatment, wire removal was included in the tasks of a dental hygienist in the revised Medical Engineers Act, but the interpretations of other tasks remain unclear. Under the guidance of a dentist, dental hygienists are allowed to remove orthodontic brackets, orthodontic elastic application, and separating. Therefore, other orthodontic treatment items, except for bracket mounting, which greatly influence the results of orthodontic treatment, need to be recognized as part of the dental hygienist’s tasks. The application of anesthesia is recognized as the task of a nursing assistant in the general medical field, whereas the application of anesthesia is not recognized as the task of a dental hygienist in the dental field. The administration of anesthesia should also be recognized as a dental hygienist’s task, considering the difficulty and risk of the task. With the rapid development of medical technology, the number of equipment used in dentistry is expanding. Various radiological diagnostic imaging devices and equipment, such as laser and ultrasound, are widely used in dental hospitals and clinics. Dental hygienists are responsible for handling and maintaining these equipments. The tasks of dental hygienists in providing dental medical services are not fixed and constant. Hence, it is necessary to expand the dental hygienists’ scope of responsibilities based on the current dental care environment.

The future-oriented tasks of dental hygienists include reading radiographs, prescribing medicines and supplies, examining patients for oral cancer, and managing eating and swallowing disorders. Since radiography is essential in dental hygiene assessment and is used as a tool for imparting oral health education to patients, it can be included as a legal work of dental hygienists under the guidance of a dentist. Prescribing appropriate drugs or supplies for each patient during oral health management should be included in the task of a dental hygienist to provide quality dental services and to improve the oral health of the public.
health of visiting patients. In addition, as the oral cancer test kit is continuously developed, it is simpler and easier to use. Dental hygienists can identify oral cancer by conducting an examination during the period of oral health management, hence, the oral cancer test should be part of the task of a dental hygienist.

The difference between the legal duties of dental hygienists prescribed in the current Medical Engineers Act and in the Enforcement Decree and the actual work performed by dental hygienists is that a dental hygienist is an unlicensed medical practitioner and infringes on the public’s right to receive a safe oral health care. Therefore, most of the tasks performed by dental hygienists are dental medical practices and should be performed in accordance with the relevant laws and enforcement decrees in order to protect the public health rights to quality and safe oral health care.

Dental hygienists must be oral health care professionals who perform dental hygiene practices with independence, self-determination, and autonomy. Therefore, it is necessary to revise the law according to the frequency, difficulty, importance, and urgency of performing the tasks of a dental hygienist to maintain a high level of professionalism. This does not mean simply expanding the task of a job. Revising the law will improve the efficiency of dental treatment, provide high-quality oral treatment, and enable the public to receive legally safe oral treatment from dental hygienists. Therefore, it is necessary to expand the area and to determine the scope of responsibilities of dental hygienists for the promotion of public oral health.

Notes

Conflict of interest
No potential conflict of interest relevant to this article was reported.

Ethical approval
This study is a review-based study and does not require an IRB review.

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