

# 關於日本・台灣齒科醫療相關領域的業務及相互合作之研究：問卷式調查比較研究

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## 摘要

本研究以日本・台灣齒科醫療教育體系的牙醫系學生為對象，調查齒科醫療領域的業務範圍及認識程度來進行資料分析，並確認各醫療領域之專業性，更以相互合作、完善制度及提供更好的醫療技術為目的，來進行分配齒科的醫療業務。調查對象為日本・台灣的牙醫系最高年級之學生。調查題目為關於牙科相關工作者的工作，牙醫系的學生對於①牙科醫師②口腔衛生師③牙科助手④牙技工師的認識度、業務內容、是否需要國家證照來進行調查。比較了日本與台灣對口腔衛生師的認識度以及是否需考取國家證照來進行調查。對於口腔衛生師的認識度，日本與台灣約有8成的學生回答認識，差異差距有意義。另外，對於接受國家考試的必要性，日本與台灣也有八成的學生回答需要，差異差距有意義。日本與台灣的齒科醫療教育體系的牙醫系學生，對於屬於不同領域範圍的口腔衛生師的認識度以及考取國家證照的必要性，約有八成的學生為相同的回答。由此可知，認識口腔衛生師及考取國家證照有其存在的必要性。

關鍵詞：醫療團隊、齒科醫療領域的相關業務及認識度、國家資格制度

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受文日期：民國103年4月15日

接受刊載：民國103年12月26日

# Duties and Cooperation of the Dentist and Dental Professionals in Japan and Taiwan : A Questionnaire-based Comparative Study

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## Abstract

The present study was conducted to obtain and analyze data on the scope of the duties and awareness of dental practice-related occupations from students at schools of dentistry as educational organizations for dental practice in Japan and Taiwan, so as to help them realize the expertise of each occupation, share dental practice duties, and provide better team care in a cooperative and supplementary manner. The study population comprised students in their final year at schools of dentistry in Japan and Taiwan. The questions concerned awareness, specific duties, and the necessity for the national qualifications of various dental occupations: 1) the dentist, 2) the dental hygienist, 3) the dental assistant, and 4) the dental technician. Japan and Taiwan were compared in terms of awareness of the duties of a dental hygienist and the necessity for national qualifications. Regarding the awareness of the dental hygienist, approximately 80% of the respondents answered "Yes, I know" in both Japan (96.6%) and Taiwan (79.6%), but there was a significant difference between the two countries. As for the necessity of national qualifications, over 80% of students checked the answer "necessary" in both Japan (94.4%) and Taiwan (80.8%), but there was a significant difference between the two countries. Regarding awareness of the duties of a dental hygienist which are out of the scope of the duties of the dentist, among students at schools of dentistry as educational organizations for dental practice in Japan and Taiwan, approximately 80% of respondents answered that they are aware of such duties (Japan 96.6%; Taiwan 79.6%). With regard to the necessity for national qualifications for dental hygienists, over 80% of respondents believe that implementation of a national qualification system is necessary (Japan 94.4%; Taiwan 80.8%).

Keywords : Team-based medicine 、 Acknowledgment 、 level of 、 occupation 、 National 、 qualification

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Submitted : April, 15, 2014

Accepted : December, 26, 2014

## Introduction

Currently, at the beginning of the 21st century, Japan and Taiwan are facing many common issues regarding medicine and welfare<sup>(1,2)</sup>. The average life expectancy in Japan is 79.64 years for males and 86.39 years for females as of 2010, and in Taiwan it is 76.13 years for males and 82.55 years for females as of 2010<sup>(3,4)</sup>. In Japan, it is expected that one out of four people will be elderly ( $\geq 65$  years) in 2015, with one out of three in 2035<sup>(5)</sup>. According to a statistical report by Taiwan's Council for Economic Planning and Development, in the next fourteen years, Taiwan is expected to see its general population super-aging with one out of five people being elderly<sup>(2)</sup>.

In these trends toward a super-aging society, medical and welfare needs are growing. Accordingly, the duties of health care professionals are increasing in amount, due to a lack of medical and / or welfare workers and their aging; greater workloads in health care settings due to increased technical demands and complexity in medical and welfare services; increases in the amount of information; increases in the amount of management work and the volume of documentation ; and increased demands for attentive explanations for informed consent concerning the protection of patient rights and the provision of information. Additionally, specific duties are becoming more and more complex and increasingly sophisticated. Thus, what shape medical care should take is a frequently asked question; "team-based medicine" is a keyword for changing what medical care should be. The term "team-based medicine" is defined as a form of medical care in which staff members engage in a broad range of medical care, share objectives and information on the basis of their

high expertise, and in which they cooperate and help each other while taking separate charges of duties, so as to provide medical care simply meeting the conditions and statuses of individual patients<sup>(1)</sup>.

Team-based medicine can also be viewed as a form of medical care in which members possessing different pieces of knowledge and information work to find the optimum practice, while freely exchanging information based on their knowledge<sup>(6)</sup>.

Generally, dental practice relies on the cooperation of the dentist, dental hygienist, and dental technician making the best use of their expertise. Regarding the legislative statuses of relevant qualifications in Japan, Article 1 in Chapter 1 of Japan's Dental Practitioners Act says, "The dentist shall endeavor to govern dental practice and health guidance to help improve and enhance public health, thereby ensuring healthy living for the people." Concerning the qualifications of the dental hygienist, Article 1 of Japan's Dental Hygienists Act says, "The purpose is to prevent dental diseases and improve oral hygiene." As for the qualifications of the dental technician, Article 1 of Japan's Dental Technicians Act says, "The purpose is to contribute to the spread and improvement of dental practice."<sup>(7)</sup>

Over the past few years, the movement toward legislating the qualifications for dental technicians has become active, beginning in Korea and Taiwan, followed by New Zealand, Australia, the Philippines, Malaysia, and other countries<sup>(8)</sup>. In Taiwan, a national qualification system for dental technicians has been launched, but no national qualification system is available for dental hygienists. Generally, it is conjectured that workers engaged in dental practice in different countries with their own systems may have variable

degrees of understanding and awareness of the duties of other occupations to work as a team.

Against this background, the present study was conducted to obtain and analyze data on the scope of the duties and awareness of dental practice-related occupations from students at schools of dentistry as educational organizations for dental practice in Japan and Taiwan, so as to help them realize the expertise of each occupation, share dental practice duties, and provide better team care in a cooperative and supplementary manner.

## SUBJECTS AND METHODS

### 1) Subjects

The study population comprised students in their final year at schools of dentistry in Japan and Taiwan. Among the Japanese subjects (academic year 2012), 136 were students at Aichi Gakuin University, 128 students at Nihon University at Matsudo (both private universities), 66 students at Okayama University, and 47 students at the University of Tokushima (both national universities). Among the Taiwanese subjects (academic year 2011), 60 were students at Chung Shan Medical University, 28 students at Kaohsiung Medical University, 8 students at China Medical University, 3 students at Taipei Medical University (all private universities), 33 students at National Taiwan University, 21 students at National Yang-Ming University, and 14 students at National Defense University. A total of 377 students in their final year at schools of dentistry in Japan and 167 students in their final year at schools of dentistry in Taiwan participated in the study.

### 2) Methods

Questionnaire-based surveys were conducted on students from schools of dentistry while they were in class between December 2011 and July 2012. Questions were asked in Japanese for Japanese students and in Chinese for Taiwanese students. As shown in Table 1, the questions concerned awareness, specific duties, and the necessity for the national qualifications of various dental occupations : 1) the dentist, 2) the dental hygienist, 3) the dental assistant, and 4) the dental technician. Each student filled out a questionnaire sheet anonymously, marking all answers that applied. After completing, the sheet was returned. The form recovery rate was 100% for both countries.

### 3) Data analyses

Responses to each question on the questionnaire sheet were analyzed separately for schools of dentistry in Japan and those in Taiwan. Data was analyzed using Microsoft Excel 2003 and was tested for significant differences using the  $\chi^2$  test.

## RESULTS

### 1) Form recovery rate

Questionnaire forms were recovered from 100% of the subjects for each country.

### 2) Study population breakdown

The study population breakdown by gender was 44.8% female and male 54.9% [Non-responding] 0.3% for Japan University, and 43.1% female and male 52.7% [Non-responding] 4.2% for Taiwan University.

An analysis of data from Question 1: Please choose the dentist's work? is given in Table 1. For Japan University the ranking was

(1) 'Setting of prosthetic appliance' 70.03%, (2) 'Repair of denture' 62.86% (3) 'Dental anesthesia' 58.62%. (4) 'Precise impression taking' 58.09% (5) 'Design of denture' 51.72%. For Taiwan University, the ranking was

(1) 'Repair of denture' 77.84%, (2) 'Root plaining 72.46%' and 'Design of denture' 72.46% (3) 'Dental anesthesia' 68.86% (4) 'Making of prosthetic appliance' 31.74%.

Table 1 Please choose the dentist's work.

	Japan University	Taiwan University	Chi-square test
Tooth brushing instruction	23.08	2.4	P<0.001
Disinfection sterilization	2.4	1.2	NS
Setting of prosthetic appliance	70.03	43.11	P<0.001
Diet counseling	6.63	1.8	P<0.05
Shade taking	20.42	22.75	NS
Scaling	18.3	29.34	P<0.01
Dental anesthesia	58.62	68.86	P<0.05
Articulator device of model	3.98	9.58	P<0.01
Apparatus preparation	3.45	1.2	NS
Making of prosthetic appliance	20.42	31.74	P<0.01
Root plaining	41.64	72.46	P<0.001
Mixing cement	2.39	0.6	NS
Repair of denture	62.86	77.84	P<0.001
X-rays taking	36.34	2.4	P<0.001
Topical fluoride application	11.67	3.59	P<0.01
Reception work	2.39	0.6	NS
Precise impression taking	58.09	23.35	NS
Making of orthodontic appliance	31.3	23.35	NS
<b>Vacuum operation</b>	2.39	2.4	NS
<b>Design of denture</b>	51.72	72.46	P<0.001

### Percent (%)

An analysis of data from Question 2: Please choose the dental hygienist's work? is given in Table 2. For Japan University the ranking was (1) 'Tooth brushing instruction' 93.37%, (2) 'Vacuum operation' 74.8% (3) 'Scaling' 67.11%. (4) 'Mixing cement' 57.03

% (5) 'Apparatus preparation' 50.66%. For Taiwan University, the ranking was (1) 'Tooth brushing instruction' 94.01%, (2) 'Diet counseling 82.04%' (3) 'Topical fluoride application' 55.09% (4) 'Apparatus preparation' 46.11% (5) 'Disinfection sterilization' 44.91%.

**Table 2 Please choose the dental hygienist's work.**

	Japan University	Taiwan University	Chi-square test
Tooth brushing instruction	93.37	94.01	NS
Disinfection sterilization	27.06	44.91	P<0.001
Setting of prosthetic appliance	1.33	1.2	NS
Diet counseling	42.18	82.04	P<0.001
Shade taking	2.92	5.39	NS
Scaling	67.11	36.53	P<0.001
Dental anesthesia	0.53	1.8	NS
Articulator device of model	0.53	6.59	P<0.001
Apparatus preparation	50.66	46.11	NS
Making of prosthetic appliance	0.53	1.2	NS
Root plaining	12.47	5.99	P<0.05
Mixing cement	57.03	32.34	P<0.001
Repair of denture	1.06	1.2	NS
X-rays taking	1.86	29.34	P<0.001
Topical fluoride application	45.36	55.09	P<0.05
Reception work	14.85	29.34	P<0.001
Precise impression taking	4.51	29.34	NS
Making of orthodontic appliance	0.27	2.99	P<0.01
<b>Vacuum operation</b>	74.8	29.34	P<0.001
<b>Design of denture</b>	0.0	0.6	NS

**Percent (%)**

An analysis of data from Question 3: Please choose the dental assistant's work? is given in Table 3. For Japan University the ranking was (1) 'Reception work' 73.74%, (2) 'Apparatus preparation' 89.39% (3) 'Vacuum operation' 75.6% (4) 'Disinfection sterilization' 73.74% (5) 'Mixing cement' 59.68% . For

Taiwan University, the ranking was (1) 'Reception work' 85.03%, (2) 'Apparatus preparation' 83.83%, (3) 'Disinfection sterilization' 64.07% (4) 'Vacuum operation' 59.88% (5) 'Tooth brushing instruction' 46.11%.

**Table 3 Please choose the dental assistant's work.**

	Japan University	Taiwan University	Chi-square test
Tooth brushing instruction	30.24	46.11	P<0.001
Disinfection sterilization	73.74	64.07	P<0.05
Setting of prosthetic appliance	1.59	1.2	NS
Diet counseling	28.65	27.54	NS
Shade taking	4.77	1.8	NS
Scaling	5.04	1.2	P<0.05
Dental anesthesia	0.53	1.8	NS
Articulator device of model	2.92	7.78	P<0.05
Apparatus preparation	89.39	83.83	NS
Making of prosthetic appliance	0.27	1.2	NS
Root plaining	0.53	0.6	NS
Mixing cement	59.68	56.29	NS
Repair of denture	2.39	0.6	NS
X-rays taking	2.12	30.54	P<0.001
Topical fluoride application	4.51	11.98	P<0.01
Reception work	90.45	85.03	NS
Precise impression taking	1.33	3.59	NS
Making of orthodontic appliance	1.06	0.6	NS
<b>Vacuum operation</b>	75.6	59.88	P<0.01
<b>Design of denture</b>	0.53	1.2	NS

**Percent (%)**

An analysis of data from Question 4: Please choose the dental technician's work? is given in Table 4 For Japan University the ranking was (1) 'Making of prosthetic appliance' 95.76%, (2) 'Articulator device of model' 93.1% (3) 'Making of orthodontic appliance' 81.7% (4) 'Repair of denture' 64.46

% (5) 'Design of denture' 59.68% . For Taiwan University, the ranking was (1) 'Articulator device of model' 85.03%, (2) 'Making of prosthetic appliance' 80.24%, (3) 'Making of orthodontic appliance' 59.28% , (4) 'Shade taking' 58.68%, (5) 'Design of denture' 59.68%.

**Table 4 Please choose the dental technician's work.**

	Japan University	Taiwan University	Chi-square test
Tooth brushing instruction	1.59	2.4	NS
Disinfection sterilization	5.04	1.8	NS
Setting of prosthetic appliance	5.04	14.37	P<0.001
Diet counseling	0.53	3.59	P<0.01
Shade taking	43.77	58.68	P<0.01
Scaling	0.53	1.8	NS
Dental anesthesia	0.27	1.2	NS
Articulator device of model	93.1	85.03	P<0.01
Apparatus preparation	3.98	8.98	P<0.05
Making of prosthetic appliance	95.76	80.24	P<0.001
Root planing	0.8	1.8	NS
Mixing cement	1.86	8.98	P<0.001
Repair of denture	64.46	33.53	P<0.001
X-rays taking	1.33	2.99	NS
Topical fluoride application	0	0.6	NS
Reception work	5.04	2.99	NS
Precise impression taking	3.71	28.74	P<0.001
Making of orthodontic appliance	81.7	59.74	P<0.001
<b>Vacuum operation</b>	1.86	7.19	P<0.01
<b>Design of denture</b>	59.68	39.52	P<0.001

Percent (%)

An analysis of data from Question 5 : Do you think that a national qualification is necessary for the dentist? For Japan University was Y'es' 98.41% 'No' 1.06%' No sure' 0.27 %'No answer' 0.27%. For Taiwan University was 'Yes' 97.01%, 'No' 0 %, 'Not sure' 0.6%' No answer' 2.4% .

An analysis of data from Question 6 : Do you think that a national qualification is necessary for the dental hygienist? For Japan University was 'Yes' 94.43%'No' 4.51% 'No sure' 0.8%'No answer' 0.27%. For Taiwan University, was 'Yes' 88.84%, 'No' 8.38 %, 'Not sure' 8.38%'No answer' 2.4% .

An analysis of data from Question 7 : Do you think that a national qualification is necessary for the dental assistant? For Japan University was 'Yes' 14.06%'No' 72.68% 'No sure' 12.73%'No answer' 0.53%. For Taiwan University, was 'Yes' 21.56%, 'No' 65.87%, 'Not sure' 10.18%'No answer' 2.4% .

An analysis of data from Question 8 : Do you think that a national qualification is necessary for the dental technician? For Japan University, was 'Yes' 92.04%'No' 4.77% 'No sure' 2.92% 'No answer' 0.27%. For Taiwan University, was 'Yes' 91.02%, 'No' 3.59%, 'Not sure' 2.99%'No answer' 2.4% .

## DISCUSSION

### 1) Comparison of the specific duties of the dentist, dental hygienist, dental assistant, and dental technician in Japan and Taiwan

By analyzing the responses to questions 1 (Table 1), 2 (Table 2), 3 (Table 3), and 4 (Table 4), the specific duties of the dentist, dental hygienist, dental assistant, and dental technician in Japan and Taiwan were compared and characterized.

With regard to the specific duties of the dentist, a higher percentage of respondents checked "root planing" in Taiwan than in Japan ; the difference was statistically significant. Also, a lower percentage of Taiwanese respondents checked "scaling" and "radiography" ; the differences were statistically significant. In Taiwan, root planing for the treatment of periodontal diseases is considered to be mainly a duty of the dentist, who, however, is not so much engaged in scaling as a preventive measure. Radiography was considered to be a duty of the dentist in Japan, but not in Taiwan<sup>(9)</sup>.

With regard to the specific duties of the dental hygienist, higher percentages of respondents checked "nutrition guidance," "disinfection and sterilization," "patient reception work," and "radiography" in Taiwan than in Japan; the differences were statistically significant. In Japan, higher percentages of respondents checked "vacuum operation," "scaling," and "cement kneading" than in Taiwan ; the differences were statistically significant. These findings seemed to reflect the different situations in the two countries: the major specific duties of the dental hygienist in Taiwan are dental practice assistance and health care guidance, which do not take place by the dental chair, whereas the major specific duties of the dental hygienist in Japan are

dental practice assistive work and preventive measures, which take place by the dental chair. The dental hygienist in Taiwan was thought to be not so much engaged in preventive measures to be taken regarding the patient's oral cavity.

With regard to the specific duties of the dental assistant, a higher percentage of respondents checked "radiography" in Taiwan than in Japan ; the difference was statistically significant. In Taiwan, radiography is thought to be undertaken mainly by the dental assistant.

With regard to the specific duties of the dental technician, higher percentages of respondents checked "shade taking" and "precise impression taking" in Taiwan than in Japan ; the differences were statistically significant. In Japan, a higher percentage of respondents checked "denture repair" than in Taiwan ; the difference was statistically significant. The dental technician in Taiwan is thought to mainly carry out dental practice assistive work by the dental chair, whereas the dental technician in Japan is not so much engaged in dental practice assistive work by the dental chair<sup>(10)</sup>.

Comparing the responses to the questions concerning the specific duties of the dentist, dental hygienist, dental assistant, and dental technician in Japan and Taiwan, many differences were found in their awareness of the specific duties of the dental hygienist. Discussing this finding from the viewpoint of three of the duties of the dental hygienist—dental prophylaxis, dental health guidance, and dental practice assistance—the dental hygienist in Taiwan is thought to be less engaged in the duty of taking preventive measures than in Japan, placing more weight on dental practice assistive work. An explanation for the lower weight on scaling as a preventive measure among the duties of the dentist in Taiwan, is that Taiwanese dentists

seemed to be more engaged in the treatment of dental caries and periodontal diseases, and less engaged in the prevention of dental caries and periodontal diseases.

## 2) Comparison of educational curricula for the dental hygienist in Japan and Taiwan

The dental hygienist training schools in Japan provide a three-year educational program, whereas those in Taiwan provide a four-year educational program. The educational curricula for the dental hygienist were compared between Japan and Taiwan<sup>(13,14)</sup> (Table 5).

The specific curricula in Japan and Taiwan were found to have respective distinct features. In Japan, students are involved in longer periods of practical exercises on three of the duties of dental prophylaxis, dental health guidance, and dental practice assistance, which take place by the dental chair; many hours are taken to provide education for acquiring clinical technical skills. In contrast, in Taiwan, many hours are taken to provide education for learning about the management and operation of dental clinics as well as the operation of medical insurance, along with acquiring expert knowledge of dentistry.

In Japan, the duties of the dentist, dental hygienist, and dental technician are facing a major qualitative turning point amid dramatic social and environmental changes such as the progression of the aging population, disease proportion changes, and dental technical advances<sup>(5)</sup>. As of 2000, the elderly population ratios in Taiwan and Japan were 8.6% and 17.3%, respectively. Although Taiwan's issue of care for the elderly does not seem to be as serious as in Japan, the progress of population aging in Taiwan is similar to that in Japan, and the speed of aging hardly differs between the two countries<sup>(10)</sup>. The dental hygienist is required to play roles in helping all people to

maintain their dental and oral functions comfortably at various life stages (i.e., infancy, school years, adulthood, and senior years), and be a provider of oral health care which links "eating" with "life." The roles of the dentist and dental hygienist in providing "expert oral care" for elderly persons in need of long-term care are considered to be important, and include care such as the removal of adherences to the teeth, tongue, mucosa, dentures, and the like using mechanical and chemical procedures, brushing by the dentist or dental hygienist, and scaling, along with functional care such as the provision of dietary assistance and guidance (training) according to impaired function<sup>(2,11,12)</sup>.

## Curriculum Comparison Dental hygiene Subjects (Table5)

●Aichi-gakuin University △Taipei Medical University □Kaohsiung Medical University

Curriculum Comparison Dental hygiene Subjects ●AGU △TMU □KMU				
Subjects	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	4 <sup>rd</sup> Year
Anatomy	② □1	△2		
Pharmacology	②	△1□2		
Physiology	②△2□2			
Microbiology	②	△2□2		
Pathology	②	△2	□2	
Dental Morphology	② □2	△2		
Psychology	③△2□2			
Community Dentistry		② □2		△2
Chemistry	②△2□4	□2		
Biology	②△3□2			
Biochemistry	③	□2		
Dental Public Health	①△2□2	② □2	①	□2
Religion	①			
English conversation	①△1□6	③ □1		
Carioiogy / Endodontics	②		□1	
Gerodontology		①		
Oral Health care for the Handicapped		①	□2	△4
Oral Prosthetics		①	△2□1	
Orthodontics		①	△2	
Periodontology		①	△2□2	
Pedodontics		①	△2□1	
Radiology		①△1□1		
Oral Surgery		①	△2□1	
Dental materials	①	△2□1		
Dental Assistance	⑤	④	□2	
Clinical Theory and ethics	①		□3	
Legal and ethical of oral medicine		□2	△2	
Management in Dental Clinic				△2
Introduction to health insurance		△2□2		
Biostatistics		②△2□2		
Research methods in oral hygiene		△2□2		
Antisepsis & infection control in Dentistry			△2	
Nutrition and Diet	③	△2□2		
Dental Health Education Preventive Dentistry Oral Prophylaxis	⑧△1□2	⑤□4	△2□2	
Practical Training University Hospital Dental Clinic		⑪	⑫	△15□20
Graduation study			②	

\*Credit of subject is the number in table

### 3) Comparison of awareness of the duties of a dental hygienist and the necessity for national qualifications in Japan and Taiwan

Based on the responses to questions 6 Japan and Taiwan were compared in terms of awareness of the duties of a dental hygienist and the necessity for national qualifications. Regarding the awareness of the dental hygienist, approximately 80% of the respondents answered “Yes, I know” in both Japan (96.6%) and Taiwan (79.6%), but there was a significant difference between the two countries. As for the necessity of national qualifications, over 80% of students checked the answer “necessary” in both Japan (94.4%) and Taiwan (80.8%), but there was a significant difference between the two countries.

Generally, dental practice relies on the cooperation of the dentist, dental hygienist, and dental technician making the best use of their expertise. Traditionally, dental practice focuses on outpatient treatment at dental clinics, and there is a lack of cooperation with hospitals, care facilities, and other medical institutions with regard the condition of the patient and the characteristics of dental treatment. Currently, in the presence of the increased populations of diseased persons and elderly persons in need of long-term care, dental practitioners are required to share information with professionals in other occupations regarding how to achieve functional cooperation with other medical institutions and facilities and how to add functions that are otherwise unavailable at their own office to improve their dental care services<sup>(11)</sup>. Basically, there are five keys to successful team-based dental care: a) all members are equal, b) the team cannot exist without the wisdom, cooperation, and trust of its members, c) all opinions should be respected, d) work is always reviewed to

find a better way, and decisions are made by discussion, and e) members appreciate the roles of other members and earn mutual trust<sup>(5)</sup>.

Future dental practitioners and care providers will be required not only to have the expertise of professionals, but also to work as a team in cooperation with those in other occupations. It is important that professionals in a variety of fields work cooperatively with professionals in other occupations and create “patient - oriented teamwork.” Rather than striving to take the leadership role as experts, practitioners and care providers, they should realize the fact that they have a duty to create a harmonious patient-oriented care team. It will be necessary to shift the focus of dental practice and care from personal care provision to team-based practice and care<sup>(5)</sup>.

Regarding awareness of the duties of a dental hygienist which are out of the scope of the duties of the dentist, among students at schools of dentistry as educational organizations for dental practice in Japan and Taiwan, approximately 80% of respondents answered that they are aware of such duties (Japan 96.6% ; Taiwan 79.6%). With regard to the necessity for national qualifications for dental hygienists, over 80% of respondents believe that implementation of a national qualification system is necessary ( Japan 94.4% ; Taiwan 80.8%). As for the degree of understanding of the duties of various dental occupations, comparisons of the responses to the questions about the specific duties of the dentist, dental hygienist, dental assistant, and dental technician in Japan and Taiwan revealed many differences in the specific duties of the dental hygienist. These differences were attributed to the fact that, in Taiwan, the duties of the dental hygienist focus on the treatment of various dental diseases, however, there is an inadequate

implementation of measures to prevent the onset of disease with an emphasis on “primary prevention” measures such as early detection by health checkups, health promotion, and the extension of healthy life expectancy.

Moreover, what is prevention? Not only prevent the disease occurrence but also as ‘Secondary prevention’ measures to obstruction of progress, relapse, and functional lesion of disease. ‘Third-order prevention’ measures to functional restoration<sup>(15)</sup>.

### CONCLUSIONS

In both Japan and Taiwan, the accelerated aging population is expected to lead to excessive social burdens, including disease treatment and elderly care. For this reason, it is concluded that the dental hygienist will be able to provide better dental care by understanding well the specific duties and expertise necessary of a dental hygienist, and by thinking about team-based dental care with the appropriate allocation of dental practice duties and mutual cooperation.

### 謝辭

在這完稿的時刻，特別感謝日本方面的日本大學松戶牙醫系的那須郁夫教授、德島大學的日野出大輔教授、岡山大學的森田學教授、愛知學院大學的加藤一夫副教授及中垣晴男教授、愛知學院大學短期大學部的佐藤厚子副教授、犬飼順子副教授及向井正視教授；台灣方面的台灣大學林俊彬教授、國防大學江正揚教授、陽明

大學高壽延教授、中山醫藥大學周明勇教授、中國醫藥大學林子賢教授、高雄醫學大學李惠娥教授、台灣口腔衛生學會張進順理事長、高雄醫學大學丁群展助理教授的鼎力協助。

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