

〔MINI REVIEW〕

A brief introduction of dental education in mainland China

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Abstract

China is one of the most populous countries in the world, with a population exceeding 1.3 billion. An understanding of its current dental education status is therefore of interest. This paper shares some of the basic information of dental education in mainland China, including the entrance examination, financial source, admission requirements, tuition fees, curriculum, and dental license system. A five-year undergraduate education leads to the Bachelor of Dental Surgery (BDS) degree. The dental school students in China must then pass the nationwide licensure examination before they could practice dentistry. The disparities of geographical distribution of dentists remain a major concern. Moreover, the overall number of dentists is not sufficient to

cover such a huge population from the perspective of a standard dentist to population ratio set by Fédération Dentaire Internationale (FDI). Majority of the Chinese people suffered from a number of dental diseases such as caries, periodontal diseases to different extent, however, some of them rarely seek professional dental care due to the traditional concept that dental diseases are not life-threatening. Therefore, the dentists in China are facing the daunting task of improving people's oral health care awareness and promoting the oral health care knowledge, nevertheless, the comparatively underdeveloped Chinese dental market are poised for growth and leaves open unlimited possibilities for Chinese dentists as well as dental companies in the near future.

Key words : Mainland China, Dental education, Curriculum, Dental license

1 : Introduction

Previously, three national scale oral health surveys of mainland China were conducted in 1982, 1995, 2005 respectively ; the fourth round of this investigation is about to initiate in the beginning of 2015 with completion of the data analysis around 2016. According to the latest investigation in 2005, the prevalence of caries in Chinese population (35 yrs-44 yrs) was 88.1% (Qi XQ, 2008) ; later, Zhang and colleagues reported the occurrence rate (18 yrs- 44 yrs, 45 yrs- 64 yrs, over 65 yrs) of calculus, and shallow periodontal pocket to be 62%, 24% (Zhang Q et al., 2014), indicating an overall lack of oral health care awareness among the public. Since attitude is a vital predictor for oral health care (Jürgensen N et al., 2011), those data suggested that the ma-

jority of the Chinese people still do not put a priority on the health maintenance of their teeth. Though the dental diseases, such as caries, are not always life-threatening, it is becoming increasingly clear that sound oral health is an integral part of the overall health of human body. Therefore, Chinese dentists are facing the arduous task of dental care knowledge dissemination and preventive dentistry practice (Zhu L et al., 2005). In 1989, the national Love-Teeth-Day (LTD) campaign was initiated by the Ministry of Health on every September 20 in an effort to enhance public awareness about oral health care and to further encourage the implementation of community-based oral health education (Zhu L et al., 2005).

With the advent of the landmark book "The Surgeon Dentist" by a French surgeon, Pierre Fauchard, back in 1723,

modern dentistry has experienced nearly three-hundred years of development and evolution. Later in 1840, the first dental school in the world was founded by Horace Hayden and Chapin Harris in Baltimore, namely, the Baltimore College of Dental Surgery. This dental school was merged with the University of Maryland in 1923. Since then, many dental schools have successively been established in other countries.

Today, the idea of internationalization is deeply rooted in this prosperous field, with hundreds of academic and clinical conferences being held every year, witnessing numerous dentists and dental researchers from different countries exchanging concepts and sharing achievements. Furthermore, knowledge of dental education required for licensure and secular trends in professional development in each country is helpful in promoting international communications, since the world is developing toward a highly interconnected one in terms of medical care. There are some studies addressing the issues in industrialized countries, particularly in Japan, and USA. However, less information is available on dental education system studies in mainland China. Here, we attempt to briefly review the history of Chinese dentistry and the current dental education system in mainland China, hoping to provide some basic information for readers.

2 : Dental school history in China

In the ancient Tang dynasty, a four-year program in the specialty of dentistry was established by the Imperial Medical Academy and marked the earliest formal institution of Chinese traditional dental education (Yang J et al., 2014). Before the founding of the People's Republic of China in 1949, there were few dental schools, most of which were private and run by foreign missionaries. In 1907, the first dental clinic was established in Chengdu by Dr. Ashely Woodward Lindsay (1884-1968), a medical missionary graduated from Royal College of Dental Surgeons, Canada (Wu ZY et al., 2010). Subsequently, the first modern dental school in China was founded based on this dental clinic and integrated with the West China Union University in 1917. This dental school is the predecessor of the current West China College of Stomatology, Sichuan University.

The second dental school in mainland China was the Aurora University Dental School in Shanghai, which goes back to 1932 and was established by French missionaries (Wu ZY et al., 2010). After decades of transformation, this

dental school has become the current College of Stomatology, Shanghai Jiao Tong University. Nowadays, the two dental schools, in combination with another three (School of Stomatology in Peking University, the Fourth Military Medical University, and Wuhan University), represent the five most famous dental schools in mainland China.

3 : Current status of number and distribution of dentists

The number of dentists in mainland China has increased rapidly along with the increased number of dental schools since the early 1990s. According to FDI data in 1990, the number of dentists was 11,044. The ratio of dentists to the total population was about 1 : 100,000 ; currently, there are over 119,000 dentists in mainland China, yielding an average ratio of 8.5 dentists for 100,000 people, according to a recent report from Xinhua news agency in 2012. The ratio of that in Japan was 69.7 (dentists) : 100,000 (population) in 2000 (Okawa Y et al. 2011). In case of the number of dentists, there is still a long way to go to achieve the standard set by FDI, which proposes the ideal dentist to patient ratio to be at around 50 : 100,000. Further, the geographical distribution of dentists is quite uneven ; the actual dentist to population ratio ranges from 0.9 : 100,000 to 5.6 : 100,000, with 40%-50% of the dentists concentrating in wealthier regions (i). An investigation carried out by Gu and coworkers revealed that the dentist to population ratio was 19.2 : 100,000 in Shanghai (Gu Q et al., 2012), significantly exceeding the national level and ratio of many other cities. Migration of dentists to more affluent areas is now becoming a major concern, as it may lead to shortage of dentists in the rural areas. Meanwhile, the affordability of oral care for the less wealthy in large cities also poses a problem, especially when it comes to the treatments that are excluded from insurance coverage (for further information, refer to chapter 6).

4 : Dental education system in China

4.1 : Funding source of dental school

Generally speaking, the universities in China are classified into five types : 1) national (directly administered by Ministry of Education) universities ; 2) national (administered by other ministries) universities ; 3) national key universities (highly regarded and getting higher amounts of funding, see table caption for explanation of project 211 and project

985); 4) provincial universities (administered by provinces); 5) municipal universities (administered by municipalities); 6) private (privately owned and funded) universities. There are over 50 dental schools in mainland China (Table 1), all of which are publicly funded and belong to national universities, provincial universities or municipality universities. In contrast, the funding source of dental schools in Japan is diversified. In addition to one public dental school (Kyushu dental college) and 11 national dental schools, there are another 17 private dental schools (partially supported by government).

4.2 : Degree classification

Three types of degree are currently offered in dental schools :

1 : Bachelor of Dental Surgery (BDS) degree. This five-year BDS degree is similar to that of the six-year Doctor of Dental Surgery (DDS) degree in Japan.

2 : Master of Dental Surgery (MDS) degree. BDS degree holders are qualified to apply for this two-year MDS degree program. Admission into this program is determined by the scores in the National Examination for Entrance into Post-Graduate School (held every January), which includes subjects of English, Politics, and Dental Sciences. The tests of

English and Politics are compulsory and designed by the Examination Center affiliated to Ministry of Education ; full points are 100 for each. The tests for dental sciences (full points are 300) are designed by the individual dental school, incorporating anatomy, histology, pathology, materials science, endodontology, periodontology, prosthodontics and orthodontics. The total score for this three parts test is 500 ; usually the minimum score for admission is set at around 340~ (60~ for Politics, 55~ for English, 180~ for Dental Sciences). Those who pass the exam should prepare for the interview held by each dental school ; the final decision is given based on his/her exam scores and performance in the interview.

3 : Doctor of Philosophy (PhD) degree. MDS degree holders are qualified to apply for this three-year PhD program. The examination (held every March or October/November for entrance into graduate school) is organized by each dental school instead of by the Ministry of Education. Subjects of tests consist of English and Dental Sciences.

It is worth noting that some dental schools offer the seven-year consecutive master program and eight-year consecutive PhD program, meaning no examination is required as above-mentioned. The admission process is the same as that of the

Table 1 : Distribution of dental schools in mainland China. *211 refers to the Project 211, which is the abbreviation of the 21st century and 100 (approximate number of participating universities), was initiated by Ministry of Education in 1995, with the purpose of improving the research level of Chinese universities (total 118) and cultivating strategies for socio-economic development. 985 is a project that was first declared by former president Zemin Jiang at the 100th anniversary of Peking University on May 4, 1998, with the intent to promote the development and academic reputation of Chinese universities (total 39) in the 21st century.

Municipalities	Universities/colleges with dental schools
Beijing	Capital Medical University ; Peking University (211/985*)
Shanghai	Shanghai Jiao Tong University (211/985) ; Tongji University (211/985)
Tianjin	Tianjin Medical University (211) ; Nankai University (211/985)
Chongqing	Chongqing Medical University ; Third Military Medical University of Chinese People's Liberation Army (PLA)
Autonomous regions	Universities/colleges with dental schools
Guangxi	Guangxi Medical University ; Guilin Medical College ; Guangxi University of Chinese Medicine
Xinjiang	Xinjiang Medical University ; Shihezi University
Ningxia	Ningxia Medical University
Inner Mongolia	Baotou Medical University
Tibet	None

Provinces	Universities/colleges with dental schools
Guangdong	Sun Yat-Sen University (211/985) ; Guangzhou Medical University ; Guangdong Medical College ; Jinan University(211) ; Southern Medical University
Hubei	Wuhan University(211/985) ; Huazhong University of Science and Technology (211/985) ; Hubei University of Medicine ; Xianning Medical College
Heilongjiang	Harbin Medical University ; Jiamusi University ; Mudanjiang Medical University ; Qiqihar Medical University
Anhui	Anhui Medical University ; Wannan Medical College ; Bengbu Medical College
Gansu	Lanzhou University (211/985) ; Northwest University for Nationalities
Guizhou	Guiyang Medical University ; Zunyi Medical University
Henan	Zhengzhou University (211) ; Xinxiang Medical University
Hebei	Hebei Medical University
Fujian	Fujian Medical University
Hainan	Hainan Medical University
Qinghai	Qinghai University
Provinces	Universities/colleges with dental schools
Shandong	Shandong University (211/985) ; Qingdao University ; Binzhou Medical College ; Jining Medical University ; Taishan Medical University ; Weifang Medical College
Liaoning	China Medical University ; Dalian Medical University ; Dalian University ; Liaoning Medical University ; Shengyang Medical University
Jiangsu	Nanjing University (211/985) ; Nanjing Medical University ; Nantong University ; Xuzhou Medical College
Hunan	Central South University (211/985) ; University of South China ; Changsha Medical University
Sichuan	Sichuan University (211/985) ; Luzhou Medical College ; North Sichuan Medical University
Shaanxi	Fourth Military Medical University of PLA (211) ; Xi'an Jiaotong University (211/985)
Zhejiang	Zhejiang University (211/985) ; Wenzhou Medical University
Shanxi	Shanxi Medical University ; Changzhi Medical College
Jiangxi	Nanchang University (211) ; Jinggangshan University
Jilin	Jilin University (211/985) ; Yanbian University (211)
Yunnan	Kunming Medical University

five-year BDS program. The students are enrolled upon their high school graduation ; the admission is based on their academic scores in the National College Entrance Examination (NCEE) (the admission scores are higher than that of BDS degree program), and run parallel with the recruiting of BDS students (For details, please see section 4.3 Admission Requirement.) ; after five years of study in schools, those students go directly for the next two or three years of research training without any need of extra examinations. However, there is a minimum requirement in the academic perform-

ance of each year, those who fail to achieve that standard are required to take the exams again, and if they fail again in the makeup exams, they drop out as a seven-year master or eight-year PhD candidates and are rearranged to the same grade five-year BDS class.

4.3 : Admission requirement

In Western countries such as the US and Canada, it is required that the applicants for dental schools should have a bachelor's degree with pre-dental courses from an accredited college. However, in Japan and China, dental school stu-

dents are recruited directly from senior high schools (Sun H et al., 2012). All dental schools in mainland China require applicants to take a NCEE which is held every June. The number of high school students who take part in the NCEE reached its peak in 2008 (10,050,000 students) (ii) and decreased annually thereafter : however, the number still remains high (about 9,000,000) as compared to that of the other countries including Japan. Although the absolute number is high, the student to population ratio is similar between China (0.69 % in 2014) (iii) and Japan (0.44 % in 2015) (iv). Each major area in each university usually sets a fixed admission quota for each province. The number of students recruited in a dental school per year is approximately 30-60 (Fu Y et al., 2006), which indicates that the quota of one dental school for each province is only one to two per year. In this regard, the entrance into a dental school is quite competitive.

The NCEE covers a broad range of subjects including mathematics, English, Chinese, physics, chemistry, biology and sociology (specifically, history, geography and politics).

Dental schools make admission decisions based predominantly on the results of exams. The minimal admission score varied among dental schools and depends on a number of factors, such as source of financial support (local or central government), the location (metropolitan, middle-sized cities, or small cities), types (dental school in medical college or comprehensive university), academic reputation at home and abroad, and the history.

4.4 : Tuition fee

The tuition fee is much cheaper in mainland China as compared to that of Japan. In Japan, the tuition fee of dental school varies and is higher than that of mainland China. In national and private dental schools, the tuition fee is 500,000 -600,000 JPY per year and 4,000,000-6,000,000 JPY per year respectively. In mainland China, the tuition of a 5-year dental school bachelor program is approximately 6,000 RMB (about 120,000 JPY by the current exchange rate) per year based on personal experience of the author in Tongji University (TJU) from 2004 to 2009. In Japan, the students are required to purchase the training instruments and text-

Table 2 : Curriculum of School of Stomatology in Tongji University (From 2004 to 2009). Dental courses are underlined and in bold. Medical courses are in *italic*. Note : Prefix S means this course is selective, which varies between students, and it is required that the student obtained a certain amount of credits of selective courses (13 credits for selective liberal arts courses ; 3 credits for selective medicine courses). Number in the parenthesis means the credit for each course ; dental courses percentage in each semester is given in parenthesis.

	The first semester (Sep-Jan)	The second semester (Mar-June)
The first academic year (Dental courses credits percentage in the first and second semester : 3% ; 0%)	English (4.0), Mathematics (3.0), Medical Physics (4.0), General Chemistry (5.0), <i>Cell Biology</i> (2.5), Fundamentals of Computer Science (2.5), Database Technology and Applications (2.5), <u>Introduction of Stomatology</u> (1.0), Sports (1.0), Military Theory (1.0), S-Exploration of College Students' Psychology (1.5), S-Religion and Culture (1.5)	English (4.0), Mathematics (3.0), Organic Chemistry (4.0), <i>Systematic Anatomy</i> (3.0), <i>Histology and Embryology</i> (3.0), Computer of Programming Language VB (2.5), Sports (1.0), Moral Philosophy (1.5), Military Training (2.0), S-Public Relationship (1.5), S-Bioethics (1.5)
The second academic year (Dental courses credits percentage in the first and second semester : 0% ; 0%)	Intermediate Oral English (3.0), <i>Biochemistry and Molecular Biology</i> (4.5), <i>Physiology</i> (3.0), Multimedia Technology and Applications (2.5), Health Service Management (1.5), <i>Experimental Physiology</i> (1.0), <i>Topology</i> (1.5), Sports (1.0), S-Introduction of Refrigerating Engineering (2.0), S-Appreciation of Chinese Traditional Music (1.5), S-Appreciation of Selected Works from TV/Movies (1.5)	English Audios, Videos and Speaking (3.0), <i>Pathology</i> (3.0), <i>Medical Immunology</i> (2.5), Fundamentals of Law (1.5), <i>Medical Social Service</i> (2.0), <i>Medical Microbiology</i> (2.5), <i>Medical Genetics</i> (2.0), Sports (1.0), Volunteer Service in Library (1.0), S-History of Western Culture (2.0)
The third academic year (Dental courses credits percentage in the first and second semester : 29.5% ; 51.0%)	<u>Oral Pathology</u> (2.0), <u>Oral Anatomy</u> (2.0), <u>Oral Histology and Embryology</u> (1.5), <u>Oral Physiology</u> (1.0), <i>Pathophysiology</i> (2.5), <i>Diagnostics</i> (3.0), <i>Pharmacology</i> (3.5), <i>Internal Medicine-1</i> (2.5), <i>Surgery-1</i> (2.5), <i>Image Diagnostics</i> (1.5)	<u>Endodontology (including Oral Medicine)</u> (3.0), <u>Prosthodontics-1</u> (3.0), <u>Oral and Maxillofacial Surgery-1</u> (2.5), <u>Dental Materials</u> (1.5), <u>Dentofacial Diagnostic Radiology</u> (1.5), <u>Occlusion</u> (1.0), <i>Medical Statistics</i> (1.5), <i>Internal Medicine-2</i> (2.5), <i>Medical Social Practice</i> (2.0), <i>Surgery-2</i> (2.5), <i>S-Ophthalmology</i> (1.5), Literature Retrieval (2.0)
The fourth academic year (Dental courses credits percentage in the first and second semester : 79.5% ; -)	<u>Prosthodontics-2</u> (3.5), <u>Periodontology</u> (3.0), <u>Oral and Maxillofacial Surgery-2</u> (3.0), <u>Preventive Dentistry</u> (1.5), <u>Orthodontics</u> (1.5), <u>Oral Biology</u> (1.5), <u>Pediatric Dentistry</u> (1.5), <u>Oral Implantology</u> (1.0), <u>Oral Clinical Pharmacology</u> (1.0), <i>Medical Psychology and Psychiatry</i> (3.0), <i>S-Pediatrics</i> (1.5),	Medical Clinical Internship in Shanghai Tenth People's Hospital affiliated to TJU (10.0)
The fifth academic year	Dental Clinical Internship (37.0)	Dental Clinical Internship (15.0) Graduation Examination (1.5)

books by themselves. In mainland China, the students also need to purchase the textbooks by themselves ; however, the equipment and instruments for pre-clinical training are all provided by the schools.

4.5 : Curriculum

The curriculum of dentistry is, in fact, a subspecialty of medicine (Table 2). As is shown in this table, in the first two years of dental schools, students studied many science subjects as well as selective liberal arts courses. At this stage, the dental school students attend classes with those from other schools ; this mode of training students is adopted by many dental schools in China, and is believed to offer a good opportunity for students from distinct background to communicate with each other and unconsciously enhance their awareness of interdisciplinary cooperation. In addition, it is evident in the table that a large number of medical courses are given in the first three years ; this is based on the fact that after the founding of People's Republic of China (PRC), since 1949, the dental educational system followed basically the former Soviet Union's pattern ; dental classes are given in the third and fourth years as is shown in table 2. For example, in the School of Stomatology, Peking University, the percentage of dental subjects in the curricula from the first to fourth year is 5.9%, 0%, 64.3%, 100% ; however, in Dental School of Tokyo Medical and Dental University, the percentage is 23.8%, 27.8%, 30.6%, and 81.3% respectively (Sun H et al., 2012). Dental subjects are allocated predominantly in the third and fourth year of the undergraduate education in mainland China.

In the first and second year, students study basic knowledge together with students from school of medicine. Those courses include basic sciences such as advanced mathematics, organic and inorganic chemistry, advanced physics, biological science, law, social science, English, sports, and computer science, etc., and basic medical sciences such as human anatomy, histo-embryology, physiology, pathology, biochemistry, pathophysiology, medical immunology, pharmacology, medical statistics, etc. Some general knowledge about dentistry is also taught--such as introduction of stomatology ; however, more professional courses of dental specialty are not taught until the third year.

In the third year, clinical medicine courses such as diagnostics, radiology, general surgery, internal medicine, pediatrics, otolaryngology, dermatology, ophthalmology, etc., and basic dental sciences (such as oral anatomy, oral physiology,

oral pathology, oral immunology, oral microbiology, dental materials, oral pharmacology) are incorporated into the curriculum.

Up until the fourth year, the students further engage in clinical dental science such as endodontics, periodontics, oral pathology, oral and maxillofacial surgery, prosthodontics, orthodontics, preventive dentistry, pediatric dentistry, oral radiology etc. In the fourth year, the students are introduced to preclinical training and start dental observation of treatment by senior dentists in a dental hospital.

The fifth year is the final year of undergraduate study ; the courses are focused on clinical training. Students participate in clinical internship and prepare for the graduation examination. The clinical internship is carried out by the form of rotation in different subspecialties (such as oral and maxillofacial surgery, endodontics, periodontics, oral pathology, and prosthodontics etc.). The duration for each subspecialty is approximately three months ; however, variation might exist in different dental schools. After training in each subspecialty, the students are tested by clinical and written exams, and then rotated to another.

All the dental students in mainland China use the same textbooks (Fig.1), which are organized by the Ministry of Public Health and published by People's Medical Publishing House with the purpose of ensuring consistency in undergraduate training.

4.6 : Training mode

Lecture-based teaching remains to be the mainstream in the first two years. In the third and fourth year, students acquire their clinical competency by observing and practicing on mannequins and patients during instructor-led pre-clinical and clinical sessions. With increasing need for international communication, the adoption of Case-Based-Learning (CBL) (Zhang SY et al., 2012), Problem-Based-learning (PBL) approach (Zhang Y et al., 2012 ; Huang B et al., 2013) and Objective Structured Clinical Examination (OSCE) have become a trend and part of current educational reform in the most well-known dental schools. Besides strategies such as multimedia education, simulated preclinical training, and community-based practice are gradually included in some dental schools. Those approaches have been employed with the purpose of training students to be more concerned with the needs of patients. Moreover, emphasis should also be paid to the recognition of oral manifestation of systemic disease, since with social development, people are exposed to

an increasing risk of HIV infection and other immune-deficiency diseases.

4.7 : After undergraduate graduation

Most of the undergraduates from dental schools choose to work in public comprehensive/dental hospitals ; there are approximately 300 dental specialty hospitals in the country. However, the major providers of dental service to the people are the thousands of state-run hospitals with dental departments. Thanks to the relaxed government regulations for private health care centers, small private clinics have sprung up in large numbers recently. Over 50,000 of those are estimated to be in operation to date (v). It needs to be pointed out that the government provides a marginal amount of financial support to the public hospitals, i.e. 5%-10% of the total cost (vi). Since 1992, the hospitals are granted autonomy and permitted to keep their surpluses generated from treating patients, meanwhile being responsible for their own debts and operating losses. Given the large population, the doctors are overloaded with daily patient treatments. Patients from all over the country flock to hospitals in cities such as Shanghai and Beijing for better health care service. Hence, improving the health care service of hospitals in middle-sized, small cities, as well as townships, and ensuring that all the people have equal access to comparable levels of health care are the pressing concerns faced by policymakers. One should recognize that the health care system reform is complex, and requires policy consistency, stability and government with credibility and strong implementation capacity (vii).

On the other hand, the rest pursue further postgraduate training or work under academic institutions. Currently, for those who intend to work in university affiliated dental hospitals in metropolitan areas such as Shanghai, it is preferred that one possesses a dental PhD degree due to a marked increase in the number of applicants. In mainland China, it takes three years for one to complete his/her Master's or PhD degree respectively. For the Master's degree, one can

choose the clinic-oriented or research-oriented types, while the PhD degree is only research-oriented.

As for the promotion system in dental schools, it usually takes five years following graduation to be appointed to an instructor position. Promotion of instructor to associate professor takes another five years. Similarly, it also takes five years for promotion from associate professor to full professor. Instructor, associate professor and professor can all give lectures to undergraduate students (Komabayashi T et al., 2006). Associate and full professors are qualified to recruit Masters and PhD program students given they have research funding sponsored by the National Natural Science Foundation of China or local governments.

5 : National examination for dental license

In mainland China, the National Dental License Examination (NDLE) was officially initiated from 1999 as an annual examination. Before that, all dental school students received both BDS diploma and dental license after the graduation examination, which was conducted by individual dental school. Nowadays, NDLE is the only exam to take for those who want to practice dentistry in mainland China.

The examination consists of a clinical skill practical exam (usually in July) and a written exam (usually in September). A candidate must first pass the clinical skill practical exam before he/she applies for the written one (Table 3). The exam results are reported on a pass/fail basis and a minimum score of 60% is required to pass (Komabayashi T et al., 2006). The pass rate for the first exam in 1999 was 70%. Recent pass rate is about the same as that of 1999.

6 : Dental insurance system

Currently, there are three medical care insurance systems in China : the Urban Employees' Basic Medical Insurance (mandatory basic health insurance for urban employees of state-owned or private enterprises, covered 220 million of the population in 2009) (UEBMI), the Urban Residents Ba-

Table 3 : Content of National Examination for Dental License in mainland China.

Exam	Content
Clinical skill exam	I : Basic and investigation skill I-1 : Clinical oral examination I-2 : Operative skills assessment I-3 : Special investigations II : Oral diagnosis and treatment planning
Written exam	600 multiple choices including basic and clinical dental sciences (four sections, 2.5 hours for each section)



Figure 1 : Textbooks used in Dental Schools in mainland China. Those textbooks are regularly revised and edited. The latest version is the 7th edition. Upper : left to right, Oral Anatomy and Physiology, Oral Histology and Pathology, Oral Biology, Oral Clinical Pharmacology, Dental Materials. Middle : left to right, Operative Dentistry and Endodontics, Periodontology, Oral Mucosa Diseases, Prosthodontics, Orthodontics. Lower : left to right, Dentofacial Diagnostic Radiology, Preventive Dentistry, Occlusion science, Pediatric Dentistry, Oral Implantology.

sic Medical Insurance (voluntary basic health insurance for urban residents not eligible for UEBMI, specifically, seniors, unemployed, children, students, disabled, covered 181 million of the population in 2009) (URBMI), the New Rural Cooperative Medical System (voluntary basic medical insurance for rural residents, covered 833 million of the population in 2009) (NRCMS). A professional dental insurance system has not yet been established, while some treatments in dentistry are covered by the above-noted medical insurance. Take Shanghai for instance, the dental treatment including pit and fissure sealant, amalgam restoration, root canal therapy, and teeth extraction are covered by URBMI, however, in case of esthetic dentistry, to name a few, nano-composite resin restoration, esthetic restoration for anterior teeth, whitening, implant, orthodontic treatment, and other prosthodontic treatment such as porcelain-metal-fused crown, ceramic crown are all excluded from the insurance, which indicates that the patients themselves are required to pay all the fees.

7 : Associations and Societies related to dental research and practice

In Japan, different associations and societies (such as The Japanese Society of Conservative Dentistry, The Japanese Society for Dental Materials and Devices, Japan Society for Adhesive Dentistry) were established quite early ; some go back to as early as the 1940s. Those professional societies offer rich opportunities for dentists to follow up on the latest development in dental field in terms of state of the art materials, instruments and cutting-edge treatment therapy. In mainland China, the Chinese Stomatological Association (CSA), a national academic nonprofit organization of scientific and clinical practitioner of stomatology and regular member of FDI, was founded on November 7 in 1996, formerly known as the Oral Science Society of Chinese Medical Association, which was established in 1951. The organization structure and sub-societies of CSA is illustrated in Figure 2. The CSA is playing an increasingly essential role in press releases of domestic or international dental conferences, symposiums, forums or exhibitions, providing latest dental related regulations, and news of job vacancies in hos-

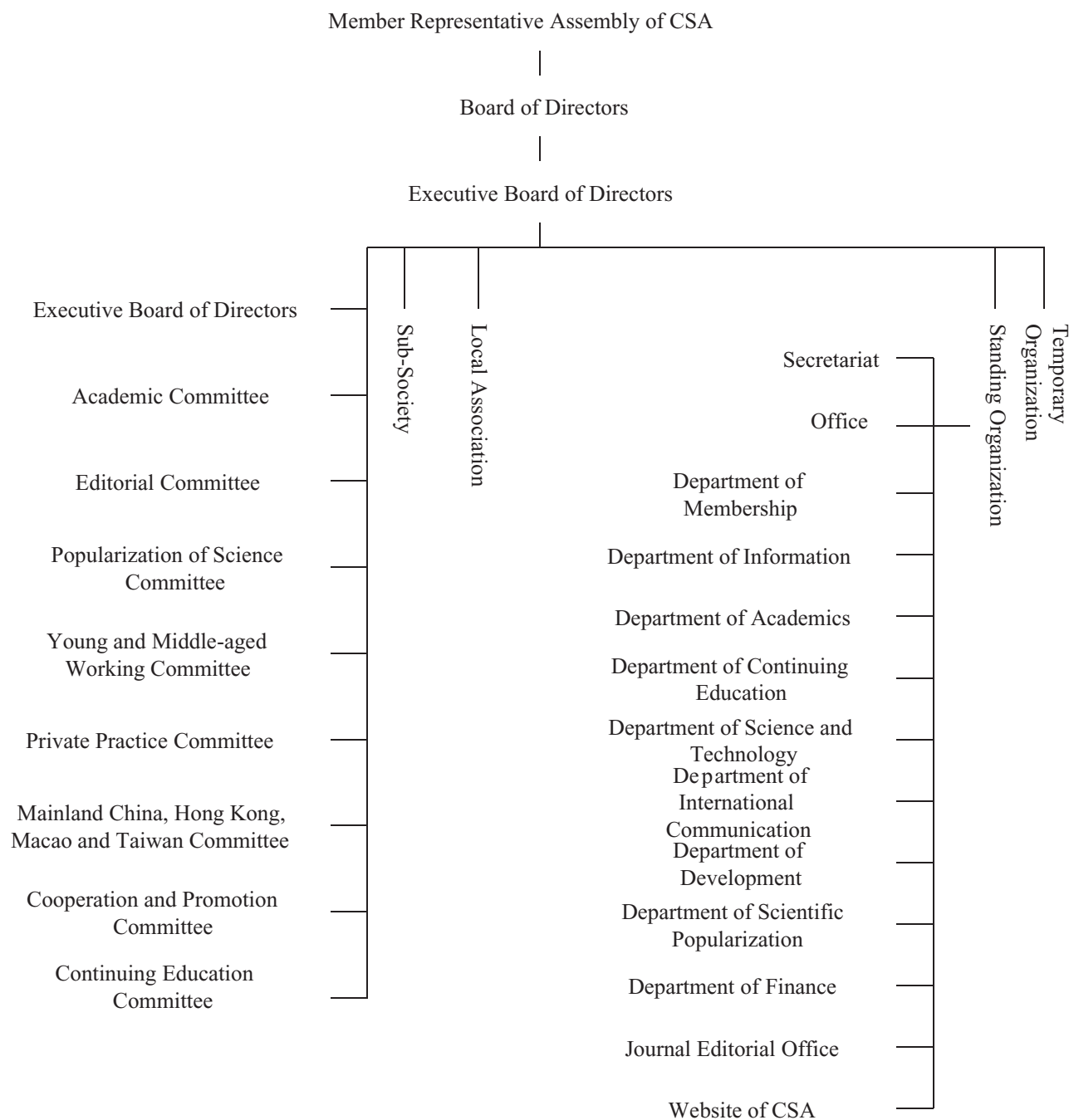


Figure 2-1 : Organization structure of China Stomatological Association (CSA).

pitals or dental clinics. Each province, autonomous region and municipality has their own association of stomatology, which is considered as the sub-unit of CSA.

8 : International communication

In recent years, more and more dental schools in mainland China signed cooperation contracts with dental schools abroad, especially in Japan. Some universities, for instance, College of Stomatology in Shanghai Jiao Tong University has forged cooperative relationships with a number of foreign dental schools (Fukuoka Dental College, Dental School

in Showa University, Osaka Dental College, Dental School of Kyushu University, Dental School in University of California, Los Angeles etc.) (viii) ; also, in School of Stomatology of Wuhan University, they have established cooperative relationship with Queensland University of Technology. It has been twenty-two years since the establishment of a sister relationship between the Dental School of Health Sciences University of Hokkaido (HSUH) and School of Stomatology, Tongji University (TJU) (Fig. 3). Previous collaborations between the two schools have included faculty exchanges, joint training of undergraduate students and visiting

Figure 2-2 : Sub-societies of CSA.

List of sub-societies of CSA
Society of Cariology and Endodontology
Society of Oral and Maxillofacial Surgery
Society of Prosthodontics
Society of Orthodontics
Society of Preventive Dentistry
Society of Oral Pathology
Society of Periodontology
Society of Oral Implantology
Society of Oral Mucosal Diseases
Society of Pediatric Dentistry
Society of Geriatric Dentistry
Society of Oral and Maxillofacial Radiology
Society of Temporomandibular Disorders (TMD) and Occlusion
Society of Dental Material Science
Society of Dental Laboratory Technology
Society of Stomatological Education
Society of Oral and Maxillofacial Anesthesiology
Society of Digital Dentistry
Society of Integrated Traditional Chinese Medicine and Western Medicine
Society of General Dentistry
Society of Oral Biomedicine
Society of Dental Practitioners
Society of Stomatological Institutes
Society of Dental Equipment and Material

-scholars, recruiting of PhD students.

Those cooperative activities provide opportunities for students of each school to gain international experience by completing part of their education in the foreign host dental schools, thereby fostering goodwill and mutual understanding between schools. As mentioned in the beginning, the world is developing toward a highly interconnected one international communication is indispensable and will become the trend in near future in not only the dental field, but also other industries.

9 : Concluding remarks

The number and quality of dentists in mainland China are increasing and improving over time ; however, current dental education models have not yet been able to adequately address disparities in oral health. To better equip the students for the challenges ahead, potential avenues include revising educational curricula to take account of a stronger focus on public health and epidemiology, as well as placing more emphasis on critical thinking, team management and interdisciplinary education. Further advocacy for global vision and standards of competence to educate and train the stu-



Figure 3 : Up-middle : the collaboration contract renewal ceremony between School of Dentistry, Health Sciences University of Hokkaido (HSUH) and School of Stomatology, Tongji University (TJU) in May, 2014. Left : Dean Zuolin Wang of School of Stomatology, TJU ; Right : Dean Takashi Saito of School of Dentistry, HSUH. Lower left : Dean Zuolin Wang was meeting with Dr. Nishimura and three undergraduate students from HSUH. Lower right : Dr. Nishimura and the students were visiting the dental clinic in Hospital of Stomatology, TJU.

dents up to the task of optimizing the oral health of Chinese population is highly desirable.

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