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PROFESSIONAL EDUCATION & TRAINING | RESEARCH ARTICLE

The evolving Chinese dental education—A brief introduction to the Xiangya model of a “5+3” consecutive dental programme

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Abstract: In 2015, the Ministry of Education of the People’s Republic of China (PRC) issued the notice about “Renovating the 7-year MD & Master’s degree clinical medical programme into a new ‘5+3’ consecutive program”. After that, 10 qualified seven-year dental schools recruited fresh high school graduates into this revolutionized system. The students who are already in the seven-year programme from these schools can freely choose to switch to the master’s degree phase training by participating into a designated three-year standardized resident training programme. According to the National Health and Family Planning Commission of China (NHFPC), the new “5+3” format differs from the traditional medical profession pathway which starts with a clinical bachelor’s degree (5 years) then a clinical master’s degree (3 years). In the past, the five-year programme students needed to finish their training before took the National Postgraduate Entrance Examination (NPEE) to join the 3 years master’s degree programme. On the contrary, students in the new “5+3” consecutive programme are guaranteed to move onto the master’s degree phase by meeting the bachelor’s degree requirements during their first 5 years. They are expected to meet all the master’s degree criteria as well as completing the national resident standardization training in their last 3 years of training. Much work is still needed from individual schools to formulate adequate curriculum. However, the revolutionary system promoted by the government represents China’s determination to

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PUBLIC INTEREST STATEMENT

As a fast-developing entity in this new millennium, the booming Chinese economy helps the development of the society from all aspects, particularly in the field of higher education. According to the 2016 Ministry of Education Report, 442,773 students from 205 different countries studies in China with an 11.35% increase from 2015. However, not much report can be found in revealing the complexity of the medical/dental training system. Hence, it is our hope that this article will provide a peek into the evolving Chinese dental education and better prepare future international applicants to programmes in China.

tackle the current challenges in the medical/dental system. In this article, we briefly reviewed the evolving Chinese Dental Educational System and summarized the pioneer work accomplished by our school in the past few years. We aim to cultivate a new generation of Chinese dentists with strong clinical skills and fundamental research ability, via rigorous clinical, social science, natural science training.

Subjects: Health & Development; Education; Medicine, Dentistry, Nursing & Allied Health

Keywords: advanced dental education; curriculum innovation; consecutive training; master's degree; professional degree; curriculum development

1. Introduction

The National Health and Family Planning Commission of China (NHFPC) broadcasted the new “5+3” format in training the Dental/Medical profession in 2015. This new system differs from the traditional medical profession pathway which starts with a clinical bachelor's degree (5 years) then a clinical master's degree (3 years). Students in the new “5+3” consecutive programme are guaranteed to move onto the master's degree phase by meeting the bachelor's degree requirements in their first 5 years. They are expected to meet all the master's degree criteria as well as completing the national resident standardization training by the end of their final year. All Dental/Medical schools over mainland China are required to adapt their curriculum to the new policy in the years to come. It is our hope that this article will offer guidance to future international applicants to programs in China via peeking into the evolving Chinese dental education.

2. The policy context and characteristics of the “5+3” year consecutive dental programme

Dental and medical doctors training in the western world usually requires 11-year or longer through: undergraduate school → dental/medical school → resident training → employment (Cooke, Irby, Sullivan, & Ludmerer, 2006; Karani, Chheda, Dunn, Locke, & Bates, 2011).

China is a fast-developing country which experienced rapid social economic development in the past few years. As a result, expectations for better health care needs to be met. Dentists who act as the front-line providers need even better comprehensive skills in serving the patients well. In order to match up with the globalization of the Dental/Medical education, to promote the integration of the standardized resident training with the specialty training (master's degree programme), the Chinese Government presented numerous new policies in the past years. In the year 2013, the National Ministries of China reached agreement to issue the “Guidance on establishing the standardized system for Medical/Dental resident training” (National Health and Family Planning Commission, 2013). The following year, the Ministries of Education, Finance, Human Resources and Social Security, the NHFPC, the State Administration of Traditional Chinese Medicine, and the National Development and Reform Commission issued the “Guidance on medical education reform to enhance the training of clinical talents” (Ministry of Education, 2014). The General Office at the Ministry of Education publicized “Renovating the 7-year MD & Master's degree clinical medical program into a new ‘5+3’ consecutive program” announcement in 2015 (General Office of Ministry of Education, 2015). These series of documents focused on: 1. Terminate all seven-year clinical Medical/Dental programmes from all universities in mainland China; 2. Establish the new “5+3” year consecutive programme as a replacement. Students who fulfilled all the requirements during the first five-year bachelor's degree training can be automatically enrolled into the three-year clinical master's degree programme alongside with a standardized Medical/Dental resident training; 3. Newly accepted master's degree programme students can also apply to combine their master's degree training with a standardized resident training; 4. The current seven-year programme students can switch into their master's degree phase of training at their own school by extending the training into 8 years. The seven-year programme students are pardon from taking the graduate school entrance exam. According to this new policy, the “5+3” year programme students will have dual identities as a master's degree

student and also as a standardized clinical training programme resident at the last 3 years of their training. A minimum 33-month rotation in different clinical departments and all other requirements must be met according to the standardized clinical resident programme protocol.

This new “5+3” consecutive programme is different from other programmes like the traditional three-year master’s degree programme, a handful of eight-year MD/DDS plus PhD programme and the standardized resident programme after five-year dental/medical school. The new format has an enhanced schedule, a lightened financial burden from taking the NPEE, and also can save time by combining the required resident training together with the master’s degree training (Wang, 2015; Yan, Wang, & Cheng, 2015). Students will be awarded with Certificate of Medical Practitioners, Certificate of Standardized Resident Training, Master Degree Diploma and Certificate for Master Degree once all the requirements are met (Li, Tang, & Chen, 2015). The purpose of the reform is to cultivate morally superior, compassionate, humanistic clinicians with solid medical knowledge, strong clinical skills (see Table 1). One who has strong communication skills as well as teaching and basic sciences research abilities (Huang, Huang, & Huang, 2015; Li, 2015).

3. Curriculum of the “5+3” year consecutive dental programme at Xiangya

The traditional master’s degree programme in dentistry takes three years. The coursework study took at least half year time, which includes mandatory public lectures and specialized courses. Student needs a minimal 10 months of clinical training at the clinic of the chosen specialty. The institute may require rotations at other related disciplines. In comparing to the traditional three-year clinical master’s degree programme, a mandatory 33-month clinical rotation is one major challenge for the students who are in the new “5+3” programme (National Health and Family Planning Commission, 2014). Because this requirement leaves a limited three-month for students to take coursework and do research (including the thesis writing), which is extremely time intensive.

The history of Xiangya medical school dated back to 1906 when the Yale-In-China Association helped to immigrate the western medicine into mainland China (Hume, 1949). As one of the most prestigious programme in China, we have always been at the front line of change. Here, we would like to propose the “XiangYa Curriculum Format” which was created and used by our school since 2015 in answering these new requirements. Even though the first recruited high school graduates are still in the middle of their training, the seven-year programme students from Class 2018 and Class 2019 gained an early taste of the newly established schedule by transferring into the new combined master’s degree/resident training phase. The Xiangya School of Stomatology Central South University started to accept seven-year programme students in 2001. Accredited by the Ministries of Education, our school is one of the few programmes in mainland China who qualifies to run the new “5+3” consecutive programme since 2015. Till now, 51 high school graduates entered the new pathway after their college entrance examination. Our school created a unique curriculum aiming to nourish capable clinical practitioners. The following characteristics of the students were

Table 1. Comparison of different training programmes in China

| Type of Programmes | Applicants | Training Objectives | Degree awarded | Certificate issued |
|--|---|---------------------------------|---------------------------------|---|
| “5+3” consecutive clinical programme | High school students | Outstanding doctor | Bachelor’s and Master’s degree | Certificate of Medical Practitioners, Certificate of Standardized Resident Training, Master Degree Diploma, Certificate for Master Degree |
| Eight-year clinical programme | High school students | High-level Outstanding doctor | Bachelor’s and PhD degree | Certificate of Medical Practitioners |
| 3 years clinical master’s degree programme | Five-year medical/dental bachelor’s and Students hold equivalent degree | Outstanding doctor | Master’s degree | Certificate of Medical Practitioners, Certificate of Standardized Resident Training |
| Standardized resident training programme | Five-year medical/dental bachelor’s | Completion of Resident training | May apply for a master’s degree | Certificate of Medical Practitioners, Certificate of Standardized Resident Training |

given special attention to: 1. Humanistic spirit and professional integrity; 2. Scientific thinking and creative mind; 3. Medical service diplomacy and clinical communication skills; 4. Health care law and appropriate usage of health resources; 5. Critical thinking and basic scientific research skills.

By referring to the Chinese Dental Residence Qualification Examination requirements (Huang, Tang, & Xie, 2008), and experience obtained by other institutions (Liu & Hu, 2013), here, are the categories of the courses: Public courses (5 credits), Core basic clinical courses (8 credits), Core specialty courses (4 credits), Electives (6 credits), Academic research or exchange (2 credits), Other courses (6 credits). A total of 31 credits are required for graduation (see Table 2) (Guidelines for the Central South University, 2016). Public courses are offered by the university, which include the Chinese Social Theory and Practice, a Brief Introduction to the Dialectics of Nature and the Academic English. The medical school offers the core basic courses which include the Medical Statistics, Clinical Epidemiology, Evidence-Based Medicine, Professionalism of the Medical Practitioner, Health Law and Regulations, Medical Ethics, Infectious Diseases and other related subjects. The clinical departments at the School of Stomatology offer a variety of core specialty courses. It is expected that these training will help to improve the scientific research skills of the students and keep them staying on top of the most recent research (see Tables 2 and 3). Students can freely choose the elective courses at their own interests.

4. Course format of the “5+3” year consecutive dental programme at Xiangya

The postgraduate students (thesis programme) are required to fulfil clinical rotations with a total of 33 months. It leaves very limited time for didactic lecturing. Creative changes must be made to the traditional curriculum in meeting all requirements for the new “5+3” consecutive programme. Thanks to the strong support from the university, the dental school is allowed to enrol graduate students as early as late June to start their training. Intensive Public Courses and Core Basic Courses filled up the first month of June. The daytime clinical training starts in late August, by then the students begin to take coursework at night-time or on the weekend:

- (1) Traditional lectures, web-based lectures, seminars and discussion formats were used in the classroom. Students are evaluated by writing tests, case reports, presentations, etc.
- (2) The clinical centres work together with the dental school by integrating the coursework studies with the standardized resident training.
- (3) The clinical departments organize their training via formats like lectures, seminars and case discussions. The goal is to help the students staying on top of the most current research. Once they report to their own specialty departments, students are required to participate at least half a day per week concentrated study session organized by the department and orally present their progress at the department meetings.
- (4) Students are also required to attend the “Xiangya Stomatology Forum” on every Wednesday afternoon. During the three years of their training, they have to join at least one national or international academic symposium. Evaluation is put together by comprehensively considering the in-class performance as well as the examination results.

Table 2. Types of courses and credit requirement for the “5+3” year consecutive dental programme

| Course type | Credit requirement | Course category | Credit requirement |
|-------------------------------|--------------------|-----------------------------|--------------------|
| Public courses | 5 | Core basic clinical courses | 8 |
| Core specialty courses | 4 | Electives | 6 |
| Academic research or exchange | 2 | Other courses | 6 |
| Total credit | | | 31 |

Table 3. Curriculum for the “5+3” year consecutive dental programme

| Course type | Code name | Credit hours | Credit | Semester | Remark |
|--------------------------------------|---|--------------|--------|-----------------------------------|--|
| Public course | 01030210101 Chinese Social Theory and Practice | 32 | 2 | Autumn | Required |
| | 01010110101 a Brief Introduction to the Dialectics of Nature | 16 | 1 | | |
| | 11,050,212,102 Academic English II | 32 | 2 | | |
| Core basic courses | 69,100,412,201 Medical Statistics (Professional degree) | 32 | 2 | Spring | |
| | 69,100,412,201 Clinical Epidemiology (DME including Research Design) | 32 | 2 | | |
| | 105,112,202 Evidence-Based Medicine | 16 | 1 | | |
| | 105,112,204 Professionalism of the Medical Practitioner | 16 | 1 | | |
| | 105,112,205 Health Law and Regulations | 16 | 1 | | |
| | 105,112,206 Medical Ethics | 16 | 1 | | |
| | 68,105,212,306 Experimental Techniques in Dental Research | 32 | 2 | | |
| Core specialty courses and electives | 68,105,212,301 Progress of Oral Mucosal Diseases | 32 | 2 | Complete during clinical rotation | Required courses require more than two credits |
| | 68,105,212,302 Progress of Oral Oncology | 32 | 2 | | |
| | 68,105,212,303 Introduction to Clinical Orthodontic and Basic Clinical Skills | 32 | 2 | | |
| | 68,105,212,304 Oral Implantology | 32 | 2 | | |
| | 68,105,212,305 Diagnosis and Application of Dental CBCT | 32 | 2 | | |
| | 68,105,212,307 Surgical Approaches to Oral and Maxillofacial Deformity and Defect | 32 | 2 | | |
| | 68,105,212,308 Advanced Topics in Oral Medicine | 48 | 3 | | |
| Seminar | Academic Discussions and Academic Exchanges | | ≥2 | | Required |
| Other courses | 000010801 Social Practice | | 1 | | Required |
| | 000010802 Situation and policy | | 1 | | Required |
| | 000010803 Professional Practice | | 4 | | Required |
| | 000011804 Independent Study/ Research and the Dissertation | | 1 | | Required |

5. Guarantee measurements

The resident training of the medical/dental graduates received worldwide appreciation in making qualified specialities. From the above introduction, we can see that the “5+3” integration model is a feasible pathway for Chinese dental schools. In order to achieve the training objectives, innovative methods below are needed to achieve the goals throughout the implementation process: Firstly, a triage mechanism is used. The specialty training usually takes 3 years. Anyone who did not pass any of the examinations (standardized residency training examination, bachelor’s degree thesis project)

within the appointed time, he/she could have a less than two year's extension to fulfil all requirements. Trainees who fail to pass the National Board Examination will be transferred into a research focused pathway. Secondly, a flexible credit system allows the trainees to earn academic credits by utilizing the hours outside the clinical rotations. Thirdly, two mentors (a clinical doctor and a research scientist) will help the trainee to become successful in their specialized fields. Fourthly, the trainee's medical ethics and clinical skills will be specially evaluated in the final comprehensive examination. Lastly, trainees are expected to complete a clinical oriented research project in strengthening their abilities to raise up scientific questions, retrieve scientific literatures, analyse data and write scientific article.

The past Chinese medical/dental education system was hugely influenced by the Soviet Union when high school graduates can directly enter the medical/dental school. However, the globalization and especially a tied-up relationship between US and China at this new millennium, the US influence prevail over. Medical/Dental schools still recruit high school graduates, however the basic science is given much weight at the beginning of the programme and the ideal of postgraduate resident training is also in action nationwide. In fact, the "5+3" programme is actually a good demonstration of this trend. Efforts are made to improve the full development of the trainees in both their clinical and research skills with unique Chinese characteristics. The satisfaction of the students upon the new programme is 95% according to our preliminary data. Because the first class of the newly recruited "5+3" students are still only in their third year, efforts are made to investigate the students' perspectives in greater depth. We will reveal more data when the students finish their training.

The "5+3" consecutive training model seamlessly connects the medical education and residence training together. It fits the currently health care need of the Chinese society. We believe this new model will help to cultivate qualified clinicians for China in this new millennium.

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