·口腔教育专栏·

新加坡牙髓病学专科医师制度的发展

SUM Cheepeng 胡晓莉△ 凌均棨

【摘要】 新加坡牙科学校最早成立于 1929 年,是英国远东殖民地的中第一所牙科学校。第一批毕业的学生被授予口腔外科医师证书(Licentiate in Dental Surgery Licentiate in Dental Surgery)。新加坡大学(University of Singapore)于 1962 年成立。牙学院在 1966 年以独立学院的形式加入新加坡大学,包含 4 个系:保存齿科(Conservative Dentistry)、口腔外科(Oral Surgery)、预防口腔医学(Preventive Dentistry)以及修复学(Prosthetic Dentistry)。1981 年,新加坡大学改名为新加坡国立大学(National University of Singapore)。2007 年,新加坡牙学院、医学院与国立医院合并成立国立大学卫生系统(National University Health System,NUHS),其任务包括临床、教学和科研。

新加坡的口腔临床医师均需要向新加坡牙科管理委员会(Singapore Dental Council)注册,所有的注册信息均可在网上查询。口腔临床医师主要在私人诊所以及公立医院工作。目前,新加坡有 1500 个注册口腔医师,约 1000 人在私人诊所工作。在国外获得基础学位的医师,在新加坡完成专科医师考试后也可以在当地从事临床工作。

在 20 世纪 60 ~ 70 年代新加坡独立早期,任何完成基础训练的牙科医师均可以进行根管治疗,特别是前牙根管治疗。虽然当时提出应用橡皮障隔湿,隔绝口腔液体引起的污染,牙科专业保险公司也鼓励牙科医师常规使用橡皮障(若未使用橡皮障造成根管治疗器械的吞咽和误吸将不予赔付等),但在当时应用橡皮障隔湿条件下进行根管治疗的医师很少。直到 20 世纪 90 年代,部分磨牙的根管治疗仍由从英国和美国经过牙髓病专科训练的医师完成。

医学专科化符合医学科学发展的规律,它不仅满足了医学领域不断拓展的需求,而且也促进了医疗服务水平的日益提高。实行专科医师准入制度是医学专科化发展的结果,是发达国家和地区普遍采用的,已经得到规范化和法律化的一项制度。美国与英国分别在 20 世纪 60 年代及 90 年代建立口腔专科医师制度。新加坡大学 1972 年建立了口腔专业的硕士学位,20 世纪 90 年代末,才开始专科医师制度并提供临床硕士学位,包括修复学、牙体牙髓学、牙周病学和口腔外科学专业。1999 年正式招收了第一批的牙体牙髓病学专科医师。为促进和引导牙科医师达到根管治疗的标准,新加坡牙体牙髓专科医师协会(Society of Endodontists)在 2004 年出台了相应的根管治疗标准。新加坡卫生部在 2008 年 1 月开始注册专科医师,并规定了培训的时间和内容,内容包括基础、临床和科研 3 部分。目前新加坡的牙体牙髓专科制度和美国的基本相同。在新加坡国立大学牙体牙髓专科培训计划中,70%的时间用于临床培训,10%用于科研,20%用于交流讨论。学生需要通过阅读,课堂发言的形式对经典的文献报告进行讨论,并通过病例报告的形式探讨治疗方案。通过讨论,学生能进一步掌握所学知识,并经

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作者单位:Department of Restorative Dentistry, Faculty of Dentistry, National University of Singapore(SUM Cheepeng);中山大学光华口腔医学院·附属口腔医院,广东省口腔医学重点实验室(胡晓莉、凌均棨)

△对本文有同等贡献

过阅读文献找到解决和支持治疗方案的依据。

专科医师培训需要完成临床硕士学位并掌握以下知识:

1. 深入了解生物医学以及与口腔和牙体牙髓相关科学知识。
2. 掌握牙髓、牙周及相关周围组织生理、病理的临床和基础知识。
3. 能正确诊断各种牙体牙髓疾病并熟悉其临床治疗。
4. 在多重疾病诊治和处理中,能与其他专科医师有效协作。
5. 掌握科研方法,并能应用适宜技术开展科研活动。
6. 具备教学经验并能传授技术知识。
7. 通过对文献的阅读和评估,养成不断独立学习的习惯和技能。

再进一步的培训计划包括提交所有的临床记录、病例报告和进行面试等内容,由卫生部的专科医师委员会组织实施。

近年来,在牙髓病和牙周病的分子医学研究方面出现越来越多微生物的研究进展,从 2012 年起,新加坡的牙体牙髓专科培训计划中的课程做了部分调整,在牙体牙髓病专科培训中增加 2 周关于分子微生物学的课程,内容包括与分子微生物学相关的课程、示教、临床取样以及实验室操作。

目前,新加坡牙髓病治疗的预约候诊时间很长,通常几个月,说明根管治疗对普通医师有难度。普通医师通常将患者转给专科医师完成,这也从另一个侧面促使专科医师更好的为患者服务。由于在私人诊所执业的专科医师能够比在政府医院收取更高的根管治疗费,大部分的专科医师选择留在私人诊所中工作,造成大学师资的短缺,这种情形在美国和欧洲也时常发生。

专科医师培训能够提高临床工作的质量,增进整个社会的健康水平。专科医师准入制度是一项有效的政府和行业规范医疗行为的管理制度,在患者得到高质量医疗保健服务的同时,有效地提高了卫生资源的使用效率,整个社会的发展以及人群的教育水平将会不断影响专科医师制度的实施发展。

Specialization of dentistry in Singapore-development of endodontics

SUM Cheepeng[1], *HU Xiao-li*[2△], *LING Jun-qi*[2]

1. Department of Restorative Dentistry, Faculty of Dentistry, National University of Singapore, 119074

2. Guanghua School of Stomatology, Sun Yat-sen University, Guangdong Provincial Key Laboratory of Stomatology, Guangzhou 510055, China

△The first two authors contributed equally to this work

Brief history of dentistry in Singapore

In the 18th and 19th centuries, there were no dentists working in the employment of the Colonial Office, which was responsible for governing Singapore and other British Colonies. When the Chief Surgeon (General Surgery) retired in Singapore in 1880, he was granted the privilege of practicing dentistry. Thereon, the practice of dentistry was carried out within the realm of Surgery at the "General Hospital", a hospital set up by the colonial government to look after its subjects.

By 1910, from records of licences issued for the possession of controlled drugs, there were eight dentists. An Ordinance for the Registration of Dentists, the first ever legislation in Singapore to control and regulate the practice of dentistry came into force on December 1, 1924.

The definition of the practice of dentistry as spelt out in the ordinance for the Registration of Dentists 1910 was "practising or being prepared to practise dentistry or treats or attempts to treat or professes to treat, cure, relieve or prevent lesions or pain of the human teeth or jaws, or performs or attempts to perform any operation thereon, or inserts or attempts to insert any artificial teeth or appliances for the restoration, regulation, or improvement of the teeth or accessory structures." You can see that from this definition, the meaning of dentistry was very much that of the practice of stomatology.

The dental school was set up in 1929- the first dental school to be established in a British colony in the Far East. By 1933, the first batch of students graduated and was granted a Licentiate in Dental Surgery. The Dental School was a Department within the Medical College called the King Edward VII College of Medicine. The Medical College was the precursor to the University of Singapore. In 1966, the Dental School attained full Faculty status within the University of Singapore. The faculty of Dentistry started with four departments-Conservative dentistry (incorporating Endodontics, Periodontics, Paedodontics and Fixed prosthodontics), Oral Surgery (incorporating Oral Medicine, Oral Pathology), Preventive Dentistry (incorporating Dental Public Health) and Prosthetic Dentistry.

The University was renamed the National University of Singapore in 1981. From the inception of the school it was sited at the Sepoy Lines Campus, together with the school of Pharmacy and Faculty of Medicine, near Chinatown in Singapore. It moved into new premises only in 1986 within the buildings of National University Hospital (NUH), which is sited within the Kent Ridge Campus of the National University of Singapore.

A leap change in organization came to the Faculty of Dentistry in October 2007; it was decided to unify the governance of National University Hospital (NUH), the National University of Singapore (NUS) Yong Loo Lin School of Medicine (NUS-YLL SOM), and the NUS Faculty of Dentistry (NUS-FOD). The new joint entity has been named National University Health System (NUHS). It will have a combined mission of clinical service, education and research. So whilst the Faculty of Dentistry was still an independent Faculty, it now is governed through the board of NUHS and not by the National University of Singapore directly.

The pressure of space at NUH made it necessary for a new temporary building being built for the Faculty of Dentistry and the Faculty moved to its current building at 11 Lower Kent Ridge Road within Kent Ridge campus in January 2010. Plans are now underway to build a new permanent building and a large tertiary referral dental centre at the Kent Ridge Campus for the use of the Faculty of Dentistry.

Service provision

All dental healthcare workers must be registered with the Singapore Dental Council. Information about registration may be found on the website of the Singapore Dental Council.

Health care workers work in two sectors-private practice or public hospitals and their attendant supporting clinics. For dentistry, in the private sector, there are several large dental practices, the largest of which is a company listed on the stock exchange and which owns about 40 clinics all over Singapore and has clinics in the Peoples' Republic of China. In the public sector there are six government funded hospitals with dental centres and a National Dental Centre. Patients from various polyclinics requiring more than primary dental care are referred to these hospital based dental centres or particularly the NUH Dental Centre or to the National Dental Centre. Most dentists work in private practice. Of the roughly 1500 registered dental practitioners in Singapore, 1000 are in the private practice.

Several foreign trained first degree holders are working in the hospital dental service in Singapore. These dental healthcare workers did their specialist training in Singapore though their basic degrees were done elsewhere. Those with degrees not registrable immediately may sit for a registration examination. Details of the examination are available from the Singapore Dental Council.

Specialisation of endodontics in Singapore

In many countries today, dentistry exists as an independent profession. However, much of what happens in the medical profession comes to affect dentistry as a matter of time. This was because today's healthcare services exist as a system, many agencies interplay to bring about care to the patient, such as insurers and health policy makers, whose decisions affect how dentists practice. No player in the system operates independently of the others; the system is a complex interplay of interests, influences, and influencers.

Meaning and purpose of specialization

To be a specialist a practitioner has to complete an accredited programme beyond the basic dental degree, whether the dental degree is called Bachelor of Dental Surgery, Doctor of Dental Surgery, Bachelor of Dental Sciences, Doctor of Dental medicine and the likes of it. It is commonly believed that with the advent of specialization, the standards of treatment of a particular discipline improve. Indeed, a survey amongst prosthodontists from across Europe where some countries have and others do not have recognized specialties, showed this to be true. In several of the countries it was pressure initiated by public health planning authorities for a speciality to be introduced. From a professional viewpoint the recognition of a speciality would develop the discipline, improve oral health planning and quality of patient care. It is further recognized that the emphasis of a training programme can affect outcome of learning. Thus when there was a shift in emphasis from a passive model of knowledge acquisition using lectures and low-fidelity laboratory exercises to one of patient-centred education statistically significant improvement in the students' total score including their performance in written and practical tests were observed.

History of specialization of endodontics in Singapore

In any discipline there must be an increase in the level of theoretical knowledge and in the range and complexity of clinical procedures beyond the basic level of training in order to merit

consideration for specialty status. Acceptance of the principle of specialist practice implies a belief that this will enhance the development of the profession, improve academic and clinical standards and provide a higher-quality and more widely available service to the public.

Although the University of Singapore had since 1972 provided Master degrees for the dental profession, Singapore really started along the route to specialization in the late 1990s with the National University of Singapore commencing to offer master degree residency programmes in Prosthodontics, Endodontics, Periodontics and Oral surgery with the intention of training specialists and the first intake of Endodontic programme residents was in 1999.

In the early years of Singapore's independence in the 1960s and 1970s, root canal treatment was carried out by any dentist with an interest and basic training in the discipline. Most dentists would do root canal treatment, especially of anterior teeth. Although the use of rubber dam isolation was taught as a standard requirement for prevention of infection of the root canal space by oral fluids, few practitioners would use it; although the largest professional insurance company operating in Singapore, Dental Protection, would regularly exhort dentists that if an endodontic instrument were to be swallowed or inhaled during root canal treatment when no rubber dam was used, the action was indefensible.

As for patients with molars requiring root canal treatment, some were competently performed by these "interested" dentists and about ten dentists who had returned from endodontic training at universities in the United Kingdom and the USA, by the early 1990s. In order to promote and guide dentists to attain a high standard of care in the provision of root canal treatment, the Society of Endodontists, Singapore published a guideline for root canal treatment in 2004.

While many have come to accept specialists today, we should remember that specialisation is a relatively recent development in dentistry and was established in the USA only in the 1960s and in the UK the process started about 1990. The Ministry of Health, Singapore, started registering specialists in January 2008 and stipulates the duration of the training programme, the course content (ba:ic sciences, clinical components and didactic components). Detailed information of requirements of the training programmes considered suitable for registration in Singapore may be found on the Ministry of Health website:http://www.hpp.moh.gov.sg/DSAB/MungoBlobs/984/809/Endodontics.pdf

In the NUS Endodontics residency training programme about 70% of the programme is made up of clinical training, about 10% is for research and 20% of the time is for didactics. Completion of the Master degree programme is considered as completion of the basic training of a specialist and the student then graduates into advanced training. The objectives of the residency programme are:

1. in-depth biomedical knowledge and a good foundation relevant to the art and science of Dentistry and Endodontics

2. sound academic and clinical understanding of physiology and pathology of pulp, periradicular and surrounding tissues

3. to be able to achieve advanced diagnostic and clinical skills needed of a specialist in

endodontics

4. ability to effectively integrate/interact with other specialists in the provision of patient care requiring differential diagnosis and/or multidisciplinary management

5. understanding of research methodology and being able to develop skills to conduct research

6. teaching experience and ability to impart skills and knowledge as teachers

7. skills for independent life-long learning will be developed through training exercises in literature critique and research evaluation

Advanced training involves the submission of a log book, case reports and an interview. The exit from advanced training is guided by the Ministry of Health Dental Specialist Accreditation Board. Details of the Exit examination for registration as an Endodontist are available from the website above.

The details of the NUS Endodontics residency training programme are available from the NUS website. Please visit: http://www.dentistry.nus.edu.sg/DGDS/files/endoresprog.pdf

From the programme outlines of many endodontics programmes worldwide, be it from the USA or Europe, you will notice that the content of most programmes are very similar and only minor differences exist. While our programme is not accredited, it is nonetheless very similar to a programme accredited in USA. Students learn through reading, presentation of seminars which they have to identify classic and current papers for critique and discussion, treatment planning seminars in which several endodontists and the students discuss issues related to the case(s) presented and other possible approaches to solve the problem. During such discussions students are also required to point out gaps in the knowledge base making reference to the hierarchy of evidence to support their decisions.

In 2011, it was felt that we needed to make small modifications to the endodontics programme. Over the previous decade, more and more of the microbiology literature in endodontics and periodontics involved molecular science. Hence, commencing 2012, both the periodontics and endodontics programme will offer a two-week course in Molecular Microbiology, in which students learn through lectures, demonstrations, clinical sampling and laboratory work, methods used in Molecular Microbiology.

As pointed out earlier, the purpose of having a specialist register is to develop the discipline, improve oral health planning and quality of patient care. How does one know if the specialization serves the country? Perhaps this can best be assessed by the "busyness" of specialists in private practice and those who are in government funded hospitals. The waiting list for endodontists is usually quite long (several months) and points therefore to the reality that endodontics (root canal treatment) is a difficult discipline and many general dental practitioners refer patients to specialists to carry out the work. In general therefore, the provision of residency programmes has increased the level of referrals made to specialists in serving patients.

Concomitant to this is another problem-that of developing future manpower for hospitals and for the purposes of teaching. Most specialists eventually practice in the private sector on a contractual fee for service basis. This method of healthcare provision had been operating for a very

long time in Singapore. Fees for root canal treatment in the private sector are much more than those in government funded hospitals. This makes it difficult for institutions to attract and retain trained manpower to serve patients as well as to teach. The situation is similar to those reported in teaching institutions in Europe and the USA.

Thus, whilst specialization has increased the availability of trained manpower for provision of higher quality of service, it has sharpened the contrast between the private and public sectors. In the private sector, practitioners who refer their patients may find an endodontist with time to serve a patient who has severe pulpitic pain on the very day the patient calls. This contrasts with the waiting list for root canal treatment in hospitals.

With the introduction of specialist registration, practices organised to provide only root canal treatment have become a reality. In general, there is more willingness amongst practitioners to refer root canal treatment to specialists for treatment. More teeth with previous root canal treatment are also being retreated as the population becomes more sophisticated and want to keep their natural standing teeth. One reason why general dental practitioners refer patients willingly may be that in case law, if a general dental practitioner were to provide root canal treatment, the standard of care expected is the same as that provided by a registered specialist.

Another important consideration in specialisation is how well different specialities interface to work on the same patient. For example, after root canal treatment of premolars, a crown would usually be required. Would a post be required? Does the referring dentist think so? What type of post should be used? In a patient with a tooth having a perio-endo/endo-perio lesion, who should initiate treatment first? During training of specialists, there should be emphasis on this aspect of training so that overall care of the patient is not sacrificed.

Conclusion

There are rewards in allowing for specialisation. The clinical quality of the work carried out goes up and is an overall improvement for the public. Whether it becomes successful depends not only on training sufficient manpower but also on a fair reward system for healthcare workers. This should attempt to balance the manpower between private practice and government funded hospitals. However, in a system where there is a large difference in the fees for the service provided, market forces dictate that it would be difficult to retain trained manpower for provision of services within hospitals. Hospitals must be aware of market forces and rise to the challenge. Other factors that affect the success of specialisation in a country include the level of sophistication, the level of education of the population of the locale it is being carried out in. In addition, if the same healthcare worker is working in a university hospital and has also to teach, carry out experiments and publish and write grants, the tremendous pressure would be too great to bear after a while and the easier route of private practice be chosen as a way of life!

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