



Education of dentists in Thailand

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Thailand is geographically located in southeast Asia and its population is 63 million. Little has been published on dental education in Thailand. This paper provides information about Thailand regarding its dental history, dental school system including curriculum and dental licensure. There are eight public and one private dental school in Thailand. A six-year dental education leads to the DDS degree. On graduation from the public dental schools, dentists are required to work in the public system for three years. Currently, there are approximately 8,000 active dentists, with a dentist: population ratio of approximately 1:7,000.

Key words: Dental education, dental school curriculum, dental licence, dental practice, culture, Thailand

Thailand is geographically located in the southeast of Asia with a size of 514,000 km² and a population of 63 million¹. International relationships in dentistry, especially dental education, have been developed through exchange and memberships in various international academic committees and organisations. In addition, many Thai academics have postgraduate qualifications from overseas universities. There has been little published information on dental education in Thailand.

Our review of dental education in Thailand will address the following topics: the history of dentistry and dental education, oral health status, the structure of dental education and entrance examinations, the dental school curriculum, dental licensure and practice, and the dental health insurance system.

History of dentistry and dental education

Thailand was peopled in prehistoric times through successive migrations from central Asia. Evidence of Bronze Age civilizations in northeast Thailand illustrate the high level of technology achieved by prehistoric people in southeast Asia. Thailand is the only country in southeast Asia never to have been a European colony².

Thailand has a long history of about 1,000 years with abundant religious rituals and activities. About 80% of the country's population reside in rural farming com-

munities where religion is strong and closely tied with daily activities. Most of the rural population are poor farmers with an average of eight years of formal education³. In ancient times, when the people became ill, they went to see traditional healers or Buddhist monks living in the same or neighbouring communities. These traditional healers generally used herbs and religious or spiritual rituals in treating the sick. People also learned the use of traditional medicines and herbs from their neighbours, and from the temples that were the centre of village activities⁴. In traditional herbal medicine, toothache is regarded as an inevitable phenomenon that has to follow its natural course until the rotting tooth falls out by itself⁵.

The first dental school in Thailand was established a part of Chulalongkorn University in Bangkok in 1940. However, the first six dental students graduated in 1943 when the training was offered under the Department of Oral Health, Faculty of Medicine, Chulalongkorn University. By the 1980s, there were five dental schools in Thailand: two in Bangkok, one in Chiang Mai in the Northern Region, one in Khon Kaen, the Northeastern Region and one in Songkhla, the Southern Region⁶. Three more dental schools have opened in the 1990s⁷. The first private dental school opened in 2005.

Currently, there are eight public dental schools and one private dental school in Thailand. Dental education in Thailand is now taught mainly in Thai. The private

dental school offers a bilingual programme in Thai and English. The data of all dental schools in Thailand are summarised in *Table 1*.

Oral health status in Thailand

Recent studies have shown that the percentage of children in many Asian countries, who have dental caries, is increasing. These countries include China, Indonesia, Philippines, and Thailand⁸. In Thailand, national data on dental caries in the primary teeth of children have shown a marked increase in prevalence and severity during the past two decades. The proportion of caries-free 5 and 6-year old children decreased from 25.6% in 1984 to 12.5% in 2001⁹. Early childhood caries in Thailand remains a significant public health problem¹⁰. National data collected in 2001 showed that 3-year-old children had a high severity of caries, with a mean dmft of 3.6. The situation was worse in the rural areas, where a capital prevalence rate of 70.3% and a mean dmft of 3.9 were reported^{9,11}.

In older people, maintaining good oral health is very important since oral health affects quality of life¹². General health can indeed alter treatment need. One aspect of general health which relates directly to oral health status is diet and nutrition. Insufficient intake of food often results from ill-fitting dentures or broken or missing teeth, swallowing problems and dysphasia. Improving or maintaining good oral health status could potentially have an important impact on decreasing morbidity and mortality in the older population¹³. Srisilapanan *et al.*¹³, reported in 2002 that there was a statistical association between the number of natural teeth and below average weight in Thai older people. Therefore the provision of dental public health services should become more of a priority for the older Thai population, and dental public health teaching should be an important part of dental school curricula in Thailand.

The Thai Dental Council

The Thai Dental Council, established in 1994, is the premier governing body of dental practice, and now on formulating uniform competency requirements for dental practitioners, thus directly influencing the teaching programmes at the dental schools. The Ministry of Public Health plays an important role in dental manpower planning for the dental public health services. The Thai Dental Council, the Ministry of Public Health and the Consortium of the Dental Schools work together to promote scientifically based dental education. In addition, the Thai government is placing more importance on the dental public health of its citizens. This policy also influences current dental education, which will be described later.

Dental personnel in Thailand comprise dentists, dental nurses, dental assistants and laboratory technicians¹⁴.

Table 1 Dental schools in Thailand

University	Chulalongkorn	Mahidol	Chiang Mai	Khon Kaen	Songklanakarin	Srinakharinwirot	Naresuan	Thammasat	Rangsit
Year of Establishment	1940	1968	1972	1982	1983	1995	1996	1996	2005
City	Bangkok	Bangkok	Chiang Mai	Khon Kaen	Songkla	Bangkok	Pisanulok	Patumthani	Patumthani
Graduated dentists per year	110	83	80	50	50	40	60	55	40
National/Private	National	National	National	National	National	National	National	National	Private
Post Graduate Certificate programs	yes	yes	yes	yes	yes	No	No	No	No
Master Degree program	yes	yes	yes	yes	yes	yes	yes	No	No
Ph.D. Degree program	yes	yes	yes	yes	yes	No	yes	yes	No

Dental nurses undertake two years certificate-level training in order to carry out simple dental services on children. In 2001 the number in the workforce was 7,175, 2,693, 1,400 and 76 for dentists, dental nurses, chairside assistants, and laboratory technicians, respectively¹⁵. In 2005, the number of dentists in public services was 3,892 and in private practice 4,551. There were 849 and 218 dentists in the university and military, respectively. In this review, we will focus only on the dentists.

Dental school systems and entrance examinations

Applicants to dental school must undertake a nationwide entrance examination and have graduated from high school. No undergraduate pre-dental study is needed prior to entry into dental school. However, special admission is offered in most schools, for example, for athletes and students from certain rural areas. The dental schools in Chiang Mai, Khon Kaen, and southern Thailand have special quotas for students who graduate from high schools in those areas.

The three-day nationwide entrance examination consists of multiple-choice, short answer and essay questions covering six or more subjects, including mathematics, English, physics, chemistry, biology, Thai, and social science. It is similar to the SAT system in the United States. Scores that students achieve from the

nationwide examination are added to their high school average grade and this forms the basis for selection. Because only a small portion of high school graduates can pursue higher education in Thailand, the admission process is extremely competitive. In Thailand, medical doctors and dentists are highly respected and this is reflected in the high demand for places¹⁶. Applicants are also required to undergo a medical examination to satisfy health requirements.

The duration of the dental school programme is six years. Dental school graduates in Thailand are awarded a Doctor of Dental Surgery degree (DDS). Class size varies from 50 to 110. The total number of graduates per year has been between 350 and 400 for the last five years. Tuition and fees in the public dental schools are approximately US\$800 per year.

Dental school curriculum

An example of a typical dental school curriculum is included in a *Table 2*. The average hours were calculated based on the data from five dental schools, since there is no nationwide uniform curriculum in Thailand. In general, the curriculum of the six-year programme consists of one year of general education courses (first-year), two years of didactic and laboratory courses (second- and third-year), and three years of dental clinical internship rotation (fourth-, fifth-, and sixth-year), which is

Table 2 An example of a typical dental school curriculum in Thailand

Subject	Average	(hours)*	Range	(hours)
	didactic	laboratory/ clinical	didactic	laboratory/ clinical
General & Oral Anatomy, Physiology, Biochemistry & Histology	458	564	375-630	420-675
Dental Materials and Laboratory work	39	21	15-60	0-45
General and Oral Pharmacology	72	9	30-105	0-45
General and Oral Pathology and Microbiology	105	78	75-135	0-135
General Medicine	45	0	30-60	0
General Surgery	9	0	0-30	0
Paedodontics	33	45	15-45	45
Conservative Dentistry, Endodontics & Periodontics	132	180	90-195	135-270
Orthodontics	45	36	30-60	0-90
Oral Surgery, Local & General Anesthesia	114	9	105-120	0-45
Prosthodontics & Crown & Bridge	102	252	75-165	135-360
Oral & Maxillofacial Radiology and Oral Medicine	51	0	0-105	0
Dental Public Health/Oral Health	135	60	120-150	0-135
Other Dental Educational Courses**	252	171	120-375	45-285
General Educational Courses†	633	231	465-750	165-405
Clinical Training for Patients	0	1992	0	1575-2355

*The average hours were calculated based on the data from 5 dental schools.

**includes oral diagnosis, dental management of medically compromised patients, ergonomics in dentistry, clinical management, preventive dentistry, epidemiology in dentistry, promotive dentistry, field work community dentistry, psychiatry for dental student, dental research project, and ethics.

† includes English language, behavioral science, economics, mathematics, chemistry, physics, and biology.

supervised by faculty members.

The general education courses (first-year) include English language, behavioural sciences, economics, mathematics, chemistry, physics, and biology. The two years of didactic and laboratory courses (second- and third-year) include general and oral anatomy, histology, physiology, biochemistry, pathology, microbiology, pharmacology, dental materials, conservative dentistry, endodontics, periodontics, orthodontics, oral surgery, local and general anaesthesia, paedodontics, anaesthesiology, oral and maxillofacial radiology, oral medicine, prosthodontics (crown and bridge), and dental public health/ oral health.

Description of the three years of dental clinical internship rotation (fourth-, fifth-, and sixth-year) is as follows. The fourth-year students have lectures and begin making contact with patients. Fifth-year students participate almost exclusively in patient care, while attending some didactic clinical lectures. Sixth-year students may be trained in practice in the hospitals and also join the extramural programme in the rural community.

The academic calendar of Thai dental schools runs from June to March with two semesters of about 18 weeks each. The first semester is from June to mid-October, and the second from November to mid-March. For some programmes, there is also an eight-week summer session from mid-March to mid-May. Some schools run on a full year programme for the last three clinical practice years. Thai dental schools have final exams at the end of each semester, conducted by a course director. Passing grades on all examinations are a requirement for dental school graduation. The examination guidelines for theory stipulate written and oral examinations, and internal assessment. The written examination consists of multiple-choice, essay, and short answer questions.

The collective experience of the authors indicates that the curriculum content is generally similar in the US, Japan, Korea, and China. However, there is some uniqueness. For example, the Thai curriculum has more emphasis on dental public health including community and preventive dentistry¹⁷. This is necessary to prepare students for the compulsory work they must undertake in a public hospital for three years after graduation.

Dental license and practice

At present, Thailand does not employ a uniform, nationwide dental licensure examination such as NBDE in the US. All students in Thai dental schools who receive a DDS degree from a public dental school are automatically granted dental licensure from the Dental Council. Additional national or state examinations are not necessary. However, from 2011 new graduates will be required to take a nationwide dental licensure examination. Attendance at continuing education courses is not currently mandatory to maintain registration however

the Thai Dental Council encourages dentists to attend such courses.

After graduation, dentists from the public universities are assigned to work in the public sector, taking into account their individual preferences. Dentists in the public sector receive fixed monthly salaries with special incentive payments if they work in particularly remote areas. Some new graduates choose to immediately enter the private sector dental clinics but must pay back some of their fees to the government.

Some graduates later choose to undertake postgraduate dental study programmes in Thailand or abroad. Individual dental schools administer the admission processes for the master's and PhD degree programmes. The processes may involve an examination which includes English and questions relating to the dental specialty area that the applicant wishes to study. The master's degree programme has both clinical and research components, whereas the PhD degree programme is completely research oriented.

Within Thai dental schools, it usually takes five years to be appointed to an assistant professor position. Promotion from assistant professor to associate professor takes at least another three years. An additional two years is required to be promoted from associate professor to full professor. The promotion is based on academic and research performance as well as the number and quality of publications. Assistant professors, associate professors, and professors are all involved in the teaching of undergraduate students. Associate and full professors are qualified to be advisors for master's and PhD degree programme students.

The number of dentists in Thailand has increased rapidly since 1990 along with the increased number of dental schools. According to the FDI data in 1990, the number of dentists was 3,008, and the ratio of dentists to the total population was 1:21,609⁷. According to a later report in 2000, the number of dentists was 6,200, and the ratio of dentists to the total population was 1:9,800¹⁸. In 2005, there were 8,443 dentists in Thailand, yielding a ratio of 1 dentist for every 7,340 people¹⁵. However, the geographic distribution of dentists is very uneven; there are many more dentists in the major cities than in the small towns, and very few in the rural areas. The number of dentists in both public service and private practice are concentrated in Bangkok, capital city of Thailand. Access to dental care is difficult in rural areas. The shortage and unequal distribution of dentists and the lack of facilities in rural areas severely limit access to oral health services by many Thai citizens.

There are three major dental health insurance programmes in Thailand. All Thai people are covered by one of the three programmes. The first provides welfare for government officers and offers the highest payment per person. The second is a social welfare scheme which is available for employees who pay 5% of their salary each month into the social welfare fund. The employer

and government also pay the same portion to the fund. The third programme is the biggest and covers more than half the Thai population and is known as 'the universal coverage' system. This scheme is available for people who are not eligible for the other two systems, and includes mainly underprivileged people. A minimal fee of less than one US\$ per visit or appointment is required. This policy includes free-of-charge basic dental treatment for all ages. No co-payment is required. The treatment includes dental sealants, amalgam and composite fillings, extractions, scaling, and removable complete/partial acrylic dentures.

Individuals who want extended dental health coverage can buy their own private insurance. However, it is more common for the Thais to pay out-of-pocket for other dental treatment not covered under any of the dental health insurance programmes. In Thailand, the government's oral health care budget is inadequate to meet increasing oral health needs and demands of the population, particularly for treatment of dental caries, periodontal diseases, and edentulourness¹⁹.

Discussion and conclusion

Acquiring the information that is reported in this paper was more difficult than anticipated since there are few publications and references on dental education in Thailand. The shortage of recent references was partially resolved by using the collective knowledge experiences of the authors. Therefore, some of the comments are the opinions of the authors based on their personal knowledge. A point of difference between the Thai dental education system and overseas dental schools is the compulsory public services required of new graduates. This system has been in place since 1989, and has produced dentists to serve in the public hospitals, especially in the rural areas, for over 17 years. In addition, the government has developed special incentives to supplement the fixed salary to encourage and maintain the dentists in the public sectors. This strategy has been very successful in retaining some dentists to work in the rural areas.

In conclusion, this paper reports on dental education in Thailand and contributes to a better understanding of international dental education. In Thailand, a standard curriculum is followed, which has some similarities and some differences to overseas courses. It is expected that academic interchange will continue to occur between Thai and foreign educators and researchers to the benefit of both groups.

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References

1. The world fact book: Thailand. Central Intelligence Agency, Office of Public Affairs. Washington DC. 2006.
2. Morrison T, Bordon GA, Conaway WA. Kiss, bow, or shake hands. Avon, MA: Adams Media Corporation, 1994:382-387.
3. http://www.moc.moe.go.th/Download/write/Learning_Agy.pdf (Article in Thai), July 2006
4. Quah SR. The Triumph of practicality: tradition and modernity in health care utilization in selected Asian countries. Singapore: Institute of Southeast Asian Studies, 1989. P162.
5. Brun V, and Schumacher T. Traditional herbal medicine in northern Thailand. Berkeley: University of California Press, 1986. P36.
6. Bramley P. Prince of Songkhla--a new dental faculty. *Br Dent J*. 1990 Jun 9;168(11):426-7.
7. FDI World Dental Federation. FDI Basic Facts 2004. Dentistry around the world. Thailand section. London: FDI World Dental Press Ltd, 2004.
8. Sekiguchi H, Machida Y. The current status of dentistry, particularly pediatric dentistry, among the countries and territories of Asia. *J Clin Pediatr Dent* 1999 **23**: 107-111.
9. Ministry of Public Health. The fifth national oral health survey in 2000-2001, Thailand. Bangkok: Ministry of Public Health.
10. Vachirarojipisan T, Shinada K, Kawaguchi Y. The process and outcome of a programme for preventing early childhood caries in Thailand. *Community Dent Health* 2005 **22**: 253-259.
11. Vachirarojipisan T, Shinada K, Kawaguchi Y *et al*. Early childhood caries in children aged 6-19 months. *Community Dent Oral Epidemiol* 2004 **32**: 133-142.
12. Kiyak HA, Mulligan K. Studies of the relationship between oral health and psychological well-being. *Gerodontology* 1987 **3**: 109-112.
13. Srisilapanan P, Malikaew P, Sheiham A. Number of teeth and nutritional status in Thai older people. *Community Dent Health* 2002 **19**: 230-236.
14. Dental health personnel. *J Dent Assoc Thai* 1981 **31**: 196-204. (Article in Thai).
15. Division of Oral Health, Department of Hygiene. Oral Health Care System in Thailand, Bangkok: 2004: 32-39 (Article in Thai).
16. Benjakul P, Cheunarrom C. Student adjustment problems in two dental schools in Thailand. *J Dent Educ* 2000 **64**: 365-369.
17. Bhuvapanish V. Effect of a training course in the community hospital towards the knowledge and attitude of the dental student under and not under the compulsory act. *J Dent Assoc Thai* 1990 **40**: 48-53. (Article in Thai).
18. Zillen PA, Mindak M. World dental demographics. *Int Dent J* 2000 **50**: 194-197, 231.
19. Phenkhue L. Oral health financing in Thailand. *J Thai Dent Public Health* 1999 **4**: 7-35 (Article in Thai).

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