

REVIEW

Centennial pharmacy education in Thailand

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Abstract

Pharmacy education in Thailand has undergone changes since founded in 1888. Several contextual influences on changes in global and local health care system and internal constraints from simultaneous changes in education system and pharmacy professional practice result in the lack of long-term strategies for reasonable implementation. Pharmacy curriculum change has profoundly affected the quantity and quality of pharmacy workforce as well as the practice of pharmacy in Thailand. By 2014, the centennial pharmacy education will be celebrated in Thailand. During the time there has been development of the curriculum to suit the changing role of pharmacists in Thailand. This article is aimed to review the current status and gather the external and internal factors affecting Thai pharmacy education for development towards Asean Economic Community by 2014.

Introduction

Thailand, like many other Asian countries, used traditional remedies in the former days. The Western medicine began when Siriraj Hospital was founded in 1888. It gradually gains popularity and become normal way of life nowadays. By 2014, the centennial pharmacy education will be celebrated in Thailand. During the time there has been development of the curriculum to suit the changing

role of pharmacists in Thailand. This article is to share our experience and the trend in pharmacy education in Thailand.

The formal medical education in Thailand began when His Majesty the King Chulalongkorn (Rama V) founded the Royal Medical School on 3 January 1901 (presently Siriraj Hospital Medical School, Mahidol University). In 1914 the first

Pharmacy School was separated from the medical school and became part of Chulalongkorn University which was founded in the same year^{1,2}. Since then there has been continuing development of the pharmacy education in Thailand and currently there are 18 faculties serving the country (Table 1).

The First Pharmacy School

The first pharmacy curriculum was a 3-year program with emphasis on galenical pharmacy and dispensing and the final year apprenticeship. Graduates received Certificate of Compounding then changed to Certificate of Pharmacy after the new terminology "pharmacy" was adopted in 1932.

Table 1 Faculties of pharmacy in Thailand

University	Year founded	No. of graduates each year**
Chulalongkorn	1914	220
Chiang Mai	1964	130
Mahidol	1968	120
Prince of Songkla	1978	120
Khon Kaen	1980	150
Silpakorn	1985	150
Rangsit*	1987	90
Naresuan	1992	100
Ubol Rachatnani	1993	120
Hua Chiew		
Chalermprakiat*	1993	120
Srinakarinwirot	1996	80
Mahasarakam	1996	90
Walailak	2005	80
Payap*	2005	60
Siam*	2006	50
Phayao	2008	-
Eastern Asia*	2008	-
Burapha	2009	-
Sum		1,680

* private institutions; **as of 2011

The courses included basic science, English, basic professional, medical science, and professionals. During

1922-1936 the professional program led by A.H. Hale, a British pharmacist, included 17 courses which could be classified into 4 groups, i.e. materia medica, dispensing technology, drug administration and apprenticeship. After that the courses were divided into 5 groups, i.e., pharmacognosy, pharmaceutical chemistry, pharmaceuticals, forensic pharmacy, and dispensing¹. Since that time there has been continued development of pharmacy curriculum (Table 2).

Table 2 Evolution of pharmacy curriculum in Thailand

Period	Degree offered	Duration (year)
1914-1934	Certification in Pharmacy Compounding	3
1935-1936	Certification in Pharmacy	3
1937-1940	Associate Degree in Pharmacy	3
1940-1956	B.Sc. in Pharmacy	4
1957-present	B.Sc. in Pharmacy	5
1998 - present	B.Sc. and Doctor of Pharmacy (Pharm.D.)	5-6
2014	All Pharm.D.	6

During the early period of pharmacy curriculum, there was no law to control the compounding, dispensing and advertising of drugs. There were only a few students admitted each year because the profession was not recognized by public and other health professions.

Profession Control Act

It was not until 1923 that King Vajiravudh (Rama VI) issued the first

Medical Act¹ for public welfare that is to protect the public from malpractice by untrained medical personnel. The Medical Act limit the compounding of drug only to those trained (pharmacists) but did not control the dispensing and advertising of drugs. There were false claims and over claims of drugs widespread over the whole country. Pharmacists with ethics in mind were unable to do so and they suffered in their practice as well as business.

In 1929 The Pharmaceutical Association of Siam was founded by pharmacists' coalition. With the association's efforts, the separation of Medical Act into Drug Control Act and Profession Control Act was succeeded in 1936¹. The Profession Control Act recognized the role of pharmacists and professional right and licensing was required ever since. The law was enforced by the Ministry of Public Health. The Secretary General of the ministry appointed a Committee on Professions which includes medical doctors, dentists, pharmacists, nurses and representatives from the ministry to control the practice of health professions. Each profession had its own sub-committee to control the practice of its members. In the last 30 years each profession split out on it's own Profession Act. The Pharmaceutical Profession Act was adopted in 1994 and the Pharmacy Council is established as the legal body to govern the pharmacy profession.

National Licensing Examination

Since 1936 pharmacy license is required for practicing pharmacists¹ in all settings including pharmaceutical industry, hospitals, drug stores and drug distributors. The licenses were issued by the Committee of Professions, the

Ministry of Public Health. Since public universities belong to the Ministry of University Affairs which also serves as a legal body to overseeing education standards, all graduates from public universities are given licenses automatically whereas graduates from private universities and from overseas are required to take licensing examination.

After 1994 the registration and licenses are responsibilities of the Pharmacy Council. The competency of pharmacists has been stated and the examination is comprised of three areas, i.e., pharmaceutical care, pharmaceutical technology and social pharmacy. By the year 2004, all new pharmacy graduates from both public and private universities are required to take licensing examination.

Pharmacist Manpower

There has been crisis in shortage of pharmacist manpower since the establishment of the first Faculty of Pharmacy. Until 1964 there was only one faculty of pharmacy in Thailand producing 120 pharmacists annually to the total workforce of 1,200 pharmacists. Recently, a national survey³ has estimated that there were 13,762 pharmacists in active services, serving 62 million population in Thailand (1:4,500 compared to 1:1,500 in industrialized countries). The 18 universities (Table1) should bring the yearly production of pharmacists to about 1,680. This figure indicated a big shortage since the regulatory required licensed pharmacists in pharmaceutical industry, hospitals, pharmacies and medicine distributors. Besides, there was uneven distribution of the workforce since most of pharmacists are in Bangkok and metropolitan area. The demand for pharmacists, especially in the rural areas, is even greater. As a

result in 1984, the government launched a "compulsory academic service" program where pharmacists graduated from public universities had to sign a contract that required them to work for government for two years in the assigned rural areas or else they have to pay 200,000 baht (US\$6,667). The program had eased the pharmacist shortage in rural areas. However, the 1997 economic crisis and government policy in downsizing the public workforce led to the end of this program beginning with new students enrolling in June 2001. Unless pharmacists find the new role, especially in pharmaceutical care, there will not be enough jobs for new graduates in the near future.

Pharmacy education system

For some political reasons in the former days, the government separates higher education from the Ministry of Education. Quality assurance program is being implemented by the Ministry of University Affairs (MUA). Administration of higher education was under MUA. Admission of students in public universities is organized by MUA through the National entrance examination. Some public universities have quota for students from rural areas by special recruitment. Private universities admit students from both National entrance examination or with its own recruitment process. Pharmacy curriculum of all universities has to be approved by the ministry, but recently it has been delegated to the University Council of individual university. The faculty staffs of public universities are government employee. The promotion and academic ranks are appointed by MUA.

At present the government has implemented a new education reform

under National Education Act 1999 by establishing the Ministry of Education as an administrative body on national education and the Ministry of University Affairs was dissolved in 2002. All public institutions change the status from "government-owned" to "government-supported" universities. Each university has autonomy over its administrative functions through the University Council, with government overseeing, and monitoring for quality and standards.

Bachelor of Pharmacy

The pharmacy education in Thailand was extended to university level and the Bachelor of Pharmacy degree was first offered in 1940¹. It was a 4-year study after 12 years of primary and secondary school education. The professional courses were pharmaceutical jurisprudence and ethics, pharmacy calculation and Latin, pharmaceutical preparations, pharmaceutical chemistry, pharmaceutical analysis, pharmacognosy, manufacturing pharmacy, pharmacology and apprenticeship.

Five-year curriculum

Since 1957 the curriculum has been extended to 5-year program. Such curriculum was mainly derived from American system. The content of general education was expanded to include calculus and statistics, social science and humanity, in addition to chemical and life sciences. Additional professional courses were introduced such as pharmacy orientation, physical pharmacy, pharmaceutical technology, pharmaceutical administration, and drug evaluation. In addition to 5-year program, a minimum of 500 hours of professional practice is required for a Bachelor degree.

Due to changing role of pharmacists form "product oriented" to "patient

oriented" a course in clinical pharmacy was introduced in 1964, and subsequently biopharmaceutics, pharmacokinetics, pathophysiology and pharmacotherapy. Besides, the placement of new pharmacists under compulsory academic service program in hospitals in rural areas created the need for pharmacists to work in the community.

An increase in the number of pharmacy faculties causes the Ministry of University Affairs to set up standard curriculum structure for Bachelor of Science in Pharmacy to consist of not less than 150 and not more than 188 credits since 1991. But this framework is implemented in various ways at different faculties. Most of public faculties are at the maximum number of credits which is relatively high as compared to other disciplines, whereas the private faculties have lower number of credits.

Tracking System

Although a 5-year program expanded the curriculum content for all aspects of pharmacy practices (including industrial pharmacy, quality control, hospital, community, pharmaceutical care and marketing pharmacy), new pharmacy graduates feel that they are inadequately trained in any one of these careers. Specialization in certain area is needed prior to graduation. To solve this problem, the curriculum has been rearranged to have more of professional electives so that student can choose their own track and still pass minimum requirements in non-specialized area. Since 1994 the majority of faculties divide into 3 tracks, i.e., pharmaceutical technology, pharmaceutical care and social pharmacy.

Six- year curriculum

The pharmacists' role has dramatically changes worldwide in the past few decades. The pharmacists' responsibility is far beyond compounding and dispensing and enters into the real world of patient care. Pharmacists are responsible for the drug therapy outcomes of their patients. Pharmacist must do more professional functions including participation in drug use decision, selection of drug product dosage form as well as source of supply, determine the dose and dosage schedule, prepare the drug product for patient use, provide the drug product to the patient, provide drug information to the patient, and monitoring of drug use. To do this requires not only objective information but also a subjective perception for the need of the patient. These changes in practice required change in education.

The current trend indicates that job in pharmaceutical industry is limited while there is still a great demand in patient care area. A minimum of about 10,000 pharmacists are needed to fill the drug stores if pharmacists are to serve full professional functions. It is expected that a 6-year program would produce pharmacist of choice for the drug store nationwide.

Naresuan University was the first to offer a 6-year Doctor of Pharmacy (Pharm.D.) in Pharmaceutical Care since 1999. All other universities are offering a 5-year B.Sc. degree and also have 6-year curriculum approved by the MUA but not implemented yet.

In 2008 the Pharmacy Council have issued a statement that pharmacy licensures are required to have 6-year training by the year 2014 yet no action has been taken for implementation.

Continuing education and re-licensing

Although it is quite natural to keep up with the current knowledge of the profession to be able to practice, there was no formal continuing education (CE) requirement and licensing is for life. Since the establishment of the Pharmacy Council in 1994 much attention has been paid to the issue for the benefit of public. Details of CE requirements and re-licensing are in a drafting stage and are expected to distribute for pharmacists' public hearing soon.

Board of Pharmaceutical Specialty

Board of Pharmaceutical Specialties was created by the Pharmacy Council in 2001 in order to promote advancement of the profession through recognition of areas of specialized training, knowledge and skills in pharmacy and certification of pharmacist specialist in those areas. The first area of specialty to be implemented in 2001 is in Pharmaceutical Care.

Also, The Federation of Asian Pharmaceutical Associations (FAPA) established FAPA College of Pharmacy (FAPA-CP) by the initiation of FAPA President Boon-ardt Saison and inaugurated on May 17, 1998 and Professor Tsuneji Nagai was elected as the first president of the college. FAPA-CP is an international collaborative program on advance professional training among Asian pharmacists. The main objectives of the college are:

1. To elevate and enhance the standard of pharmacy practice in every field of the pharmacy profession.
2. To develop the highest scientific and technological competencies in pharmacy practice.
3. To promote moral, ethical and professional relationships among

pharmacists and other health personnel.

4. To accredit programs for higher education and advanced training in various fields of pharmacy specialization.
5. To organize the scientific and professional meetings for better achievement in pharmacy profession.
6. To set up collaboration or cooperation in pharmacy practice, research, post graduate education and training.

The most important and concrete activity of FAPA-CP is to provide the professional degree as Fellow of Asian College of Pharmacy (F.A.C.P.) and Associate Fellow (Assoc. F.A.C.P.) as recognition for the achievement of professional expertise. Any licensed Asian pharmacist is eligible to enroll in the program. The training can be done at home or abroad via self-study, distance learning, tutorial, short courses and professional practice in the approved sites. The detail of the program can be found at: www.pharm.chula.ac.th/fapa-cp.

Pharmaceutical Education in Thailand in Transition

By law and regulations as mentioned above, pharmacists in Thailand have to get involved in almost every aspects of the pharmaceutical supply chain, from manufacturing industry to patients outcomes. With the diversities of roles and responsibilities among different practice settings, pharmacy students have to endure a variety of subject matters in pharmacy curriculum pertaining to technology of the pharmaceutical products as well as the pharmacotherapy part of patient care. At the moment, there are two curriculums existing in Thailand, 5-year B.Sc. and 6-year Pharm.D. Degree. But starting since 2009, all pharmacy curriculums in Thailand will

be a 6-year Pharm.D., as mandated by the Pharmacy Council of Thailand. It is believed that the 6-year Pharm.D.'s will provide a better means in producing pharmacy graduates with knowledge and skills needed by the evolving job market. As a result, pharmacy education in Thailand is in an important transition period, when taking into consideration many internal and external factors that would affect the practice of pharmacy, i.e. the rapidly changing health care system, advancement in drug discovery and development, the aging society of Thai population, as well as the socio-economic impact from the AEC (Association of the Southeast Asian Nations Economic Community). The big question is "How the 6-year Pharm.D. degree will fulfill the many expectations required by law under one single license?"

For licensure, there has been only one pharmacy license in Thailand, but with many duties to perform under the same license; from drug production in the local manufacturing industry, to drug regulation and registration by the Food and Drug Administration (FDA), to all the drug distribution channels until the drug product is consumed by the general public. At present, all the knowledge and skills needed to perform these duties are put together in the 5-year Bachelor's degree. But this will change with the mandatory 6-year Pharm.D. degree. Under the new curriculum structure, all pharmacy students will take the same subject matters during the first four years, the curriculum contents will provide students with the foundations of pharmacy⁴ (or core competencies) for their professional practice. The last two years are for specialization, students can choose their specialties either in Pharmaceutical Sciences or Pharmaceutical Care area. The fifth-year is for course work and the last year is for clerkships in their

specialized area. Contents of the Pharmaceutical Sciences will gear towards local pharmaceutical manufacturing industry and pharmacotherapy will be the major focus for Pharmaceutical Care. Students in both special areas are required to take certain courses in Social and Administrative area.

For clerkship, the new curriculum will comprise of 2,000 hours of practice training. The first 400 clerkship hours will take place at the end of the fourth year, students are required to be trained for their core competencies, either in the hospital or drug store settings. Core competencies comprise of seven domains. They are; 1) Professional ethics, 2) Team work and system management, 3) Information, communication and education, 4) Pharmaceutical products, Quality assurance and Herbal drugs, 5) Drug compounding, 6) Basic pharmaceutical care, and 7) Health and drug system. The other 1,600 hours are for the 6-7 clerkship rotations in either Pharmaceutical Sciences or Pharmaceutical Care area.

For now, to enter into professional practice, pharmacy graduates will take the same board examination at the end of the 5-year or 6-year program. But this requirement will also be changed in the near future. Starting in 2014, the Pharmacy Council of Thailand has stipulated that pharmacy students need to take two exams for licensure, one basic exam at the end of the fourth year and another one at the end of the 6-year program, the former is to determine the core competencies and the latter is for competencies in their specialized area.

With the pharmacy education and practice in this transition period in the Thai health care system, there are more questions than answers as to how to make it happen effectively

and successfully in order to provide assurance that pharmacy practice can help Thai society achieve the optimal use of drugs? There is a lot of expected uncertainty or confusion, particularly in the Pharmaceutical Sciences area. First, how the Pharm.D. in Pharmaceutical Sciences differs from the M.S./Ph.D. post-graduate degrees, since Pharm.D. is an entry level degree? Second, how to design clerkship rotations in Pharmaceutical Sciences since most of the quality assurance system of the pharmaceutical industry are of international standards or guidelines and the duties of regulating the industry belong to the FDA, not the Council? Last but not least, how to incorporate the diverse competencies of the two specialized areas into one professional license. The two specialized areas are very much different in the content, process as well as outcomes; therefore, it is a big challenge of how to make it work effectively under one common license? Or maybe it's time to think about two separate licenses, one for Pharmaceutical Sciences and another for Pharmaceutical Care.

The transition in the Thai pharmacy education in recent years has been done in a haphazard manner, without taking into consideration the many important contextual factors of the health care system as well as the

constraints of all pharmacy schools in Thailand. It also lacks long-term strategy for implementation. Besides, having students spend an extra year in schools is a costly investment for both students and teachers. Therefore, a lot of problems are expected and practical solutions are needed in the near future. But it remains to be seen how the new curriculum structure will affect the quantity and quality of pharmacy workforce as well as the practice of pharmacy in Thailand.

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