

REVIEWS

Nursing education in the United States, Thailand, and China: Literature review

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ABSTRACT

The global shortage of nurses intensifies the challenge to recruit more nurses. Therefore, nursing educators in different countries need to collaborate their efforts in solving this problem because nursing schools are responsible for supplying sufficient numbers of skilled nurses for both national and international health care services. In addition, with the increase of global travelling, it is important for nurses to know how to take care of people with different cultural backgrounds. Therefore, the scientific knowledge of this paper was provided (1) Through a review of the historical development of nursing education in the selected countries, which can help readers understand why there are a diversity of nursing programs and the current strength of nursing education in the selected countries. (2) Through a review of current programs in the selected countries, which can help readers to enhance international academic communication and facilitate international exchange among nurses, nurse educators and nurse students. (3) Through a review of the issues of nursing education in the selected countries, which can help nurse educators design the appropriate nursing programs according to the societal needs.

Key Words: Nurse, Education, History, Program, Issue

1. INTRODUCTION

Asia's economic development plays an important role in the world's economic development. In addition, China's current, quick economic development cannot be ignored in the world. Since increasingly more people will come to China for traveling and living, it will bring a big challenge for Chinese health care services. Meanwhile, Chinese nurses will be required to deliver multicultural nursing services to people with different cultural backgrounds. Therefore, these challenges bring China to an increasing need to learn from other countries who have advanced experience and knowledge in health care services, especially in nursing services.

The nursing education in the United States (U.S.) was developed quickly after World War II with higher quality.^[1] According to The American Association of Colleges of Nurs-

ing (AACN),^[2] AACN encouraged advanced practice nursing (APN) to move from the current master's degree to the doctoral level, which is a doctor of nursing practice degree (DNP). DNP prepared nurses can make more advanced nursing interventions than APN prepared nurses. In addition, the U.S. was an immigration country, a diversity of foreigners would like to live in the U.S. Multicultural nursing care was required for the public. Therefore, the U.S. was selected first for the benchmark among various Western countries. Contrasting to Western countries represented by the U.S., Thailand was selected as a representative of Eastern countries, because Thailand has the same nursing education system as the U.S. In addition, from the societal points of view, the current King of Rama IX Bhumibol Adulyadej's mother — Princess Srinagarinda is educated in the nursing major.

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The king's mother's nursing education has made Thailand's nursing education develop more quickly than most other Eastern countries. Moreover, Thailand is a tourist country. It has some experience in providing multicultural nursing care for various tourists. Thus, the U.S. and Thailand were selected as benchmarks for the development of Chinese nursing education. This can facilitate the development of Chinese nursing education to deliver the multicultural nursing care and achieve the international standards of nursing services. Based on aforementioned characteristics of the societies' development progress and challenge or strength of the development of nursing education, the U.S., Thailand, and China were selected for this review.

In the health care system, in order to provide good health care service to the public, it is important to have enough health care personnel. However, the World Health Report has stated that the significance of the insufficient number of people working in the health care system has been a critical issue since 2003.^[3] According to the Employment Projections of 2012-2022 released in December 2013 by the U. S. Department of Labor's Bureau of Labor Statistics,^[4] Registered Nurse (RN) is listed among the top occupations in terms of job growth through 2022. The RN workforce is expected to grow from 2.71 million in 2012 to 3.24 million in 2022 with an increase of 526,800 RNs. The Bureau also projected the need to replace 525,000 nurses in the same period. Therefore, a total of 1.05 million more RNs will be needed for the growth and replacement of RNs by 2022. In Thailand, the Thailand Nursing and Midwifery Council (TNC) asserted that the nursing workforce should increase from 163,500 in 2010 to 170,000 in 2019 to provide health care services both to citizens and foreigners, with a projected ratio of 2.5 RNs per 1000 population. However, in 2010, there were only 130,388 RNs under the age of 60 years old, which indicates 33,112 more RNs were needed in that year. Therefore, at least 39,612 RNs will be needed because the TNC's assessment did not consider the replacement of RNs by 2019.^[5] In China, according to the long-term development planning for medical and health personnel (year 2011-2020),^[6] 2,860,000 RNs are needed by the end of 2015 and 4,450,000 RNs are needed by the end of 2020, due to increased demand for the population. Until the end of 2013, there were only 2,783,000 RNs in China. Thus, 1,667,000 more RNs are needed to achieve the minimum required number of RNs, which does not include the replacement of RNs. This data proves there is a significant issue with the shortage of nurses in the U.S., Thailand, and China.

Since nursing education institutions are the source providing nurses, it is essential to know the history of nursing education, which includes the emergence and establishment of

each country's initial points of the first nursing program. It is important to know the history development of nursing education because (1) It can provide domestic and international contemporary nurses with knowledge about the background of nursing education in the involved countries; (2) It can educate contemporary nurses about the significant events related to the development of nursing education in the selected countries; (3) It can help contemporary nurses understand why different countries have various programs for nursing education, which are related to their country's social or political events as well; and (4) It can help administrators for contemporary nursing education learn from historical events and prevent destructive actions in the development of nursing education. Thus, the result of the history review can be used to see the current strength and weakness of the development of nursing programs in the selected countries through the tracking of their histories.

In addition, understanding the current programs of nursing education in the selected countries is important for assisting nurse educators in learning from each other. The effective programs and curriculum design of nursing education will be benchmarked by other countries. Therefore, the results of reviewing the selected countries' programs of nursing education can be used to establish academic credit recognition of the international exchange programs, and certainly to expand nurses' horizons of intercultural nursing care. These kinds of international nursing programs can also be used to enhance the quality of nursing care to patients with different cultural backgrounds. Moreover, this paper also provides information on the nursing issues in the selected countries. It is important to help nursing educators understand that various problems exist in different countries. These problems may be related to an individual society's religions, beliefs, and cultures. Thus, it can be used to develop more effective nursing programs to meet the public needs. Based on the aforementioned explanations, the purposes of this manuscript were (1) to understand how the initial history of nursing education in the selected countries influence current existing nursing programs; (2) to recognize how current programs and curriculums of nursing education in the selected countries can enhance nurses' international academic communication and the delivery of intercultural nursing care; and (3) to see specific issues related to the development of nursing education in the selected countries in order to design effective nursing programs.

2. THE HISTORY OF NURSING EDUCATION IN THE U.S., THAILAND, AND CHINA

The establishment of nursing education in the U.S., Thailand, and China has more than 100 years' of history. However, World War I and World War II had a significant impact on

the development of nursing education. Meanwhile, the wars also brought problems with the needs of nurses, because many soldiers needed care at the battlefields. In addition, each country's policy influenced the development of nursing education in different ways. For example, the requirement of midwifery pushed the development of nursing education in Thailand. However, the Cultural Revolution in China obstructed the development of nursing education. In the following parts, the development of nursing education in the U.S., Thailand, and China are introduced.

2.1 The development of nursing education in the U.S.

At the 1868, meeting of the American Medical Association, the president, Dr. Samuel Gross, recommended a training program for nurses. With the development of the New England hospital and the initiation of the first American school for the scientific training of nurses in 1872, the first formal 1 year nurse training program was established. The hospital-based nurse training schools were successful and they gained experiences to train nurses. In 1909, the first school of nursing was established at Minnesota University as part of the school of medicine, along with the first four-year nursing baccalaureate program.^[7] During World War I, nurses were needed to assist in caring for wounded soldiers as the national demand. The committee on Nursing of the General Medical Board of the Council of National Defense shortened nursing courses into two years in order to meet the national demand. After the war, nursing education was strengthened. In 1918, the Rockefeller Foundation helped build a committee to improve the hospital training programs, which was called a diploma degree program.^[8] After World War II, there were not enough nurses to meet patients' needs.^[8] With the investment of the federal government and the growth of community colleges, the program of associate nursing education was formed by Mildred Montag at Teacher's college of Columbia University in 1952.^[7]

The first post baccalaureate program for nurses started at Teacher's College of Columbia University in the early 1920s. The post baccalaureate program was designed to prepare nursing educators and administrators. This education model was adapted to offer the master's level nursing program in order to prepare clinical nurse specialists in 1954, at Rutgers University.^[7]

Moreover, with the emphasis shifted to develop clinical skills, master's program of Clinical Nurse Specialist (CNS), Nurse-Midwives (NM), Nurse Practitioners (NP), and Certified Registered Nurse Anesthetists (CRNA) were emerged.^[9] NPs program began in 1965, at the University of Colorado. NPs programs provide basic health care for persons and families, usually in a community rather than in an inpatient setting.

Master's programs that helped nurses to become a CNSs began from the middle to late 1960s. CNSs were expected to be experts in the nurses' areas of clinical practice. Additionally, since women needed special services, the nurse-midwives were educated in both nursing and midwifery disciplines. They received a Master of Science program certificate, which were certified by the American College of Nurse-Midwives. In addition, CRNAs were the longest established advanced practice nurses in the U.S., because World War I greatly increased demand for nurse anesthetists.

When we look at the program of doctoral nursing education, it can be tracked back to 1933, when Teacher's College of Columbia University offered the doctor of education degree. These programs produced many nursing leaders, who worked for the improvement of nursing education.^[10] In 1954, the University of Pittsburgh initiated the program of a Doctor of Philosophy in Nursing (Ph.D.). Since that time, doctoral education for nurses has developed steadily. Later on, with the establishment of National Institutes of Health (NIH) the department of the National Institutes of Nursing Research (NINR) in 1985, the postdoctoral training in nursing grew up.^[7]

Therefore, the strength of nursing education in the U.S. is that it provides a diversity of nursing programs in order to fill the societal needs and different levels of nurse careers' development. The various graduate nursing programs can enhance the development of nursing specialists. In addition, the highest nursing education, such as postdoctoral training is also available in the U.S., which can provide the direction for the development of the nursing profession in the world.

2.2 The development of nursing education in Thailand

Nursing education in Thailand has over one hundred year of history. In 1896, the Queen Sripachariantra of King Rama V established the first school of Nursing and Midwifery at the Siriraj Hospital.^[11] Due to the Queen's wishes to reduce maternal deaths and infant mortality rates, the nursing curriculum emphasized on midwifery. The initial courses were taught by physicians from foreign countries. However, all of the nursing courses were hospital based in a diploma level.^[12] When Prince Mahidol returned after graduation from Harvard University, in the U.S.; he began to develop a knowledge-based nursing education program.^[13]

In 1956, the first program of baccalaureate degree in nursing education was established at the School of Nursing and Midwifery at the Siriraj of Mahidol University. After World War II, the number of nursing schools was increased due to the shortage of nurses. In 1971, with the establishment of the first Nursing Faculty at Khon Kaen University, nursing

became an independent profession. The master's degree education was developed during this time as well. The first program of master's degree in nursing was established at the education faculty of Chulalongkorn University in 1973. The international doctoral nursing program began in 1999, by the collaboration among the Faculty of Nursing at Mahidol University, Chiang Mai University, and Khon Kaen University. The students that entered this program had the opportunity to study at both Mahidol University, Chiang Mai University, or Khon Kaen University and a selected overseas university. When students studied abroad, they were monitored by supervisors with expertise in the area related to their dissertations.^[11]

Therefore, the strength area of nursing education in Thailand is midwifery. In addition, with the establishment of the international doctoral nursing program, it can increase the highest level of nursing education development in Thailand.

2.3 The development of nursing education in China

The history of modern nursing education in China can be tracked back to 1888, with the establishment of the first nursing school at Fuzhou, Fujian province.^[14] In 1921, under the support from the Rockefeller Foundation, Johns Hopkins University, and Duke University, the first five-year baccalaureate nursing program was established at Peking Union Medical College (PUMC).^[15]

However, there were three catastrophes for the modern development of nursing education in China, which significantly obstructed the development of nursing education. First, Chinese nursing experienced a great hardship from the Japanese invasion and war from 1931 to 1945. During that time, many schools had to close their programs and the quality of nursing education was reduced.^[16] Second, with the establishment of the Communist Government in China in 1949, the development of higher nursing education was interrupted. During the 1950s, China focused on agricultural production and collectivization of properties, nursing education was unified as the health school-based nurses training program.^[8] It was called certification programs. Third, from 1967 to 1977, China was under the Cultural Revolution. It was closed to the Western countries. Since education was considered to be nonessential, a majority of programs in nursing education were closed down.^[17] After 1978, the Chinese government opened to the outside world again. It brought reform and new standards for education. Although a certification program in nursing remained until the 1980's, the first program of a three-year associate degree was opened in Guangzhou in 1981.^[8]

The first baccalaureate nursing program was reestablished in 1983 by Tianjin Medical University.^[17] Baccalaureate nurs-

ing programs admit nurses graduated from high school, who passed the National University Admission Examinations. In addition, nursing programs with international collaboration also accelerated the development of baccalaureate nursing education.^[19]

The first master's nursing program was set up in 1992, at Beijing Medical University.^[20] The bachelor's degree was a requirement for admission to master's programs in China as it was in other countries. With the collaboration of Chiang Mai University and fund support from the China Medical Board, a master's degree in nursing education also got the avenues.^[20]

The first doctoral nursing program was created in 2004, by Central South University and Second Military Medical University. A master's degree was required for a student to enter the doctoral nursing programs. The objectives of doctoral nursing education focused on three main points (1) professional values, professional development abilities, and professional culture of the human spirit; (2) the international perceptions and international activities; and (3) nursing research abilities.^[21]

Therefore, although the development of Chinese nursing education had been broken down by several historical events, it is pleasing to see that the doctoral nursing programs have been established in China.

In a word, the aforementioned introduction provides information about the historical development of nursing programs with each individual country strength and weakness. In addition, a comparison of the year when the selected countries established nursing programs in Bachelor, Master and Doctoral degrees is presented in Table 1. The earliest establishment of Master's and Doctoral degrees were both in the U.S., followed by Thailand, and China. Although China established a Bachelor's degree of nursing education earlier than Thailand, the system of Chinese nursing education was pulled down by various social events. However, the development of Chinese nursing education has been relatively fast. The time interval between the establishment of master's degree programs and doctoral degree programs is only 12 years, which is shorter than both Thailand and the U.S. Therefore, the earlier establishment of graduate nursing programs also reflected an advanced development of nursing education in the selected countries.

Table 1. Comparison of years nursing programs were established in the U.S., Thailand, and China

	The U.S.	Thailand	China
The first bachelor's degree	1909	1956	1921
The first master's degree	1920s	1973	1992
The first doctor's degree	1954	1999	2004

3. CURRENT PROGRAMS OF NURSING EDUCATION IN THE U.S., THAILAND, AND CHINA

In 2004, the Director of the AACN Board announced that in order to enter professional nursing practice, a bachelor's degree in nursing education background was the minimum level of requirement. In addition, Aiken *et al.* also stated that a nurse with a bachelor's degree education reduces hospital deaths.^[22] Nowadays, in Thailand, the basic nursing education level is started at the baccalaureate level. However, certification programs, associate degree programs, and diploma degree programs are still offered in the U.S. Certification programs and associate degree programs are still offered in China as well. This is because based on Thailand Nursing and Midwifery Council's mission, they would like to upgrade the professional level of nurses to the same as other health alliance professions. Therefore, baccalaureate prepared nurses are currently required as the minimum level of nursing education in Thailand. In addition, the requirement is also related to the fact that different levels of nursing students hold different nurse working licenses in Thailand. When nurses with different levels of education work in clinical settings, they have different responsibilities. However, various nurses working in the same unit with different responsibilities makes patients confused about what kinds of nurses they should call to help them under different situations. Therefore, nurse education lower than a baccalaureate degree is not provided in Thailand anymore. The following parts provide information regarding current programs of nursing education in the U.S., Thailand, and China.

3.1 Nursing programs in the U.S.

There are four primary undergraduate nursing programs in the U.S., including certification programs, associate degree programs, diploma degree programs, and baccalaureate degree programs (BSN). The master's nursing programs in the U.S. includes four variations: CNSs, NMs, NPs, and CRNAs. Additionally, doctoral programs and post-doctoral fellowships are also popular in the U.S. Further details are as follows:

The certification program provides a certificate for a Licensed Practical Nurse (LPN) or a Licensed Vocational Nurse (LVN). These nurses can deliver nursing care to patients under the supervision of RNs.^[8] The duration of a certification program is 1 to 1.5 years.^[5] Since the 1960's, all LPNs or LVNs have been required to pass a licensure examination before they can practice.^[8] However, they can only provide the basic nursing care. They are not eligible for giving patients intravenous injections.^[5]

The associated degree program is the lowest level of the technical nursing program for RNs in the U.S.^[8] Nurses usually study in a community college, and some programs are based on senior colleges or universities. The duration of the associate degree program is 2 to 3 years.^[5] It requires 60% of the total number of credits to be allocated to nursing courses.^[9] The graduates are expected to deliver direct bedside nursing care to patients.

The diploma degree program takes place in a hospital school of nursing. It provides a channel for LPNs/LVNs or high school graduates who wish to become a RN.^[8] The duration of the diploma program is around 2 to 3 years. This type of program is under the direction of the hospital or incorporates independently. The subjects offered in this program include biology, physical science, social science, nursing theory and practice.^[9]

The baccalaureate degree program pays attention to develop students' skills of independent judgment, critical decision making skills and research skills.^[9] The feature of professional nursing practice pays more attention to risk reduction and health promotion. The study duration of a baccalaureate prepared nurse is 4 to 5 years. The initial courses include sciences, liberal arts, and humanities. The nursing courses account for one half to two thirds of the curriculum.

The BSN-completion program is a baccalaureate program designed for students possessing either an associate or diploma degree in nursing. In addition, those students have held an RN license. Nurses in those programs transfer credits from the basic education courses or receive credits by passing a nursing entrance examination. Depending on the credits of the courses required, the length of study lasts from 1 to 2 years.^[9]

Various graduate nursing programs are available for nurses, such as a Master of Nursing (MN), Master of Nursing Science (MSN), Nurse Practitioner Certification (NPC), CNS, CRNA. The majority of these master's programs require at least 18 to 24 months of full-time study. Students can choose an area of role preparation, such as education, administration, case management, health policy, health care system, informatics, and the increasingly popular advanced clinical practice roles.^[9]

Nowadays, various Doctoral Degrees in Nursing are also provided in the U.S., such as Doctor of Science in Nursing (DSN), Doctor of Nursing Practice (DNP), and Ph.D.^[23] There are two types of doctoral programs including practice focused and research focused. Practice focused doctoral programs (DSN or DNP) account for a small percentage; while the majority of the programs are research focused, such as

Ph.D. Practice focused doctoral nursing programs aim to foster specialized and advanced clinical nurses. Research regarding practice focused programs is evidence-based and innovative. In addition, credible research findings are recommended to be implemented in clinical settings. Research focused programs are designed to cultivate nurse scholars and scientists. These programs emphasize on scientific research methodology and content. In addition, these programs require original research projects and an integrated dissertation. These two types of doctoral programs are designed with different goals to cultivate different competencies for their graduates.^[24]

When looking at the overall programs of nursing education in the U.S., there were 1793 undergraduate nursing programs, 861 master's level nursing programs, and 123 doctor's level nursing programs by 2007.^[25]

3.2 Nursing programs in Thailand

Currently, the lowest level nursing program in Thailand is the baccalaureate. The baccalaureate program is a four-year program. The required courses include philosophy, sociology, biology, physiology, economics, microbiology, statistics, biochemistry, English, and Thai languages. The nursing courses include nursing fundamentals, obstetrics and gynecology, pediatrics, adult health, geriatrics, psychiatric mental health, and public health. Students are required to complete a total of 150 credits. Thirty credits are required for general education, 90 credits are for core education and at least three credits are for elective courses. Students are also required to deliver at least five babies in a midwifery course and learn how to diagnose and treat various minor illnesses by learning the course of primary care.^[26]

Graduate programs of nursing education in Thailand consist of master's and doctoral levels. According to The Nurses' Association of Thailand,^[12] all master's degree programs require two years of study. The curriculum varies between institutions. Total credits range from 39 to 44. Twelve credits are required for thesis, and the rest are related to coursework. Most of the programs organize coursework in four groups: core courses, major courses, minor courses and elective courses. Credits for core courses range from 9 to 12. Credits for major courses are between 12 and 15. Minor course credits are between 4 and 6. Some programs require elective courses.

All doctoral degree programs require at least three years of study. There are two types of doctoral nursing education in Thailand. Type I is a dissertation without coursework. For students with a master's degree, 48 credits are required. For students with a bachelor's degree, 72 credits are required.

Type II is a dissertation with coursework. For students with a master's degree, 27 credits are needed for coursework and 36 credits are required for a dissertation. For students with a bachelor's degree, 36 credits are required for coursework and 48 credits are required for a dissertation.^[27]

There are now 85 nursing schools providing different levels of nursing education around the country in Thailand.

3.3 Nursing programs in China

Nursing programs in China at the present time have included both undergraduate and graduate nursing programs.

There are four types of undergraduate nursing programs, including certification programs, diploma degree programs, baccalaureate degree programs, and continuing or adult nursing education programs. They are introduced as follows.

Health Schools provide certificate programs and foster technical nurses, who have dominated the hospital workforce in China in the past several decades. Technical nurses used to account for 95% of all practicing nurses in China ten years ago. This program recruits students who have graduated from middle school and trained them in hospital-affiliated health schools.^[8] It is a three-year program. The major courses include English, foundations of computer application, anatomy, physiology, histology and embryology, physiology, biological science, microbiology, pharmacology, and pathology. Nursing courses include fundamental nursing, surgical and medical nursing, obstetrical and gynecological nursing, pediatric nursing, psychological nursing, geriatric nursing, and psychological nursing.^[28] Graduates are required to take the registered nurse license examination in order to provide direct care to patients at the general hospitals, convalescent hospitals or community hospitals.

The diploma degree program is available in the medical college and requires three years to complete.^[29] The nursing school programs in colleges are designed to educate students who will give patient-centered nursing care in hospitals as general duty or as the staff nurses. The courses include basic professional nursing courses, special clinical nursing courses, public health nursing courses, humanity science, and others (including courses of administration, education, and research). Graduates of these programs are expected to function with intelligence and skill in the more predictable or recurring patient care situations that require more specific knowledge.

The baccalaureate degree program is available in universities. This program requires four years to complete. The course's components are similar to the associate degree program mentioned above. They are built on the knowledge gained from science and humanity so that the baccalaureate graduates

achieve a broad understanding of nursing and related sciences as well as the basic nursing skills. The baccalaureate prepared graduates are expected to have the ability to provide good quality nursing care to patients and their families.^[30]

Continuing or adult nursing education programs (CANEP) recruit students who have working experiences. There are two levels of adult nursing education. Level one is a diploma degree with the certification education background. The study duration is three years. Level two is a bachelor degree with the certification education background (5 years to complete) or diploma education background (3 years to complete).^[31]

Nowadays, both master's and doctor's degrees in nursing education are available in China. Master's nursing programs require 2 to 3 years to complete. These programs are generally divided into two sections. The first section, nursing professional and professional basic courses are required to finish in the first year. Students are required to complete the second section with a thesis, clinical practice and educational practice within the programs' studying years. The master level nurses should have a teaching role, leadership role, and a management role in order to provide services in hospitals.^[30]

The doctoral level nursing program requires three years to complete, which focuses on conducting research with the certification of Ph.D. The major courses include political theory, English, advanced statistic, nursing and health protection management. The doctoral programs emphasize on the development of students' professional value, professional

development ability, professional human spirit, international communication, and research skills.^[21] The graduates are expected to hold teaching, leadership, and management roles in the academic field.

There were 1537 undergraduate nursing programs, 73 master's nursing programs, and 16 doctoral nursing programs including all nursing programs around the country by 2012.^[32]

In summary, the comparison of nursing education programs in the U.S., Thailand, and China is shown in Table 2. Through the comparison, the programs' objective and curriculum, it was found that the U.S. has various nursing programs both in undergraduate nursing education and graduate nursing education. The development of undergraduate nursing education programs in the U.S. were based on the emergence of social needs. Therefore, LPNs and LVNs exist in hospital work settings in the U.S. Only RNs are permitted to work in Thailand and Chinese hospitals. Comparing Thailand nurses' educational background with Chinese nurses, all Chinese nursing graduates can receive an RN license by passing the same national RN examination. When looking at the diversity of graduate nursing programs in the U.S., it provides the direction for specialty nursing students to learn from. Therefore, if an exchange program of nursing students with academic credit recognition can be established among countries, it will benefit nursing students to expand their horizons in different countries' specialties and intercultural differences. Moreover, nursing student exchange program can also drive globalization to integrate arising from the interchange of world views, ideas and other aspects of culture.

Table 2. Comparison of nursing educational programs and graduates' working licenses in the U.S., Thailand, and China

Type of program	The U.S. (years)	Thailand (years)	China (years)
Certification program	1 to 1.5 LPN/LVN		3 RN
Associate's degree program	2 to 3 RN		3 RN
Diploma degree program	2 to 3 RN		
BSN-completion program/CANEP	1 to 2 RN		3 to 5 RN
Baccalaureate degree program	4 to 5 RN	4RN	4 RN
Master's degree program	1.5 to 2 RN (MN, MSN, NPC, CNS, CRNA)	2 + RN	2 to 3 RN
Doctoral degree program	3+ RN (DSN, DNP, Ph.D.)	3 + RN	3 + RN

4. COMPARISON OF ISSUES IN NURSING EDUCATION AMONG THE U.S., THAILAND, AND CHINA

The system of nursing education as an open system cannot exist by itself. It must change as the social context changes, such as in the case of an aging society, nursing shortage, fac-

ulty shortage or immigration. It also finds that factors such as geography, economic, race, religion, different languages, and politics significantly influence nursing education.^[33] A review of literature also found that social issues influence the development of nursing education in different ways among selected countries as showed in Table 3.

Table 3. Comparison of social issues' influence the development of nursing education in the U.S., Thailand, and China

Countries	Issues
The USA	The issues for the American nursing education are shown as follows: (1) the change of nursing students' profiles, from the full time students to part time students, (2) educational mobility: the change from traditional classroom teaching to web-based learning, (3) a shortage of registered nurses, (4) a shortage of qualified nursing faculty, (5) technology and education significantly extend to cable television and the internet, (6) changes in health care settings, from inpatient to outpatient, and (7) an aging population. ^[9]
Thailand	According to the class discussion with the president of the Thailand national nursing association, the following issues are related to the Thai nursing education: (1) the changes in students' profiles are requiring more male nurses to provide the nursing care to priests/monks, (2) education mobility: changes from classroom teaching to community or projects based areas teaching, (3) a shortage of registered nurses, with unequal distribution, (4) a shortage of qualified nursing faculty, (5) education technology (e-learning and distance learning), (6) changes in the health care settings from inpatient to community based, (7) an aging population, and (8) disaster nursing.
China	The challenges facing nursing education in China include: (1) an aging population, (2) change in disease patterns, from simpler to more complex diseases, (3) highly developed new technology, (4) increased consumer knowledge, (5) health care insurance coverage is partial, and (6) graduates of nursing programs are adolescents with 70% being the only child in their respective families and are seen as self-indulged. ^[15]

5. SUMMARY

Looking at the history of nursing education, the beginning of nursing education in the aforementioned countries was at a similar time and it usually started at the hospital based nursing education level. During the development of nurse education, special historical events happened in each country. Some of those events contributed to the development of special nursing programs to fit the society's needs. However, some of those historical events obstructed the development of nursing education, especially in China. When comparing the types of programs in nursing education among selected countries, the master's level nursing programs are more diversified in the U.S. Therefore, it can provide a model for the development of nursing programs in Thailand and China. In addition, the development of advanced nurse practitioners in the U.S. has been highly valued for delivery of primary care to the public.^[23] This development provided good strategies for nursing educators in other countries to offer the advanced practice nurse program in order to enhance nurses' social status and their job values. Moreover, the U.S. DNP program can provide a diversity of advanced nursing intervention for clinical nursing practice. It will provide the good protocol for both Thai and Chinese nurses' benchmark.^[34] Although in Thailand, currently the lowest level of nursing education is baccalaureate, it may not be appropriate for other countries. On one hand, each country has its special background and geographic reasoning for providing suitable nursing pro-

grams. On the other hand, the global shortage of nurses is recognized around the world. Thus a certification program, associate degree program, diploma degree program, or continuing nursing education program should co-exist to provide a stable nursing workforce. Moreover, when the course curriculums are shared among countries, it is helpful for administrators in nurse education to develop nursing students exchange programs. These programs can help nursing students receive a cross-cultural nursing care experience and enhance global cooperation in nursing. Furthermore, as our world is facing the problem of aging populations, the nursing program should focus on gerontology. Last but not least, with the increase in health care expenses, community based nursing programs should be considered in order to reduce the expenditure.

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CONFLICTS OF INTEREST DISCLOSURE

The authors declare no conflict of interest.

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