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Original Research

Development of pharmacy competency framework for the changing demands of Thailand's pharmaceutical and health services

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Abstract

Background: In Thailand, pharmacists are responsible for all activities to ensure access to medicines throughout pharmaceutical supply chain. Competency framework (CF) is an important guidance for professional development and workforce planning.

Objective: This study aimed to explore needs for pharmacy services in pharmaceutical supply chain and competencies of pharmacists to serve those needs. It was the first step for developing evidence-based pharmacy CF within the context of Thailand in 2026.

Methods: A qualitative method using in-depth interviews to gain rich data from practitioners and leaders in all area of practices. 99 key informants from 56 workplaces in Thailand were interviewed during January and March 2016. Data was transcribed verbatim, and thematic analysis was used. Competencies were extracted, followed by several rounds of group discussion among team members to develop an initial framework. The competencies and CF were presented, and recommendations were gained from professional leaders for refining the findings.

Results: The key informants agreed that pharmacist's works and responsibilities have gradually been drifted to support changes in healthcare and pharmaceutical systems. The upcoming pharmaceutical services call for higher standards of practice, larger number of personnel, and skillful pharmacists who have strong foundation in pharmaceutical knowledge as well as an ability to integrate knowledge into practices. Two sets of CFs were established. The general CF comprises five core domains: product focus, patient focus, healthcare system focus, community focus, and personal focus for self-improvement. These general competencies allow practitioners to perform basic professional tasks, including providing information, dispensing, and compounding. The service-specific competency is the integration of general competencies tailored into specific area of practice.

Conclusions: Regarding the professional goal to evolve pharmacists from generalists to specialists for providing higher quality of professional services, the pharmacists are required to demonstrate general competencies and service-specific competencies. The findings serve as the need-based evidence for developing a national CF for pharmacists in Thailand.

Keywords

Education, Pharmacy; Curriculum; Academic Success; Pharmaceutical Services; Pharmacy; Pharmacies; Pharmacists; Evidence-Based Pharmacy Practice; Workforce; Health Services Accessibility; Qualitative Research; Thailand

INTRODUCTION

Health workforce is an essential element for well-operative health systems. The World Health Organization (WHO) has launched the Global Strategy on Human Resources for Health: Workforce 2030 for ensuring availability, accessibility, acceptability, coverage, and quality of the health workforce. It calls for evidence-based planning and implementing on health workforce throughout national and local levels.¹

The International Pharmaceutical Federation (FIP), the global leadership of pharmacists and pharmaceutical scientists, endorses an action plan in transforming pharmacy education for preparing a workforce for pharmaceutical services development.^{2,3} The FIP recommends its members to develop an evidence-based competency framework that clearly describes competencies and scopes of practice for all stages of professional career in its development goals.⁴ The FIP Global Competency Framework (GbCF) comprises 20 competencies, and 100 behavioral competencies which are divided into four domains including pharmaceutical public health, pharmaceutical care, organization and management, and professional/personal competencies.⁴

Competency is the observable and measurable ability that integrate a person's knowledge, attitudes, and skills in their task performance. Competency is durable and individual develops competency through education and experience in training.⁵ Competency standard (CS) describes contributed competencies which enable an individual to practice professional services effectively.⁶ Competency framework (CF) encompasses the complete set of competencies and associated behavioral statements that are essential for working effectively. Competency cluster is referred to a set of closely related competencies within the CF. CF is

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multidimensional, dynamic, contextual, and developmental.^{6,7} It provides a clear guidance for workforce education and training to ensure that practitioners are competent to provide services for the society.^{8,9}

Thailand is an upper middle-income country located in South-East Asia. It is the international exemplification for achieving universal health coverage (UHC) policy. The success is based on continuous health system development focusing on investment in health infrastructures at district levels and health personnel capacity development since the 1970s.¹⁰ The government health care systems are the main service deliveries for the Thais. Approximately 67% of the country's hospital beds and 86% of total outpatient visits were provided by the public hospital facilities in 2018.¹⁰

In Thailand, there are 42,060 registered pharmacists (1: 2,261 pharmacists to population ratio), working in hospitals (40%), community pharmacies (28%), industry (16%), public health offices (3%), academia (3%) and other area (10%).¹¹ Unlike many countries where pharmacists focus their work in community pharmacy, Thai pharmacists are responsible for all activities ensuring access to medicines throughout pharmaceutical supply chain, from manufacturing, regulating, marketing, dispensing and ensuring patients' safe use of medicines.¹²⁻¹⁴ Hospital pharmacists are responsible for various activities, including drug selection, procurement, compounding, distribution, health promotion, dispensing, and providing pharmaceutical care to ensure rational drug uses.¹⁵

To practice in Thailand, pharmacists must complete the accredited 6-year program, pass a national licensing examination, and acquire continuous education credits for every 5-year relicensing.^{16,17} Thai pharmacy education has been transitioned from 5-year Bachelor of Pharmacy to 6-year Doctor of Pharmacy program (PharmD) since 2014 with the needs to change pharmacy competencies from generalists to specialists.¹⁷ The Pharmacy Council of Thailand (PCT) requires every graduate to meet CSs for generalists, and CSs for their selected specialty.¹⁸ Currently, there are specialized CSs for pharmaceutical care, industrial pharmacy, and pharmaceutical and health consumer protection (Online appendix 1).¹⁹⁻²¹

There is no national CF describing competencies and scopes of practice for all stages of professional career in Thailand. The PCT established professional CSs in 2002 as a guidance for licensure examination which has been revised into a current core professional CSs.²² In addition, 3 sets of specialized CSs were established with similar purposes.¹⁹⁻²¹ However, competencies for some practice areas are unidentified.¹⁶ Lack of national CF as the roadmap for professional human resource development, there is mismatching between pharmacy graduates' competencies and their assigned responsibilities.²³ In hospital services, while graduates perform better in clinical care, their employers observed that they were less competent in primary care and consumer health protection services.²⁴

There are an ongoing needs for advance skills in pharmacy practices due to more diverse and complex health problems of ageing population, continuous drug systems development, promoting rational drug use in a community,

and a new regulation required full-time on-duty pharmacist with higher quality services at every pharmacy.^{15,25-28} In pharmaceutical industry, higher quality standards and novel specialty medicines call for competent pharmacists to perform professional tasks.^{29,30}

Concerning to the shifts in social and health system needs, Thailand National Human Resources for Health Commission called for collaborations of healthcare professional councils to support evidence-based information for developing human resources (HR) policy and strategies.³¹ The forecasting quantity of Thailand's health workforce for services landscape in 2026 was presented elsewhere.³² Thus, the PCT wanted to predict pharmacy workforce for providing services over the next-decade, qualitatively and quantitatively. This study used a qualitative method technique to explore needs for pharmacy services all along pharmaceutical supply chain and competencies of pharmacists to serve those needs as a first step to develop evidence-based pharmacy CFs within the context of Thailand in 2026. Findings for this study serve as the base for developing national CFs essential for human resource development for pharmacy profession.

METHODS

This study used semi-structured in-depth interviews to gain rich data from key informants including practitioners and leaders in the fields who foresaw pharmacists' responsibilities and competencies. The research protocol was approved by the Research Ethics Committee at Faculty of Pharmacy, Chiang Mai University (no. 28/2558, 7 September 2015).

Key informants

The study's key informants included pharmacists who were leaders and practitioners in pharmaceutical supply chain, including pharmaceutical manufacturing, marketing and distribution, regulation and registration, hospital, community pharmacy, and academia. A purposive and snowballing sampling were used. The research team identified the first group of key informants who were well-accepted leaders in their area of practice, then further potential key informants were referred to within their networks. Table 1 presents numbers of key informants in different practice areas.

Table 1. Key informants participating in the interviews		
Titles	Participants	Workplaces
Pharmaceutical manufacturing		
Director and Consultant	20	15
Research & Development	7	6
Production	5	4
Quality control	8	5
Quality assurance	7	6
Clinical research	4	3
Regulatory affairs	3	3
Regulation and registration	8	5
Marketing and distribution	11	10
Pharmaceutical services		
Tertiary hospitals	10	6
Secondary hospitals	5	5
Private hospitals	2	2
Community pharmacy	3	3
Academia and pharmacist leaders	6	5

Instruments

An interview guide, one-page infographic summarizing plausible scenario of Thai health systems in 2026, field note, and voice recorder were data collecting tools. The infographic (Online appendix 2) recapped key findings of reports presenting scenario of Thai health systems in 2026 developed by the sub-committee for planning Thailand's health workforce over the next-decade (2017-2026) under the National Human Resources for Health Commission.³¹ The interview guide asked open-ended questions on their future work scenario and future pharmacists' responsibilities in their scope of practice, pharmacist's competencies required for achieving those tasks, and recommendations for entry-level pharmacist workforce. These tools were validated by three experts who were academic professor, PCT member and member of professional workforce planning committee.

Procedure

A list of potential key informants was identified. After an initial telephone brief, an invitation letter was sent to inform them about the project's objectives, interviewing process, and scope of questions. Those agreed on participating in the study were scheduled for an interview on their convenient date and time. All interviews were conducted between January and March 2016. All session of face-to-face interviews were around 45-90 minutes.

Interview session began after a verbal consent was granted. The infographic summarizing plausible Thai health systems in 2026 was introduced to set the scene. A series of questions according to the interview guide were used for leading the conversation. Then, the interviewers took additional 10 minutes for summarizing main points to the informant for data verification. The interviews were audio recorded and transcribed verbatim for analysis by research assistants who were pharmacy students.

Analysis

The primary researcher read the scripts and developed initial categories and themes for the analysis. Two researchers, then, individually analyzed the data, differences were discussed until consensus was reached. Afterwards, relationships between themes were reorganized and emerged to draw competencies. Preliminary competency domains and CF for practicing pharmacy services were developed. Then, the research team members reviewed, discussed, and refined the framework.

The competencies and CF emerging from this process were presented to professional leaders at a meeting of the PCT and the Pharmacy Education Consortium of Thailand (PECT). Suggestions were harvested from the meeting. The index of item-objective congruence (IOC) were at 0.6 – 1.0. The CF was also presented at the PCT subcommittee on pharmacy workforce meeting and the Thai Pharmacy Education National Conference 2018 to get feedbacks and comments for refining the CF.

RESULTS

A total of 99 key informants practicing in 56 workplaces all across Thai pharmaceutical supply chain had participated in

the interviews. They were pharmacist leaders and practitioners from pharmaceutical industry, pharmaceutical regulation and control, pharmaceutical services in hospitals and community pharmacies, and academia, as shown in Table 1. The majority of key informants were from pharmaceutical industry because they had broad responsibilities for various activities, ranging from research and development, production, quality control, quality assurance, regulatory affairs, to marketing and distribution.

The key findings presented in this study were divided into two parts. The first part presents demands for pharmacy workforce. The second part describes pharmacy competency domains and proposed framework.

Shifted in demands for Thai pharmacists' future work and responsibilities

The key informants in every area agreed that pharmacist's work and responsibilities have gradually been drifted to support changes in healthcare systems, resulting from changes in social and health determinants of the country and the world.

Demands for higher standards of practice

The roles of pharmacists in every setting have changed significantly during the past 10 years towards a demand for greater quality of pharmaceutical products and services. In pharmaceutical manufacturing, the new regulations as Pharmaceutical Inspection Co-operation Scheme on good manufacturing practice (PIC/S GMP), calls for enormous changes in Thai pharmaceutical industry. In hospital practices, requirements for hospital accreditations, rational use of medicine, and patient safety standards have shifted demands for pharmacists to have better clinical skills concerning on improving rational medicine use for patient-centered care. In community pharmacies, new regulations require all pharmacies to follow Good Pharmacy Practice (GPP), specifically those serving as a primary care unit of the Universal Health Coverage Scheme.

Demands for larger number of pharmacists

The demands for higher standards of practice due to the needs for quality pharmaceutical products and practices as mentioned above have influenced the higher needs of pharmacist, qualitatively and quantitatively. Pharmaceutical industry recruits large number of pharmacists to work on pharmaceutical quality assurance and registration process. Pharmaceutical services, in both hospitals and community pharmacies, shift pharmacists' role to offer higher level of professional practices and transfer routine non-professional tasks to technicians or machines.

Demands for higher and broader competencies of pharmacists

With expectations to provide higher level of professional tasks, these works would need personnel with higher skills than those are currently available. Fit-for-the job pharmacists require in-depth understanding of one's own work, together with broader areas of knowledge to collaborate with others. Industrial pharmacists need to be specialized in pharmaceutical knowledge to handle

technical issues, and to provide consultation for non-pharmacist workers.

Hospital pharmacists are expected to specialize in clinical care in order to work with medical specialists, and nurses to care for patients. Increasingly, they are asked to be a drug use manager for ensuring rational drug use and patient safety, and a drug system manager for setting a criterion for drug selection, a protocol for monitoring, and a guideline for quality improvement.

Demands for integrative knowledge and skills

Although, Thai pharmacy education has transformed from 5-year to 6-year program with specialty tracks, in every area of professional practice, pharmacists need to have strong foundation in product-, patient-, and health system-oriented knowledge, and be able to integrate these knowledge to solve any pharmaceutical-related problems in their practice.

Thai pharmacy competencies and competency framework

To serve those changing demands in pharmaceutical services, the informants were further asked about pharmacists' competencies for serving future needs. Data regarding responsibilities and competencies of pharmacists harvested from the interviews were used to develop competency framework for Thai pharmacists displayed in Figure 1.

As mentioned previously that Thai pharmacists are responsible for access to quality and safety use of medicines in every activity in pharmaceutical supply chain. Therefore, pharmacy graduates are required to have a broad area of competency, ranging from scientific to

healthcare systems knowledge, and from product focus to patient care focus. Importantly, they are expected to integrate personal competencies to improve pharmaceutical and health related tasks. Table 2 presents a set of competencies for generalists, called the general CF, which comprises five competency domains, as follow.

1. Product-focused domain: competencies for ensuring drug availability and safety

Participants from all area agreed that a pharmacist must be competent in applying knowledge of pharmaceutical formulation, production, quality control, chemistry, and dosage form into their own practices in selection, procurement, compounding, policy implementation, and consultation for rational drug use. It is a unique set of knowledge serving as a fundamental and strength of pharmacy practice to work collaboratively with other healthcare members.

2. Patient-focused domain: competencies for ensuring optimal care with safety and efficacy

Ensuring patients' safety and rational use of medicines to achieve optimal care is essential for pharmacy practice. Pharmacists are expected to apply pharmaceutical product knowledge to provide care for patients in assessing their needs, ensuring appropriate prescription, dispensing, counseling, and monitoring.

3. Healthcare-system focused domain: competencies for ensuring access to quality and affordable medicines

Due to the complexity and adaptivity of healthcare and pharmaceutical systems, pharmacists need to understand healthcare systems and manage their services around the

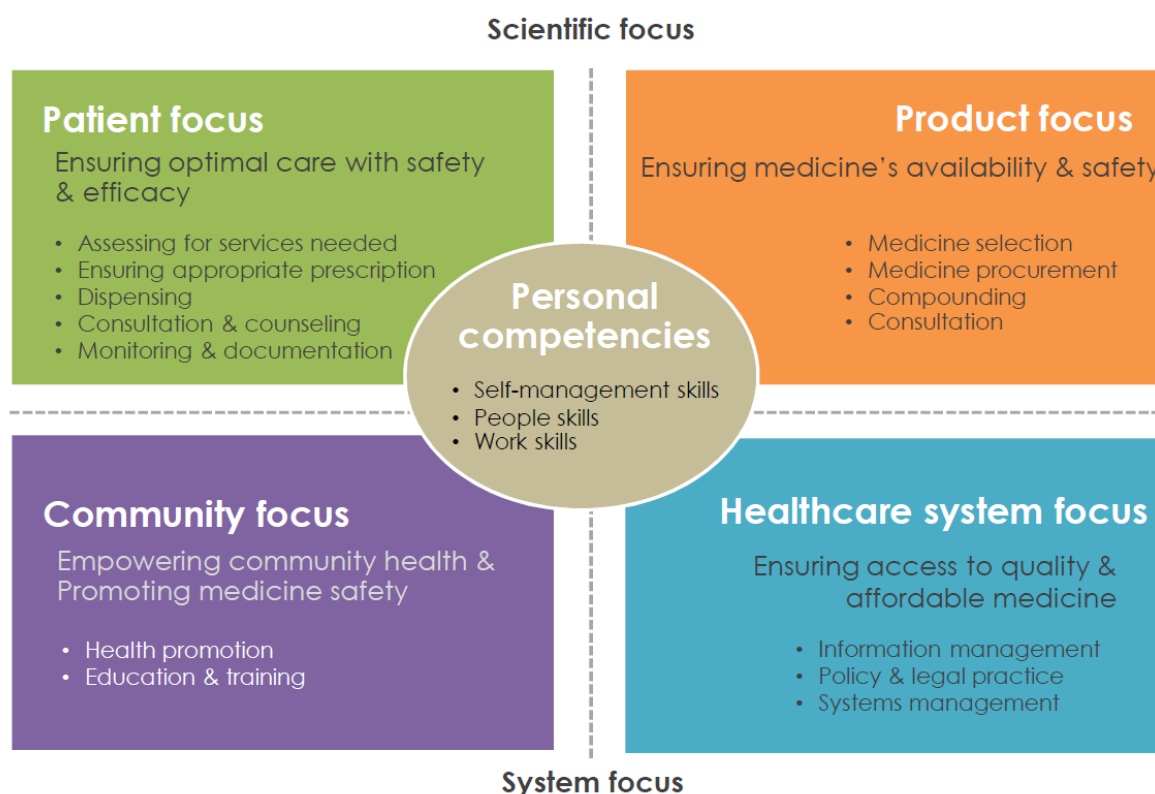


Figure 1. Proposed pharmacy general competency framework

Table 2. Proposed pharmacy general competencies within the context of Thailand in 2026		
Competencies		Behaviors
1. Product focus	1.1 Medicine selection	Develop criteria for selecting medicines into a hospital formulary concerning pharmaceutical chemistry, formulation, quality standards and therapeutic properties
	1.2 Medicine procurement	Develop efficient inventory system management
		Develop procedures for medicine storage and delivery
		Implement and supervise procurement systems
	1.3 Compounding	Formulate and prepare medicines (extemporaneous, cytotoxic, total parenteral nutrition, or small batch preparation)
		Develop protocols for ensuring quality of prepared medicines
		Choose suitable packaging for intended use and identify storage conditions
1.4 Consultation	Discuss and advise healthcare providers and clients on issues related to pharmaceutical products and quality standards	
2. Patient focus	2.1 Assessing for services needed	Identify pharmaceutical services that a client needs according to the person’s health status, behaviors, and contexts
		Assess and diagnose a health condition based on subjective and objective evidence
	2.2 Ensuring appropriate prescription	Provide evidence for optimizing prescribing decisions (ensuring appropriate medicines, route, time, doses, and forms)
	2.3 Dispensing	Validate prescriptions for accuracy and legitimacy
		Identify medicine-medicine, medicine-condition, medicine-food interactions
	2.4 Consultation and counseling	Discuss with prescribers on appropriate medicine selection based on patients’ targeted outcomes
		Discuss and advise multidisciplinary team members on appropriate medicine administration based on patients’ targeted outcomes
		Discuss and advise patients and care givers on appropriate medicine use based on patients’ contexts
	2.5 Monitoring and documentation	Develop protocols for monitoring medicine uses and pharmaceutical services needed along the treatment pathways
		Identify, prioritize, and resolve medicine-related problems
Document, reconcile and update patient medication history and received interventions		
3. Healthcare system focus	3.1 Information management	Identify sources, search information systematically, evaluate and provide evidence-based medicine information appropriate for the needs of clients
		Counsel patients, clients, and population on safe and rational use of medicines
		Collect and analyze data for evidence-based decisions using appropriate research methods
		Understand process and assessments for quality and safety, including pharmacoeconomics
	3.2 Policy and legal practice	Demonstrate knowledge in healthcare systems regarding policies, financing, information systems, workforces, service delivery, and access to essential medicines and health technologies
		Demonstrate knowledge in legal and regulatory practices along pharmaceutical supply chain
		Demonstrate understanding in professional codes of ethics
3.3 Systems management	Identify and resolve risk management issues to improve quality and safety of medicine use and services	
4. Community focus	4.1 Health promotion	Initiate and implement programs or interventions to promote healthy lifestyles, disease prevention, or consumer protection
		Educate population to access and understand health information on selection and rational use of herbal medicines, health products, and medicines
	4.2 Education and training	Provide training programs for community staff and leaders on knowledge and skills essentials for promoting health
		5. Personal competencies
Demonstrate caring and service mind		
Demonstrate flexibility and adaptability in uncertain situations		
Demonstrate leadership in initiative and management		
Demonstrate systems thinking in understanding complex situations and interconnections between things		
Continuous self-improvement		
5.2 People skills	Communicate effectively with the targeted clients (patients, physicians, staff, or population)	
	Collaborate with others to work towards the target, take responsibility and respect diversity	
5.3 Work skills	Demonstrate accountability by taking responsibility for work activities as committed	
	Analyze situations, critically decide on options, and initiate solutions (problem-solving)	

on-going shifts of the systems to ensure a patient and an institution supply of medicines. Being able to use information effectively and keeping up to the rhythm of healthcare systems, policies and regulations allow pharmacists to appropriately improve medicine-related systems for the health needs of patients, organizations, and the society.

4. Community focused domain: competencies for empowering community health

Primary care services focusing on empowering people and community in health promotion, diseases prevention, as well as providing treatments for common illness and providing continuity of care. Community and hospital pharmacists play a role of a primary care supporting

coordinator, focusing on medicines and health products used in the community. In providing primary care services, understanding and implementing activities regarding self-care, health promotion, and consumer protection are needed for pharmacists.

5. Personal competencies for self-improvement

Personal competencies are very important for all pharmacists, mentioned by informants, regardless of practice areas. These abilities would support inner growth of individual to enhance self-development. Specifically, they could be categorized into three sub-domains. First,

self-management skills comprise ethical concerns, caring, flexibility, leadership, systems thinking, and self-directed learning.

The second sub-domain is people skills or abilities to work with others, including effective communication and collaboration. The third sub-domain includes accountability, problem solving skill, attention to details, and technology literacy. Pharmacists need both depth and width perspectives in handling their works. They are required to pay attention to details while to gather relevant data to solve problems.

Table 3. Proposed pharmacy service-specific competencies within the context of Thailand in 2026		
Task		Behavioral competencies
1. Pharmaceutical industry	1.1 Research and development	Forecast potential product candidates
		Research and develop product formulations for new product candidates
		Develop and improving manufacturing process
	1.2 Production	Develop pharmaceutical production process
		Validate manufacturing process
		Supervise and provide consultation in manufacturing process
	1.3 Quality control	Develop and validate analytical procedures for quality control according to product specification
		Supervise and provide consultation in quality control
		Prepare product specification documents
	1.4 Quality assurance	Plan and manage all activities of the quality assurance to assure the quality of all batches of pharmaceutical products
		Co-ordinate and communicate with all departments for product quality
	1.5 Regulatory affairs	Understand and apply laws and regulation requirements for product registration
		Communicate with coordinating units relating to the requirements
		Prepare and compile the dossier required for registration of pharmaceutical product
	1.6 Clinical research	Design and execute research protocols
		Organize and manage activities according to the protocols
		Interpret and disseminate the study outcomes
	1.7 Procurement and logistics	Understand and apply quality standards on medicine procurement and distribution
		Design and monitor medicine procurement and distribution procedures
2. Pharmacy service delivery	2.1 Medicine management	Demonstrate understanding in product specification and therapeutic properties
		Apply marketing techniques in product presentation
		Design and manage marketing activities for clients
		Demonstrate awareness of laws and regulations govern drug advertising and promotion
		Summarize and communicate key elements of products regarding product specification and therapeutic properties
		Collect data for pharmacovigilance
	2.2 Medicine dispensing	Ensure effective systems for medicine selection
		Ensure efficient medicine procurement and distribution within hospital systems
		Prepare extemporaneous, cytotoxic, total parenteral nutrition, or small batch preparation as needed
		Provide evidence-based medicine/ health information services
		Conduct research for data-driven medicine-related policies and decisions
	2.3 Pharmaceutical care services	Implement new services for resolving risks and responding to needs in medicine-related systems
		Ensure accuracy and legitimacy of prescriptions
		Consult healthcare providers or counsel patients as needed for ensuring that patients receive the medicines correctly and use medicines appropriately
3. Pharmaceutical public health	3.1 Registration and regulation	Document errors for system improvement
		Identify potential medicine-related problems
		Provide pharmaceutical services to ensure optimal care
		Monitor, document, reconcile and update patient medication history and received interventions
	3.2 Health promotion	Evaluate and grant product registrations according to laws and regulations
		Conduct health-related product surveillance
		Provide consultation on good manufacturing practice
		Identify and implement laws and regulations in health-related products legal issues
		Assess primary healthcare needs in the community
		Initiate and implement interventions to promote healthy behaviors, disease prevention, or consumer protection in the community
		Ensure effective continuity of care in the community
		Empower healthcare providers, leaders and members in the community to be competent in rational use of health-related products

6. Pharmacy competencies, an integration of five general competency domains

Competent pharmacists to serve a broad-spectrum of demands are required to have good foundations of 5 domains of general competency. The generalists should be able to perform basic professional tasks, including providing information services, dispensing, and compounding. Integration of these general competencies tailored into specific area of practice prepare entry-level pharmacists with specialized competencies.

For pharmaceutical industry specialized competencies, practitioners are required to produce pharmaceutical products in manufacturing scale, whereas in general competencies, they have to prepare basic extemporaneous preparations. In providing service delivery, pharmacists specialized in pharmaceutical care are able to provide pharmaceutical care services for patients with complex health conditions. Likewise, for other services, specialized competencies involve abilities to create, implement, supervise and improve specific professional tasks. Table 3 presents pharmacy service-specific competencies along pharmaceutical supply chain.

Figure 2 illustrates a set of general competency domains with different ratio requiring at different job positions in pharmaceutical supply chain. It presents flexibility to integrate general competencies into developing service-specific competencies and specialized competencies later on. For instance, to develop specialized CF for pharmaceutical industry, the program should highlight on product-focus competencies with concerns on other competency domains. To develop competency for pharmacists serving on service delivery, the program should focus on patient-focus competencies. For pharmacists in public health systems management, the

program should emphasize on healthcare system-focus competencies.

DISCUSSION

Competency framework is a model that explains competencies essential for performing pharmacists' work effectively within the area of practice.⁷ It serves as a mapping tool for personal and professional development as a united goal for workforce development and an identifier for a gap that needs a training program.³³ The FIP encourages its members to develop and use evidence-based competency frameworks for supporting effective development of practitioners to deliver professional services specific to the local needs.^{3,9} Many countries had developed their pharmacy CFs, for instance, African countries, Japan, Croatia, Serbia, and Kuwait.³⁴⁻³⁸

The FIP Global Competency Framework (GbCF) serves as a starter for CF development in many countries, by translating the original English version of the GbCF into their language, checking for applicability in their own contexts, and modifying the CF according to the findings.³⁴⁻³⁶ Some countries use literature review for developing a CF.^{39,40} This research gained first-hand evidences using a qualitative research for developing pharmacy CF that fits for Thai society where pharmacy professional practice is very unique as it serves all activities in pharmaceutical supply chain.¹¹

Under Thai healthcare systems, pharmacy education and licensing systems as mentioned in the introduction, the CF emerging from this study embraces both sets of general and service-specific competencies. The general CF comprises 5 competency domains, which are patient-focus, product-focus, community-focus, healthcare system-focus, and personal competencies.

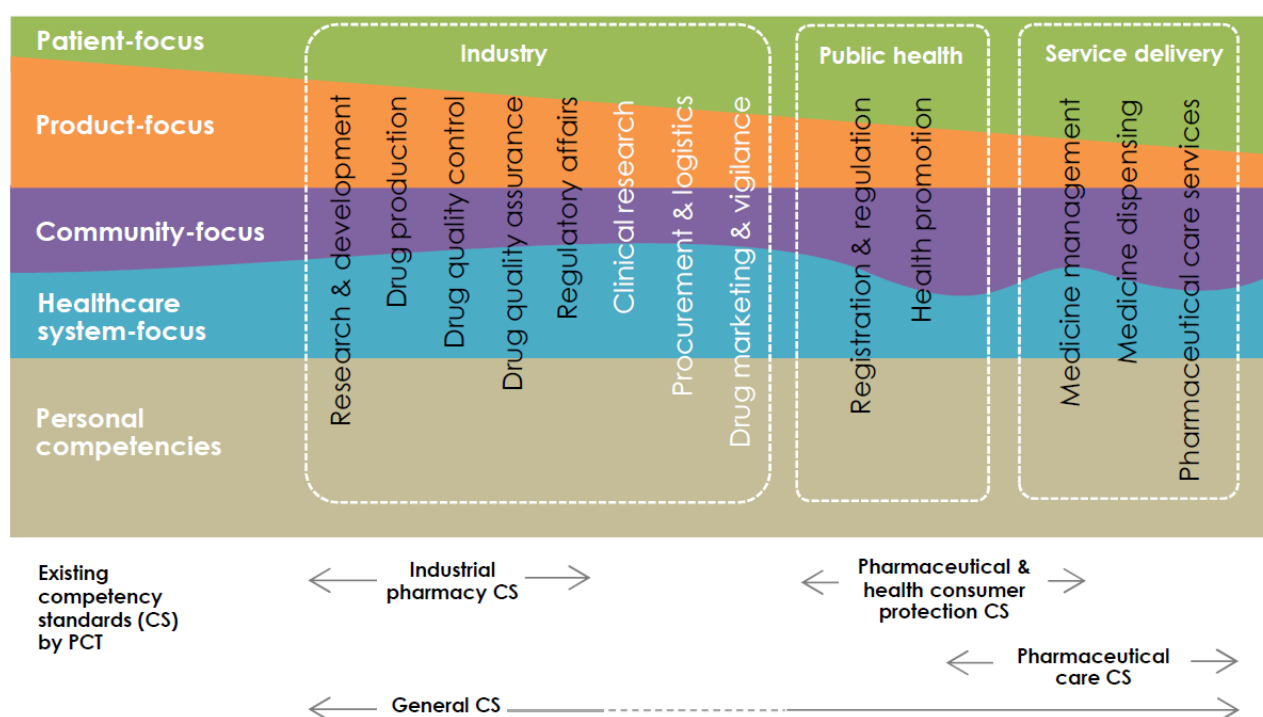


Figure 2. Proposed service-specific competencies for developing specialized competency framework

and personal-focus. Most of the pharmacy general competencies in the context of Thailand are consistent with the FIP GbCF in all 4 domains. However, there are some aspects which are specific with country characteristics. For example, Thai pharmacy general competencies differ from the FIP GbCF in two aspects as follows; 1) Personal competencies include wide range of soft-skills for working effectively and self-improvement (e.g. demonstrate caring and service mind; demonstrate flexibility and adaptability in uncertain situations) while the FIP GbCF includes voluntary services and practice management skills; and 2) Thai general CF demonstrates systems thinking in understanding complex situations and the interconnections between things holistically while the FIP GbCF did not explain in this competency.³⁸

The general competencies are mostly relevant to the GbCF because these are competencies in foundational-level for pharmacists working at hospitals and community pharmacy, which are major field of practice in Thailand. The framework highlights an urge to prepare pharmacists with competencies in medicine systems management, in addition to product- and patient-focus competencies. The finding is in line with the characteristics of the next generation pharmacists, defined as “a health care provider and change agent on the interprofessional health care team, personalizing medication use, managing safe and effective medication systems, and creating healthier communities”, to be up to the challenge of the society's healthcare needs.⁴¹

Community-focus competencies are essentials for Thai pharmacists as the government has emphasized primary health care as the country core health strategic plans.^{42,43} With a policy to have community pharmacy as a primary care unit of the Universal Health Coverage Scheme, pharmacists are expected to demonstrate these abilities. The movement happens in many countries where pharmacists gradually integrate primary care services into their community pharmacy practice, regardless of different national policy challenges.⁴⁴⁻⁴⁷ The FIP and pharmacy organizations have positioned community pharmacists as essential primary health care professionals in providing services and empowering people and communities.^{8,48}

Our CF suggests that integration of emerging professional roles into the traditional roles on product and patient care is crucial for the future pharmacists. Together with personal competencies to work collaboratively with others and continuous self-improvement, pharmacists are able to handle challenge tasks of the future. However, with the professional goals to change pharmacists' role from generalists to specialists and to serve higher demands for professional services, service-specific CFs are essential.¹⁷ Practice area plays important role on required workforce competencies. For example, hospital pharmacists in Japan rated high degree of practice relevance for pharmaceutical public health and pharmaceutical care domains while industrial pharmacists rated high degree on organizational management and professional and personal domains.³⁵

Comparing the list of emerged service-specific competencies to the existing CSs in Thailand (Figure 2), there are some gaps, as well as overlapping competencies between CSs. The competencies for traditional roles of

pharmaceutical production and pharmaceutical care are well demonstrated in industrial pharmacy and pharmaceutical care CSs, but competencies for emerging roles of professional (i.e. clinical research, logistics, marketing and vigilance) are not clearly stated.^{19,20} Competencies for health promotion and medicine management are mentioned in pharmaceutical care and health consumer protection CSs, but the expected behaviors are failed to exhibit precisely.^{19,21} Interestingly, there is no unite concept in constructing competency domains between the existing CSs. Without the clear statement of behavioral competencies, implementing these competency standards in professional development program and evaluating the outcomes would be challenging.

Considering the above weakness of existing CSs, it is rational to develop the country pharmacy CF and to revise the CSs based on findings suggested from this study to include all essential competencies for professional services. It is important to note that this study presents preliminary findings for developing CF. Following this first step for national CF development, several steps for future work include; 1) consensus development panels and Delphi techniques for identifying and refining competency clusters and competencies for general and service-specific levels; 2) national survey for validating applicability of the CFs; and 3) expert panels for final validation.^{22,34,35,49}

Using qualitative data collection technique to gather first-hand data is a strength of this CF development, but with major limitation in sample selection. Since findings were harvested from informants who were experts in all area of professional practices, there were limited numbers of key informants from private hospitals and community pharmacies. Therefore, some implicit tasks and competencies may be unidentified. This limits generalizability of the findings and calls for caution in processing the next steps of work.

The development of competency standard requires significant commitment of time and effort. It took 8 years for developing Singapore pharmacy CF (2009-2017) to ensure that the CF is flexible, versatile, and applicable to all evolving roles and services pharmacists can provide within their area of practice.⁵⁰ In addition to this study findings, competencies could be justified from well-established frameworks (i.e., GbCF, Singapore competency standards for pharmacists in advance practice, national competency standards framework for pharmacists in Australia, New Zealand competence standards for the pharmacy profession, pharmacist competency framework & domain-specific frame of reference for the Netherlands), and standards of practice guidelines.⁵⁰⁻⁵³

Carefully developing professional competencies through several sources should be valuable for designing a wide range of specialty for undergraduate students, as well as for continuing professional education and advancement.^{54,55} Going forward, continue refining and validating the framework to cover all level of practice, from foundation-level to expert, is necessary. The professional career framework accompanying with competencies required at different level of expertise would facilitate the growth of practitioners along the career ladder.⁵⁰ Besides

well-constructed national CF, consensus and continuous commitment for pharmaceutical workforce development among professional agencies in practice and education are imperative. Harmonizing science, practice, workforce, and education together is a transformative framework suggested by the FIP with the goal for promoting the role of pharmacy through pharmaceutical workforce development.^{3,8}

The purposes of professional education are more than transmitting knowledge, but forming professional identity and competencies.⁶ The well-accepted national CF reflecting the acquired competencies of pharmacists from all settings is a foundation for transitioning pharmacy education towards competency-based curriculum. The conventional curriculum experience focusing on providing technical knowledge would fail to transform a student into a competent pharmacist.^{5,6} Implementation of competency-based pharmacy education emphasizing on ability development with learner-centeredness is another challenge for professional development in Thailand.

CONCLUSIONS

This study explored needs for pharmacy services all along pharmaceutical supply chain and competencies of pharmacists to serve those needs. It provided seeding for the development of evidence-based pharmacy CF within the context of Thailand in 2026. The proposed CF emerging from this study embraces sets of general and service-specific competencies. The general CF comprises 5 competency domains, which are patient-focus, product-

focus, community-focus, healthcare system-focus, and personal-focus. It is mostly consistent with the FIP GbCF. The service-specific competencies are suggested with regards to the professional goal to transform pharmacists from generalists to specialists to serve with higher demands for professional services. The general competencies allow practitioners to perform basic professional tasks, including providing information services, dispensing, and compounding. The service-specific competencies are the integration of these general competencies tailored into specific area of practices. Integration is important since pharmacists' responsibility involves "patient-centered product care". Although the profession has become more patient oriented, the pharmacist's responsibility is primarily to ensure medicine availability and product quality in the system. This is an on-going work intended to develop national CF for Thai pharmacists, which will be used as a foundation for curriculum planning and professional development to serve the needs of Thai society.

CONFLICT OF INTEREST

None.

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