RESEARCH ARTICLE

Development of new training programmes for Thai community pharmacists using the theory of training needs analysis

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Abstract

Background: The study aimed to develop new training programmes for community pharmacists based on the theory of training needs analysis. **Methods:** Two phases were conducted. Phase 1 was the pharmacists' needs analysis using the mixed method with an exploratory sequential design and the Hennessy-Hicks training needs analysis. Eligible pharmacists were requested to rate 44 task items on a 5-point Likert scale for task importance and perceived performance. All data were gathered and analysed using subgroup analysis and exploratory factor analysis for training needs. Phase 2 was the training programme development and verification by a focus group. **Results:** A total of 365 pharmacists completed the questionnaire, with a response rate of 28.3%. The 44 primary care tasks were grouped into seven main domains based on their importance. Three tasks with wide training gaps (mean gaps > 2.0), i.e., depression screening, home visits, and family planning, were selected for the programme development. The focus group agreed on the programme's usefulness, practicality, and ease of implementation. **Conclusion:** The training needs of community pharmacists were evaluated, and three training programmes in primary care pharmacy were developed. The impacts of the training programmes merit further study.

Introduction

Community pharmacists need to strike a balance between the pharmacy profession and a business with profits. They usually dispense medicines and offer other pharmacy services such as disease screening, health promotion, and medication management. However, their roles in primary care pharmacies have dramatically increased over the past decade. Primary care pharmacy may generally refer to providing primary care services involved in optimising the use of medicines and relevant resources for local communities to prevent diseases and promote health (Silcock *et al.,* 2004). Various primary care pharmacy services, such as preventive care and medication management, have been offered in developed countries like the UK and Australia (Benrimoj & Frommer, 2004; Community Pharmacy England, 2022).

Nevertheless, together with relevant services, the concept of primary care pharmacy remains unclear in developing countries.

In Thailand, the National Health Security Office (NHSO) suggested that four primary care services should be implemented in community pharmacies, i.e. medication therapy management (MTM), disease screening, health promotion and consumer health protection, and behavioural modifications (Watcharadamrongkun, 2017). However, most community pharmacists do not fully capture the proposed services. As previously reported, Thai community pharmacists are still confused about the primary care pharmacy principles and services provided to the public (Puengrung *et al.,* 2020). Moreover, some specialised primary care services, e.g. disease screening or early disease detection, may require special training to monitor and refer severe

patient cases. Still, the actual training needs are yet to be assessed.

A training needs analysis (TNA) is essential to designing an appropriate training programme to meet individual needs (Juan, 2014). The analysis of needs is an activity of information gathering, which is an integral part of systematic curriculum design to ensure the actual training needs of trainees (Brown, 1995). Additionally, the needs must be continually assessed for accuracy (Juan, 2014). For staff development in an organisation, TNA may be conducted by identifying a personal "*training gap*," which is the difference between the standard or desired performance and actual practice (Moore & Dutton, 1978; Wright & Geroy, 1992). A training gap is generally a term used to denote a trainee's shortcomings that need to be addressed to ensure their performance, knowledge, and skills (PediaLink, 2018). This gap is significant, as most trainees often demand a training topic based on their "*feelings*" (felt needs) and fail to realise other topics of interest.

Two models of TNA, i.e. the organisation-task-person (O-T-P) model (McGehee & Thayer, 1967) and the Hennessy-Hicks training needs analysis (Hicks & Hennessy, 2011), have been widely used in various industries and healthcare organisations. The O-T-P model is used to investigate the training needs from the organisation's perspective (or macro level) or to look at the organisational, task, and personal levels. It aims to provide appropriate training sessions for particular employees, such as Taiwanese coast guard training (Chen & Hung, 2012) and teachers' professional development in South Africa (Ngema & Lekhetho, 2019). On the other hand, the Hennessy-Hicks model is to identify the training needs from individual perspectives (or micro level) or to identify the training gaps based on five subsections with 30 tasks, e.g. research/audit, communication/teamwork, clinical tasks, and administration and managerial tasks. For

instance, this model was exploited to assess the professional development needs of nurses and midwives in Indonesia (Hennessy *et al.,* 2006) and the training needs of mental health professionals in Southeast Asian countries (Wiwatanadate *et al.,* 2021). Nevertheless, neither model has yet been used for pharmacy education and training.

An extensive literature search revealed the scarcity of reports on training programmes for community pharmacists or the training needs of community pharmacists. Therefore, this study aimed to develop new training programmes for community pharmacists using the theory of training needs analysis (TNA). It involved assessing the training needs of pharmacists from the perspectives of pharmacy organisations using the organisation-task-person model and from the pharmacists' point of view using the Hennessy-Hicks model, followed by the development and verification of the new training programmes.

Methods

This study was approved by the Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University (COA :171/2561). It was carried out in Bangkok from 2018 to 2022. The study followed the guidelines for reporting the results of survey research (Kelley *et al.,* 2003) and focus groups (Tong *et al.,* 2007). It was divided into two phases, as shown in Figure 1. Phase 1 (needs analysis) employed a mixed method with qualitative and quantitative approaches to assess the training needs of community pharmacists for primary care pharmacy. Phase 2 involved the development and verification of the new training programmes based on the findings in Phase 1. Details of the two phases are described below.
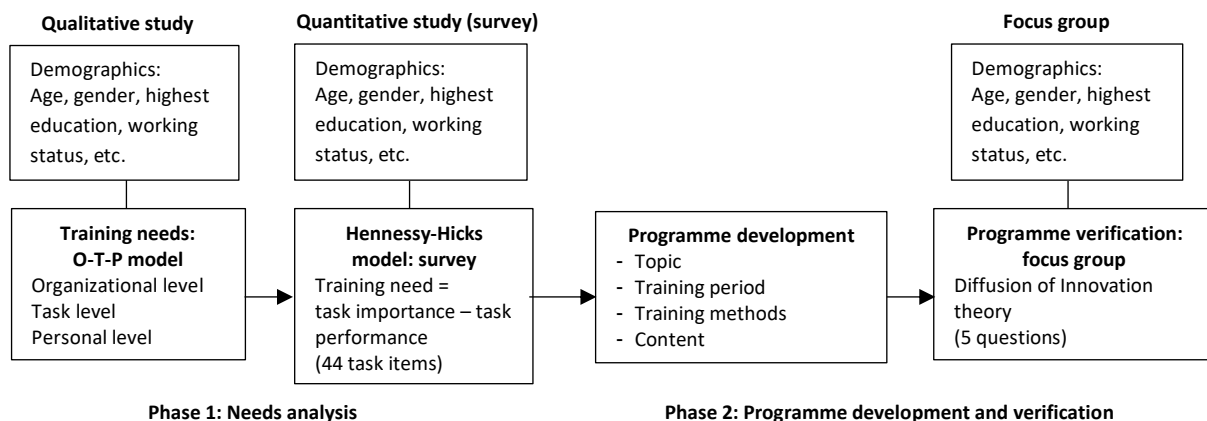

Figure 1: Study framework

Phase 1: Needs analysis

Study design. A mixed method with an exploratory sequential design (Fetters *et al.*, 2013) was used to assess the community pharmacists' needs for primary care training. This phase was divided into two parts. The qualitative study (Part 1) aimed to explore the current training needs of community pharmacists using the Organisation-Task-Person (O-T-P) model. A semi-structured interview with an interview guide was conducted with ten key informants who were experienced community pharmacists or executives in various pharmacy organisations. They were purposively recruited using a snowball sampling technique (Etikan *et al.*, 2015). Each interview session was audiotaped, transcribed, translated, and checked for accuracy. After that, all the data were coded for a thematic analysis. The qualitative results were previously reported (Puengrung *et al.*, 2020) and briefly summarised as follows:

The training needs of community pharmacists based on the O-T-P model were expressed as three levels with nine main themes, i.e. the task level (4 themes), the personal level (3 themes), and the organisational level (2 themes) (Figure 2).
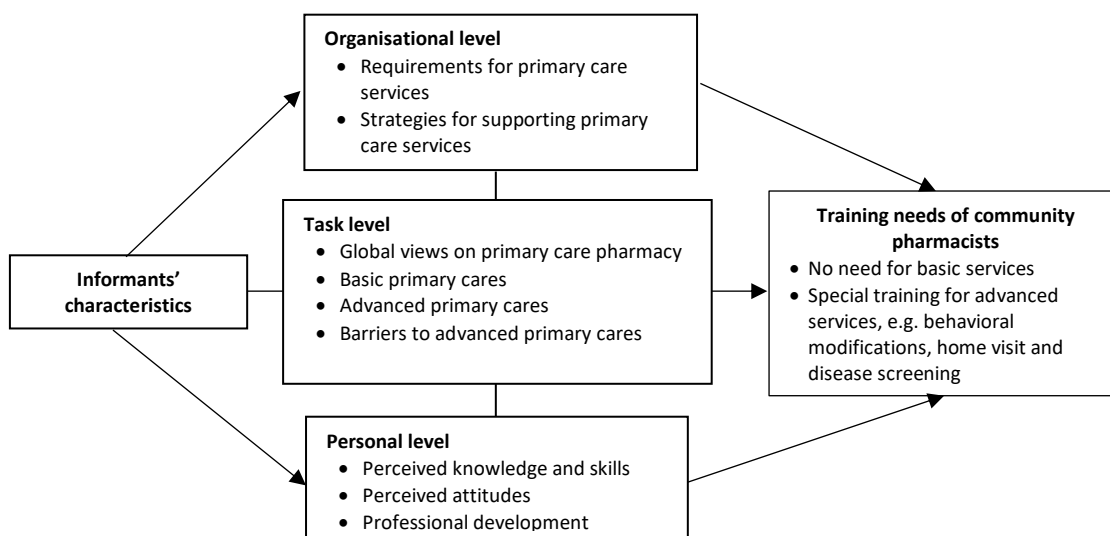

Figure 2: Training needs of community pharmacists based on the O-T-P model with main themes

At the task level, the global views on primary care pharmacy involved medicines and patient education. Additionally, primary care services were divided into basic services (e.g. dispensing and counselling) and advanced practices (e.g. behavioural modification and home visits). Some barriers to advanced services were reported, including legal restrictions on vaccine administration, a lack of trust in pharmacists, and the absence of service charges. At the personal level, the perceived knowledge and skills were entirely concerned with continuing professional education and pharmaceutical care. Moreover, perceived attitudes were rather unfavourable towards business-oriented services and unethical practices. The organisational level focused on requirements for special training for advanced services, such as behavioural modifications and home visits, including strategies for supporting primary care services.

The qualitative findings, comprising nine main themes, were used to devise a self-administered questionnaire to survey community pharmacists in Part 2.

Participants. In Part 2, the population consisted of Thai community pharmacists who were members of the Community Pharmacy Association (Thailand, CPA). There were approximately 5,000 CPA members, but only 3,290 of them actively practised in pharmacies (or drugstores) across the country (Community Pharmacy Association (Thailand), 2019). For the survey sample, the inclusion criteria were practising pharmacists who worked in any type of drugstore and were willing to participate in the study. Permission was sought from the CPA to use the name list of pharmacists.

The sample size was determined using the equation $n = Z_\alpha^2 pq/d^2$ (Bartlett *et al.,* 2001). According to the preliminary study of the same research team among Thai community pharmacists, the estimate of variance (pxq) was 1.94, with a response rate of 28%.

Accordingly, the sample size of 361 was determined based on a 95% confidence interval and a margin of error (d) of 0.20. Considering a 30% response rate from mailing, the sample was then increased to 1,203 pharmacists. The names of practising pharmacists were randomly chosen from the CPA list to recruit the sample using a systematic random sampling technique in Microsoft Excel (MathWave Technologies, 2017).

Study instrument. A questionnaire was specially constructed based on the Hennessy-Hicks concept of training needs analysis (Hicks & Hennessy, 2011), with a training need or gap equal to the task importance deducted by the perceived level of performance. The findings of the preceding qualitative study using the O-T-P model and previous studies and guidance on four primary care services set out by the National Health Security Office (NHSO) (Watcharadamrongkun, 2017) were utilised to generate questionnaire items. The questionnaire consisted of two sections.

Section 1 consisted of the needs assessment for primary care tasks. It comprised 44 items distributed across five domains, i.e. medication therapy management (15 items), disease screening (5 items), behavioural modification (6 items), consumer health protection (10 items), and management (8 items). Each item was assigned to two question sets, A and B, rated on a 5-point Likert scale. Set A asked about the importance of the task (or desired performance), e.g. "*How important is the task to your performance as a community pharmacist*?" with answers ranging from 0 (not applicable) through 1 (least important) to 5 (most important). Set B was focused on pharmacists' perceived performance, e.g. "*How well do you currently perform the task*?" Responses were rated from 1 (very badly) to 5 (very well), with the option of 0 reflecting no performance or not applicable. Section 2 recorded the sociodemographic characteristics of the respondents, such as gender, age, and education.

The questionnaire was developed in two formats, i.e. hard copies and an online version. Its face validity was evaluated by three experts from the pharmacy faculty, a pharmacy organisation, and a community pharmacy. A pilot study involving 25 community pharmacists was also conducted to assess accuracy, internal consistency, and reliability. Cronbach's alpha coefficients were calculated, resulting in a total measurement of 0.919, indicating excellent reliability (Tavakol & Dennick, 2011).

Data collection and analysis. Copies of the questionnaire and a permission letter with explanatory statements were posted to all randomly selected pharmacists, who were asked to complete and return the questionnaire or fill out the online version within two weeks. In case of no response, a reminder letter

with a hard copy of the questionnaire was sent to them again for follow-up. The questionnaire was also dispatched to practising community pharmacists who attended the monthly meetings held by the Community Pharmacy Association of Thailand to increase the response rate.

All the data were gathered, coded, and entered into IBM SPSS Statistics 24.0 (IBM Co., New York, USA). Descriptive and inferential statistics were analysed, i.e. percentage, mean, standard deviation (SD), and t-test. An exploratory factor analysis of the training needs was performed to select and group up items, and a Varimax rotation was applied to obtain the factors with high factor loadings (Hair *et al.*, 2013). All training gaps between task importance and perceived performance were computed to determine suitable training programmes. Since pharmacists with different pharmacy degrees and current work settings might have different needs for primary care training, a subgroup analysis with a *t*-test was performed. The significance level) α) was set at 0.05.

Phase 2: Programme development and verification

Study design. The training gaps with high scores in Phase 1 were analysed to develop at least three new training programmes. Each programme consisted of the training topic, duration, outcomes, content, format (e.g. lecture, workshop, or role-play), and assessment. A small group of pharmacists first considered the proposed programmes to assess course alignment with their needs and satisfaction levels. Subsequently, a focus group of community pharmacists verified the programmes for accuracy, practicality, and satisfaction.

Participants. Nine key participants, who were either community pharmacists and/or preceptors of the sixth-year PharmD students, were purposively selected for the focus group and did not overlap with participants involved in the Phase 1 survey. Each participant was allocated an identification code (e.g. P1, P2, etc.) to facilitate the data analysis and presentation.

Study instrument .A set of five attitudinal questions was constructed based on the Diffusion of Innovations Theory, which encompassed: (1) relative advantages, (2) compatibility with existing values and practices, (3) simplicity and ease of use, (4) trialability, and (5) observable results that covered their adoption and satisfaction with the programmes (Dearing & Cox, 2018). The questions were rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Examples of the questions were, "*To what extent would you think… this programme is better than previous training sessions*?" and "*…this programme meets the pharmacists' needs and the present situation*?" Three experts in qualitative research and community

pharmacy checked all the questions for face validity to improve the wording and content accuracy.

Data collection and analysis •A focus group was convened with nine participants at the Faculty of Pharmaceutical Sciences, Chulalongkorn University. The participants had been mailed the package of the three training programmes, which contained programme structures, post-training assessment forms, performance appraisals, and examples of the tools used for training. They were requested to fill out a consent form before their participation. The focus group was facilitated by the researcher (SP) and an experienced community pharmacist. Initially, the group members were requested to read the five questions for each programme and then rate them individually. After that, they used their answers to discuss and comment on the programmes. Field notes were made to ensure that the planned questions could create relevant discussion. The discussion took approximately 60 minutes and was audiotaped and conventionally transcribed. Transcription was twice checked and confirmed by the researcher (SP) for accuracy. All the data were entered into Microsoft Word, and key points were extracted for each programme.

Results

Phase 1: Needs analysis

At the outset, 1,289 copies of the questionnaire were mailed to eligible pharmacists. Only 107 respondents completed the study, resulting in a response rate of 8.3%. Additionally, 258 participants who attended the monthly pharmacy meetings returned the questionnaire. Hence, a total of 365 copies (28.3%) were used for data analysis. Table I presents the detailed characteristics of the respondents.

Female pharmacists were twice as many as males (69% *vs*. 31%). Participants were mostly young pharmacists under 35 (54%). Most respondents had their first degree in pharmacy (76.7%), but few pursued their graduate studies. Most finished the 5-year Bachelor's programme in pharmacy (68.8%) and worked full-time at independent pharmacies. Apart from being community pharmacists, some were pharmacy owners or held managerial and other positions, e.g. business developers or medical representatives.

Table I: Respondents' characteristics (n = 365)

Characteristic	Number of respondents (%)
Gender	
Male	113 (31.0)
Female	252 (69.0)
Age: Mean (SD)	38.8 (13.2)
24 – 35 years	197 (54.0)
36 – 45 years	64 (17.5)
46 – 55 years	56 (15.3)
56 – 65 years	33 (9.1)
> 65 years	15 (4.1)
Highest education	
Bachelor's degree	280 (76.7)
Master's degree	77 (21.1)
Doctoral degree	8 (2.2)
Pharmacy degree	
BSc in Pharmacy (4 years)	2 (0.5)
BSc in Pharmacy (5 years)	251 (68.8)
Pharm.D. (6 years) – Industrial pharmacy	46 (12.6)
Pharm.D. (6 years) – Pharmaceutical care	66 (18.1)
Current workplace	
Independent pharmacy	271 (74.3)
Chain pharmacy	84 (23.0)
Franchise pharmacy	10 (2.7)
Position[†]	
Owner	144 (39.5)
Pharmacist on duty	341 (93.4)
Manager	41 (11.2)
Other, i.e. business developer, medical representative, etc.	13 (3.6)
Type of position	
Full time	223 (61.1)
Part time	142 (38.9)

[†] Question with more than one answer; hence, the percentage was greater than 100%

Initially, primary care tasks (Table II) were grouped into five domains comprising 44 items. However, items were regrouped into seven domains based on factor loadings of task importance and perceived performance. All eigenvalues were greater than 1.0, ranging from 3.1 to 5.2 (data not shown). Overall, the seven domains could explain 67.49% of the variables and demonstrated high reliability, with Cronbach's alpha values spanning from 0.85 to 0.92 (data not shown). Table II presents the training needs or gaps of community pharmacists.

Table II: Training needs for primary care pharmacy categorised into seven domains based on task importance and perceived performance (n = 365)

Task item	Factor loading (% of variance)	Task importance† mean (SD): A	Perceived performance‡ mean (SD): B	Training need or gap A – B mean (SD)
1. Basic medication therapy management	(11.60)			
1.1 Solving drug-related problems identified	0.694	4.7 (0.6)	3.7 (1.0)	1.0 (1.1)
1.2 Collecting patient information to identified drug-related problems	0.670	4.5 (0.8)	3.3 (1.4)	1.2 (1.3)
1.3 Counselling on drugs with special medication techniques, e.g. use of an inhaler or a suppository	0.607	4.6 (0.6)	4.0 (1.0)	0.6 (1.0)
1.4 Advice on self-management of medications and medication adherence	0.580	4.4 (0.7)	3.5 (1.2)	0.9 (1.1)
1.5 Patient referral by exchanging patient information with other healthcare professionals	0.565	4.2 (1.0)	2.5 (1.6)	1.7 (1.7)
1.6 Medication use review to assess patient's understanding and medication errors	0.560	4.4 (0.7)	3.3 (1.3)	1.1 (1.2)
1.7 Filling prescriptions and refills for patients	0.533	4.3 (1.1)	3.3 (1.7)	1.0 (1.6)
1.8 Making a care plan for patient's drug use	0.471	4.1 (0.9)	3.0 (1.4)	1.1 (1.4)
1.9 Dispensing for patient's symptoms	0.444	4.7 (0.5)	4.2 (0.9)	0.5 (0.9)
1.10 Documentation and continuous monitoring for patient's drug therapy	0.433	4.2 (0.9)	2.7 (1.4)	1.5 (1.5)
2. Advanced medication therapy management	(7.00)			
2.1 Home visit with the multidisciplinary team for bed-bound patients or those with peritoneal dialysis, stroke and other diseases	0.639	3.4 (1.5)	1.2 (1.5)	2.2 (1.8)
2.2 Pharmacist's home visit for bed-bound patients or those with peritoneal dialysis, stroke and other diseases	0.638	3.4 (1.4)	1.3 (1.6)	**2.1 (1.7)**
2.3 Keeping patient records systematically, e.g. using a computer programme or paper-based patient files	0.515	3.9 (1.1)	2.1 (1.6)	1.8 (1.6)
2.4 Recording health or medical history of each patient	0.493	3.8 (1.1)	2.1 (1.6)	1.7 (1.6)
3. Screening and risk assessment	(10.89)			
3.1 Risk assessment of stroke	0.783	4.1 (1.0)	2.3 (1.7)	1.8 (1.7)
3.2 Screening and risk assessment of asthma or chronic obstructive pulmonary disease	0.771	4.0 (1.0)	2.3 (1.7)	1.7 (1.6)
3.3 Screening and risk assessment of depression	0.714	3.9 (1.1)	1.9 (1.6)	**2.0 (1.7)**
3.4 Screening and risk assessment of sexually transmitted diseases	0.678	4.1 (1.0)	2.6 (1.7)	1.5 (1.6)
3.5 Screening and risk assessment of chronic diseases, e.g. hypertension, diabetes and obesity	0.495	4.3 (0.9)	3.0 (1.5)	1.3 (1.5)
4. Behavioural modification	(7.83)			
4.1 Counselling on calorie control from food	0.593	4.0 (1.0)	3.0 (1.4)	1.0 (1.4)
4.2 Counselling on appropriate diet for patients with chronic diseases, e.g. hypertension, diabetes and gout	0.565	4.3 (0.8)	3.5 (1.2)	0.8 (1.1)
4.3 Counselling on reduction in alcohol consumption	0.543	4.1 (1.0)	3.0 (1.5)	1.1 (1.4)
4.4 Counselling on appropriate exercise	0.517	4.3 (0.8)	3.7 (1.2)	0.6 (1.1)
4.5 Counselling on smoking cessation	0.496	4.2 (1.0)	2.8 (1.5)	1.4 (1.5)
4.6 Counselling on reduction in narcotics and neuropsychotropic drug use	0.440	4.0 (1.0)	2.4 (1.7)	1.6 (1.6)
5. Health promotion for the community	(10.06)			
5.1 Counselling on antenatal care	0.737	3.8 (1.1)	2.5 (1.6)	1.3 (1.5)
5.2 Counselling on unintentional pregnancy	0.668	4.0 (1.1)	2.4 (1.7)	**1.6 (1.7)**
5.3 Counselling on screening for cervical cancer or HPV vaccination in girls aged 9-14	0.627	3.7 (1.2)	2.2 (1.6)	1.5 (1.6)
5.4 Surveillance and identification of health product problems in the community, e.g. testing for steroid-containing products	0.557	3.8 (1.2)	2.1 (1.7)	1.7 (1.7)

Task item	Factor loading (% of variance)	Task importance[†] mean (SD): A	Perceived performance[‡] mean (SD): B	Training need or gap A − B mean (SD)
5.5 Advice on treatment rights, such as rights to access the national health security or social security scheme	0.480	3.9 (1.1)	2.5 (1.6)	1.4 (1.6)
5.6 Counselling on family planning and sexually transmitted diseases, e.g. using emergency contraceptive pills or condoms	0.453	4.3 (0.9)	3.6 (1.3)	**0.7 (1.1)**
6. Health promotion for individual patients	(8.36)			
6.1 Providing information about herbs and herbal medicines for safe and cost-effective use	0.742	3.9 (0.9)	3.2 (1.1)	0.7 (1.1)
6.2 Providing information about health products, e.g. dietary supplements, for safe and cost-effective use	0.650	4.0 (0.9)	3.5 (1.2)	0.5 (1.1)
6.3 Promoting patient's selection of appropriate medical devices, e.g. blood pressure monitor, glucose meter and medical supplies	0.562	4.1 (0.9)	3.3 (1.4)	0.8 (1.3)
6.4 Promoting appropriate use of medical equipment, e.g. crutch or patient bed	0.483	3.7 (1.1)	2.4 (1.6)	1.3 (1.6)
6.5 Promoting patient's basic self-care	0.404	4.4 (0.7)	3.7 (1.1)	0.7 (1.1)
7. Management	(11.75)			
7.1 Financial management of a drugstore	0.819	4.4 (0.9)	3.6 (1.3)	0.8 (1.3)
7.2 Tax management of a drugstore	0.737	4.3 (1.0)	3.2 (1.4)	1.1 (1.4)
7.3 Verbal and non-verbal communication skills	0.711	4.6 (0.7)	4.1 (0.9)	0.5 (0.9)
7.4 Risk management of a drugstore, e.g. a management system for short expiry drugs	0.657	4.6 (0.6)	4.2 (0.9)	0.4 (0.9)
7.5 Facilitators and barriers to communication with customers, i.e. reading or hearing impairment	0.615	4.4 (0.8)	3.7 (1.2)	0.7 (1.2)
7.6 Management of drug selection	0.562	4.3 (0.9)	3.5 (1.3)	0.8 (1.3)
7.7 Management of inventory control for drugs and health products, e.g. temperature recording	0.543	4.4 (0.8)	4.0 (1.1)	0.4 (1.0)
7.8 Risk assessment of a drugstore, e.g. dispensing errors or expired products	0.517	4.5 (0.7)	3.9 (1.1)	0.6 (1.0)
7.6 Management of drug selection	0.562	4.3 (0.9)	3.5 (1.3)	0.8 (1.3)
7.7 Management of inventory control for drugs and health products, e.g. temperature recording	0.543	4.4 (0.8)	4.0 (1.1)	0.4 (1.0)
7.8 Risk assessment of a drugstore, e.g. dispensing errors or expired products	0.517	4.5 (0.7)	3.9 (1.1)	0.6 (1.0)

† 5-point Likert scale for task importance: 1 = least important, 2 = important, … and 5 = most important; 0 = not applicable.

‡ 5-point Likert scale for perceived performance: 1 = very badly, 2 = badly, … and 5 = very well; 0 = no performance or not applicable

All tasks in Domain 1 (Basic MTM) were deemed basic duties that pharmacists should be able to perform effectively. Nevertheless, some tasks were perceived as slightly challenging, e.g. the continuous monitoring of patients' drug therapy (mean gap = 1.5) and patient referral with information sharing (1.7). Advanced MTM tasks in Domain 2 were construed as necessary but poorly performed by most pharmacists, especially for a home visit by pharmacists alone (2.1) or with other healthcare professionals (2.2). For Domain 3, tasks related to screening and risk assessment were quite a challenge to accomplish, in the case of depression (2.0) and stroke (1.8), for example. All six tasks of behavioural modifications (Domain 4) were found essential and manageable, but only counselling on reducing the use of narcotics and neuropsychotropic drugs was a bit challenging (1.6). Regarding Domains 5 and 6, most respondents felt they could perform well in health promotion activities for the community and individual patients.

In Domain 7, management was regarded as the most important task. It was perceived as achievable by all pharmacists, except for the tax aspect (gap mean = 1.1). Most respondents asserted they could perform the task under Domain 7, "*verbal and non-verbal communication skills*" (0.5), albeit essential and sometimes subtle. As for the subgroup analysis, the training needs or gaps of pharmacists with two pharmacy degrees (5-year BSc programme *vs* 6-year Pharm.D. programme) or two current workplaces (independent pharmacies *vs* chain or franchise pharmacies) were not statistically different ($p > 0.05$,

data not shown). However, pharmacists with a 6-year PharmD degree could perform almost all tasks marginally better than those with a 5-year degree. Furthermore, pharmacists working in chain or franchise pharmacies tended to deliver health promotion for individual patients somewhat better than those in independent pharmacies, but the rest were the same for both groups.

Phase 2: Programme development and verification

Three main tasks, i.e. depression screening (mean gap = 2.0), home visits (2.1), and family planning (2.3),

were selected to develop training programmes owing to the high mean gaps in Phase 1. As home visits with a multidisciplinary team (2.2) were quite challenging to arrange in practice, pharmacists' visits were preferred. Moreover, despite its low mean gap (0.7), counselling on family planning and sexually transmitted diseases was also selected because of its benefits for the family and the community and its role in the prevention of unintentional pregnancy (1.6). Table III displays the abridged structures of the three programmes verified by the focus group.

Table III: Abridged structures of three training programmes developed according to training needs analysis and verified by the focus group

Programme structure	Depression screening	Home visits	Family planning
Duration	Online session: 8 hours On-site practical session: 7 hours Total: 15 hours (min.)	Online session: 8 hours On-site practical session: 7 hours Home visits: Specially arranged for 7 hours Total: 22 hours (min.)	Online session: 8 hours On-site practical session: 7 hours Total: 15 hours (min.)
Training outcomes	- To explain the concepts of screening and assessment of depression in various groups, i.e. older people, adolescents and new mothers - To use several depression screening tools effectively - To initiate primary care, monitor and refer depressive patients	- To explain the principle of home visits and care for patients after hospital discharge - To acquire skills in home visits and care for the patients at home - To assess patient's drug-related and behavioural problems in order to plan for care and monitor for drug therapy effectively and safely	- To explain the concepts of disease protection and family planning - To acquire counselling skills and data collection for family planning, sexually transmitted diseases, cervical cancer and unintentional pregnancy - To initiate primary care, monitor and refer customers (customers/patients)
Contents (training strategies)	***Online session*** (lecture, group discussion and case studies) - Concepts of screening and risk assessment - Epidemiology of depression in in various groups, i.e. older people, adolescents and new mothers - Brush up on symptoms and signs of depression in different patient groups ***On-site practical session*** (group discussion, videotapes, role play and practice) - Communication and use of depression screening tools for various groups - Primary care for depression and monitoring for outcomes - Referral to appropriate healthcare professionals	***Online session*** (lecture, group discussion and case studies) - Principle of home visits and care - Pharmacist's role and preparation for home visits, i.e. how to do a home visit and care, complete a form and use a home visit kit - Pharmacist manual for home visits and patient care records ***On-site practical session*** (group discussion, videotapes, role play and practice) - Communication and use of a form and kit for home visits - Assessment of patient's drug-related and behavioural problems - Planning and monitoring for patient's drug therapy at home ***Home visits:*** To be arranged in due course	***Online session*** (lecture, group discussion and case studies) - Overview of family planning and contraceptive technology - Brush up on sexually transmitted diseases, cervical cancer and unintentional pregnancy - Pharmacist's role in counselling on family planning and related issues ***On-site practical session*** (group discussion, videotapes, role play and practice) - Communication and use of a form to collect data and printed materials to counsel customers or patients on family planning and related issues - Primary care and monitoring for outcomes - Referral to appropriate healthcare professionals
Assessments	- Portfolio of depression screening with self-assessment of patient care submitted within 3 months - Practical assessment	- Portfolio of home visits with self-assessment of patient care submitted within 3 months - Practical assessment	- Portfolio of family planning with self-assessment of patient care submitted within 3 months - Practical assessment
Achievement criteria	- At least 80% of total practical marks to get a certificate	- At least 80% of total practical marks to get a certificate	- At least 80% of total practical marks to get a certificate

In the focus group, one male and eight female pharmacists rated each training programme based on five attitudinal questions. They all agreed (means > 4.0) that the three proposed programmes were valuable,

practical, and easy to implement with concrete outcomes. Details of the training programmes discussed by the focus group are shown in Table IV.

Table IV: Three training programmes verified by the focus group (n = 9)

Diffusion element	Attitude†: Mean (SD)		
	Depression screening	Home visits	Family planning
Relative advantages	4.3 (0.7)	3.8 (1.1)	4.2 (1.0)
This programme is better than previous training sessions.			
Compatibility with existing values and practices	4.8 (0.4)	4.2 (0.7)	4.4 (0.5)
This programme meets pharmacist's needs and present situations.			
Simplicity and ease of use	4.2 (0.4)	4.3 (0.7)	4.3 (0.7)
This programme is feasible and not complicated.			
Trialability	4.6 (0.7)	4.2 (0.8)	4.7 (0.5)
This programme can be tested and adjusted for better use.			
Observable results	4.6 (0.5)	4.0 (0.7)	4.6 (0.7)
This programme brings about a change noticed by service users.			
Total	4.5 (0.4)	4.1 (0.5)	4.4 (0.6)

† 5-point Likert scale: 1 = strongly disagree, 2 = disagree, … and 5 = strongly agree

Programme 1: Depression screening. All participants agreed on the importance and appropriateness of this programme for community pharmacists to provide services to potential depressive patients. They also recommended including topics covering obsessive-compulsive disorder (OCD) and other neuropsychiatric disorders, such as anxiety, panic, bipolar disorder, and Alzheimer's disease, in the training programme. They preferred 1-day or 2-day face-to-face training due to accommodation and travel challenges for pharmacists in remote areas. Furthermore, considering the difficulties in accommodation and travel, they suggested an alternative approach, i.e. an 8-hour online session for theoretical content, followed by a 7-hour on-site session for screening practice. The inclusion of role plays and video presentations was also recommended to help trainees learn more about how to use depression screening tools in their practice.

Some participants highlighted the value of engaging well-known speakers or expert trainers to provide appropriate knowledge and skills in actual practice, considering it a worthwhile investment. Nevertheless, they acknowledged the importance of practice for pharmacists to "*comprehend patients*" and their needs. Regarding performance assessments, participants argued against pre-and post-tests, as scoring well on theoretical knowledge alone did not guarantee effective service delivery; instead, they advocated for practical assessments.

As part of the training achievement, participants were recommended to submit a training portfolio with self-

assessment within 3 to 6 months to be evaluated by experts who would provide appropriate feedback. They also suggested storing relevant information on the cloud to enable pharmacists to share their best practices and discussions and save time in class. Additionally, participants proposed the creation of a call centre or real-time consultation service with experts for guidance when necessary. Other comments with key points and quotes included:

Lack of competence to deal with psychiatric or depressive cases (implication: need for appropriate training to develop competence) – "There are many psychiatric patients coming to the drugstore, but we are not competent enough to provide good services." (P4)

Use of standard screening tools – "We should use standardised, formal screening tools in English or Thai language." (P3)

Certification to acknowledge the specialised service – "Certification after training is an important motivation for community pharmacists to participate and acknowledge them to be specialists. This can be set by the level of specialists". (P5)

Programme 2: Home visits. Most participants believed this programme suited community pharmacists with ample time to practise. Similar to depression screening, they suggested an 8-hour online session and another 7-hour practical class. Moreover, home visits for at least 7 hours were to be arranged in due course. Some

participants also highlighted the importance of teamwork and the presence of experienced pharmacists in providing home-visit training. Experienced team members would be role models, motivating novice pharmacists and students to offer better services. Participants also recommended having more practical sessions provided and supervised by experts. In terms of assessment, respondents preferred only a practical evaluation with the submission of a training portfolio. They stressed the need for a certificate upon programme completion, echoing the approach suggested for depression screening. Examples of some responses are:

> *Requirement for practical training and multidisciplinary teamwork for home health care – "Home health care should be trained continuously using real cases for practising. In some areas, the co-operation of healthcare professionals may be problematic, especially for referral cases." (P7)*

> *Experienced mentors as a role model to boost confidence in service provision – "From my own experience, experienced mentors are quite important to advise, assist, and be the role model for community pharmacists to provide service with confidence." (P6)*

> *Service without co-operation of primary care providers – "There is no co-operation from primary care units in my area. I must contact patients myself and start from those who live near my drugstore." (P1)*

Programme 3: Family planning. Some participants commented that most pharmacists could provide family planning services effectively, especially considering the availability of regular, free training sessions offered by a primary care unit in Bangkok. They also suggested that training should focus on handling complicated cases of sexually transmitted diseases (STDs). They emphasised the need for standard materials for patient counselling on contraceptive use and STD prevention, such as pap smear brochures, and most importantly, maintaining consistent and high-quality services for all customers or patients post-training. Regarding training assessment and certification, participants adopted the same requirements as other training programmes. Here are some comments on this course:

> *Need for training in advanced sexually-transmitted diseases – "It is quite common for community pharmacists to give advice on family training. However, training on complicated STDs should be arranged." (P7rov)*

> *Provision of standard educational publications for better comprehension – "Standard materials for*

> *education should be prepared and provided for patients. It will be more understandable and beneficial." (P9)*

> *Submission of training portfolio submission and certification – "I think, like other programmes, submission of a training portfolio within 3 – 6 months for expert's assessment and certification for programme completion are important." (P3)*

Discussion

This study developed new training programmes for community pharmacists based on their identified training needs. It was the first to apply the needs analysis theory to design pharmacy training programmes. Qualitative results from Phase 1 were used to construct the 44-task-item questionnaire using the Hennessy-Hicks training needs analysis.

Phase 1 findings revealed that all basic services aligned with the recommended pharmacy services outlined by the World Health Organisation (Solunke *et al.,* 2017), e.g. dispensing, counselling, and medication use review. However, pharmacists do not usually perform basic patient referral, documentation, and follow-up, although these services are core elements of MTM in chronic diseases (American Pharmacists Association & National Association of Chain Drug Stores Foundation, 2008). Given that more than half of the participants were young (24–35 years) and had limited experience, it seemed challenging for them to provide advanced MTM services. These pharmacists must complete continuing pharmacy education, such as regularly attending patient-related workshops, meetings, or short courses, and achieve a specified number of credits, as required by the Pharmacy Council of Thailand. These activities will partly enable them to improve their knowledge and skills in delivering advanced services.

Of note, the task item "*verbal and non-verbal communication skills*" under Domain 7 (Management) is indispensable to home visits and other advanced MTM. While pharmacists reported good communication skills, as evidenced by the mean gap of 0.5, training sessions on high-level communication skills could further enhance their ability to communicate more effectively with patients. Another challenging issue was the lack of competence in handling bedridden patients, especially those on peritoneal dialysis, nasogastric tubes, or feeding tubes in situ. Thus, collaborating with other healthcare professionals, such as physicians or nurses, is essential to addressing these cases.

Screening and risk assessments were rated as highly important but were poorly performed, particularly in conditions such as depression, chronic obstructive pulmonary disease, and sexually transmitted diseases. From an economic perspective, screening or early disease detection can do more good than harm at reasonable costs, potentially reducing subsequent treatment expenditures (Gray, 2004; Siu & USPSTF, 2016). Regarding behavioural changes, all tasks were deemed essential and could be moderately performed. For instance, counselling on smoking cessation was not successful because of some barriers, including the lack of knowledge and skills, the unavailability of counselling kits, and the time-consuming nature of the sessions (Phanucharas & Chalongsuk, 2012).

Regarding health promotion tasks, community services, such as counselling on family planning and STDs, affect the entire community but are often not well-performed due to various reasons, including time constraints or a lack of competence. However, individual services, such as providing appropriate information about herbal medicines and health products to each customer so that they can select or use the products safely and cost-effectively, are usually delivered more effectively. Given the widespread use of complementary and alternative medicine, pharmacists should typically be able to provide patients with relevant information, for example, on dosages, side effects, and interactions with prescription medicines.

In terms of pharmacy management, tasks related to this area were regarded as the most important, and all pharmacists could perform them well. One vital aspect is the management of short-expiry drugs, which pharmacists must handle effectively to ensure cost containment for their business. Ideally, pharmacists should have managerial skills, e.g. finance, accounting, marketing, operations, and human resources, to deal with all issues in their drugstores and provide better primary care services. In reality, many respondents, especially those working in chain or franchise pharmacies, reported suboptimal performance in drug selection and tax management. This result is partly because they often do not perform such duties themselves; they rather follow the procedures and policies set by their organisations.

In Phase 2, three new training programmes, depression screening, home visits, and family planning, were developed based on pharmacists' training needs from the perspectives of pharmacy organisations using the organisation-task-person (O-T-P) model and from the points of view of pharmacists using the Hennessy-Hicks model.

Regarding depression screening, psychiatric patients with depression or suicide attempts have dramatically increased, and community pharmacists are in an ideal position to offer proactive interventions to the patients (Brown *et al.,* 2019). Appropriate training enables pharmacists to screen for depression or give advice on relevant issues, whether for adults (Miller *et al.,* 2020) or university students (Phimarn *et al.,* 2015). Training programmes for mental health care, which is a broader aspect than depression, are investigated in community pharmacists using various training strategies (Febrinasari *et al.*, 2023). Apart from community pharmacists, mental health training needs were identified using the Hennessy-Hicks training needs analysis in general practice pharmacists and technicians (Johnson & Earle-Payne, 2022). Therefore, it is necessary to provide community pharmacists with training programmes to effectively manage depression and other mental health problems.

Home visits are increasingly demanded as part of home health care or family pharmacy despite the many barriers to implementing this service, including time constraints, staffing shortages, and a lack of reimbursement (Ensing *et al.,* 2017). The WHO has recommended home healthcare, especially for older patients (Regional Office for the Eastern Mediterranean, 2015). According to the guidelines for home visits, this service can benefit both patients and their families by identifying drug-related problems and improving efficacy, safety, medication adherence, and storage conditions (Saploy *et al.,* 2017). Thus, a training programme would enable community pharmacists to offer quality home visits.

Teenage pregnancy has been a matter of great concern to the Ministry of Public Health (Bureau of Reproductive Health, 2018), highlighting the importance of family planning services where pharmacists should get involved. Community pharmacists are encouraged to provide counselling on early pregnancy (Truong *et al.,* 2019) or emergency contraception to prevent unintentional or teenage pregnancies (Rafie *et al.,* 2017). A training programme is thus necessary to deliver effective family planning services.

Regarding programme verification, the focus group was positive towards the proposed programmes with all five diffusion elements but highlighted some areas for improvement, i.e. training duration, training format (face-to-face *vs* online), and engaging experts. For example, in depression screening, the use of lengthy question sets raised a concern about the practicality of standard screening tools for the training programme; the focus group favoured the nine-item Patient Health Questionnaire (PHQ-9), widely employed by healthcare professionals and validated in Thailand (Lotrakul *et al.,* 2008).

Similarly, family planning education requires standard educational resources. Pharmacists equipped with written material can help customers develop a better understanding of relevant issues (Rafie *et al.,* 2017). Regarding home visits, the challenge lies in establishing collaboration with other primary care providers within the training programme. This difficulty is confirmed by Ensing and colleagues (2017), whose study also showed that pharmacists perceived collaboration with other healthcare professionals, such as physicians, nurses, and homecare services, as a crucial facilitator.

In Thailand, the National Health Security Office (NHSO) has collaborated with the Pharmacy Council of Thailand and retail drugstores to expand the role of pharmacists in primary care for patients covered under the Universal Coverage Scheme (UCS) (National Health Security Office, 2022). Through this initiative, UCS patients can get free consultations and medicines for treating 16 common illnesses, such as headache, dizziness, joint and muscle pain, and fever, at designated "*quality pharmacies*" certified to provide primary and pharmaceutical care. These pharmacies are then reimbursed for consultation fees and medication costs by the NHSO, acting as a health purchaser. Additionally, UCS patients can conveniently obtain their prescription medicines from these pharmacies since partner hospitals work closely with them. This partnership ensures seamless prescription transmission for dispensing medicines or referrals back to hospitals when necessary. Hence, three new training programmes developed based on the needs analysis are beneficial for strengthening the roles of community pharmacists in primary care and MTM.

Limitations

The study has several limitations that need to be acknowledged. Firstly, the perceived task importance and performance levels are inherently subjective, thus affecting the assessment of training needs or gaps. The data collection should ideally be repeated 6–12 months after the first round to confirm participants' actual perceptions and training needs and mitigate this subjectivity.

Secondly, the training needs identified in this study were based on responses solely from members of the Community Pharmacy Association (CPA). It is worth noting that many community pharmacists are members of the Thai Pharmacies Association (TPA) only or members of both the TPA and CPA. The TPA usually focuses on the business aspect rather than professional practice, suggesting that the training needs of TPA pharmacists might differ from those identified in this study.

Lastly, only nine high-performing pharmacists took part in the focus group to verify the training programmes. Their views might not represent the broader spectrum of community pharmacists; therefore, a couple of focus groups should be convened to triangulate the results.

Conclusion

This study has led to developing three new training programmes focused on depression screening, home visits, and family planning based on the training needs at the macro and micro levels. These programmes are readily available and designed to benefit all community pharmacists or pharmacy organisations as part of self-development or continuing professional development initiatives. It is anticipated that these programmes will be organised and implemented by the Community Pharmacy Association or pharmacy schools in the future.

Training programmes may also be developed using the needs analysis theory for other pharmacy areas, such as clinical pharmacy, industrial pharmacy, or specialised pharmacy practice. Further studies should be carried out to evaluate the impact of the programmes on pharmacists' knowledge and skills in primary care settings. Given the diversity in pharmacists' backgrounds and experiences, exploring the association between their characteristics and specific training needs would be of interest. Moreover, future research should assess how pharmacy organisations and changing practices affect training needs over time.

Conflict of interest

The authors declare no conflict of interest.

participating in the in-depth interview, survey, and focus group.

Ethics approval

This study was approved by the Research Ethics Review Committee for Research Involving Human Research Participants, Health Sciences Group, Chulalongkorn University (COA: 171/2561).

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