Original Article

Thai Journal of Pharmaceutical Sciences

Development of a Thai pharmacists' cultural competency self-assessment scale

Auttakrit Aunkaew[1,2], Puckwipa Suwannaprom[3], Siritree Suttajit[3]

[1]Department of Pharmacy and Consumer Protection, Khunyuam Hospital, Mae Hong Son, Thailand, [2]Master's Degree Program in Pharmacy Management, Faculty of Pharmacy, Chiang Mai University, Chiang Mai, Thailand, [3]Department of Pharmaceutical Care, Faculty of Pharmacy, Chiang Mai University, Chiang Mai, Thailand

Corresponding Author: Siritree Suttajit, Department of Pharmaceutical Care, Faculty of Pharmacy, Chiang Mai University, Chiang Mai, Thailand. E-mail: siritree.s@cmu.ac.th

Received: April 16, 2022
Accepted: July 30, 2022
Published: January 16, 2023

ABSTRACT

Objective: The objective of the study was to develop and evaluate a cultural competency assessment form for Thai pharmacists. **Materials and Methods:** The research was conducted in two phases. Phase 1 involved item development based on the Campinha-Bacote's and the ACPP's concept of cultural competency and the self-assessment of perceived level of cultural competence questionnaire. Seven experts assessed the content validity and face validity. The revised scale was tested for comprehension among 12 pharmacists using the think-aloud technique. Phase 2 constituted the scale development and scale evaluation. The Thai pharmacist cultural competency self-assessment (TPCCS) scale developed from Phase I was sent to randomly selected Ministry of Public Health Hospitals. A total of 241 pharmacists completed the online scale. Exploratory factor analysis and a reliability test were used to evaluate the data. **Results:** The developed TPCCS scale consisted of 79 items, 18 factors and 5 domains: awareness (23 items), skill (20 items), knowledge (20 items), encounter (11 items), and desire (5 items), explaining 31.5% of the total variance. The reliability of the five dimensions was between 0.8550 and 0.9217. **Conclusion:** Cultural competency is crucial for pharmacists as society evolves. The 79-item TPCCS scale has been systematically developed and has the potential to be improved for pharmacy workforce enhancement.

Keywords: Assessment development, cultural competency, pharmacist

INTRODUCTION

Culture is a vital part of human society that shapes people's traits, habits and perceptions.[1] People who have different personalities, based on their age, gender and sexual orientation, race, religious belief, ethnicity, or occupation, for example, also have different concerns and cultures.[2] Culture can affect disease progression, health seeking behaviors, self-care and medicine use behavior.[3] Thai society features a varied range of cultures, owing to regional distinctions as well as the cultural flow of many people groups.[4] This diversity poses significant challenges to Thailand's society and public health services' goal of equality. When cultures are not considered, unmet demands may develop.[5] Incorrectly managing a Muslim patient's meds during Ramadan or a Thai monk who only eats once or twice a day and not after lunch are examples. Other examples include discrimination against LGBTQ, disabled, and ethnic patients. Prompt response services centered on customer culture may increase patient treatment outcomes.[6-8]

To respond to cultural variety with quality and equity, a culturally aware health workforce is required.[6,9] Cultural competency is needed for pharmacists to comprehend health and medicine use behaviors in a complex and multicultural society.[2,10,11] Cultural competency refers to an individual's capacity to operate effectively in culturally diverse contexts, such as recognizing and respecting cultural differences, as well as an understanding of one's own and the patient's culture, and knowledge of other cultures' health services.

Cultural competency for healthcare practice is defined in various ways.[12-15] Campinha-Bacote[12] proposes that cultural competency among healthcare personnel is comprised of

five key elements: Cultural awareness, skills, knowledge, encounter, and desire. These key elements cover all the cognitive, affective, and behavioral dimensions of the cultural competency framework of healthcare providers. The Campinha-Bacote's concept was therefore used as the main framework in this study.

In the international pharmacy profession, cultural competence is emphasized and characterized as a component of competency framework,[16-18] training,[9-11,19-25] and practice,[26,27] particularly in relation to the provision of pharmaceutical care. The US Accreditation council for pharmacy education mandated in 2016 that pharmacy courses teach and assess cultural competency in lectures and internships.[9] The American College of Clinical Pharmacy (ACCP)[21] has identified seven elements to develop cultural competency among pharmacists: Assess cultural attitudes and knowledge, learn about and understand views of diverse cultures, effectively communicate with diverse cultures, tailor treatment based on patient's culture, develop strong ties with community, understand national and professional care initiatives on diversity, and evaluate progress toward cultural competency. Pharmacists should continue to cultivate cultural competency,[22] so the focus of the ACCP's concept of cultural competency development process specifically for the pharmacy profession was also adopted in this study. Many occupations in Thailand also encourage cultural competency, including hospital nurses,[28-30] nursing students and professors,[31] Thai traditional medicine students,[32] and teachers.[33]

However, in the pharmacy profession, there are relatively few studies. A situation analysis of pharmaceutical care delivery with cultural competency by Chanthapasa in 2007[34] was the only paper that specifically stresses measuring cultural competency. Since then, there has been no other assessment study of pharmacists' cultural competence. Other related works, such as the development of a competency assessment form for Chonburi Hospital pharmacists in 2015 (which "dispenses medicines and gives advice on medicines taking into account religious principles, culture, lifestyle, knowledge, and demographic factors," are part of the relationship-building and communication skill assessment);[35] a study of cross-cultural adaption of international pharmacy graduate students in 2018;[36] and a study of cross-cultural competency and performance of personnel in the pharmaceutical industry in 2020.[37]

The cultural competency research can determine how well the sample participants are able to deal with cultural differences and area for improvement.[38] However, few research studies on pharmacists' cultural competency have been conducted in Thailand, and no standardized assessment tool has been designed specifically for pharmacists. This study aimed to develop a cultural competency assessment scale for pharmacists in the Thai context. This assessment scale will help identify the current state of pharmacist cultural competency and help plan future cultural competency development for pharmacists and pharmacy students.

MATERIALS AND METHODS

The research study used descriptive research methods to develop and test the quality of the cultural competency assessment scale of Thai pharmacists, divided in two phases [Figure 1]. For both study phases, the principal researcher (AA) served as a facilitator. For the past 10 years, he has worked as a hospital pharmacist for the Ministry of Public Health (MOPH) in a multi-ethnic area, Thailand. He has undergone training in qualitative research.

This research has been approved for Human Research Project No. 38/2563 from the Research Ethics Committee, Faculty of Pharmacy, Chiang Mai University.

The following sections detail each phase.

Phase 1: Item Development

Identification of domain and item generation

The self-assessment of perceived level of cultural competence (SAPLCC) was adapted using Campinha-Bacote's[12] concept of cultural competency for health care professionals and the ACCP's concept of cultural competency development in pharmaceutical care.[21] The SAPLCC's items were chosen because they target pharmacists and they cover all three domains of cognitive, affective, and behavioral. The SAPLCC was adapted from the California brief multicultural competence scale and the Clinical Cultural Competency Questionnaire.[39] The researchers contacted Echeverri *et al*., the lead developer of the SAPLCC,[40] and received permission to modify the scale for this study. The SAPLCC includes six domains of awareness, attitude, abilities, skills, encounters, and knowledge. But we kept the Campinha-Bacote's five domains, which are cultural awareness, skills, knowledge, encounter, and desire, as the scale's foundation.

Content validity

Seven pharmacist experts were purposively selected for their expertise, experience providing services to culturally diverse patients, and unique characteristics (type and size of hospital, region and location, and job position). The experts evaluated whether the designed items accurately represented and included the cultural competency that should be assessed. Each item was analyzed using the index of consistency (IOC). A valid item should have an IOC more than 0.5. The items with an IOC <0.5 were noted to be taken into consideration in the next step and were not removed yet in this step.

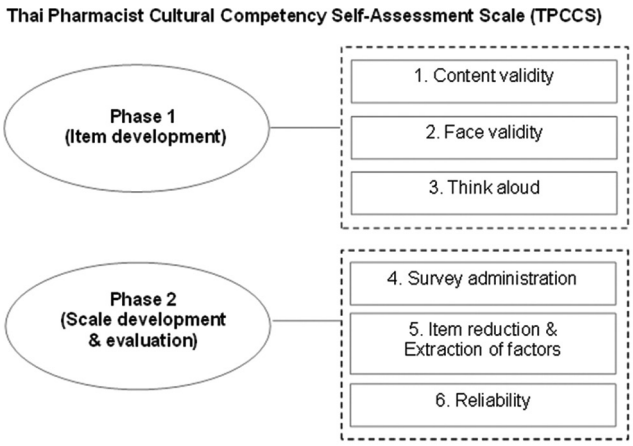

Figure 1: Two phases and steps in developing the Thai pharmacist cultural competency self-assessment scale

Face validity

In a semi-structured interview, 1 week after the content validity, the same seven experts were asked whether the established scale covered the idea it purported to measure. The experts' opinions from the recorded audio file were transcribed and their suggestions on each question item were gathered to enhance the items for testing in the following stage.

Pretesting questions

An expert-validated assessment may still be difficult for the target group to understand and interpret. The think aloud technique was used for usability testing to verify the scale and obtain qualitative insights into respondent experience. Twelve purposively selected pharmacists were asked to verbally report everything that came to their minds, how they felt about each question, and any difficulties they faced while they were performing an assessment. The findings were entered into the observation log and incorporated into the process of revising the questionnaire to improve it before obtaining an adequate assessment form. These pharmacists work in hospitals for the MOPH. They are a distinct group from the experts in the previous step and the respondents in phase 2.

Phase 2: Scale Development and Scale Evaluation

Survey administration

A cross-sectional analytical research was used to test the scale in the target group from March 2021 to August 2021. The target group was comprised of hospital pharmacists who are currently employed by the Office of the Permanent Secretary, MOPH, are willing to participate in research, and are not on study leave. These MOPH pharmacists are the largest group of pharmacists distributed across Thailand's 12 health regions, and the nature of their work varies, exposing them to a wide range of cultural issues to be addressed. As of 2020, 7,628 hospital pharmacists were working in hospitals under Thailand's Office of the Permanent Secretary, MOPH.[41]

The measured scale will be operationalized into three levels of competency to be consistent with previous research and to compare the percentage of pharmacists at each level (high, moderate, and low). Accordingly, based on the literature's suggestion of a sufficient sample size of around 200–400 respondents for measurement testing,[42-44] a sample size of 380 was estimated using formula derived by Yamane[45] with a 95% confidence and a 5% error. The stratified random sampling based on the proportion of hospitals in each health region (1–12) and hospital level (regional, general, and district hospitals) was performed. Then a simple random sampling of a hospital in each group was done by computer. All pharmacists in a sampled hospital will be counted, and hospital sampling will continue until the required number of samples for each hospital level and health region is obtained. If the sampled hospital has more pharmacists than needed, the pharmacy department head will be asked to distribute the survey to pharmacists in various roles to the greatest extent possible.

A paper survey with a short URL link and a QR code for an online survey was mailed. It was asked that the head of the hospital's pharmacy department send the link to the sample group and complete the assessment in 15 days. There were two rounds of follow-up at 3 and 6 weeks. The evaluation took around 30 min and was evaluated in two sections, as described below.

Part 1 Background information of the respondents: It consists of 13 questions about personal factors,[36-38,40] including sex, age, race, religion, educational level, year of work, job proficiency level, primary responsibility, setting regional, general, or district hospitals), training/seminars on cultural competency, the ability to communicate in another language including dialects, additional routes of cultural perception (reading, watching, listening, conversing, etc.), experience, and frequency of intercultural interactions. The items were multiple-choice (check list) and open-ended questions.

Part 2 Cultural competencies of pharmacists: Cultural awareness (27 items), cultural skills (24 items), cultural knowledge (24 items), the ability to culturally encounter and cope (12 items), and cultural desire (5 items) are the five domains, adapted from the SAPLCC. The number of questions in each domain was determined by the first phase's findings, resulting in a total of 92 items. A five-point Likert scale based on practical ability for self-assessment had 5=highest, 4=high, 3=moderate, 2=low, and 1=lowest.

The cultural awareness domain examines cultural competency in health care, societal dynamics, diverse nationalities, discriminatory situations, and self-reflection. The cultural skill domain examines the capacity to deliver culturally acceptable and effective services, handle cross-cultural health difficulties, and understand public health requirements. Cultural awareness includes understanding about people from different cultures to cope with public health concerns and appreciate diversity. The cultural encounter domain covers dealing with culturally diverse patients' health issues and one's own aggression and prejudice. And the cultural desire domain covers incentive to practice cultural competency.

Item reduction and extraction of factors

Factor analysis is a data reduction approach used to uncover underlying linkages among many items when there is no previous hypothesis about the factor structure and to eliminate items with insufficient correlations.[46] The items from the survey data were aggregated in this study using exploratory factor analysis (EFA) with principal component analysis method and varimax rotation using SPSS Statistics for Windows, version 17.0 (SPSS Inc., Chicago, Illinois, USA). Using the Bartlett test for sphericity and the Kaiser-Meyer-Olkin measure of sample adequacy, the appropriateness of using factor analysis was determined. A factor loading of more than 0.5 was regarded adequate. Duplicate entries for the same performance were consolidated in a single entry and grouped in a framework of pharmacist cultural competency.

Tests of reliability

Extracted items and factors were subjected to a reliability test using Cronbach's alpha. A Cronbach's alpha of 0.7 or above indicates instrument reliability.

RESULTS

Phase 1: Item Development

The Campinha-Bacote concept, emphasizing cultural competence for health care providers, the ACCP concept of developing cultural competency in pharmaceutical care, and questions from the SAPLCC were used in this study to identify domain and item generation for the role of pharmacist in Thailand. The initial draft included five domains "ASKED:" Cultural awareness, cultural skills, cultural knowledge, cultural encounter, and cultural desire; 16 factors, a total of 92 questions and a five-point Likert scale for self-evaluation.

The scale's validity was evaluated using an IOC for content validity reviewed by seven experts [Table 1], as well as a face validity evaluation using interviews. These validity tests aid in identifying items that are not relevant to Thai pharmacists, as well as misconceptions involving specific language and terminology. After the content validity evaluation, 11 questions scored an IOC value of <0.5. The following topics were indicated that they were taken out of context: The issue of Caucasians which was not a problem in Thailand (cultural awareness domain); and the topic of physical examination, which may not be the pharmacist's responsibility (cultural skill domain). Experts also suggested converting a phrase to a whole sentence, as well as editing items with ambiguous target audience interaction, and revising items with difficult jargon (such as identity and stereotyped attitude) [Table 2]. However, at this stage, the researcher opted to keep these details in account for the following phase rather than removing them.

The questions were rewritten in accordance with experts' advice from face validity assessments and evaluated using the think aloud technique among 12 pharmacists with a wide range of experience and education levels [Table 3]. According to the observations, the pharmacists typically spent a long-time reading question with specific terminology and questions that are phrases, and their facial expressions and words often revealed their confusion. The majority of the sample group experienced this with the same question items. After reading the questions, the sample group frequently expressed their ideas toward each item, particularly those that were clearly based on their everyday lives or connected to their practice.

The think aloud technique helps us understand how users generally view queries. Most questions were updated to be more pharmacy relevant. The vocabulary, phrase structure, and question sequence were all altered to help people comprehend the questions better before proceeding to the second phase.

Table 1: Expert characteristics for the content and face validity tests (n=7)

Expert	Area of expertise	Characteristics
1	Administration and hospital accreditation	Senior professional level pharmacist and deputy head of the pharmacy department at a provincial hospital in the Northern region's Thai-Myanmar border province
2	Clinical pharmacy	Professional level pharmacist at a provincial hospital in the Northeastern region
3	Pharmacy practice and clinical pharmacy	Professional level pharmacist at a district hospital in the Northern region's Thai-Myanmar Special Economic Zone
4	Consumer health protection	Senior professional level pharmacist at a provincial public health office in the Southern region's Thai-Malaysia border province
5	Pharmacist competency, and assessment tool development	Senior university professor in the Northern region
6	Social anthropology	Senior university professor in the Northern region
7	Social anthropology	Senior university professor in the Southern region

Phase 2: Scale Development and Scale Evaluation

The phase 1 draft questionnaire was completed by 241 pharmacists. Following the distribution of 771 questionnaires, including the two rounds of follow-up, this reflects a 31.26 percent response rate. Most respondents were female, Thai, Buddhist, and lived outside Bangkok. Most pharmacists completed a 5-year curriculum and have a postgraduate degree. The majority have over 10 years of hospital experience and have held previous positions at district hospitals. The sample group comprised pharmacists in a variety of positions, with a significant part working in outpatient care [Table 4].

The survey data were used for explanatory factor analysis. Related items were grouped together, whereas 13 items unrelated to other components were eliminated [Table 5]. The remaining factors were then combined and renamed as necessary, making the final Thai pharmacist cultural competency self-assessment scale (TPCCS) comprised 5 domains, 18 factors and 79 items after EFA. Cronbach's alpha coefficient was used to assess the reliability of the modified scale, and the total instrument reliability was an acceptable 0.9383. The number of items in each factor, the range of factor loadings for the items in each factor, and their reliability values are shown in Table 6. The TPCCS final version details and scale in Thai can be found in Appendixe 1, respectively.

DISCUSSION

Cultural competency in the field of pharmacy has been extensively studied.[9,47,48] In contrast, none of the hundreds of articles published in PubMed during the past two decades examined Thai pharmacists. In the Thai pharmacy profession, there is a lack of study on this subject and assessment tools for cultural competency. To the best of our knowledge, this study is therefore considered the first to systematically develop a scale for measuring a Thai pharmacist's cultural competency.

Overall, the development and refinement of the scale to meet the Thai context benefited from both study phases that engaged several experts [Table 1] and pharmacists [Table 3]. While pharmacy experts tended to have the same comments

Table 2: IOC and examples of items remarked by the experts in the content validity and face validity evaluation

Domain	IOC range (mean±SD)	Examples of remarked item	Experts' comment *and Item revision*
Cultural Awareness	0.00–1.00 (0.676±0.264)	How well do you aware of the following characteristics?	White people are not a problem in the Thai context. *The word "white people or the majority of society" has been changed to "most people in society".*
		- Being born in the minority in this society brings some challenges and limitations that white people or the majority of society do not face.	
		- Your race, ethnicity, or cultural identity	The term "identity" and the phrase are difficult to understand. *The item has been changed to "You have a distinct racial, ethnic, or cultural identity."*
Cultural Skills	0.14–1.00 (0.863±0.222)	How skilled are you to provide following services that are culturally appropriate?	Physical examination may not be a pharmacist's role.
		- physical examination	*The item has been changed to "A preliminary physical or diagnostic examination to evaluate disease and illness conditions."*
Cultural Knowledge	0.43–1.00 (0.869±0.193)	How knowledgeable are you in the following topic?	The item is inconsistent with the other question. *The item has been changed to "Civil rights stating that all people have equal rights and freedoms."*
		- All people have equal rights and freedoms	
		- Criticism of research on cultural diversity	Change phrase to sentence.
Cultural Encounter	0.71–1.00 (0.905±0.112)	How comfortable are you in handling the following cross-cultural situation?	Make the sentence more concise.
		- Advising patients to change behaviors or practices related to cultural beliefs that cause adverse health effects.	*The item has been changed to "Advising patients to change health behaviors related to cultural beliefs."*
Cultural Desire	0.71–0.86 (0.823±0.075)	You want to develop cultural competence despite obstacles or fears.	It shouldn't be restricted to "development," but should also cover service delivery. *The item has been changed to "You want to improve your cultural competences so that you can established a better health care system for individuals of various cultures."*

Table 3: Pharmacist characteristics for the scale's pretesting with using the think aloud technique (n=12)

Pharmacist	Gender	Religion	Education level	Hospital level	Region	Years of experience	Role/Setting/Past experiences
1	Female	Buddhist	Master (studying)	District	Northern	5–10	Provincial public health office
2	Female	Buddhist	Bachelor	District	Northern	5–10	Tourist city
3	LGBT	Buddhist	Bachelor	District	Northern	5–10	Primary care practice
4	Female	Buddhist	Bachelor	General	Northern	10–15	Department head, marginal area
5	Female	Buddhist	Master (studying)	District	North-eastern	15–20	Department head, consumer protection
6	Male	Buddhist	Bachelor	District	Northern	0–5	IT
7	Female	Buddhist	Bachelor	District	Northern	5–10	Contract position
8	Female	Buddhist	Bachelor	District	Northern	5–10	Clinical pharmacy
9	Female	Buddhist	Bachelor	District	Northern	5–10	Inventory and vaccines
10	Male	Muslim	Ph.D.	Regional	Southern	15–20	Department head, academic sector
11	LGBT	Christian	Bachelor	General	Central	15–20	Out-patient service
12	Female	Buddhist	Bachelor	District	Northern	5–10	Drug store

on the same items during content and face validity tests, leading to some low IOC items in 3 domains (awareness, skill, and knowledge) [Table 2], the think aloud technique contributed additional insights from the pharmacists completing the assessment.

The researchers apply EFA with principal component analysis method and varimax rotation. A factor loading of more than 0.5 was regarded adequate. After removing 13 items from the initial 92, the final TPCCS scale included 5 domains, 18 factors, and 79 questions. The 5 domains of

Table 4: Pharmacist demographics for the phase 2 scale evaluation (n=214)

Demographics	*n* (%)	Demographics	*n* (%)
Gender		Bachelor's degree	
Female	190 (78.8)	5-year program	149 (61.8)
Male	51 (21.2)	6-year PharmD program	92 (38.2)
Age		Years working in hospital	
<31	47 (19.5)	1–5	39 (16.2)
31–40	112 (46.5)	6–10	91 (37.8)
41–50	74 (30.7)	>10	111 (46.0)
>50	8 (3.3)	Professional level	
Race		Practitioner	61 (25.3)
Thai	218 (90.5)	Professional	166 (68.9)
Thai-Chinese	22 (9.1)	Senior professional	9 (3.7)
Others	1 (0.4)	N/A (contact position)	5 (2.1)
Religion		Main responsibility	
Buddhist	231 (95.9)	Department head	21 (10.0)
Muslim	6 (2.5)	Out-patient service	141 (58.5)
Christian	2 (0.8)	In-patient service	31 (17.0)
Unaffiliated	2 (0.8)	Others	35 (14.5)

Table 5: Items deleted during the exploratory factor analysis for the TPCCS

Domain	Item deleted		Reason for deletion
Cultural awareness	A3 a	Perceiving the identity of one's own diversity	An independent factor
	A4 a	The importance of genetics in contributing to health inequalities	An independent factor
	A6 a	Interaction with patients	An independent factor
	A7 a	The importance of obtaining cultural competence training	Low factor loading (0.53) in A7 (Improving interpersonal/intercultural interactions)
Cultural skills	S1 i	Palliative care	An independent factor
	S1 k	Working with a medical interpreter	An independent factor
	S2 c	Dealing with drug adherence issues	An independent factor
	S2 e	Apologizing for any misunderstandings or errors across cultures	An independent factor
Cultural knowledge	K2 h	Civil Rights Act	An independent factor
	K2 i	Cultural/Language standards	An independent factor
	K3 a	Ability to use multicultural tools	An independent factor
	K3 b	The ability to communicate with a wide range of patients	An independent factor
Cultural encounter	E2 e	Indirect speech rather than direct speech	An independent factor
Cultural desire	No items deleted		-

TPCCS align with Campinha-Bacote's concept of cultural competency,[12] and the scale is relevant to the six domains of the SAPLCC instrument (14 factors, 75 items),[40] which has been continuously developed for use in the US. Pharmacy curricula.[38,40,46,49]

In our study, the deleted 13 items were identified as an independent factor from the explanatory factor analysis [Table 5]. Five of these items were also omitted from SAPLCC too, including items that cross-loaded with two factors (end-of-life care, apologizing to patients, ability to use multicultural tools, and importance of genetics) and an item used as a control variable to evaluate the training (importance of receiving training).[40] For our study, issues stemmed from the fact that the context of Thai culture has not been publicly articulated, such as ethnic or minority issues, resulting in a lack of information and clarity for Thai pharmacists. Some components, such as genetics, are plainly unrelated to health inequalities, while others, such as patient relations and apologizing for cross-cultural mistakes and communication, might be easily managed in the Thai environment. Working with medical interpreters[50,51] and care for terminally ill patients[52-54] are still an area where pharmacists' engagement remains limited.

Table 6: Factor structure of the initial and final versions of TPCCS

Factors	Initial version	Final version of TPCCS			
		Number of items	Range of factor loadings	Variance explained (%)	Cronbach's alpha
Awareness domain	7 Factors, 27 items	7 Factors, 23 items			0.911
A1 Confronting racial dynamics		2	0.664–0.668	11.88	0.616
A2 Aware of bias towards own values		3	0.571–0.668	4.33	0.722
A3 Understanding barriers to health care		2	0.674–0.724	6.45	0.827
A4 Engaging in self-reflection		2	0.641–0.719	2.19	0.577
A5 Recognizing social determinants of health		5	0.695–0.818	1.55	0.881
A6 Recognizing disparities-related discrimination		6	0.613–0.845	1.05	0.914
A7 Improving interpersonal/intercultural interactions		3	0.780–0.859	0.82	0.905
Skill domain	3 Factors, 24 items	4 Factors, 20 items			0.897
S1 Culturally competent in gathering patient information		4	0.671–0.784	0.67	0.860
S2 Culturally competent in providing services		5	0.586–0.800	0.56	0.850
S3 Dealing with cross-cultural conflicts		3	0.711–0.785	0.48	0.868
S4 Assessing population health needs		8	0.604–0.861	0.39	0.910
Knowledge domain	3 Factors, 24 items	4 Factors, 20 items			0.922
K1 Addressing population health issues		8	0.627–0.834	0.29	0.921
K2 Understanding the context of care		7	0.530–0.819	0.21	0.907
K3 Recognizing personal beliefs		2	0.595–0.586	0.17	0.759
K4 Critical discussing on multicultural issues		3	0.507–0.566	0.15	0.941
Encounter domain	2 Factors, 12 items	2 Factors, 11 items			0.903
E1 Increasing comfort during cross-cultural encounters		7	0.633–0.824	0.12	0.886
E2 Managing cross-cultural communication challenges		4	0.539–0.593	0.08	0.748
Desired domain	1 Factor, 5 items	1 Factor, 5 items			0.855
D1 The motivation of pharmacists to want to engage in the process of becoming culturally competency		5	0.654–0.820	0.06	0.854
Total	16 Factors, 92 items	18 Factors, 79 items			

It would be interesting if some of these issues, which are growing concerns in some settings, for example, palliative care and civil rights, could be used as supplementary questions and assessed in further studies. Concerns about social and cultural issues may need to be addressed often to keep an evaluation instrument relevant to Thailand and the globe because society's culture and situation are continually changing.

The number of items for each factor in TPCCS varies, ranging from 2 to 8 [Table 6 and Appendix 1]. There are 4 factors that each comprise 2 items (A1 Confronting racial dynamics, A3 Understanding barriers to healthcare, A4 Engaging in self-reflection, and K3 Recognizing personal beliefs). All of these do not have cross-loading with other factors and have acceptable loading score (>0.5). The first three awareness domain factors (A1, A3, and A4) explained 20.52% of the total variance, and the items within each factor appear to be interpretable. A small number of items in each factor can be observed in many other scales, e.g., SAPLCC also has 2 items in their F14 Confronting racial dynamics, with good reliability (0.82).[40] In the case of narrowly specified constructs, a single-item assessment may also be sufficient too. However, further study with improved operationalization of the target latent variable and testing in larger and more diverse samples would strengthen items and factor revision. This should also benefit in raising the percent of total variance explained for total scale too.[55-58]

EFA indicated that TPCSS only explained 31.5% of total variance. The most item-rich cultural awareness domain explained the most than the other domains [Table 6]. There was no absolute acceptable threshold for the variance explained. However, since most literature suggests more than 50–60% for social science research[59] and other cultural competency measurement scales

show nearly 80% of total variance explained,[40,46] TPCSS could be strengthened by factor revision to answer the target latent variable with fewer items. The scale needs to be more Thai-centric while remaining globally comparable.

In term of reliability, TPCCS was determined to be reliable with a total Cronbach's alpha of 0.9383. The reliability of 5 domains ranging from 0.8550 to 0.9217, and the reliability of 18 factors ranging from 0.577 to 0.940. Even though there is moderate Cronbach's alpha in some factors with 2 items, that is, A1 Confronting racial dynamics (0.577) and A4 Engaging in self-reflection (0.616), they were also among the factors with a higher percentage of variance explained [Table 6]. A more reliable instrument that was previously well-developed, the SAPLCC, has reliability values of 0.80–1.00 for its 14 factors and 0.95 for the total scale.[22]

The study's pharmacists spent an average of 30 min completing the evaluation, which might have led to survey fatigue and inadequate results. The 79-item long list and some technical jargon may still hinder user comprehension. Furthermore, Thai pharmacists may not be as familiar with cultural competency as US pharmacy students, who take about 15 min to complete the 75-item SAPLCC.[40] The 50-item Intercultural Development Inventory (IDI)[36] and the 55-item Intercultural Adjustment Potential Scale (ICAPS)[38] are among the shorter measures used. However, the shorter tool also has limits as well. For example, the IDI only evaluates the cognitive domain, whereas the ICAPS measure includes both cognitive and affective domains but not the behavioral domains. If a factor has more items than anticipated, there are options for eliminating them, such as deleting those with poor conceptual coherence with other items, or those with the lowest factor loading.[56] However, a compromise must be reached between optimal scale length and factor structure quality. After removing items, a final EFA should be performed to ensure that the factor solution has not changed.[56]

Further studies may be easier to test or revise a single part, such as the cultural awareness domain, than all the domains together. However, none of the research has addressed whether chosen subscales or items from a tool might be utilized instead of the complete tool without damaging its integrity.[9] In addition, TPCSS may experience social desirability bias, which has been noted in other self-evaluation instruments. As a result, users should consider using it in conjunction with other tools that evaluate pharmacists' real performance (such as standardized patients)[9,40]

The TPCCS was evaluated on a single group of pharmacists, and the two follow-up attempts yielded fewer responders than expected, which may restrict the generalizability of the study results. The reason for engaging a single group to evaluate the tool which was intended to target all pharmacists is that the MOPH hospital pharmacists make up the biggest group in Thailand, and their nature also varies, while the scale is also non-task specific. In addition, the examined average communality of the retained items was 0.730, which is over 0.6,[59] suggesting that 241 respondents were enough. However, it is preferable to have a larger sample size or respondent-to-item ratio in future studies to get more reliable factor loadings, repeatable factors, generalized results, and reduced measurement errors.[44,59,60] Future research will also need more diversified samples (e.g., community pharmacists, industrial pharmacists, pharmacy students, and professors).[61] This will enhance the revision of the TPCCS's constructs, enabling the identification of new factors, and increasing their generalizability.[40]

Few research on Thai pharmacists' cultural competency[34-37] have been undertaken, and none have been specifically aimed at developing a cultural competency assessment scale. As a result, this study is regarded as the beginning point for further research. At the same time, Thailand may learn from the experiences of other countries in its efforts to build more culturally competent pharmacists.

Many countries place a high value on cultural competence. Their national pharmacy competency frameworks[16-18] and pharmacy education accreditation criteria emphasized cultural competence.[9,11,21] Thus, cultural competency was incorporated across the whole pharmacy curriculum in a number of ways.[26,27,62] To facilitate integration, measurement tools were developed and validated to monitor and assess learner capability, for example, before and after relevant courses or before professional experience training.[9,39-40] In addition, there are also various non-pharmacy resources that can benefit our learning;[62] e.g., the U.S. Department of Health and Human Services' online training and toolkit,[63] the Hopkins Center for Health Disparities Solutions' web-based tool to assess the cultural competency of health-care organizations,[64] and the Center for Cultural Competence Australia's co-design and development of culturally appropriate policy, programs, and service delivery.[65]

Cultural competence in medicine is debatable. Concerns were raised on the idea of keeping culture static by imprinting people and their cultures with fixed identities or making culture too simple or generic. These inadvertent actions can lead to individuals being stereotyped, stigmatized and produce a negative impact on the patient's negotiating strength.[52,66,67] Cultural education takes time because culture is constantly absorbed and modified to the context. Using tools to evaluate and assess over time may not necessarily reflect a person's identity, but still allows us to identify the general trend for further cultural competency development.

CONCLUSION

The TPCCS was systematically developed and consists of 5 domains, 18 factors, and 79 items. Despite the scale's acceptable high internal consistency, it only explained 31.5% of the total variance. The TPCSS has the potential to develop into more reliable structural measure. Standardized cultural competency assessment will not only help with competency evaluation but will also encourage awareness and competency growth among pharmacists working in this culturally diverse health system.

ACKNOWLEDGMENTS

The authors would like to thank experts and hospital pharmacists under the Office of the Permanent Secretary, (MOPH), Thailand who participated in this study. We also appreciate Dr. Margarita Echeverri's permission to adapt SAPLCC and her provision of relevant material. This study was partially funded by the Faculty of Pharmacy, Chiang Mai University.

REFERENCES

1. Kleinman A, Eisenberg L, Good B. Culture, illness, and care: Clinical lessons from anthropologic and cross-cultural research. Ann Intern Med 1978;88:251-8.
2. American College of Clinical Pharmacy, O'Connell MB, Korner EJ, Rickles NM, Sias JJ. Cultural competence in health care and its implications for pharmacy. Part 1. Overview of key concepts in multicultural health care. Pharmacotherapy 2007;27:1062-79.
3. Turner BS. Encounters with aging: Mythologies of menopause in Japan and North America by Margaret Lock. Body Soci 1996;2:141-2.
4. Bureau of Social and Health Research. Local Knowledge, Culture, Health and ASEAN Society. Nonthaburi: Health Systems Research Institute; 2013.
5. Centers for Disease Control and Prevention, U.S. Department of Health and Human Services. Health Disparities among Youth. Available from: https://www.cdc.gov/healthyyouth/disparities/index. htm [Last accessed on 2020 July 01].
6. Wassana K. Health Paradigms and Cultural Ecology: Domains of Holistic Health Care among Ethnic Groups. Surin: Surin Rajabhat University Press; 2008.
7. Lin KM, Smith MW, Ortiz V. Culture and psychopharmacology. Psychiatr Clin North Am 2001;24:523-38.
8. Betancourt JR, Cervantes MC. Cross-cultural medical education in the United States: Key principles and experiences. Kaohsiung J Med Sci 2009;25:471-8.
9. Medina MS, Maerten-Rivera J, Zhao Y, Henson B. A systematic review of assessment tools measuring cultural competence outcomes relevant to pharmacy education. Am J Pharm Educ 2022;8:207-216.
10. Medina MS, Plaza CM, Stowe CD, Robinson ET, DeLander G, Beck DE, *et al.* Center for the advancement of pharmacy education 2013 educational outcomes. Am J Pharm Educ 2013;77:162.
11. Accreditation Council for Pharmacy Education. Accreditation Standards and key Elements for the Professional Program in Pharmacy Leading to the Doctor of Pharmacy Degree ("Standards 2016"). Available from: https://www.acpe-accredit.org/pdf/standards 2016FINAL.pdf [Last accessed on 2022 Jul 01].
12. Campinha-Bacote J. The process of cultural competence in the delivery of health care services: A model of care. J Transcult Nurs 2002;13:181-4.
13. Candel-Mora M. Attitudes towards intercultural communicative competence of English for specific purposes students. Procedia Soc 2015;178:26-31.
14. Hoffman E, Verdooren A. Diversity Competence: Cultures don't Meet, People do. Wallingford: Centre for Agriculture and Biosciences International; 2019.
15. Purnell L. The purnell model for cultural competence. J Multicult Nurs Health 2005;11:7-15.
16. International Pharmaceutical Federation. Pharmacy Education Taskforce: A Global Competency Framework Version 1. Hague, Amsterdam: International Pharmaceutical Federation; 2012.
17. The Pharmacy Council of New Zealand. Competence Standards for the Pharmacy Profession. Wellington: Pharmacy Council of New Zealand; 2015.
18. Pharmaceutical Society of Australia. National Competency Standards Framework for Pharmacists in Australia. Deakin West: Pharmaceutical Society of Australia; 2016.
19. Schellhase EM, Miller ML, Malhotra JV, Dascanio SA, McLaughlin JE, Steeb DR, *et al.* Development of a global health learning progression (GHELP) model. Pharmacy 2020;9:2.
20. Chen AM, Armbruster AL, Buckley B, Campbell JA, Dang DK, Devraj R, *et al.* Inclusion of health disparities, cultural competence, and health literacy content in US and Canadian pharmacy curriculums. Am J Pharm Educ 2021;85:76-86.
21. O'Connell M, Rickles N, Sias J, Korner E. Cultural competency in health care and its implications for pharmacy: Part 2 emphasis on pharmacy systems and practice: Cultural competency in health care and its implications for pharmacy. Pharmacotherapy 2009;29:14-34.
22. Nash KA. Cultural competence: A guide for human service agencies. Washington, DC: ERIC Institute of Education Science; 1999.
23. Butler L, Chen AM, Borja-Hart N, Arif S, Armbruster AL, Petry N, *et al.* Assessment of a multi-institution integration of cultural competency activities. Curr Pharm Teach Learn 2020;12:517-23.
24. Sánchez AD, Salmon JW. An Approach to cultural competence education into the pharmacy curriculum: Glances from the Cuban framework. Educ Res Int 2022;2022:1-13.
25. Aspden T, Butler R, Heinrich F, Harwood M, Sheridan J. Identifying key elements of cultural competence to incorporate into a New Zealand undergraduate pharmacy curriculum. Pharm Educ 2017;17:43-54.
26. Alsharif NZ, Brennan L, Abrons JP, Chahine EB. An introduction to cultural sensitivity and global pharmacy engagement. Am J Pharm Educ 2019;83:592-603.
27. Jongen C, McCalman J, Bainbridge R. Health workforce cultural competency interventions: A systematic scoping review. BMC Health Serv Res 2018;18:232.
28. Bunjitpimol P, Kumar R, Somrongthong R. Effectiveness of case based cultural competency among nurses working in private hospitals of Bangkok, Thailand: A Quasi-experimental study. Pak J Med Sci 2018;34:179-84.
29. Phusomta J, Krairiksh M. Cultural competency of professional nurses in hospitals affiliated with centers Ministry of Health Northeast. J Nurs Healthc Res 2019;37:113-22.
30. Leekamnerdthai M, Cheevakasemsook A. Cultural competence of professional nurses at Pathumthani hospital. J Health Sci Res 2015;9:32-8.
31. Jirarode A. Study of cultural competency of lecturers and students in Faculty of Nursing, Thammasat University. TSTJ 2015;7:37-48.
32. Ruangdej K, Chaosuansreecharoen P, Rodkhem R, Ochaompawon K, *et al.* Effectiveness of community-based learning on cultural competence among first year Thai traditional medicine students. Nurs J Ministry Public Health 2013;22:12-25.
33. Chamnan K, Ruengtragul A. The scales development and analysis of teachers' cultural competencies. J Educ 2014;9:534-48.
34. Chanthapasa K. The Situation Analysis of Cultural Competency of Pharmacist on Pharmaceutical Care Services. Bangkok: Ministry of Science and Technology; 2007.
35. Khamkaew S. Development of Competency Appraisal form for Pharmacist at Chonburi Hospital [Master of Public Administration]. Chonburi: Burapha University; 2015.
36. Chuwijitra L, Boonsamai W, Tonput P. Factors affecting cross-cultural adaptation of international graduate students in the Faculty of Pharmaceutical Sciences, Chulalongkorn University. Mahidol R2R J 2018;5:83-94.
37. Srimarut T, Mekhum W. The relationship between cross-cultural competency and employee performance in the organization: A case of Thailand's pharmaceutical industry. Syst Rev Pharm 2020;11:595-602.
38. Echeverri M, Unni E, Harpe SE, Kavookjian J, Alkhateeb F, Ekong G, *et al.* Identifying areas of improvement for cultural competence in pharmacy curricula: A multi-school study using the self-assessment of perceived level of cultural competence (SAPLCC) questionnaire. Syst Rev Pharm 2021;13:1278-87.
39. Echeverri M, Brookover C, Kennedy K. Assessing pharmacy students' self-perception of cultural competence. J Health Care Poor Underserved 2013;24:64-92.
40. Echeverri M, Unni E, Harpe SE, Kavookjian J, Alkhateeb F, Ekong G, *et al.* A multi-school validation of a revised scale

for assessing cultural competence in pharmacy students. Am J Pharm Educ 2019;83:412-21.
41. Ministry of Public Health. Geographic Information System for Health Resources. Available from: https://www.gishealth.moph.go.th/healthmap/gmap.php [Last accessed on 2020 Jan 02].
42. Schumacker RE, Lomax RG. A Beginner's Guide to Structural Equation Modeling. New York: Psychology Press; 1996.
43. Hair JF. Multivariate Data Analysis. Upper Saddle River, N.J: Prentice Hall; 1998.
44. Boateng GO, Neilands TB, Frongillo EA, Melgar-Quiñonez HR, Young SL. Best practices for developing and validating scales for health, social, and behavioral research: A primer. Front Public Health 2018;6:149.
45. Yamane T. Statistics: An introductory analysis. Singapore: Times Printer; 1973.
46. Echeverri M, Brookover C, Kennedy K. Nine constructs of cultural competence for curriculum development. Am J Pharm Educ 2010;74:181.
47. Alizadeh S, Chavan M. Cultural competence dimensions and outcomes: A systematic review of the literature. Health Soc Care Community 2016;24:e117-30.
48. Kawaguchi-Suzuki M, Hogue MD, Khanfar NM, Lahoz MR, Law MG, Parekh J, *et al.* Cultural sensitivity and global pharmacy engagement in Asia: India, Indonesia, Malaysia, Philippines, and Vietnam. Am J Pharm Educ 2019;83:651-64.
49. Echeverri M, Dise T. Racial dynamics and cultural competence training in medical and pharmacy education. J Health Care Poor Underserved 2017;28:266-78.
50. Patcheep M. Communication problems of Japanese people for medical services in Thai public hospitals. J Lang Relig Cult 2019;8:241-68.
51. Anunnontok N, Chunjareon P, Paksasuk S. Communication Challenges between Pharmacists and Deaf Patients. Pharmacy Research Project, Bachelor's Degree Faculty of Pharmacy. Thailand: Burapha University; 2019.
52. Department of Medical Services MOPH. Handbook of Palliative and end-of-life Care (for Medical Personnel). Nonthaburi: Department of Medical Services; 2020.
53. Nilmanat K. Palliative care in Thailand: Development and challenges. Can Oncol Nurs J 2016;26:262-4.
54. Kradanpol S, Phumpruek P. Opinions of pharmacists on their level of competence in palliative care work as expected by multidisciplinary teams. JHSR 2017;11:91-101.
55. Bergkvist L, Rossiter JR. The predictive validity of multiple-item versus single-item measures of the same constructs. J Mark Res 2007;44:175-84.
56. Worthington RL, Whittaker TA. Scale development research: A content analysis and recommendations for best practices. Couns Psychol 2006;34:806-38.
57. Hoeppner BB, Kelly JF, Urbanoski KA, Slaymaker V. Comparative utility of a single-item versus multiple-item measure of self-efficacy in predicting relapse among young adults. J Subst Abuse Treat 2011;41:305-12.
58. Hooper D. Exploratory Factor Analysis. Approaches to Quantitative Research-Theory and its Practical Application: A Guide to Dissertation Students. Cork, Ireland: Oak Tree Press; 2012.
59. MacCallum RC, Widaman KF, Zhang S, Hong S. Sample size in factor analysis. Psychol Methods 1999;4:84-99.
60. Osborne JW, Costello AB. Sample size and subject to item ratio in principal components analysis. Pract Assess Res Eval 2004;9:1-9.
61. Hammer MR. The Intercultural Development Inventory: An Approach for Assessing and Building Intercultural Competence. Ch. 16. California: SAGE Publications; 2008.
62. Patel I, Gadwal T, Shrestha S, Khieri S, Miller MK, Guy JW, *et al.* Cultural competency education in pharmacy curricula-need and implementation. Indian J Pharm Pract 2020;13:97-112.
63. The Substance Abuse and Mental Health Services Administration (SAMHSA). Resources on cultural competency. Available from: https://www.samhsa.gov/section-223/cultural-competency/resources [Last accessed on 2022 Jul 08].
64. LaVeist TA, Relosa R, Sawaya N. The COA360: A tool for assessing the cultural competency of healthcare organizations. J Healthc Manag 2008;53:257-66.
65. Centre for Cultural Competence Australia (CCCA). Delivering Practical Acts of Reconciliation. Available from: https://www.ccca.com.au [Last accessed on 2022 Jul 08].
66. Matsumoto D, LeRoux J, Ratzlaff C, Tatani H, Uchida H, Kim C, *et al.* Development and validation of a measure of intercultural adjustment potential in Japanese sojourners: The intercultural adjustment potential scale (ICAPS). Int J Intercult Relat 2001;25:483-510.
67. Brown N, McIlwraith T, de González LT. Perspectives: An Open Introduction to Cultural Anthropology: 2nd ed. Arlington: American Anthropological Association; 2020.

APPENDIX

Appendix 1: Details of the Thai pharmacists cultural competency self-assessment scale (TPCCS)

Factors	Items
A. Cultural awareness domain	
A1 Confronting racial dynamics	[A1 a] Awareness of minority inferiority
	[A1 b] Awareness of social inequality
A2 Aware of bias towards own values	[A2 a] Awareness of perception of imposing own values to others
	[A2 b] Awareness of imposing on values in own practice
	[A2 c] Awareness of cultural values on attitudes and beliefs
A3 Understanding barriers to health care	[A3 a] Awareness of institutional barriers
	[A3 b] Awareness of barriers to use health services
A4 Engaging in self-reflection	[A4 a] Awareness of own stereotypes
	[A4 b] Awareness of own biases and prejudices
A5 Recognizing social determinants of health	[A5 a] Contribution of lifestyle to health disparities
	[A5 b] Contribution of environment to health disparities
	[A5 c] Contribution of poverty to health disparities
	[A5 d] Contribution of education to health disparities
	[A5 e] Contribution of illiteracy to health disparities
A6 Recognizing disparities-related discrimination	[A6 a] Health disparities related to ageism
	[A6 b] Health disparities related to sexism
	[A6 c] Health disparities related to homophobia
	[A6 d] Health disparities related to racism
	[A6 e] Health disparities related to classism
	[A6 f] Health disparities related to ableism
A7 Improving interpersonal/ intercultural interactions	[A7 a] Interacting with colleagues
	[A7 b] Interacting with classmates
	[A7 c] Interacting with staff
S. Cultural Skill Domain	
S1 Culturally competent in gathering patient information	[S1 a] Greeting patients in a culturally sensitive manner
	[S1 b] Eliciting perception about health and illness
	[S1 c] Eliciting perception about Using of folk remedies and/or other alternative healing modalities
	[S1 d] Eliciting perception about Using of folk healers and/or other alternative practitioners
S2 Culturally competent in providing services	[S2 a] Performing physical examinations
	[S2 b] Performing treatment plan
	[S2 c] Performing patient education and counseling
	[S2 d] Performing clinical preventive services
	[S2 e] Assessing patient's health literacy
S3 Dealing with cross-cultural conflicts	[S3 a] Dealing with issues in the informed consent
	[S3 b] Dealing with problems in diagnosis or treatment
	[S3 c] Performing clinical preventive services
S4 Assessing population health needs	[S4 a] Assess needs of people with disabilities
	[S4 b] Assess needs of children and adolescent
	[S4 c] Assess needs of older adults
	[S4 d] Assess needs of men

(Contd...)

Appendix 1: *(Continued)*

Factors	Items
	[S4 e] Assess needs of women
	[S4 f] Assess needs of LGBTQ individuals
	[S4 g] Assess needs of the poor
	[S4 h] Assess needs of minority populations
K. Cultural knowledge domain	
K1 Addressing population health issues	[K1 a] Knowledge on health promotion
	[K1 b] Knowledge on reproductive health
	[K1 c] Knowledge on child health
	[K1 d] Knowledge on adolescent health
	[K1 e] Knowledge on adult health
	[K1 f] Knowledge on geriatrics
	[K1 g] Knowledge on women's health
	[K1 h] Knowledge on men's health
K2 Understanding the context of care	[K2 a] Demographics
	[K2 b] Socio-cultural characteristics
	[K2 c] Health risk
	[K2 d] Health disparities
	[K2 e] Ethnopharmacology
	[K2 f] Different healing traditions
	[K2 g] Impact of discrimination in healthcare
K3 Recognizing personal beliefs	[K3 a] Able to identify stereotypical beliefs
	[K3 b] Able to recognize acculturation models
K4 Critically discussing multicultural issues	[K4 a] Abilities to critique multicultural research
	[K4 b] Able to discuss differences among diverse
	[K4 c] Able to discuss multicultural research
E. Cultural encounter domain	
E1 Increasing comfort during cross-cultural encounters	[E1 a] Caring for patients from diverse backgrounds
	[E1 b] Caring for patients with limited English proficiency
	[E1 c] Patients using complementary medicine
	[E1 d] Identifying hiding beliefs that might affect
	[E1 e] Understanding non-verbal communication
	[E1 f] Interpreting expressions of pain and suffering
	[E1 g] Advising change of behaviors or practices
E2 Managing cross-cultural communication challenges	[E2 a] Breaking "bad news" to a patient's family
	[E2 b] Working with health care professionals from culturally diverse backgrounds
	[E2 c] Working with colleagues making derogatory comments
	[E2 d] Treating a patient who makes derogatory comments
D. Cultural desire domain	
D1 Motivation to engage in the process of becoming culturally competent	[D1 a] Caring and love
	[D1 b] Sacrifice
	[D1 c] Social justice
	[D1 d] Humility compassion
	[D1 e] Sacred encounters

[A1 a]; A is cultural awareness domain, 1 is the first factor and a is the first item, [D1 e]; D is cultural desire domain, 1 is the first factor and e is the fifth item