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Cross-cultural adaptation and psychometric validation of the Vietnamese version of the evidence-based practice competency questionnaire for registered nurses (EBP-COQ Prof©)

Thi Dung Ngo[1]*, Miranda Hawks[2], Maria Ruzafa-Martinez[3], Thi Kim Chi Le[4], Thi Thanh Truc Nguyen[1], Hong Thiep Nguyen[1], Van Hieu Phan[4], Thi Ngoc Han Nguyen[1]

[1]Faculty of Nursing and Medical Technology, Can Tho University of Medicine and Pharmacy, Can Tho, Viet Nam
[2]WellStar College of Health and Human Services, Kennesaw State University, Kennesaw, Georgia, USA
[3]Faculty of Nursing, University of Murcia, Murcia, Spain
[4]Can Tho University of Medicine and Pharmacy Hospital, Can Tho University of Medicine and Pharmacy, Can Tho, Viet Nam

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Corresponding Author:
Thi Dung Ngo, Faculty of Nursing and Medical Technology, Can Tho University of Medicine and Pharmacy, Can Tho, Viet Nam.
E-mail: ntdung@ctump.edu.vn

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ABSTRACT

Background & Aim: Establishing strategies to enhance evidence-based practice (EBP) requires a reliable instrument for assessing EBP competency. This study focused on translating and validating the Evidence-Based Practice Competency Questionnaire for Registered Nurses (EBP-COQ Prof©) in the Vietnamese context.
Methods & Materials: Through a methodological approach, this study performed cross-cultural adaptation and psychometric validation. The study involved 372 nurses selected through convenience sampling. Content validity was established using the Content Validity Index for Items (I-CVI) and the Content Validity Index for Scales (S-CVI). Construct validity was assessed via exploratory (EFA) and confirmatory factor analysis (CFA). Reliability was determined using Cronbach's alpha and the intra-class correlation coefficient (ICC). Criterion validity was examined by comparing EBP-COQ Prof© competency between nurses with and without prior EBP education.
Results: The Vietnamese version of EBP-COQ Prof© maintained consistency with the original version following cross-cultural adaptation. Content validity was confirmed with I-CVI> 0.78 and S-CVI/AVE= 0.97. EFA and CFA revealed consistent components with the original version: attitude (8 items), knowledge (11 items), skills (6 items), and utilization (10 items). Cronbach's alpha values were high: attitudes (0.965), knowledge (0.962), skills (0.909), and utilization (0.926). ICC values were also significant: attitudes (0.754), knowledge (0.895), skills (0.823), and utilization (0.966). Nurses with prior EBP education demonstrated higher EBP-COQ Prof© competency.
Conclusion: The translated and validated EBP-COQ Prof© provides a robust tool for assessing EBP competency among Vietnamese nurses. Its reliability, validity, and sensitivity to educational effects underscore its potential for promoting EBP in nursing.

Introduction

In routine practice, nurses need to improve nursing care processes, which leads them to seek out the best current practices or interventions that are being used to produce the best outcomes for the patient. Nurses' critical thinking to seek alternative approaches is the foundation for evidence-based practice (EBP) (1). EBP is an approach integrating the best evidence from well-designed studies, including patients' preferences and values and a clinician's expertise in considering the patient data (2). EBP competencies lead healthcare professionals to integrate the best evidence into clinical decision-making, improving the quality of care and patient outcomes (3).

In Viet Nam, EBP implementation is an ongoing challenge for nurses who require professional development to facilitate EBP. Nurses require specialized research training, clinical nursing leadership, and supportive

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work cultures to advance EBP throughout healthcare settings. While recognizing the significance of EBP, the Vietnamese government has considered it a crucial national health initiative that will enhance healthcare across the nation (4). Nursing research and EBP are included as requirements for the basic nursing competency standards for professional nursing in Viet Nam. The functions of nursing research and EBP are described in competency indicators related to conducting and implementing research skills and synthesizing and utilizing EBP to improve the quality of nursing practice (5).

EBP competency is a prerequisite for evidence-based nursing implementation, contributing to quality nursing practice. Assessing the competency in EBP of front-line nurses is necessary to enhance EBP implementation in care settings. Using validated tools to assess EBP competency facilitates the process of diagnosing and monitoring EBP competency, which contributes to the development of interventions for improving EBP competency among nurses (6). Research about the implementation of EBP in nursing has been conducted in Viet Nam since the significance of assessing EBP implementation has been recognized. Although certain instruments have been translated to evaluate nurses' EBP in Viet Nam, these instruments are rarely evaluated by psychometric property validation. The Evidence-Based Practice Questionnaire, developed by Upton and Upton (7), is one of the most commonly used to assess nurses' EBP in Viet Nam. Researchers used the Evidence-Based Practice Questionnaire developed by Upton and Upton (7) for their studies to assess EBP without evidence of full psychometric properties (8-10). Although Nguyen et al. (11) used the Health Sciences Evidence-Based Practice Questionnaire (HS-EBP) with psychometric validation, the validation process was conducted on the lowest rate allowed of item/participant (1/5), with midwives being the unique target population.

Self-report instruments have proven advantages, including easier administration, lower costs, and increased viability (12). The Questionnaire to Evaluate the Competency in Evidence-Based Practice of Registered Nurses (EBP-COQ Prof©) was developed and validated by Ruzafa-Martínez et al. (13) as a self-report instrument. EBP-COQ Prof© was designed to measure different fields of EBP competency of registered nurses based on the seven-step theoretic framework developed by Melnyk et al. (2, 13). The EBP-COQ Prof© was translated and validated in the Greek version, including four factors confirmed as the developer's design and a high level of internal consistency calculated in its components (14). The reliability and validity of the EBP-COQ Prof© were approved in both the Greek version and the original Spanish version of the survey.

This study was conducted to translate and validate the EBP-COQ Prof© in a sample of Vietnamese nurses to explore the advantages of the EBP-COQ Prof© as an instrument to evaluate EBP competency in Vietnamese nurses.

Methods

A methodological study was conducted to evaluate the psychometric properties of the translated instrument. Beaton et al. (15) and Sousa and Rojjanasrirat (16) models were used for translation, linguistic-cultural adaptations, and validation. The study occurred from June 2022 to May 2023 in six hospitals in the south of Viet Nam. All of the hospitals included in this study were general hospitals, with the smallest hospital having 250 beds, including 124 nurses, and the largest hospital having 1000 beds, including 769 nurses.

This study used the EBP-COQ Prof© developed and validated by Ruzafa-Martinez et al. (13). The EBP-COQ Prof© includes 35 items measuring the competency of registered nurses in the fields of attitudes, skills,

knowledge, and utilization of EBP in clinical settings. A five-point Likert-type scale ranging from 1 to 5 was used to present the responses, with 1 indicating "strongly disagree," 2 to "disagree", 3 to "neither agree nor disagree, "4 to "agree", and 5 to "strongly agree." Dr. Ruzafa-Martinez, the author of the scale's original version, granted permission to use the EBP-COQ Prof© scale on December 5, 2022.

The target population of this study included registered nurses working in clinical settings. Subjects included in this study were nurses who (a) had at least one year of experience and (b) worked full-time as registered nurses in clinical settings. Convenience sampling was used to recruit participants in this study. The research team contacted the nurses who satisfied the inclusive sampling criteria to invite them to participate in the study until the sample size was sufficient. The pilot survey was administered to 40 nurses that satisfied the recommendation of Beaton et al. (15). Ten experts with experience in EBP were included in the pilot survey to seek content validity, according to Sousa and Rojjanasrirat (16). The main survey to analyze psychometric validation was conducted on 372 nurses, which satisfied the recommendations of the guidelines with at least 10 subjects per item (16, 17). Forty nurses participated in the retest to analyze the test-retest reliability, following the COSMIN checklist manual (18).

Based on the models of Beaton et al. (15) and Sousa and Rojjanasrirat (16), the validation methodology includes the following phases:

Phase I: Forward translation

The Spanish version of the questionnaire was translated into Vietnamese by two subjects whose first language is Vietnamese. The first translator did not have knowledge of the contents and terminology of the instrument but was familiar with colloquial phrases and common usage in Vietnamese. The second translator was a healthcare expert who had spent six years studying and working in a Spanish-speaking country and had a relative knowledge of the questionnaire's contents. The translators worked individually and generated two Vietnamese questionnaire versions (T1 and T2).

Phase II: Synthesis of the translations

The two translations of the questionnaire were integrated into one translation. The original two translators, a third bilingual independent translator, and research team members facilitated the development of the integrated translated version of the scale. At the end of Phase II, a single version of the instrument was produced in Vietnamese (T12).

Phase III: Backward translation

A translation of the questionnaire was elaborated from Vietnamese to the original language (Spanish) as a control process for the validation of the instrument. The process of backward translation from the T12 version of the questionnaire was blinded to the original version to avoid bias in translation. The backward translation was conducted by two subjects who were different from those in the previous phases and worked individually. One of the translators involved in the backward translation process did not have knowledge of the contents or the terminology of the instrument. However, the translator involved in the back translation process had familiarity with colloquial phrases and the common use of Spanish, whereas the other translator had relative knowledge of the questionnaire. This phase produced two versions of the instrument in the original language (O1/O2).

Phase IV: Expert committee

The five versions of the instrument (O1-O2-T12-T1-T2) were evaluated by a multidisciplinary expert team with the scope of reaching a trans-cultural equivalence and therefore, content validation. This phase included all members of the research team and

all translators involved in the previous phases. The items in the integrated translated version (T12) were preserved if there were semantic equivalence, idiomatic equivalence, experiential equivalence, and conceptual equivalence in the original version (Spanish), forward translated versions (T1/T2), and backward translated versions (O1/O2). The items with discrepancies in forward and backward translated versions were repeated in forward and backward translation to clarify how another wording of an item would function within the instrument. Subsequently, the members of the multidisciplinary committee of experts discussed and adjusted the translated items (Vietnamese) to obtain equivalence in semantics, idiomaticity, experience, and conceptuality in comparison with the original version (Spanish). At the end of Phase IV, the committee created the pre-final version of the instrument, which verified the semantic equivalence, idiomatic equivalence, experiential equivalence, and conceptual equivalence that would be used for the pilot test survey in Phase V.

Phase V: Test of the pre-final version

The pre-final version of the instrument achieved in Phase IV was used for the pilot test survey to seek face and content validity. The pre-final version of the questionnaire was administered to 40 registered nurses belonging to the target population, including registered nurses with at least one year of experience and working full-time as registered nurses in clinical settings. A group of 10 experts with experience in EBP was also administered the questionnaire to seek face validity. The participants (i.e., 40 registered nurses and 10 experts) were asked to evaluate the indications and the elements of the questionnaire using a dichotomous scale (i.e., "clear" or "not clear"). Reformulation and re-evaluation were conducted if an item was identified as "not clear" for more than 20% of the respondents. Reformulation was conducted by adjusting the item to make it clearer, which ensured the same meaning as the original version. Subsequently, re-evaluation was conducted by asking a group of 10 experts to evaluate the clarity (i.e., "clear" or "not clear") of the adjusted item.

The group of experts evaluated each element of the questionnaire for content validity using the following Likert scale: not relevant = 1, unable to assess relevance = 2, relevant but needs minor alteration = 3, and very relevant and succinct = 4. The pre-final version of the translated instrument would be accepted if the Content Validity Index for Items (I-CVI) was calculated to be equal to or greater than 0.78 and the Content Validity Index for Scales (S-CVI) was calculated to be equal to or greater than 0.90.

Phase VI: Psychometric validation

Based on the feedback rate in the pilot test survey (80%), 450 nurses were invited to the main survey to ensure at least 350 responses. The data was collected by a Google Form sent to the subjects through Gmail and Zalo (a message and call application on mobile and desktop). There were 372 responses per 450 invitations sent (the response rate was 82.7%).

Two questionnaire administrations were conducted to analyze the test-retest reliability, following the COSMIN checklist manual (18). The retest was performed after two weeks to avoid recollection of the answers, according to the recommendation of Souza, Alexandre, and Guirardello (19). The data was collected in an anonymous format and handed out individually in a closed envelope. Fifty nurses were invited to the test-retest, with 40 responses repeated (the feedback rate was 80%). The data was collected through pen-and-paper surveys.

Face validity was presented as frequency and percentage. For content validation, the I-CVI and the S-CVI were calculated. To calculate S-CVI, the average calculation S-CVI/AVE was used (20). An

acceptable level of I-CVI would be 0.78, and that for S-CVI was 0.9.

The validity of the construct was evaluated through exploratory factor analysis (EFA) using the principal components technique with varimax rotation, to identify underlying factors in the questionnaire using SPSS version 20.0. Confirmatory factor analysis (CFA) was used to verify the factor structure of the instrument using AMOS version 20.0.

Since there were no specific gold standard instruments available in the Vietnamese context, criterion validity was verified through external validity using the following hypothesis: "EBP-COQ Prof© competency is higher in nurses with previous education in EBP." Relations between variables (previous education on EBP or not) were assessed using the independent sample t-test to validate this hypothesis,. The statistical analysis was completed using SPSS version 20.0.

The internal consistency of the instrument was calculated through Cronbach's alpha. Sufficient internal consistency would be assumed for a Cronbach's alpha >0.7. Intra-class correlation coefficient (ICC) was calculated to assess the reliability test-retest among all questionnaire items while taking into account the variance for twice where the questionnaire was completed. For an ICC > 0.7, sufficient test-retest reliability would be assumed (21).

The study was approved by the institutional review board of Can Tho University of Medicine and Pharmacy (decision No. 22.004.GV/PCT-HDDD, issued on May 10, 2022). The identity of the subjects was protected at every moment of the testing to guarantee the maintenance of anonymity. A complete instruction sheet was supplied to the participants, including an explanation of the research and its goal, fill-in instructions, and a statement of anonymity. Voluntary participation was declared in the informed consent attached to the first part of the survey. Returning the filled-out questionnaire had the value of an informed consensus for participation in the study.

Results

Face and content validity

The pilot test conducted on 10 experts and 40 registered nurses indicated that "item 13" and "item 15" should be reformulated and re-evaluated because they received more than 20% feedback with "not clear" (22.5% feedback from nurses for "item 13", 30% and 40% feedback from nurses and experts, respectively, for "item 15"). The change of "item 13" and "item 15" occurred to increase clarity (Table 1). The expert panel changed "item 13" and "item 15" with the support of the translator team to ensure the same meaning in comparison with the original version (Spanish version).

Table 1. Content adjustment of the Vietnamese version of the EBP-COQ Prof©

Item	Corresponding items	Revised corresponding items
13	Tôi biết cấp độ bằng chứng của các thiết kế nghiên cứu khác nhau. *(I know the evidence level of the different designs of research studies)*	Tôi biết các thiết kế nghiên cứu khác nhau sẽ cung cấp bằng chứng khoa học ở các mức độ khác nhau. *(I know different study designs provide scientific evidence to varying degrees)*
15	Tôi biết ý nghĩa của các biện pháp liên kết chính và mức độ ảnh hưởng *(I know the significant of the main measures of association and effect size)*	Tôi biết ý nghĩa của các phép đo tương quan và mức độ ảnh hưởng (ví dụ: kiểm định Student's, Chi bình phương, RR, OR…) *(I know the meaning of the main measures of association and the effect size (Student's t-test, chi-square, RR, OR, etc.)*

After adjusting "item 13" and "item 15", the pilot test survey was repeated on 10 experts and 40 nurses. The result indicated that all items met the clarity requirement since the feedback with "the sentence is clear" was equal to or greater than 80% for each item. Subsequently, I-CVI and S-CVI/AVE were calculated. The result indicated that 35/35 items were accepted since the I-CVI was greater than 0.78 and the S-CVI/AVE was 0.97.

Construct validity and criterion validity

The main survey included 372 nurses from six hospitals in the south of Viet Nam. The data collected in the main survey were suitable for factor analysis, with the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy scoring 0.943 and the statistical significance of Bartlett's Test of Sphericity ($p<0.001$). Construct validity was demonstrated with the scree plot indicating four factors generated (Figure 1).

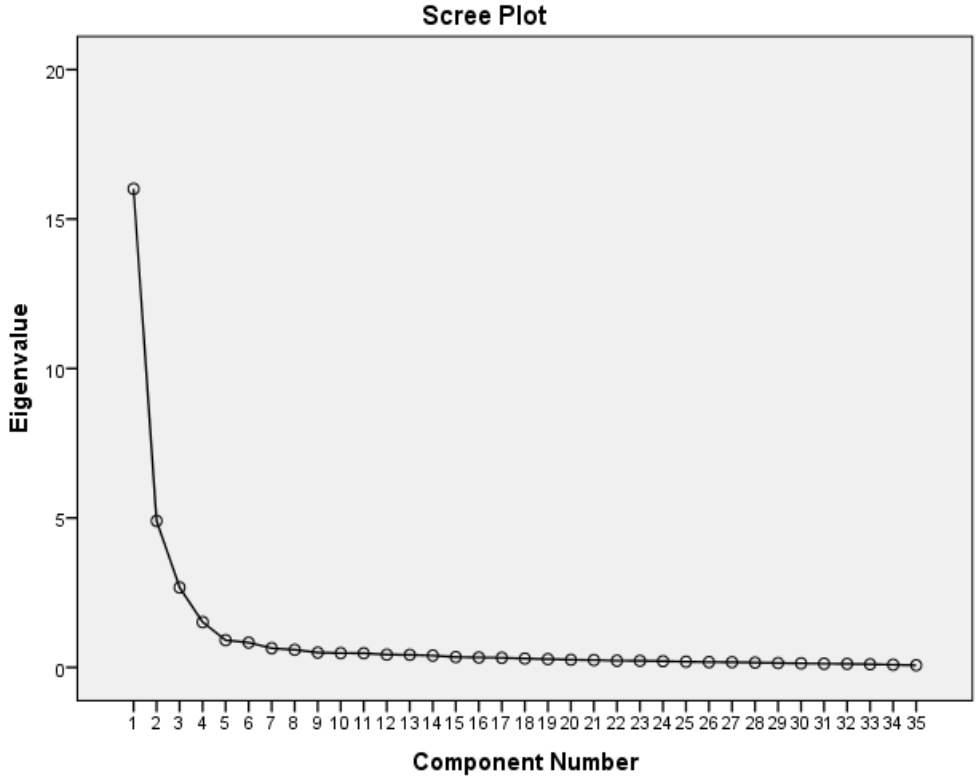

Figure 1. Slope accumulation graphics of the scale for the items

A rotated component matrix illustrated that all items were loaded into four factors. Table 2 shows the rotated component matrix as follows: Factor I included items 9–19, corresponding to knowledge of EBP; factor II included items 1–8, corresponding to attitudes toward EBP; factor III included items 24, 25, 26, and 29–35, corresponding to EBP utilization; and factor IV included items 20–23, 27, and 28, corresponding to EBP skills. All items (35/35) had loading factors greater than 0.5, and no items should be removed. CFA indicated a confirmation of the four-factor design as the original version (Figure 2). Acceptable global fit indices with Chi-square/df = 2.988, CFI = 0.914, TLI = 0.907, and RMSEA = 0.073 (90% CI = 0.069 − 0.077).

An independent sample t-test to estimate external validity revealed statistically significant differences in all dimensions of the Vietnamese version of the EBP-COQ Prof© between nurses who had and had not undergone EBP training, with the scores being higher in those who had undergone training (Table 3).

Table 2. Rotated component matrix

Items	Component			
	1	**2**	**3**	**4**
Item 1		.825		
Item 2		.846		
Item 3		.882		
Item 4		.913		
Item 5		.833		
Item 6		.907		
Item 7		.865		
Item 8		.880		
Item 9	.782			
Item 10	.837			
Item 11	.855			
Item 12	.806			
Item 13	.658			
Item 14	.709			
Item 15	.795			
Item 16	.762			
Item 17	.773			
Item 18	.751			
Item 19	.751			
Item 20				.543
Item 21				.756
Item 22				.748
Item 23				.626
Item 24			.742	
Item 25			.721	
Item 26			.728	
Item 27				.734
Item 28				.637
Item 29			.568	
Item 30			.801	
Item 31			.721	
Item 32			.717	
Item 33			.628	
Item 34			.780	
Item 35			.796	

Extraction Method: Principal component analysis
Rotation Method: Varimax with Kaiser normalization

Table 3. Different scores for each dimension of the Vietnamese version of the EBP-COQ Prof© related to EBP training (N= 372)

	Training EBP	**N**	**Mean**	**Std. Deviation**	**P***
Attitude	Undergone	242	32.99	6.032	0.014**
	Not undergone	130	31.43	5.435	
Knowledge	Undergone	242	42.52	6.802	<.001***
	Not undergone	130	37.68	7.735	
Skill	Undergone	242	24.01	3.107	<.001***
	Not undergone	130	22.00	4.081	
Utilization	Undergone	242	38.44	5.244	<.001***
	Not undergone	130	35.97	6.560	
General EBP	Undergone	242	137.96	16.183	<.001***
	Not undergone	130	127.08	19.669	

Note: Independent sample t-test; *: Sig. (2-tailed); **: Equal variances assumed; ***: Equal variances not assumed.

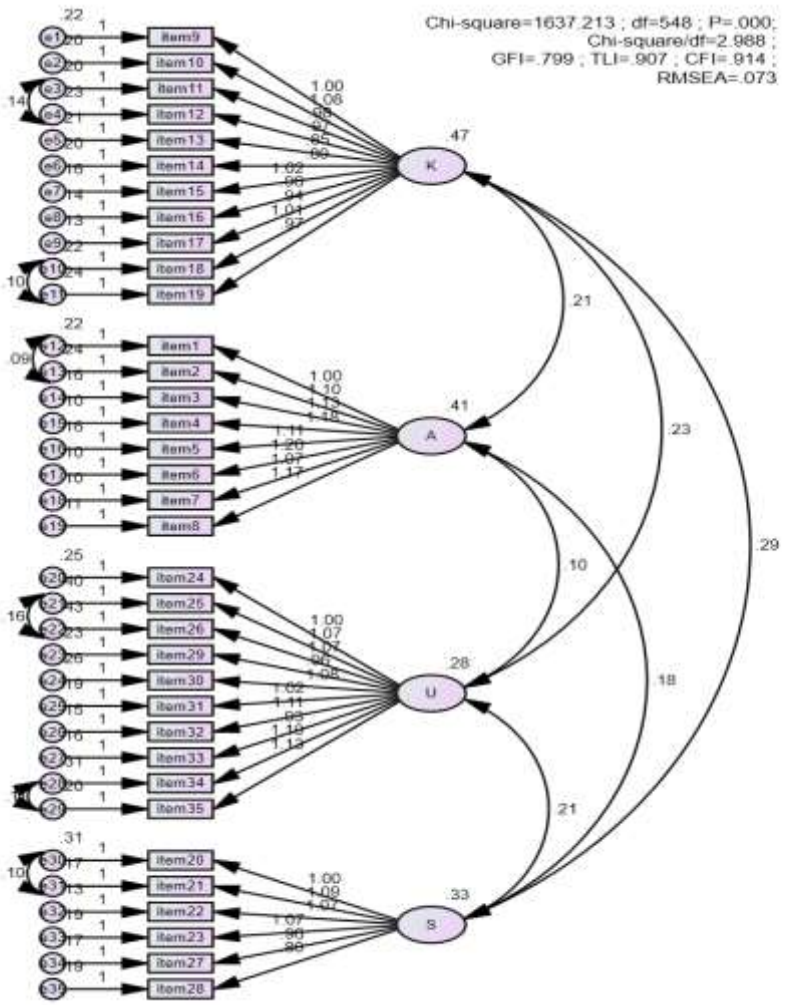

Figure 2. Confirmatory factor analysis of the Vietnamese version of EBP-COQ Prof©

Reliability

The internal consistency Cronbach's alpha calculation was 0.964 for 35 items with dimension values among subscales. Cronbach's alpha for each subscale was 0.965, 0.962, 0.909, and 0.926, corresponding to attitudes toward EBP, EBP knowledge, EBP skills, and EBP utilization (Table 4). The corrected item-total correlation ranged from 0.664 to 0.907.

The calculation of ICCs showed a high level of test-retest reliability: attitude toward EBP = 0.754 (p< 0.001) 95% CI (0.568–0.864); EBP knowledge = 0.895 (p< 0.001) 95% CI (0.675– 0.956); EBP skills = 0.823 (p< 0.001) 95% CI (0.259–0.937); and EBP utilization = 0.966 (p< 0.001) 95% CI (0.925–0.983). The total ICC for test-retest reliability was 0.948 (p < 0.001) 95% CI (0.871–0.976) being, assumed as greater than 0.7.

Table 4. Reliability coefficients of the Vietnamese version of EBP-COQ Prof© and its subscales

Scale and subscale	Number of items	Cronbach's alpha
Attitude	8	.965
Knowledge	11	.962
Skill	6	.909
Utilization	10	.926
General EBP (total scale)	35	.964

Discussion

The Vietnamese version of EBP-COQ Prof© was implemented with translation and linguistic-cultural adaptation from the Spanish version to ensure the original content and accordance with the Vietnamese context. Bilingual translators whose first language is the target language more accurately reflect the nuances of the language (15). Although there have been different guidelines for cross-cultural adaptation, the recurrence of the method proposed by Beaton et al. (15) demonstrates its importance and acceptability (22). The forward and backward translations used in this study were implemented in prior research about EBP in Viet Nam (9-11). The synthesis process, accompanied by forward and backward translation, is to discuss and resolve any ambiguities and discrepancies in the original text (16).

The face validity of the scale was evaluated to ensure that the translated items were consistent with the original items and did not produce incomplete or inaccurate answers (17). Experts followed the principle of equivalency in iterative processes to ensure the clarity of the translated version and maintain content equivalence. Two rounds of face validity were conducted to create the pre-final version used for full psychometric testing. CVI was calculated to assist the revision process, which was repeated, corresponding to the changes in vocabulary, colloquialisms, and idiomatic phrases. After adjusting, 35/35 items of the scale were accepted with an I-CVI greater than 0.78 and an S-CVI/Ave of 0.97, according to Polit and Beck (20). The process of examining the clarity and content equivalence gave more support to the conceptual, semantic, and content equivalency as well as the structure of sentences used in the translated version (16).

The result of EFA showed the construct of the Vietnamese version of the EBP-COQ Prof© similar to the original version with items assigned to four factors: attitude, knowledge, skills, and utilization. The result of the CFA indicated a confirmation of the four-factor design as the original version with acceptable global fit indices, according to the recommendation of Hu and Bentler (23). The result of the EFA and CFA of the Vietnamese version of the EBP-COQ Prof© allows for assessing nurses' EBP with four aspects of competency, as the original authors proposed. The Vietnamese version of the EBP-COQ Prof© retains the construct validity of the original version with four factors following the time sequence of the EBP (13).

The result of the independent sample t-test indicated a statistically significant higher EBP competency score in nurses undergoing previous EBP training in comparison with those who did not. Ruzafa-Martinez et al. (13) also indicated a similar result for criterion validity by ANOVA test, showing a statistically significant higher score in nurses who had undergone > 40 hours of training. Mai et al. (24) indicated a statistically significant increase in EBP implementation scores after EBP training through a quasi-experimental study.

Although the respondent-to-item ratio can range from 5:1, this study conducted on 372 nurses achieved a good level sample size with more than 300 subjects, as discussed by Tsang, Royse, and Terkawi (17). The Vietnamese version of the EBP-COQ Prof© reveals excellent reliability with a Cronbach's alpha of 0.964 (greater than 0.9). According to Amirrudin, Nasution, and Supahar (25), the instrument will be more reliable if it has a greater Cronbach's alpha value. Reliability analysis indicated that Cronbach's alpha of the Vietnamese version of the EBP-COQ Prof© alternated between attitudes toward EBP, EBP knowledge, EBP skills, and EBP utilization (0.965, 0.962, 0.909, and 0.926, respectively). The Greek version of the EBP-COQ Prof© also demonstrated an excellent

Cronbach's alpha ranging from 0.918 to 0.952 (14). The Cronbach's alpha of the Vietnamese version of the EBP-COQ Prof© is slightly higher in comparison with the original version (Spanish version), whose Cronbach's alpha was 0.888, 0.948, 0.817 and 0.840 corresponding to attitude toward EBP, EBP knowledge, EBP skills, and EBP utilization. Although there are differences in Cronbach's alpha between the translated and original instruments, the lower Cronbach's alpha belongs to the factors of EBP skills and EBP utilization in both versions. In contrast, the Evidence-Based Practice Questionnaire developed by Upton and Upton recorded the lowest Cronbach's alpha for the attitude subscale, which was demonstrated in the original as well as a translated version (7, 26).

A test-retest was conducted according to the recommendation of Souza, Alexandre, and Guirardello (19), with the second questionnaire administered two weeks after the first. The test-retest result indicated a high-reliability level, with a total ICC of 0.948 ($p < 0.001$). The Greek version of the EBP-COQ Prof© also showed a high level of ICC with 0.997 (14). While the ICCs of each factor in the original version dimensions range from 0.815 (EBP skills) to 0.966 (EBP knowledge) (13), the ICCs of the factors in the Vietnamese version of the EBP-COQ Prof© dimensions range from 0.754 (attitude toward EBP) to 0.966 (EBP utilization). According to the recommendation of Terwee et al. (21), the Vietnamese version of the EBP-COQ Prof© has sufficient test-retest reliability with ICCs greater than 0.7. In comparison with the HS-EBP-V (Vietnamese version of the Health Sciences Evidence-Based Practice Questionnaire) validated by Nguyen et al. (11) with ICCs between 0.45 and 0.66, the Vietnamese version of the EBP-COQ Prof© demonstrated outstanding test-retest reliability.

By retaining the construct validity of the original version, the Vietnamese version of the EBP-COQ Prof© covers the attributes of the EBP competency framework developed by Melnyk et al. (2). The components in the Vietnamese version of the EBP-COQ Prof© and the original version (EBP-COQ Prof© in the Spanish version) satisfy the definition of competency of Fukada (27), which evaluates competency as a cluster of elements including knowledge, skills, attitudes, critical thinking ability, and requirement values. The aspects of EBP competency covered in the Vietnamese version of the EBP-COQ Prof©, including the assessment of knowledge, skills, attitudes, and utilization of EBP, is an advantage when considering instruments to assess EBP competency in nurses. The reliability and validity properties of the translated instrument are more confident if they are validated by complete psychometric approaches (16). The sample size in this study was sufficient for psychometric validation to generate confidence in the tool's reliability and validity properties according to the guidelines (16, 17).

Although the advantages of the Vietnamese version of the EBP-COQ Prof© as a self-report instrument were indicated, there has not been any evidence of the relationship between this self-report instrument and more objective instruments. A study to compare the Vietnamese version of the EBP-COQ Prof© with objective instruments is needed to measure its sensitivity and performance in different contexts.

Conclusion

This study confirmed that the Vietnamese version of the EBP-COQ Prof© is a reliable and valid instrument to evaluate EBP competency in professional nurses within Viet Nam. The factor analysis of the Vietnamese version of the EBP-COQ Prof© approved a strong association between four factors, including attitude, knowledge, skills, and utilization of EBP. The psychometric validation indicated that the Vietnamese version of the EBP-COQ Prof© has satisfactory reliability and covers sufficient

aspects of EBP competency. The reliability and validity of the Vietnamese version of the EBP-COQ Prof© derived from this study provide data for researchers and managers considering instruments assessing EBP competency in nurses. The Vietnamese version of the EBP-COQ Prof© is also a useful instrument for evaluating the effect of EBP training programs as well as developing interventions to improve EBP competency. Future research in different contexts should be conducted to examine the performance of the Vietnamese version of the EBP-COQ Prof©.

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Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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