Original Article

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Translation and Validation of the Thai Version of the Quality Nursing Care Questionnaire (T-QNCQ)

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Abstract:

Objective: The Quality Nursing Care Questionnaire (QNCQ) has been widely used to assess nurses' perceptions of care quality. However, there was a lack of studies validating the QNCQ in Thai healthcare settings, highlighting the need for its adaptation. This study aimed to translate the QNCQ into Thai and evaluate its internal consistency and psychometric properties.

Materials and Methods: A cross-sectional study design was used in this research. The Thai version (T-QNCQ) was a self-reported questionnaire consisting of 38 items across 5 response categories, covering 6 dimensions: physical environment, staff characteristics, preconditions, task-oriented activities, human-oriented activities, and patient outcomes. A sample of 380 registered nurses from tertiary government hospitals in Thailand was recruited using purposive and convenience sampling. To assess the validity of the translated scale, confirmatory factor analysis (CFA), descriptive statistics, and reliability testing were conducted.

Results: The T-QNCQ demonstrated strong reliability and validity. The Cronbach's alpha coefficient for the total scale was 0.98, with subscale values ranging from 0.86 to 0.94. Item-total correlations for the overall scale were positive, ranging from 0.61 to 0.84. Construct validity was supported by CFA, which yielded the following fit indices: comparative fit index=0.95, Tucker-Lewis index=0.94, root mean square error of approximation=0.05, and standardized root mean square residual=0.04.

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Conclusion: The T-QNCQ was found to be a reliable and valid tool for assessing nurses' perceptions of care quality in Thai healthcare settings. These results provide valuable insights for nurse administrators and policymakers, aiding improvements in care delivery.

Keywords: nursing, psychometric properties, quality of care, questionnaires and surveys, validity and reliability

Introduction

Quality nursing care has been recognized as a fundamental element of healthcare, directly influencing patient outcomes, safety, and overall satisfaction[1,2]. Given that nursing care is critical to the quality of healthcare systems, various tools have been developed globally to assess it, particularly from the perspective of nurses[3]. The Quality Nursing Care Questionnaire (QNCQ) is a new tool that nurses can use to assess how they view the care they provide in different healthcare settings. It has strong psychometric properties, which make it a valuable way to understand the quality of nursing care[4,5]. However, for these tools to remain effective in diverse cultural contexts, they must undergo adaptation to ensure their relevance and accuracy[6].

In Thailand, there has been increasing interest in the quality of nursing care, with several studies examining factors that influence nursing practices and care quality[7,8]. Despite this growing focus, there remained a lack of culturally adapted tools to evaluate the perceptions of Thai nurses regarding the quality of care[9]. This gap highlighted the need for an instrument tailored to the unique aspects of nursing practice in Thailand's distinct healthcare and cultural environment.

The QNCQ, developed by Liu et al.[10], assesses 6 key dimensions of nursing care. It was found that the instrument has strong internal consistency and reliability, with Cronbach's α coefficients ranging from 0.83 to 0.97. When assessing construct validity, the confirmatory factor analysis (CFA) results showed a good model fit, with satisfactory GFI indicators (χ^2/df=1.08, p-value=0.054, Goodness of Fit Index (GFI)=0.93, Adjusted Goodness of Fit Index (AGFI)=0.90, Normed Fit Index (NFI)=0.99, Root Mean Square Error of Approximation (RMSEA)=0.01, and Standardized Root Mean Square Residual (SRMR)=0.03). These findings confirmed the validity of the scale's underlying structure[10]. Before applying the tool to Thai nurses, it underwent a thorough translation and validation process to ensure its cultural and psychometric relevance. As emphasized by Guillemin et al.[11] and Beaton et al.[12], translation alone is insufficient; instruments must be adapted to the cultural context of the target population to yield valid and reliable results. In Thailand, the lack of studies validating the QNCQ within local healthcare settings underscores the necessity of this adaptation.

This study sought to bridge this gap by systematically translating and validating the QNCQ for Thai nurses, incorporating translation, expert evaluation, and pilot testing. The primary objective was to develop a reliable and culturally appropriate tool with strong psychometric properties to assess nursing care quality in Thailand. Beyond filling this gap, the research contributed to the broader field of nursing quality assessment by offering a model for other countries with similar healthcare and cultural contexts. By providing a validated, culturally adapted tool, this study supported efforts to improve nursing care quality, enhance nurse retention, and ultimately improve patient outcomes in Thailand. Moreover, it promoted the development of context-specific solutions to enhance healthcare globally.

Objective

This study aimed to translate the QNCQ into Thai and assess its internal consistency and psychometric properties.

Material and Methods

Study design and sample

A cross-sectional study was conducted at 35 tertiary government hospitals under the Ministry of Public Health in Thailand from January 1 to 31, 2025. Eligible nurses were invited to participate through official hospital channels. Upon expressing interest, participants were provided with detailed information about the study, including its purpose, confidentiality measures, and the estimated time required to complete the questionnaire. Full-time registered nurses who held at least a bachelor's degree in nursing and were actively working at these hospitals were selected using purposive and convenience sampling methods. Nurses on maternity leave, extended sick leave, or study leave were excluded from the study. To determine the necessary sample size for factor analysis, the study followed the recommended participant-to-item ratio of 5 to 10 to minimize sampling error[13-15]. As a result, a total of 380 nurses were included in the study.

The Instrument

The 38-item QNCQ, developed by Liu et al.[10], comprises 6 dimensions: physical environment (6 items), staff characteristics (8 items), preconditions (7 items), task-oriented activities (6 items), human-oriented activities (5 items), and patient outcomes (6 items). This 5-point Likert scale instrument is used to assess QNC from the nurses' perspective, where scores range from 1 ("strongly disagree") to 5 ("strongly agree"). Higher scores indicate a greater perception of QNC, while lower scores reflect a lower perception[10].

Translation of the instrument and content validity

The original 38-item QNCQ, published in English, was used to assess participants' perceptions of nursing care quality[10]. Two independent translators translated the English version of the QNCQ into Thai—one a linguistic expert and the other a nursing expert—to ensure both linguistic accuracy and conceptual relevance. A researcher resolved any discrepancies between the 2 translations to reach a consensus. After incorporating the necessary revisions, the Thai version was back-translated into English by 2 additional translators—one a linguistic expert and the other a nursing expert—to verify the accuracy of the translation. The back-translated version was compared with the original English text to identify and resolve any inconsistencies. Finally, the research team reviewed the final version, checking for clarity, consistency, and cultural appropriateness before finalizing the translation.

To ensure the content validity of the Thai-QNCQ (T-QNCQ), 5 experts in psychiatry or nursing science, each holding a master's or Ph.D., evaluated the relevance of each item. They rated the items on a four-point scale (1=not relevant, 2=somewhat relevant, 3=quite relevant, 4= very relevant) and provided suggestions for clarification. The Content Validity Index (CVI) was analyzed, with a score of 0.80 or higher deemed acceptable[16,17]. Both the Scale-level Content Validity Index (S-CVI) and the Item-level Content Validity Index (I-CVI) for the T-QNC achieved perfect scores of 1.00, demonstrating excellent content validity.

Ethical considerations

The study protocol was approved by the Institute for the Development of Human Research Protections (IHRP) at the Health Systems Research Institute (HSRI) under Research Project COA No. IHRP2024184, dated December 23, 2024. It was part of the research project

titled "A Causal Model of Factors Influencing the Quality of Nursing Care in Psychiatric and Substance Abuse Wards of Hospitals under the Office of the Permanent Secretary, Ministry of Public Health, Thailand". Participants provided consent after being informed about the voluntary nature of their involvement, their right to opt out, data confidentiality, study objectives, and procedures. It was confirmed that no identifying information was collected.

Data analysis

Statistical analyses were conducted using Jamovi software (version 2.4.14), the internal consistency of the T-QNCQ was evaluated by calculating Cronbach's alpha and examining the corrected item-total correlations. Values of Cronbach's alpha coefficient greater than 0.7, along with item-total correlations exceeding 0.3, were considered indicative of acceptable internal consistency[18,19]. To explore item interrelationships, we employed the Pearson correlation matrix, which is suitable for large sample sizes (n>100). An absolute Pearson correlation coefficient greater than 0.3 was deemed appropriate for inclusion in factor analysis[20,21].

To evaluate the suitability of the data for factor analysis, we conducted Bartlett's test of sphericity, with a p-value less than 0.05 suggesting significant intercorrelations among the variables. Additionally, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was applied, with values exceeding 0.7 indicating adequate sampling for factor analysis[22-24].

CFA was conducted to assess the construct validity of the scale, grounded in established theoretical frameworks and previous research. The model fit was evaluated using several indices, including a chi-square (χ^2) p-value>0.05, a normed chi-square (χ^2/df) value <3, indicating a good fit, the Tucker–Lewis Index (TLI), and the Comparative Fit Index (CFI)≥0.90. Additionally, the RMSEA was considered acceptable if <0.05, and the SRMR was deemed good if <0.09[25-27].

Results

Socio-demographic characteristics

Table 1 presents the socio-demographic characteristics of the study participants. A total of 380 nurses participated in the questionnaire, with no missing data or outliers. All responses were included in the final analysis. The majority of participants were female (89.21%), with an average age of 39.89 years (standard deviation (S.D.)=11.01), and 50.53% were married. Most participants had completed a bachelor's degree (81.32%) and a nursing specialty course (62.11%). The average work experience was 6.67 years (S.D.=5.36), and 40.00% earned a monthly salary of THB 45,000 or more. Most participants were employed as government officers (97.47%), with 50.00% working at the professional level as registered nurses. Additionally, 53.42% of participants rated the quality of nursing care as the highest (Table 1).

Internal consistency

Table 2 presents the characteristics of the questionnaire, including the means, standard deviations, item-total correlation, alpha if item deleted, and Cronbach's alpha coefficients. The internal consistency of the Quality Nursing Care Questionnaire was confirmed to be sufficient, with Cronbach's alpha values of 0.94, 0.93, 0.89, 0.94, 0.93, and 0.86 for the Physical Environment, Staff Characteristics, Preconditions, Task-oriented Activities, Human-oriented Activities, and Patient Outcomes subscales, respectively. Additionally, item-total correlation coefficients exceeding 0.3 for all items indicated strong correlations with their respective scales, further supporting the questionnaire's reliability.

Construct validity

The data indicated excellent sampling adequacy, as shown by a KMO value of 0.97 and individual KMO values ranging from 0.95 to 0.98. Bartlett's test produced a significant result (χ^2=14,345.89, df=703, p-value<0.001), confirming the suitability of the data for factor analysis. The

initial six-factor model, based on Liu and Aungsuroch[10], was evaluated using CFA to assess the measurement of psychological constructs. This analysis aimed to determine whether the proposed factor model fit the data well and to provide evidence of construct validity for the self-report scales. Regression weights for the 6 dimensions ranged from 0.60 to 0.98 (p-value<0.001). Most of the fit indices were acceptable, including the CFI of 0.95, the TLI of 0.94, the RMSEA of 0.05, and the SRMR of 0.04, with χ^2/df=1.78. However, the chi-square significance (p-value<0.001) was an exception[26], as presented in Table 3. The measurement model of the T-QNCQ is illustrated in Figure 1.

Table 1 General characteristics of study participants (N=380)

Characteristics	Number	%
Age		
(mean±standard deviation)	39.89±11.01	
Gender		
Female	339	89.21
Male	41	10.79
Marital status		
Single	167	43.94
Married	192	50.53
Other (divorce, widowed)	21	5.53
Education		
Bachelor's degree	309	81.32
Master's degree	70	18.42
Doctoral degree	1	0.26
Nursing specialty course		
Yes	236	62.11
No	144	37.89
Work experience (years)		
(mean±standard deviation)	6.67±5.36	
Salary/month (THB)		
15,000-29,999	121	31.84
30,000-44,999	107	28.16
≥45,000	152	40.00
Employment status		
Government officers	359	94.47
Non-government officers	21	5.53
Status		
Registered nurse	21	5.53
Registered nurse, practitioner level	116	30.52
Registered nurse, professional level	190	50.00
Registered nurse, senior professional level	53	13.95
Level of perceived quality nursing care		
Lowest	0	0.00
Low	1	0.26
Moderate	19	5.00
High	157	41.32
Highest	203	53.42

THB=Thai Baht

Table 2 Mean scores, corrected item-total correlation, Cronbach alpha values of T-QNCQ (N=380)

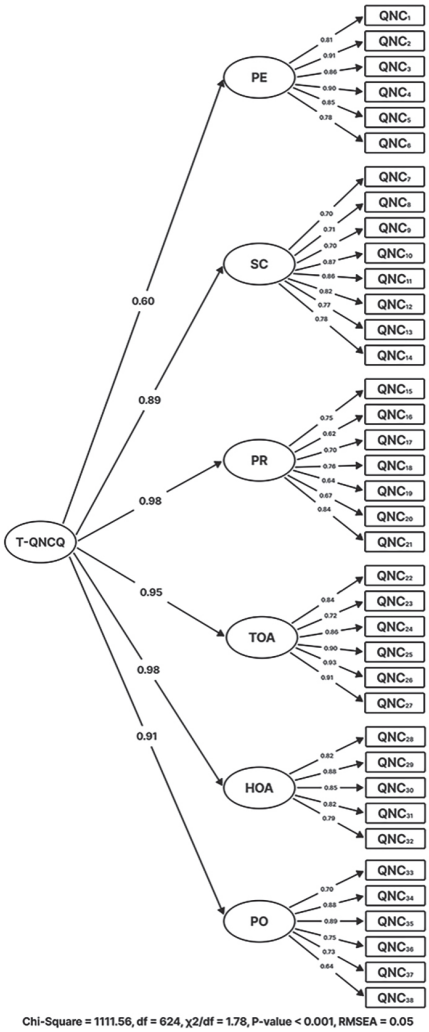
Items	Mean±S.D.	Item-total correlation	Cronbach's alpha	Alpha if item deleted
Physical environment	4.14±0.74		0.94	
QNC1	3.98±0.84	0.65		0.97
QNC2	3.98±0.81	0.65		0.97
QNC3	3.98±0.87	0.63		0.98
QNC4	4.08±0.83	0.65		0.97
QNC5	3.87±0.94	0.64		0.98
QNC6	3.89±0.86	0.63		0.98
Staff characteristics	4.52±0.55		0.93	
QNC7	4.42±0.65	0.70		0.97
QNC8	4.41±0.62	0.69		0.97
QNC9	4.36±0.65	0.72		0.97
QNC10	4.44±0.64	0.74		0.97
QNC11	4.51±0.66	0.73		0.97
QNC12	4.46±0.63	0.72		0.97
QNC13	4.31±0.65	0.71		0.97
QNC14	4.42±0.62	0.73		0.97
Preconditions	4.21±0.57		0.89	
QNC15	4.22±0.66	0.73		0.97
QNC16	3.95±0.78	0.62		0.98
QNC17	4.01±0.76	0.68		0.97
QNC18	4.39±0.65	0.70		0.97
QNC19	4.12±0.85	0.63		0.98
QNC20	4.12±0.75	0.68		0.97
QNC21	4.42±0.64	0.78		0.97
Task-oriented activities	4.43±0.56		0.94	
QNC22	4.37±0.65	0.78		0.97
QNC23	4.20±0.79	0.69		0.97
QNC24	4.41±0.63	0.79		0.97
QNC25	4.45±0.62	0.81		0.97
QNC26	4.41±0.64	0.84		0.97
QNC27	4.36±0.65	0.81		0.97
Human-oriented activities	4.37±0.54		0.93	
QNC28	4.21±0.65	0.77		0.97
QNC29	4.42±0.63	0.81		0.97
QNC30	4.28±0.64	0.79		0.97
QNC31	4.27±0.63	0.78		0.97
QNC32	4.24±0.63	0.76		0.97
Patient outcomes	4.49±0.45		0.86	
QNC33	4.43±0.71	0.61		0.98
QNC34	4.40±0.63	0.76		0.97
QNC35	4.44±0.59	0.78		0.97
QNC36	4.26±0.64	0.73		0.97
QNC37	4.32±0.64	0.69		0.97
QNC38	4.19±0.71	0.66		0.97

S.D.=standard deviation

Table 3 Fit indices of the factors structure of the T-QNCQ (n=380)

Goodness-of-fit statistics	Threshold values	Studied value
Chi-square (χ^2)	p-value>0.05	p-value<0.001
Normed chi-square (χ^2/df)	<3.00	1.78
Comparative Fit Index (CFI)	≥0.90	0.95
Tucker-lewis Index (TLI)	≥0.90	0.94
Root-Mean-Square Error of Approximation (RMSEA)	<0.05	0.05
Standardized Root Mean Square Residual (SRMR)	<0.09	0.04

The level of significant was set at 0.01(2-tailed)



T-QNCQ=Thai-quality of nursing care questionnaire, PE=physical environment, SC=staff characteristic, PR=precondition, TOA=task-orientated activities, HOA=human-orientated activities, PO=patient outcomes

Figure 1 Measurement model of T-QNCQ

Discussion

This study aimed to translate and assess the psychometric properties of the Thai version of the QNQC. The translation process adhered to Brislin's standardized model[28] and the cross-cultural adaptation guidelines outlined by Beaton et al.[29], ensuring the T-QNCQ's linguistic accuracy and cultural relevance for the Thai population. A critical aspect of this process was including both linguistic and nursing experts, alongside the use of a back-translation method. This approach helped ensure the T-QNCQ captured the intended meanings of each item while aligning with the cultural expectations and norms of Thai nurses.

Content validity was evaluated by subject matter experts, and the results demonstrated strong alignment with the cultural and contextual realities of Thai healthcare settings. The high Item-Content Validity Index (I-CVI) and Scale-Content Validity Index (S-CVI) values of 1 provided clear evidence of strong content validity for the instrument. The cultural considerations in the translation process—such as differing perceptions of care, professional roles, and patient relationships—played a key role in ensuring the tool's relevance and appropriateness for Thailand's healthcare context.

Psychometric testing further confirmed that the T-QNCQ exhibited robust psychometric properties, supporting both content and construct validity. The high internal consistency, reflected by Cronbach's alpha values ranging from 0.86 to 0.94 across the subscales, indicated that the items on the T-QNCQ were highly correlated and effectively measured the intended constructs of nursing care quality[18,19]. These results align with previous studies of the original QNCQ10, reinforcing the reliability of the tool in diverse healthcare contexts and underscoring its relevance within Thailand.

To assess construct validity, CFA was conducted, showing that most fit indices were within acceptable thresholds, supporting the model's robustness. Despite a significant chi-square (χ^2) result—common in studies with large sample sizes 30 — the normed fit chi-square (χ^2/df) of 1.78 was well below the recommended cutoff of 3 31, 32, suggesting a good model fit. Additional goodness-of-fit indices, such as GFI >0.90, TLI >0.90, and SRMR <0.09, all indicated a well-fitting model[25-27], aligning with widely recognized criteria for model assessment. These results confirm that the T-QNCQ is a reliable and valid tool for measuring constructs in the Thai nurses' population. All factor loadings were statistically significant (p-value<0.05), further reinforcing the construct validity of the T-QNCQ and its alignment with the theoretical framework. The findings of this study align with previous research emphasizing the importance of strong psychometric properties in ensuring the reliability and validity of measurement instruments[33,34]. Overall, the model's fit indices indicate that the T-QNCQ could be confidently used in both research and practice.

This study established the T-QNCQ as a reliable and valid instrument for evaluating the Thai nurses' quality of nursing care. However, this was the first instance of the T-QNCQ being translated and utilized within the Thai context. Several limitations should be noted. This study was conducted exclusively in tertiary government hospitals under the Ministry of Public Health in Thailand, potentially limiting the generalizability of the findings to nurses in other countries. Future research should aim to explore a broader range of settings. Additionally, the reliance on a self-administered questionnaire raises the possibility of socially desirable response bias among participants.

The T-QNCQ demonstrated significant potential for both practical application and further research. Policymakers, nurse leaders, and nurse administrators could apply this tool to gain a deeper understanding of nurses' perceptions of quality care, which would facilitate more targeted improvements in care delivery. Research indicates that accurately measuring nurses' perceptions of quality has led to enhanced job satisfaction and improved

patient outcomes. By integrating the T-QNCQ into quality assurance processes, healthcare organizations were able to obtain critical insights into the factors influencing nursing care, fostering a more supportive work environment for nurses, and enhancing patient satisfaction. Furthermore, studies have suggested that tools such as the T-QNCQ were instrumental in identifying areas requiring further training and development, ensuring that nurses were adequately equipped to address the evolving demands of healthcare.

Conclusion

This study demonstrated that the Thai version of the T-QNCQ is a reliable and valid instrument for assessing nurses' perceptions of care quality in Thai healthcare settings. The strong evidence supporting the reliability and validity of the T-QNCQ highlights its effectiveness in capturing key dimensions of nursing care. This enabled the tool to provide valuable insights for both organizational and individual improvements. By utilizing this tool, healthcare facilities were able to identify areas that required attention and implement targeted strategies to enhance nursing care, ultimately improving patient outcomes and optimizing healthcare delivery. Furthermore, the T-QNCQ has contributed to ongoing quality improvement initiatives, ensuring sustained progress in care delivery.

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Conflict of interest

The research was conducted independently, free from any commercial or financial affiliations that could have introduced potential conflicts of interest.

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