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Knowledge Questionnaire over Forensics Nursing Practices: adaptation to Brazil and psychometric properties

Questionário de Conhecimentos sobre Práticas de Enfermagem Forenses: adaptação para o Brasil e propriedades psicométricas

Cuestionario de Conocimientos sobre Prácticas de Enfermería Forense: adaptación a Brasil y propiedades psicométricas

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Abstract

Background: Recognizing violence and providing assistance to victims or aggressors are challenges facing nursing.
Objective: To adapt the Knowledge Questionnaire over Forensics Nursing Practices to Brazil and verify its psychometric properties.
Methodology: Methodological study with nursing undergraduates, involving linguistic and semantic adaptation and analysis of the psychometric properties (convergent and divergent validity and reliability).
Results: In its general semantic validation, the questionnaire version adapted to Brazilian Portuguese showed good/very good acceptance (97.0%), high relevance (56%), and easy comprehension (83.0%). In terms of item evaluation, the relevance ranged from 61 to 95.0% and its comprehension and clarity were higher than 93.0% and 90.0%, respectively. The analysis of the psychometric properties with 253 students showed that both convergent validity and divergent validity were satisfactory only for two subscales and that the overall reliability was satisfactory.
Conclusion: The linguistic and semantic adaptation of the questionnaire to Brazilian Portuguese was satisfactory, as well as its reliability. It is recommended that the content of the items and their association with the theoretical aspects, the number of items, and the subscales' reorganization should be assessed.

Keywords: forensic nursing; violence; validation studies; nursing care

Resumo

Enquadramento: Reconhecer a violência e dar assistência às vítimas ou agressor são desafios para a enfermagem.
Objetivos: Adaptar para o Brasil e verificar as propriedades psicométricas do Questionário de Conhecimento sobre Práticas de Enfermagem Forenses.
Metodologia: Estudo metodológico, com graduandos de enfermagem, envolvendo adaptação idiomática e semântica e verificação das propriedades psicométricas (validação de construto convergente e divergente e fidedignidade).
Resultados: A versão do questionário adaptada para o idioma do Brasil apresentou, na validação semântica geral, boa/muito boa aceitação (97,0%), alta relevância (56,0%) e fácil compreensão (83,0%). Na avaliação específica dos itens a relevância variou de 61 a 95%, o entendimento foi maior que 93,0% e a clareza maior que 90,0%. Nas medidas psicométricas, com 253 estudantes, obtiveram-se validades de construto convergente e divergente satisfatórias apenas para duas das subescalas e fidedignidade global satisfatória.
Conclusão: A adaptação idiomática e semântica do questionário para o Brasil e a fidedignidade foram satisfatórias. Recomenda-se avaliar o conteúdo dos itens e a sua relação com os aspetos teóricos, o número de itens e reorganização da constelação das subescalas.

Palavras-chave: enfermagem forense; violência; estudos de validação; cuidados de enfermagem

Resumen

Marco contextual: Reconocer la violencia y proporcionar asistencia a las víctimas o agresores son retos para la enfermería.
Objetivos: Adaptar para Brasil y verificar las propiedades psicométricas del Cuestionario de Conocimientos sobre Prácticas de Enfermería Forense.
Metodología: Estudio metodológico, con graduandos de enfermería, que comprende la adaptación idiomática y semántica, así como la verificación de las propiedades psicométricas (validez de constructo convergente y divergente y fiabilidad).
Resultados: La versión del cuestionario adaptada al idioma de Brasil presentó, en la validación semántica general, buena/muy buena aceptación (97,0%), alta relevancia (56,0%) y fácil comprensión (83,0%). En la evaluación específica de los ítems la relevancia osciló entre el 61 y el 95%, la comprensión fue superior al 93,0% y la claridad superior al 90,0%. En las mediciones psicométricas, con 253 estudiantes, se obtuvo una validez de constructo convergente y divergente satisfactoria solo para dos de las subescalas, y una fiabilidad global satisfactoria.
Conclusión: La adaptación idiomática y semántica del cuestionario para Brasil y la fiabilidad fueron satisfactorias. Se recomienda evaluar el contenido de los ítems y su relación con los aspectos teóricos, el número de ítems y la reorganización del conjunto de subescalas.

Palabras clave: enfermería forense; violencia; estudios de validación; atención de enfermería

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Introduction

In Brazil, forensic nursing was recognized as a specialty in 2011. In 2017, the Federal Nursing Council (*Conselho Federal de Enfermagem*, COFEN) issued a resolution that regulated the areas of intervention of forensic nurses, which covered the specialized assistance to victims of family violence, relatives, and aggressors, vulnerable and prison populations, and patients with mental illness. This resolution underlines the need for forensic nurses to have knowledge about the legal aspects, the collection of evidence, and the testimonies in courts. It also establishes the following criteria to become a forensic nurse: having a degree in nursing or a specialization in the area (master's or doctoral degree) and having the title recognized by the Ministry of Education or awarded by institutions that are registered in the Regional or Federal Nursing Councils (Resolução nº 556/17, de 25 de agosto).

In their everyday interaction with the victims and the perpetrators of violence, nurses must be able to recognize and identify the elements and peculiarities of a situation of violence and provide quality care to the victims or their aggressors.

Thus, nurses should become familiar with and apply measuring instruments, both for patients' evaluation and the assessment of professionals' skills and knowledge in the area of forensic nursing. Up to now, the following instruments were identified: the Knowledge Questionnaire over Forensics Nursing Practices of Cunha and Libório (*Questionário do Conhecimento sobre as Práticas de Enfermagem Forense*, *QCPEF de Cunha & Libório*; Libório, 2012; Cunha, Libório, & Coelho, 2016), which includes statements for assessing the knowledge about concepts, situations, elements, and documentation in forensic sciences and forensic nursing; the General Questionnaire on Forensic Nursing (*Questionário Geral sobre Enfermagem Forense*, QGEF; Libório, 2012) that includes questions on the sociodemographic characterization and training of nursing students; and the Questionnaire on Forensic Nursing Practices (*Questionário de Práticas de Enfermagem a realizar perante Situações Forenses*, QPESF; Ribeiro, 2016), proposed based on clinical cases, to identify the relevant practices.

Because it is an emerging area that is not yet offered as a specific discipline in most of the curricula of Brazilian nursing schools, the potential contribution of instruments for assessing students' and professionals' knowledge in their area justifies the development of this study. Therefore, the objective of this study was to adapt the Knowledge Questionnaire over Forensics Nursing Practices of Cunha and Libório (QCPEF) to the Brazilian context and analyze the psychometric properties of the adapted version.

Background

The original version of the QCPEF of Cunha and Libório (Libório, 2012) was developed in Portugal to assess the knowledge of Portuguese nursing students about forensic nursing practices. It is a self-administered questionnaire, which is composed of 74 dichotomous (*True*/*False*) statements in its original version, where incorrect answers are scored 0 and correct answers are scored 1, with the total maximum score of 74 points. Originally built from a literature review, the questionnaire was assessed by an expert who contributed to its clarification. Its users (nursing students) assessed it and confirmed that it was easy to use and understand. The questionnaire showed a total Cronbach's alpha of 0.807, and a split-half reliability of 0.785 in the first part and 0.673 in the second part. Based on the theoretical assumptions in this domain, the statements were grouped into the following six subscales: Forensic Nursing Concept, with 10 items; Forensic Situations, with 12 items; Forensic Traces, with 12 items; Communication and Documentation in Forensic Sciences, with 10 items; General Nursing Care, with 10 items; and Forensic Traces Preservation, with 20 items. The internal consistency of the questionnaire ranged from 0.6 to 0.8 for the first three subscales and from 0.533 to 0.573 for the other subscales (Libório, 2012).

The QCPEF of Cunha and Libório (Libório, 2012) has been used with Portuguese students, for which case studies were used. The QCPEF proved to be useful for analyzing the level of knowledge before and after an educational intervention (p-value < 0.05; Coelho, 2013). The same conclusion was found in the study on the effectiveness of a structured forensic nursing intervention, in which, after the presentation of clinical cases, the students' knowledge about the topic increased (p-value < 0.001; Ribeiro, 2016). The instrument was also useful to assess the level of knowledge

of a group of Portuguese nurses working in three emergency departments, with 43.0% of correct answers in the group from Alcobaça, 69.0% in the group from Leiria, and 80.0% in the group from Pombal (Pereira, 2017).

In Brazil, the QCPEF was used to assess the level of knowledge of 109 nursing students. In this sample, 50% of participants or less did not answer correctly in only 6 of the 74 questions (Soares, 2016).

However, the instrument has not yet been validated for the Brazilian population. It is recommended the use of valid instruments (Pereira et al., 2018) to analyze the phenomena of interest to nursing, which would allow proper planning of interventions, in the field of education, management, or clinical practice.

Research question

Is the QCPEF a reliable and valid instrument for a sample of undergraduate nursing students in Brazil?

Methodology

This is a methodological study (Polit & Beck, 2011) conducted in a public Brazilian university of the state of São Paulo, with undergraduate nursing students.

An evaluation questionnaire was adapted using the following steps: linguistic and semantic adaptation, and verification of the psychometric properties related to the convergent and divergent validity and the reliability of the adapted version.

The questionnaire was designed in European Portuguese, which has some differences from Brazilian Portuguese, especially in relation to vocabulary, accent, and syntax. To ensure the quality of the linguistic standard, steps similar to those recommended in the literature for cross-cultural validation of research instruments were adopted (Souza, Alexandre, & Guirardello, 2017). To this end, two reviewers assessed the questionnaire on an individual basis and made the relevant adjustments, resulting in two versions. Then, five reviewers, who were specialized in methods or the topic under analysis, reconciled both versions based on the answer option that showed a better understanding of each item, resulting in a reconciled version. Next, an independent expert, who was blinded to the research, compared the reconciled version with the original version, resulting in the final version adapted to Brazilian Portuguese. Finally, this version was sent to the authors of the original questionnaire who approved it to be further adapted.

The semantic adaptation sought to assess the level of understanding, ambiguity, acceptance, and relevance of the questionnaire items by the target population. The DISABKIDS® method was used and adapted to the topic under analysis (Disabkids Group, 2004; Fuzissaki, Santos, Almeida, Gozzo, & Clapis, 2016). A total of 36 students from different degree levels participated in this phase: 18 beginners and 18 finalists, who were recruited through the snowball technique (Vinuto, 2014). Each group of six students assessed each subscale in detail using a specific instrument for assessing the degree of relevance, difficulty, and clarity of those items; and all of them (n = 36) answered the the QCPEF-adapted version in full and gave their overall opinion. The students answered the instruments individually.

The convergent and divergent validity of the adapted version were examined (Fegadolli, Reis, Martins, Bullinger, & Santos, 2010), as well as its reliability (internal consistency of the items according to the subscales and total score and reproducibility by test-retest according to the agreement between repetitions in the measures of the subscales and the overall score). All nursing students of the institution were invited to participate, except for those who had already participated in previous phases of the study. Each student was asked to provide information on their age, gender, degree, and years in the undergraduate course (Bachelor's Degree or Teaching Degree in Nursing).

The project was approved by the Ethics Committee of the University of São Paulo at Ribeirão Preto College of Nursing as research protocol number CAAE: 47673615400005393. All participants signed two copies of the Informed Consent Form.

Data from each phase of this study were double entered into tables using Microsoft Office Excel, 2007 version. They were then confirmed and exported for analysis to IBM SPSS Statistics Software, Version 22.0 (IBM).

Descriptive statistics were used for the variables of participant identification (gender, age, degree, and degree level). For the age variable, the mean

was used as a measure of central tendency and the standard deviation was used as a measure of dispersion. Absolute and percentage frequencies were used for categorical variables and the percentage frequency was used for the overall impression of the instrument.

The multitrait-multimethod technique was used for the assessment of convergent and divergent validity. This technique assesses the linear correlations between the items and the dimensions to which they belong, as well as between the items and dimensions to which they do not belong. It is known that the cases in which the correlation between the item and the dimension to which it belongs is higher than the correlation with a dimension to which it does not belong are related to convergent validity. The software used was the Multitrait Analysis Program (MAP; Fegadolli et al., 2010).

Reliability was assessed using measures of internal consistency of the items and agreement between the answers at distinct moments (reproducibility). The measure of internal consistency of the items was calculated using the Kuder-Richardson Formula 20 (KR-20), which is more suitable for analyzing scales that have items with dichotomous answers (*True*/*False*; Streiner, Norman, & Carney, 2015). A KR-20 higher than 0.70 was considered satisfactory.

Reproducibility was assessed using the test-retest technique. Kappa coefficient was applied to verify the agreement between the answers to each of the items. The strength of agreement can be classified into: *poor* if less than zero; *slight* from 0.00 to 0.20; fair from 0.21 to 0.40; *moderate* from 0.41 to 0.60; *substantial* from 0.61 to 0.80; and *almost perfect* from 0.81 to 1.00 (Landis & Koch, 1977). Moreover, the Intraclass Correlation Coefficient (ICC) was used to verify the agreement between the measures obtained in the answers to each of the subscales and total score, and it can range from 0.00 to 1.00; it is recommended that these coefficients should be higher than 0.70 (Souza et al., 2017).

Results

During the process of linguistic adaptation of the QCPEF, some adjustments were made regarding the replacement of words from European Portuguese into Brazilian Portuguese, such as "*vómito*" by "*vômito*", "*sémen*" by "*sêmen*", "*pêlos*" by "*pelos*". During this process, the conceptual equivalence of the items was maintained, which was ensured through the contact with the authors of the original questionnaire.

A total of 36 students participated in the semantic evaluation phase. They had a mean age of 21 years (*SD* = 3.0); 31 (86.1%) were women; 25 (69.4%) were attending the *Curso de Bacharelado e Licenciatura em Enfermagem*; and 11 (30.6%) were attending the *Curso de Bacharelado em Enfermagem*.

The students evaluated the usability, level of understanding, and relevance of the QCPE-F-adapted version. They pointed out that the questionnaire was good (39.0%) or very good (58.0%), easy to understand (83.0%), very relevant (56.0%), and that it raised no difficulties in its use (72.0%). With regard to the specific semantic evaluation, the information focused on the relevance, difficulties of understanding, and clarity of the items of each subscale of the QCPEF-adapted version. The results showed that the content was considered relevant by the majority of the students, with a mean frequency for the set of items of each subscale ranging from 61.1% (Forensic Traces - Item 23 to 34) to 93.3% (Communication and Documentation in Forensic Sciences - Item 35 to 44). In all subscales, more than 93.2% of participants found no difficulties in understanding the questions and at least 90.0% of them found that the items were clear and consistent.

At this stage, the suggestions for change included the number of items, which was considered high, and the assessment of possible repetitions. The suggestions to add information on the job market and include examples in the questionnaire were not accepted; other suggestions were accepted, such as replacing "*salvaguarda*" by "*proteção*".

A total of 253 nursing students participated in the evaluation of the psychometric properties, which corresponded to 51.8% of the students enrolled at the institution at that time. Of these, 65.2% attended the *Curso de Bacharelado em Enfermagem* and the remaining ones attended the *Curso de Bacharelado e Licenciatura em Enfermagem*; 69 students did the retest. With regard to age, even though the mean age was 21.7 years (*SD* = 3.2), that is, young adults, participants were aged up to 50 years. There was a predominance of female students (88.1%).

Using the MAP for analyzing the answers, satisfactory results were obtained for the convergent validity of the instrument, with a linear correlation of the items with their respective dimension (> 0.30) only for the subscales Forensic Situations and Forensic Traces. Table 1 on the divergent validity shows that the percentage of adjustments higher than 75.0%, obtained by summing the scores +1 and +2, was only observed for the subscales Forensic Situations and Forensic Traces, showing that these subscales were adequate to this analysis.

Table 1
Divergent validity using the Multitrait-Multimethod technique in the scores of the subscales of the QCPEF-adapted version (n = 253).

Subscales	- 2*	- 1†	1‡	2§	1+ 2
Forensic Nursing Concept	6.0	22.0	48.0	24.0	72.0
Forensic Situations	3.3	5.0	8.7	83.0	91.7
Forensic Traces	0.0	0.0	30.0	70.0	100.0
Communication and Documentation in Forensic Sciences	4.0	32.0	38.0	26.0	64.0
General Nursing Care	14.0	40.0	34.0	12.0	46.0
Forensic Traces Preservation	26.0	34.0	35.0	5.0	40.0
Overall Score	10.8	22.7	31.9	34.6	66.5

Note. Percentages of the correlations between the item and the subscale to which it belongs in relation to the correlation between the item and the subscales to which it does not belong: §: 2 = significantly higher values; ‡: 1 = higher values; †: -1 = lower values; *: -2 = significantly lower values.

With regard to reliability, the analysis of the internal consistency of the items of the QCPE-F-adapted version showed a KR-20 consistency coefficient of 0.734, revealing a satisfactory internal consistency. With regard to the internal consistency of the subscales, the values ranged from 0.719 in Forensic Traces to 0.179 in Traces Preservation, showing an unsatisfactory value, as well as in two other subscales: Forensic Nursing Concept and General Nursing Care (Table 2).

Table 2
Kuder-Richardson Formula 20 (KR-20) internal consistency coefficient for each subscale and total score of the QCPEF-adapted version (n = 36).

Subscales	Minimum	Maximum	Expected score	Mean	Standard deviation	KR-20*
Forensic Nursing Concept	3	10	[0-10]	7	1.6	0.397
Forensic Situations	2	12	[0-12]	10	2.0	0.664
Forensic Traces	4	12	[0-12]	11	1.8	0.719
Communication and Documentation in Forensic Sciences	2	10	[0-10]	8	1.4	0.443
General Nursing Care	4	10	[0-10]	8	1.3	0.308
Forensic Traces Preservation	7	19	[0-20]	13	1.9	0.179
Overall Score	36	71	[0-74]	58	6.1	0.734

Note. KR-20* = Kuder-Richardson Formula 20 consistency coefficient.

Reliability was assessed using the Kappa coefficient. The results showed that 66 of the 74 items of the QCPEF-adapted version showed agreement between the answers of the test and the retest (p-valor < 0.05), demonstrating that the scale remained stable, that is, it actually measures what it is intended to measure (Table 3).

Table 3
Kappa coefficient values of the items in the QCPEF-adapted version (n = 69).

Item	Test		Retest		Kappa Coefficient	p‡
	f (%)*	f (%)†	f (%)*	f (%)†		
Item 1	55 (79.7)	14 (20.3)	59 (85.5)	10 (14.5)	0.198	0.094
Item 2	54 (78.3)	15 (21.7)	52 (75.4)	17 (24.6)	0.187	0.119
Item 3	52 (75.4)	17 (24.6)	44 (63.8)	25 (36.2)	0.326	0.005
Item 4	68 (98.6)	1 (1.4)	64 (92.8)	5 (7.2)	-0.025	0.778
Item 5	30 (43.5)	39 (26.5)	37 (53.6)	32 (46.4)	0.454	0.000
Item 6	61 (88.4)	8 (11.5)	39 (56.5)	30 (43.4)	0.098	0.248
Item 7	36 (52.2)	33 (47.8)	44 (63.7)	25 (36.2)	0.237	0.043
Item 8	66 (95.6)	3 (4.3)	32 (46.3)	7 (10.1)	0.361	0.001
Item 9	38 (55.1)	31 (44.9)	32 (46.3)	37 (53.6)	0.655	0.000
Item 10	57 (82.6)	12 (17.3)	47 (68.1)	22 (31.8)	0.469	0.000
Item 11	63 (91.3)	6 (8.6)	57 (82.6)	12 (17.3)	0.623	0.000
Item 12	53 (76.8)	16 (23.1)	54 (78.2)	15 (21.7)	0.459	0.000
Item 13	52 (75.3)	17 (24.6)	48 (69.5)	21 (30.4)	0.494	0.000
Item 14	56 (81.1)	13 (18.8)	51 (73.9)	18 (26.0)	0.546	0.000
Item 15	50 (72.4)	19 (27.5)	48 (69.5)	21 (30.4)	0.578	0.000
Item 16	64 (92.7)	5 (7.2)	63 (91.3)	6 (8.69)	0.309	0.010
Item 17	62 (89.8)	7 (10.1)	59 (85.5)	10 (14.4)	0.532	0.000
Item 18	58 (84.0)	11 (15.9)	56 (81.1)	13 (18.8)	0.396	0.001
Item 19	52 (75.3)	17 (24.6)	50 (72.4)	19 (27.5)	0.249	0.038
Item 20	59 (85.5)	10 (14.4)	55 (79.7)	14 (20.2)	0.398	0.001
Item 21	56 (81.1)	13 (18.8)	55 (79.7)	14 (20.2)	0.310	0.010
Item 22	49 (71.0)	20 (28.9)	43 (62.3)	26 (37.6)	0.418	0.000
Item 23	66 (95.6)	3 (4.3)	59 (85.5)	10 (14.4)	0.258	0.009
Item 24	56 (81.1)	13 (18.8)	55 (79.7)	14 (20.2)	0.402	0.001
Item 25	68 (98.5)	1 (1.4)	61 (88.4)	8 (11.5)	0.202	0.005
Item 26	54 (78.2)	15 (21.7)	55 (79.7)	14 (20.2)	0.607	0.000
Item 27	57 (82.6)	12 (17.3)	57 (82.0)	12 (17.3)	0.496	0.000
Item 28	61 (88.4)	8 (11.5)	58 (84.0)	11 (15.9)	0.453	0.000
Item 29	65 (94.2)	4 (5.7)	61 (88.4)	8 (11.6)	0.458	0.000
Item 30	67 (97.1)	2 (2.9)	62 (89.8)	7 (10.1)	0.185	0.058
Item 31	62 (89.8)	7 (10.1)	61 (88.4)	8 (11.5)	0.477	0.000
Item 32	62 (89.8)	7 (10.1)	61 (88.4)	8 (11.5)	0.626	0.000
Item 33	55 (79.7)	14 (20.2)	58 (84.0)	11 (15.9)	0.464	0.000
Item 34	54 (78.2)	15 (21.7)	51 (73.9)	18 (26.0)	0.563	0.000
Item 35	51 (73.9)	18 (26.0)	44 (63.7)	25 (36.2)	0.566	0.000
Item 36	33 (47.8)	36 (52.1)	30 (43.4)	39 (56.5)	0.388	0.001
Item 37	68 (98.5)	1 (1.4)	63 (91.3)	6 (8.7)	-0.025	0.756
Item 38	59 (85.5)	10 (14.5)	56 (81.1)	13 (18.8)	0.532	0.000
Item 39	57 (82.6)	12 (17.4)	48 (69.5)	21 (30.4)	0.494	0.000
Item 40	61 (88.4)	8 (11.6)	61 (88.4)	8 (11.6)	0.434	0.000
Item 41	65 (94.2)	4 (5.7)	63 (91.3)	6 (8.7)	0.785	0.000
Item 42	65 (94.2)	4 (5.7)	62 (89.8)	7 (10.1)	0.313	0.007
Item 43	55 (79.7)	14 (20.2)	55 (79.7)	14 (20.2)	0.642	0.000

Continued

Item	Test		Retest		Kappa Coefficient	*p*‡
	f (%)*	f (%)†	f (%)*	f (%)†		
Item 44	56 (81.1)	13 (18.8)	54 (78.2)	15 (21.7)	0.463	0.000
Item 45	52 (75.3)	17 (24.6)	53 (76.8)	16 (23.1)	0.562	0.000
Item 46	35 (50.7)	34 (49.2)	31 (44.9)	38 (55.0)	0.711	0.000
Item 47	69 (100)	0 (0)	64 (92.7)	5 (7.2)	0.000	1.000
Item 48	36 (52.1)	33 (47.8)	32 (46.3)	37 (53.6)	0.595	0.000
Item 49	61 (88.4)	8 (11.5)	48 (69.5)	21 (30.4)	0.378	0.000
Item 50	67 (97.1)	2 (2.9)	60 (86.9)	9 (13.0)	0.332	0.000
Item 51	62 (89.8)	7 (10.1)	54 (78.2)	15 (21.7)	0.367	0.001
Item 52	45 (65.2)	24 (34.7)	41 (59.4)	28 (40.5)	0.570	0.000
Item 53	59 (85.5)	10 (14.4)	53 (76.8)	16 (23.1)	0.532	0.000
Item 54	58 (84.0)	2 (2.8)	60 (86.9)	9 (13.0)	0.577	0.000
Item 55	66 (95.6)	3 (4.3)	64 (92.7)	5 (7.2)	0.471	0.000
Item 56	38 (55.0)	31 (44.9)	32 (46.3)	37 (53.6)	0.712	0.000
Item 57	15 (21.7)	54 (78.2)	22 (31.8)	47 (68.1)	0.526	0.000
Item 58	56 (81.1)	13 (18.8)	59 (85.5)	10 (14.4)	0.532	0.000
Item 59	64 (92.7)	5 (7.2)	61 (88.4)	8 (11.5)	0.747	0.000
Item 60	27 (39.1)	42 (60.8)	28 (40.5)	41 (59.4)	0.607	0.000
Item 61	54 (78.2)	15 (21.7)	60 (86.9)	9 (13.0)	0.502	0.000
Item 62	40 (57.9)	29 (42.0)	34 (49.2)	35 (50.7)	0.711	0.000
Item 63	8 (11.6)	61 (88.4)	59 (85.5)	10 (14.5)	-0.219	0.000
Item 64	53 (76.8)	16 (23.1)	49 (71.0)	20 (28.9)	0.551	0.000
Item 65	61 (88.4)	8 (11.5)	61 (88.4)	8 (11.5)	0.576	0.000
Item 66	68 (98.5)	1 (1.4)	64 (92.7)	5 (7.2)	-0.025	0.778
Item 67	68 (98.5)	1 (1.4)	64 (92.7)	5 (7.2)	0.317	0.000
Item 68	46 (66.6)	23 (33.3)	44 (63.7)	25 (36.2)	0.681	0.000
Item 69	26 (37.6)	43 (62.3)	27 (39.1)	42 (60.8)	0.724	0.000
Item 70	50 (72.4)	19 (27.5)	43 (62.3)	26 (37.6)	0.641	0.000
Item 71	44 (63.7)	25 (36.2)	44 (63.7)	25 (36.2)	0.624	0.000
Item 72	50 (72.4)	19 (27.5)	46 (66.6)	23 (33.3)	0.659	0.000
Item 73	35 (50.7)	34 (49.2)	40 (57.9)	29 (42.0)	0.622	0.000
Item 74	63 (91.3)	6 (8.7)	63 (91.3)	6 (8.7)	0.410	0.000

Note. * = Simple and percentage frequencies of correct answers; † = Simple and percentage frequencies of incorrect answers; ‡ = *p*-value.

The analysis of the strength of agreement (Kappa coefficient) showed that five items had values less than or equal to zero and four other items had values between 0 and 0.2. Sixteen of the other items showed fair agreement (0.21 to 0.40); 32 items showed moderate agreement (0.41 to 0.60); and 17 items showed substantial agreement (0.61 to 0.80; Landis & Koch, 1977).

The analysis of the agreement between the answers in the test and the retest using the ICC showed an overall value of 0.767, which is considered good or substantial. Data indicate a moderate agreement in the subscales of Forensic Nursing Concept and Forensic Nursing Care, although the ICC was considered good or substantial in the subscales Forensic Situations, Forensic Traces, Communication and Documentation in Forensic Sciences, and Forensic Traces Preservation (Table 4).

Table 4
Intraclass Correlation Coefficient values of students' scores in the test and the retest (n = 69).

Subscales	ICC*	CI†	95%	*p*‡
Forensic Nursing Concept	0.559	0.296	0.725	0.000
Forensic Situations	0.630	0.407	0.770	0.000
Forensic Traces	0.733	0.570	0.835	0.000
Communication and Documentation in Forensic Sciences	0.786	0.637	0.871	0.000
General Nursing Care	0.577	0.299	0.743	0.000
Forensic Traces Preservation	0.760	0.606	0.853	0.000
Overall Score	0.767	0.587	0.863	0.000

Note. ICC*: Intraclass Correlation Coefficient; CI†: Confidence Interval; *p*‡: *p*-value.

The psychometric analysis showed stability and satisfactory internal consistency; however, it only showed convergent and divergent validity for two of the dimensions of the scale.

Discussion

The steps for the cross-cultural validation of instruments suggested by the literature (Souza et al., 2017) and applied to the QCPEF preserved the semantic and linguistic equivalence for the Brazilian context, culminating in a version approved by the original authors and set to be further adapted.

Data from the general and specific semantic validation using the DISABKIDS® method, already described in the literature (Disabkids Group, 2004; Fuzissaki et al., 2016), also confirmed the relevance and contribution of the method to the process of adaptation of the instrument under analysis. With regard to the overall impression, the questionnaire was considered good, easy to understand, raising no difficulties in its use, and relevant by most of the participants, as previously described. In the specific semantic evaluation, in which each group of students analyzed a set of items, the relevance of the subscale items and the ease in answering them were highlighted.

However, some difficulties were identified in understanding the items which may be associated with the existence of sentences with a negative meaning. In addition to being a common practice to avoid trends, the questionnaires with negative and positive items are attempts to reduce the number of automatic responses by the participants. The difficulty of individuals in processing items which are reversed may be related to lack of attention, different educational backgrounds, or behavioral factors (Gouveia, Lima, Gouveia, Freire, & Barbosa, 2012).

The items which were considered complex by some of the students, particularly those in the subscales Forensic Traces, Communication and Documentation in Forensic Sciences, and General Nursing Care, address aspects related to traces, signs, evidence, storage, dealing with cases of violence, notification of violence, and preservation of evidence. It is worth remembering that the findings on the difficulties experienced by the participants in validation studies are cited in the literature (Fuzissaki et al., 2016).

There was a predominance of female students in the phase of analysis of the psychometric properties of the version adapted to the Brazilian context; there is a trend for a female predominance in the profession, which was also found in the original study (Libório, 2012) carried out in Portugal.

In the analysis of the convergent and divergent validity of the questionnaire, the data obtained in this population using MAP indicate agreement with the theoretical proposal of the instrument only in the subscales Forensic Situations and Forensic Traces. These results may be associated with the theoretical complexity of the topic and the insertion of the items inherent to each domain which have not yet been assessed through exploratory factor analysis.

The literature recommends the analysis of the factor structure, for example through the exploratory analysis (in studies aimed to design the instruments) and the confirmatory analysis

(in validation studies). In this study, the analysis of the prerequisites for an exploratory factor analysis revealed a KMO value of 0.52, thus the minimum value required for such analysis was not reached (0.80; Hair, Black, Babin, Anderson, & Tatham, 2009).

However, in view of the results on the divergent and convergent validity, further studies should assess the behavior of the items, their scores and their relationship with the theoretical aspects for further changes to be made to the instrument. These data are in line with the Portuguese authors (Cunha et al., 2016) who consider it important to keep every item until other studies, with different or larger samples, are performed; however, for now, the results obtained by the MAP technique (Table 1) did not support the proposed domains.

In our study, the internal consistency of the scale was assessed using the KR-20, whose overall value of 0.732 revealed a satisfactory internal consistency (Streiner et al., 2015). With regard to the internal consistency of the subscales, the values ranged from 0.720 for Forensic Traces to 0.174 for Traces Preservation. Therefore, even though the overall score was satisfactory, the values were below this measure in four subscales. In the original study, the authors examined reliability using Cronbach's alpha and obtained a coefficient of 0.807, which is considered good, and reasonable results for three subscales (Forensic Situations, Forensic Traces, and Communication and Documentation in Forensic Sciences), ranging from 0.600 to 0.816. Despite this, the values ranged from 0.533 to 0.573 in the other subscales.

Unsatisfactory internal consistency results may occur due to the negativity of inter-item correlations and the content used to design the instrument (Tashima & Júnior, 2013). Unsatisfactory internal consistency can also indicate that the items of a questionnaire do not measure the construct that it is intended to measure. Streiner et al. (2015) argue that it may be important to remove some items or relocate others in the subscales.

The reliability results using the Kappa coefficient showed that 66 of the 74 items of the scale had a significant strength of agreement between the answers in the test and those in the retest (p-value < 0.05), demonstrating that the questionnaire remained stable; however, eight items showed no significant agreement. When considering the strength of agreement (Kappa coefficient), nine items showed minimal values and require further analysis while the other items showed a fair to substantial strength of agreement (Landis & Koch, 1977).

The results obtained in the test and retest showed that students have knowledge about many of the items assessed in the questionnaire, even though there is no specific course about Forensic Nursing in the elective curriculum of the institution where the study was conducted. Cunha et al. (2016) concluded that the Portuguese students answered correctly, on average, to 78.7% of the questionnaire items. They found that 40.0% of them had a good level of knowledge, 23.0% had a sufficient level of knowledge, and 36.0% had an insufficient level of knowledge. The results of studies with Portuguese nurses (Pereira, 2017) and Brazilian students (Soares, 2016) reinforce the same findings.

Some items answered by the participants at the first contact (test) and the second contact (retest) with the questionnaire had differences of agreement. In question 63 about Forensic Traces, this topic may have aroused curiosity among the participants who sought to complement their knowledge. The possibility of changing the condition of the phenomenon (in this case, knowledge) in both assessment moments (test and retest) must be considered in this type of data collection.

Another study (Reis et al., 2014) also highlighted a significant difference in data between the test and the retest, although it is desirable that the answers do not vary between those moments if the construct does not vary in that period.

In addition to verifying the strength of agreement of the answers given to each of the items in the test and the retest, another way to check for agreement in these two moments (stability) is through the scores of the subscales using the ICC. Data from this study point to a moderate agreement in two subscales and a substantial agreement in the other four subscales. The total ICC was 0.767, which is considered satisfactory (Souza et al., 2017).

In view of the question proposed in this study, the version of the QCPEF adapted to Brazil proved to be a reliable instrument, but further

studies are needed to confirm its validity. The results obtained in this study may be due to the complexity of the issue, the number of questionnaire items, the characteristics of the population under analysis, the variation of the participants' characteristics, such as age, and sample size.

Conclusion

In this research study, the process of adaptation of the QCPEF to Brazil showed satisfactory results in both the linguistic and the (general and specific) semantic adaptation of the items. Regarding the psychometric properties, the convergent and divergent validity of two of the subscales of the adapted version were satisfactory, as well as the overall reliability of the questionnaire. The results also indicate that further research is needed with larger samples and confirmation through exploratory factor analysis, as well as with fewer items, if appropriate, which may lead to a reorganization of the subscales.

Therefore, a confirmatory factor analysis should be performed to test hypotheses related to the theoretical proposal of six domains and respective item allocation in the studied population. After these steps, the validity of the questionnaire can be confirmed.

There is a need for further studies because of the lack of similar instruments for assessing knowledge about Forensic Nursing and to confirm that the instrument is valid for use in this area.

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