ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

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Psychometric Properties of Turkish Version of Intensive and Critical Care Nursing Competence Scale

Yoğun ve Kritik Bakım Hemşireliği Yeterlilik Ölçeği'nin Türkçe Versiyonunun Psikometrik Özellikleri

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**This study was presented as an orally in the 2nd International & 8th National Congress of Critical Care Nursing, 10-13 October 2018, Muğla, Turkey.*

ABSTRACT Objective: Competence assessment is needed to provide quality nursing care. In our country, no valid and reliable measurement tool evaluates the competence of intensive critical care nurses. The purpose of the study was to evaluate the validity and reliability of the Turkish version of the Intensive and Critical Care Nursing Competence Scale (ICCN-CS-1^{TR}). **Material and Methods:** This study was conducted as methodological and cross-sectional. A total of 432 intensive and critical care nurses working in İzmir province were included in this study. The data of the study were collected using the Nurse Information Form and the ICCN-CS-1^{TR}. The descriptive data and the exploratory factor analysis were assessed on a computer using the SPSS 16.0 statistics software, and the confirmatory factor analysis was performed using the LISREL 8 for Windows. **Results:** According to the exploratory factor analysis, the factor loads of the scale ranged from 0.31 and 0.75. The Cronbach's alpha value of the scale was 0.98. Item-to-total correlation coefficients were between 0.43 and 0.70. The fit indexes of the confirmatory factor analysis showed that the scale was at an acceptable level. **Conclusion:** ICCN-CS-1^{TR} is a valid and reliable scale to evaluate the competence of intensive care and critical care nurses in Turkey.

Keywords: Clinical competence; professional competence; critical care nursing; intensive care units

ÖZET Amaç: Yeterlilik değerlendirmesi, kaliteli hemşirelik bakımını sağlamak için gereklidir. Ülkemizde yoğun ve kritik bakım hemşirelerinin yeterliliğini değerlendirmek için geçerli ve güvenilir ölçüm aracı bulunmamaktadır. Bu çalışmanın amacı, Yoğun ve Kritik Bakım Hemşireliği Yeterlilik Ölçeği'nin Türkçe versiyonunun (YKBH-YÖ-1)^{TR} geçerlik ve güvenilirlik çalışmasını yapmaktır. **Gereç ve Yöntemler:** Bu çalışma, metodolojik ve kesitsel türde yapıldı. İzmir ilinde yoğun bakım ve kritik bakımda görev yapan toplam 432 hemşire bu çalışmaya dâhil edildi. Çalışmanın verileri Hemşire Tanıtım Formu ve YKBH-YÖ-1^{TR} ile toplandı. Tanımlayıcı veriler ve açıklayıcı faktör analizi bilgisayarda SPSS 16. versiyon kullanılarak değerlendirildi ve doğrulayıcı faktör analizi Windows için LISREL kullanılarak yapıldı. **Bulgular:** Açıklayıcı faktör analizine göre ölçeğin faktör yükü 0,31 ve 0,75 arasında değişmekteydi. Ölçeğin Cronbach alfa değeri 0,98 idi. Madde-toplam korelasyon katsayıları 0,43-0,70 arasındaydı. Doğrulayıcı faktör analizi uyum indeksleri ölçeğin kabul edilebilir düzeyde olduğunu gösterdi. **Sonuç:** YKBH-YÖ-1^{TR}, Türkiye'deki yoğun bakım ve kritik bakım hemşirelerinin yeterliliğini değerlendirmek için geçerli ve güvenilir bir ölçektir.

Anahtar Kelimeler: Klinik yeterlilik; mesleki yeterlilik; yoğun bakım hemşireliği; yoğun bakım üniteleri

Today, health care is the complexity. Nurses provide better quality and safe care to their patients.[1] Nursing competence is essential for the quality of nursing interventions and results, and it is also important because it affects many aspects of nursing, including education, practice, and management.[1-3] Competence has different definitions in the literature. However, competence and competency are used interchangeably.[4] Lack of consensus in the definition of competence in nursing creates a problem.[5] Competency is defined as the component of knowledge, skills, and/or judgment that the nurse shows for safe, ethical, and effective nursing practices.[4] Competence is an individual's effective use of their knowledge,

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skills, and judgment as a combination.[6] Nursing competence means knowledge, skills/actions, professional standards, or professional role models, self-assessment.[7] Nursing competence reflects the knowledge, attitude, and judgment required for effective performance in the nursing profession using holistic perspectives and behaviours.[8] According to Benner, competence is in the middle period of the process from inexperience to expertise, and competence begins when the nurse begins to see her attempts as a long-term goal or goal. The nurse is aware of the plans and determines the features and aspects of the current and expected future situation. The competent nurse creates a perspective plan, and this plan is based on a considerable awareness, abstract, and analytical consideration of the problem.[9]

Intensive care is units where are high technologies are used support of failing organ systems, particularly the lungs, cardiovascular system, and kidneys.[10] Intensive care unit nurses are involved in reducing health care-related infections, mortality, reducing post-operative complications, and unplanned extubation.[11] A combination of knowledge, skill, practice, values and attitudes should be used in nursing practices. For this reason, it is stated that competence should be holistic.[12] Nurse's competence is significantly associated with patient safety issues in intensive care units (ICUs).[13] The competence of intensive care and critical care nurses is related to knowledge, skills, behaviours, attitudes and values, and experiences related to intensive and critical care nursing.[14,15] Evaluation of competence of nurses is also of extreme importance in terms of providing the best possible patient care.[3] The competence level of nurses was found at a "good level" in studies.[3,15] There are very few tools available for assessing competence of intensive/critical care nurses.[15-18] First tool is The Basic Knowledge Assessment Tool developed by Boyle, Kenney and Butcher`; The second tool is Critical Care Nursing Competence Questionnaire for Patient Safety by Okumura, Ishigaki, Mori and Fujiwara. The third tool is the instrument to determine competencies for ICU nurses developed by Hadjibalassi et al. and the fourth tool is Intensive and Critical Care Nursing Competence Scale (ICCN-CS-1) developed by Lakanma et al. Of these tools, only ICCN-CS-1 is based on holistic competence definition.[15] Holistic competence knowledge, skill, attitude and values, experience combined.[15] However, there is no validity and reliability study of this scale in Turkish. The purpose of this study was to test the psychometric properties of the Turkish version of the ICCN-CS-1^{TR}. Psychometric studies of the scale were shown in Figure 1.

MATERIAL AND METHODS

DESIGN AND SAMPLE

This methodological study was carried out in 38 ICUs and critical care units (CCUs) of five hospitals located in İzmir province. The sample of the study consisted of 432 intensive/intensive care nurses working in five hospitals in İzmir for at least six months, 4 times the number of items in the scale.[19] It is stated in the literature that the sample size should be at least 300 in order to perform factor analysis.[20] The data were collected between January and May 2015.

DATA COLLECTION

The data were collected via the nursing information form, which comprised the socio-demographic and clinical characteristics of the nurses and the ICCN-CS-1.[15] The aim of this study explained to nurses and handed the data forms then they were taken back after an average of one hour. The scale was implemented within three-week intervals for test-retest assessment. Nurses completed the data collection forms, on average 15-20 minutes.

DATA COLLECTION TOOLS

The Nursing Information: This form was created by the researchers according to the literature. It consists of demographic and professional characteristics such as age, sex, marital status, education level, nursing experience, intensive care experience, trained by their institution on intensive care, and having Ministry of Health intensive care nursing certificate.[15,18]

The Intensive and Critical Care Nursing Competence Scale: This scale was developed by Lakanmaa et al. in Finland. The scale development process was carried out with graduating nursing students

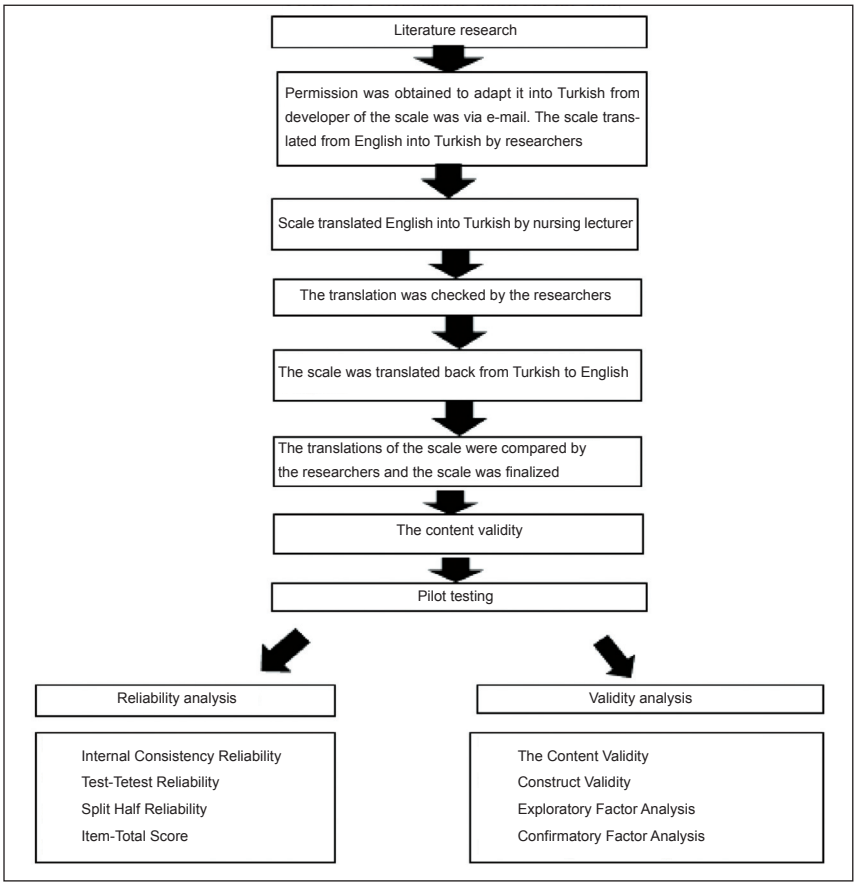

FIGURE 1: Psychometric studies of the scale.

and ICUs nurses. This scale is used to measure the basic competence of ICU and CCU nurses. This scale is divided into 2 categories as clinical competence and professional competence. The scale has four subscales including knowledge, skills, attitude and values, and experience. The scale consists of 144 items. As graduating nurse students do not have the experience, the experience subscale has been removed from the scale. For this reason, the scale consisted of 108 items. Each subscale consisted of 36 items. The scale is of 5-item Likert type. Every item is valued between 1 and 5 points. The points range from very poorly to very well. The possible range of scores of the scale is 108 to 540 points, and it has no cut-off score. The scale scores are classified as 108-216 points=poor competence, 217-324 points=moderate competence, 325-432=good competence points and 433-540 points= excellent competence. Also, the mean score can be used in scale scoring. Accordingly, 1-2.49 is classified as poor, 2.5-3.49 is classified as moderate, 3.5-4.49 is classified as good, and 4.5-5 is classified as excellent competence. Criterion-related validity r=0.042, p=0.707; Spearman's correlation. Bentler-Bonett comparative fit index is 0.52. The Cronbach alpha coefficient varies ranging from 0.83 and 0.97 for nurses.[15,21]

DATA ANALYSIS

The descriptive data and the exploratory factor analysis were assessed with the SPSS for Windows 16.0 statistics software, and LISREL was used for the confirmatory factor analysis. The descriptive data of the study for socio-demographic and clinical characteristics are given in numbers, percentages, and means.

VALIDITY OF INTENSIVE AND CRITICAL CARE NURSING COMPETENCE SCALE-TURKISH VERSION

An expert's opinion was obtained for the content analysis of the validity of the scale. The expert opinions were evaluated using content validity indexes

(CVIs).[22] The appropriateness of data for the factor analysis was examined with the Kaiser-Meyer-Olkin (KMO) coefficient.[20,23] Explanatory factor analysis and confirmatory factor analysis (CFA) were carried out for construct validity.[20]

RELIABILITY OF INTENSIVE AND CRITICAL CARE NURSING COMPETENCE SCALE-TURKISH VERSION

Internal consistency was assessed by Cronbach's α coefficient.[24,25] The relationship between the item-total score was tested by Pearson's correlation analysis.[26] Test-retest measurement and split-half method were tested the Pearson correlation coefficients.[26,27]

ETHICAL CONSIDERATIONS

Before the onset of the study, permission was obtained to adapt it into Turkish from the developer of the scale via e-mail. Written permissions were obtained from the Ethics Committee of Ege University Nursing Faculty (25.06.2014, No: 2014-79), Public Hospitals Union General Secretariat and the hospital management board. The objective of the study was explained to the nurses and verbal and written consent obtained from nurses who agreed to participate.

RESULTS

DEMOGRAPHIC DATA

The demographic and professional characteristics of nurses are shown in Table 1. The mean age of the nurses was 29.83±6.35 years; 86.1% (n=372) of them were female, 58.8% (n=254) were single, and 67.6% (n=292) had a Bachelor's degree. Although the mean working time in nursing was 7.80±6.77 years, the mean working time in ICUs and CCUs was 2.74±2.78 years. The majority [39.4% (n=170)] of the nurses reported that they had been trained by their institution on intensive care. Of the nurses, 17.1% (n=74) stated that they had attended the intensive care nursing certificate program offered by the Ministry of Health.

THE VALIDITY OF INTENSIVE AND CRITICAL CARE NURSING COMPETENCE SCALE-TURKISH VERSION

Validity studies of ICCN- CS1^{TR} were shown in Figure 2.

Linguistic Validity: Initially, the scale translated from English into Turkish by researchers. After that, two nursing lecturers who were interested in intensive care nursing was translated the scale into Turkish. Later, it was back-translated by two academically qualified linguists experts who have extensive knowledge of both languages and cultures and do not know the English version of the scale. The original scale and the back-translated version were compared, and it was decided that the two versions were similar.

Content Validity: Ten experts evaluated each item (two education nurses in the university hospital, three MSc nurses in the intensive care unit, four nurse faculty members who have mastered the scale validity and reliability study, one general surgeon who has experience in intensive care). The experts scored the appropriateness of each item of the ICCN-CS1^{TR}. The expert opinions were evaluated using CVIs. Item-level (I-CVI) and scale-level (S-CVI) were measured to evaluate (CVIs).[22] The item I-CVI was found to be between 0.99 and 1.00, and the scale S-CVI was found as 0.99.

TABLE 1: Demographic and professional characteristics of nurses (n=432).

Characteristic	Value
Age, years, mean (SD)	29.83±6.35
Working time in nursing, years, mean (SD)	7.80±6.77
Working time in ICUs and CCUs, years, mean (SD)	2.74±2.78
Gender, n (%)	
Female	372 (86.1)
Male	60 (13.9)
Marital status, n (%)	
Married	178 (41.2)
Single	254 (58.8)
Education status, n (%)	
Health vocational high school	61 (14.1)
Associate degree	53 (12.3)
Bachelor's degree	292 (67.6)
Postgraduate	26 (6.0)
Trained by their institution on intensive care	
Yes	170 (39.4)
No	262 (60.6)
Having ministry of health intensive care nursing certificate	
Yes	74 (17.1)
No	358 (82.9)

SD: Standard deviation; ICUs: Intensive care units; CCUs: Critical care units.

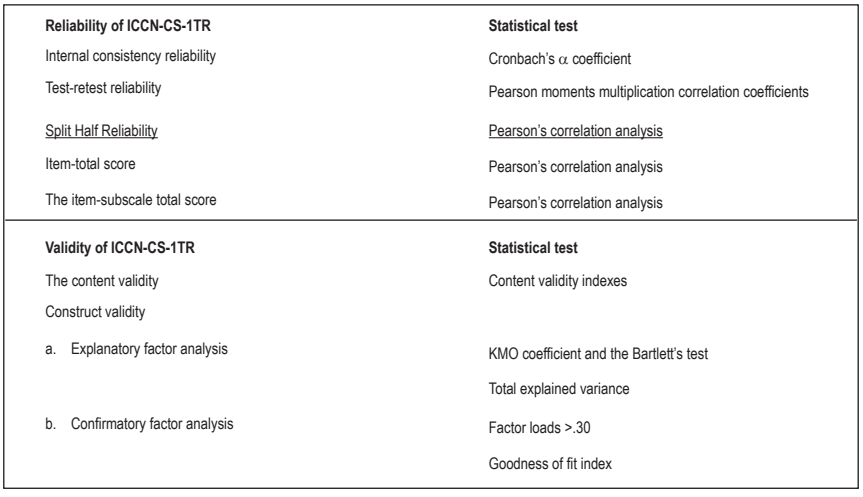

FIGURE 2: Reliability and validity of intensive and critical care nursing competence scale Turkish version.
ICCN-CS-1TR: Intensive and critical care nursing competence scale Turkish version; KMO: Kaiser-Meyer-Olkin.

Pilot Study: Once content validity was established, the final version of the scale was implemented on 30 ICU nurses who fulfilled the same sample characteristics. The nurses suggested that the word "equally" be changed to "just," and the word was changed according to this suggestion. The data of the 30 ICU nurses who took part in the pilot study were excluded from the research.

CONSTRUCT VALIDITY

EXPLANATORY FACTOR ANALYSIS

The appropriateness of data for the factor analysis was examined with the Kaiser-Meyer-Olkin (KMO) coefficient, the suitability of the correlation matrix to factor analysis was tested using Bartlett's (BS) test. In this study, the KMO was 0.953, and BS was (chi-square (χ^2)=44265.413, p<0.001). The rate of total explained variance was 49.6%. The ICCN-CS1^{TR} item factor loads values between 0.31 and 0.75. According to factor loads of the items, first subscale factor loads between 0.32 and 0.73, second subscale factor loads between 0.31 and 0.75, and the third subscale factor loads between 0.42 and 0.74.

CONFIRMATORY FACTOR ANALYSIS

CFA of ICCN-CS1^{TR} was tested with the goodness of fit indexes. The goodness of fit indexes results was shown in Table 2.

According to factor loads of the items, in the first subscale factor loads between 0.56 and 0.79, second subscale factor loads between 0.45 and 0.78, and third subscale factor loads between 0.41 and 0.76.

RELIABILITY OF INTENSIVE AND CRITICAL CARE NURSING COMPETENCE SCALE-TURKISH VERSION

Reliability studies of ICCN-CS1^{TR} were shown in Figure 2. The reliability of the scale was performed with invariance over time internal consistency analysis and item-to-total correlations. Test-retest was used to determine the stability over time.[27] As a result of the test-retest of the scale applied to 88 nurses, statistically significant difference between the score

TABLE 2: Results of confirmatory factor analysis.

Fit indices	χ^2	df	p value	χ^2/df	RMSEA	GFI	CFI	IFI	NFI	NNFI	RFI
ICCN-CS-1^{TR}	16280.74	5512	<0.01	2.95	0.067	0.59	0.97	0.97	0.96	0.97	0.96

χ^2: Chi-square: χ^2/df: Chi-square/degrees of freedom; ICCN-CS-1^{TR}: Intensive and critical care nursing competence scale Turkish version;
RMSEA: Root mean square error of approximation; GFI: Goodness-of-fit index; CFI: Comperative fit index; IFI: Incremental fit index; NFI: Normed fit index;
NNFI: Non-normed Fit index; RFI: Relative fit index.

averages was obtained from two measurements performed with a three-week interval on the scale (p=0.026), knowledge (p=0.017), attitude and value base (p=0.003). No statistically significant difference was found only between the test-retest score averages of the skill base (p=0.544). The time between the two applications should be long enough to remember the responses of the participants, but this time should not be as long as the information changes.[27] The result of test-retest scores of the scale are shown in Table 3. A statistically positive strong relation was detected between the test-retest scores of the scale and its three bases.

The internal consistency was assessed by Cronbach's alpha coefficient. The Cronbach's alpha coefficient of the entire ICCN-CS1^{TR} was 0.98. As for the bases of the ICCN-CS-1^{TR}, the Cronbach's alpha reliability coefficient was 0.97 for knowledge, 0.97 for skill, and 0.98 for attitude and value (Table 4). Spearman-Brown split-half test correlation of ICCN-CS-1^{TR} was 0.891 for knowledge, 0.873 for skill, 0.880 for attitude and value, 0.806 for the total of the scale (Table 4). Guttman split-half test correlation was 0.891 for knowledge, 0.873 for skill, 0.889 for attitude and value, 0.793 for the total of the scale (Table 4). It was detected that the correlation between the scale items with the total score of the scale varied between 0.43 and 0.79. The item-subscale score correlations were 0.55-0.76 for knowledge subscale, 0.58-0.75 for skill subscale, and 0.57-0.77 for attitude and value subscale (Table 5).

DISCUSSION

The study found that the ICCN-CS1^{TR} was a valid and reliable measurement tool in the Turkish language.

LINGUISTIC VALIDITY

Linguistic validity should be performed by translators who are fluent in both languages, who know the structure and use of measurement tools and can interpret the methodologic section of the report.[28] Translation-back translation of the scale was made for language validity. The language validity of the scale was provided.

CONTENT VALIDITY

Content validity is degree to which the content of a scale adequately represents the construct being measured and content validity is required to enhance the construct validity of a scale.[24] Obtaining expert opinion is one of the methods used to provide content validity. The number of experts required varies in the literature.[29] In this study, the opinions of 10 experts were obtained. In nursing studies, the most common assessment of content validity is the scope validity index or the CVI. It is expected that content analysis should be above 0.78.[22] The consistency between the opinions of the experts was 0.99-1.00 for each item and was 0.99 for the entire scale, which reveals that the experts reached a consensus on the validity of the ICCN-CS-1^{TR}.[22] For the validity of the original scale, content, and perspective, validity was used and provided. After the establishment of content validity, this scale was implemented on 30 ICU nurses who fulfilled the sample requirements for a pilot study.

CONSTRUCT VALIDITY

Construct validity is the degree to support that the score from the scale is represented correctly.[22] Factor analysis is the best method for explaining the scale structure.[20]

The adequacy of the sample for factor analysis is evaluated with the KMO measure.[20,23] For factor anal-

TABLE 3: Comparisons of test-retest reliability coefficient and mean scores for the Intensive and critical care nursing competence scale-Turkish version (n=88).

	Time 1 Mean±SD	Time 2 Mean±SD	t value**	p value	r value***	p value
(ICCN-CS-1^{TR})-Turkish version-total	447.02±42.88*	448.82±41.36	2.273	0.026	0.985	<0.001
Knowledge subscale	141.47±20.67*	142.51±20.37	2.425	0.017	0.981	<0.001
Skill base subscale	143.02±18.22*	143.29±17.26	0.609	0.544	0.973	<0.001
Attitudes and values base subscale	162.52±12.09*	163.01±11.83	3.064	0.003	0.993	<0.001

ICCN-CS-1^{TR}: Intensive and critical care nursing competence scale Turkish version; SD: Standard deviation;
*Values are expressed as mean±SD; **t-test for dependent groups; ***Pearson moment product correlation coefficient.

TABLE 4: Reliability analysis of intensive and critical care nursing competence scale and subscale scores (n=432).

Scale	Cronbach α	Spearman-Brown of Split-half reliability	Guttman of split-half reliability	Mean±SD	Minimum-Maximum
Knowledge subscale	0.970	0.891	0.891	142.71±20.88	46-180
Skill base subscale	0.967	0.873	0.873	144.74±19.48	54-180
Attitudes and values subscale	0.967	0.890	0.889	163.10±13.55	47-180
(ICCN-CS-1^{TR})-Turkish version-total	-0.982	0.806	0.793	448.31±49.22	184-540

SD: Standard deviation; ICCN-CS-1TR: Intensive and critical care nursing competence scale Turkish version

ysis to be performed, this value must be over 0.60.[30] In this study, the KMO was high and adequate of sample for factor analysis. The BS is performed in order to examine the difference between the correlation matrix and the unit matrix. Being lower than $p<0.05$ shows that the correlation matrix is suitable for factor analysis.[23] In this study, the BS result was $\chi^2=44265.413$ and $p<0.001$, meaning that the data were appropriate for factor analysis.

The explained variance rates being high indicate the factor construct of the scale. In social sciences, the explained variance is expected to be 30%-40.[25] The fact that the total variance of three factors described 49.6% of the total variance showed that its factor construct strength was good. The factor load is suggested to be between 0.20-0.40.[30] The factor load cut-off point was 0.30 in this study. At the end of this study, similar to the item factor loads of the original scale, the factor loads of the ICCN-CS1^{TR} scale were between 0.31 and 0.75, which was an indicator of an acceptable factor loading.[15] In the Persian version, factor loads values were 0.30-0.72.[31] None of the items were excluded from the scale because the factor loads for all items were over 0.30.

Being a frequently-used method in factor analysis scale adaptations, CFA was used in this study because it tests the hypothesis about the structure of the items in the scale.[32] ICCN-CS1^{TR} goodness of fit results are shown in Table 2. The χ^2/SD value and the Root Mean Square Error of Approximation (RMSA) score in the study showed that the model had an acceptable fit.[25] According to the literature (Normed Fit Index (NFI), Incremental Fit Index (IFI), Non-normed Fit Index (NNFI) values should be 0.95, GFI values should be 0.90 and CFI values should be 0.97 good fit.[25,33] In this study, NFI, IFI, NNFI, and Comperative Fit Index (CFI) scores showed that there was a good fit, but Goodness-of-fit Index (GFI) was 0.59, which means there was no fit.[25,33] The results of, Relative Fit Index score also indicate the model's perfect fit.[33] According to the CFA results of the ICCN-CS1^{TR}, and the results of the fit indexes other than the GFI value, the scale had an acceptable fit for our country.[25] There is only the Persian adaptation of the scale. CFA results of Persian version of this scale were χ^2/SD 4.36, GFI=0.64, CFI=0.95, IFI=0.95, NFI=0.95, NNFI=0.94, and RMSEA=0.10. The results of this study were similar to the Persian version.[31] In the original scale, the comparative fit index score of the scale was 0.52. Lakanmaa et al. detected the ICCN-CS-1 as seven models. Unlike their study, it was decided in our study that the scale had three models according to factor analysis.[15]

TABLE 5: Item-total and item-subtotal score correlation of intensive and critical care nursing competence scale (n=432).

Subscale	Items	Item-subscale score correlations (r value)*
Knowledge subscale	1-36	0.55-0.76
Skill subscale	37-72	0.58-0.75
Attitudes and values subscale	73-108	0.57-0.77

*Significant at p<0.001 level.

RELIABILITY

A scale's consistency measurement shows its reliability.[27] Internal consistency analysis, stability over time, and item analysis was used in reliability analysis for ICCN-CS-1^{TR}.

Test-retest reliability is used in psychometric properties studies.[24,27] In this method, a scale is implemented twice to the same group.[27] It is recommended that the time interval for the application is 2-4 weeks.[34] The time

between the two applications should be long enough to remember the responses of the participants, but this time should not be as long as the information changes.[27] The ICCN-CS-1^{TR} was implemented with three-week intervals. A statistically significant difference between the scores from two implementations, scale (p=0.026), knowledge (p=0.017), attitude and value subscales was found (p=0.003). No statistically significant difference was found only in the skill base (p=0.544), which shows that this method should be used when the assessed quality is unchangeable. Except for the skill base of the scale, it was found that the knowledge, attitude and value base change over time. This result can be explained by the fact that qualities such as attitude, mood and information processing mechanisms can change continuously for any reason in the period between two evaluations.[35] Although there was a statistically significant difference between the two applications, it was found that there was a little difference between the two applications. When the correlations were examined, it was seen that the scores were significantly similar to each other. Even though there was a statistically difference, it can be said that the scale is reliable.

In split half reliability, the test is divided into two parts and the reliability between the total scores of the two halves is evaluated by the Spearman-Brown and Guttman formulas. The correlation between the total scores of the two halves is checked and the correlation value close to 1 indicates that the scale is reliable.[26] Spearman-Brown correlation of ICCN-CS-1^{TR} was between 0.806 and 0.891 and Guttman split-half correlation was between 0.793 and 0.891. The fact that the Spearman-Brown correlation of ICCN-CS-1^{TR} was between 0.806 and 0.891 and Guttman split-half correlation was between 0.793 and 0.891 shows that the scale was reliable.

The Cronbach's α coefficient is often used to demonstrate internal consistency reliability and being between 0.80-1.00 indicates that the reliability of the scale is high.[24,25] In this study, Cronbach's α coefficient for overall scale was 0.98, and its subscales were between 0.97-0.98. These reveal that the scale was highly reliable. In the original scale, the Cronbach's α coefficient of the ICCN-CS-1 was 0.98, and it was 0.95-0.96 in the Persian version, the scale had a total Cronbach's α coefficient of 0.98, Cronbach's α coefficient for subscale between 0.93-096. The final version result was similar to the original scale and the Persian version.[15,31]

The item-total correlation is used to determine the correlation between the scale item and the assessed structure, and the item-total correlation was expected to be 0.25 or higher.[25] In this study, the correlations of the scale items with the subscale total score were 0.43-0.70, which reveals that the distinctive quality of the scale items was high, and the items could be included in the ICCN-CS-1^{TR}. In the original scale, the item-total correlations of the ICCN-CS-1 were 0.22-0.70.[15]

CONCLUSION

This study result showed that the psychometric properties of the ICCN-CS-1^{TR} were suitable for the competence level in Turkish ICUs and CCN nurses. This scale can be used for intensive care and critical care nurses in the assessment of their competence in the evaluation of in-service training' results and clinical research.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Fatma Demir Korkmaz, İlknur Çalışkan;* ***Design:*** *Fatma Demir Korkmaz, İlknur Çalışkan;* ***Control/Supervision:*** *Fatma Demir Korkmaz;* ***Data Collection and/or Processing:*** *İlknur Çalışkan;* ***Analysis and/or Interpretation:*** *Fatma Demir Korkmaz, İlknur Çalışkan;* ***Literature Review:*** *Fatma Demir Korkmaz, İlknur Çalışkan;****Writing the Article:*** *Fatma Demir Korkmaz, İlknur Çalışkan;****Critical Review:****Fatma Demir Korkmaz;* ***References and Fundings:*** *İlknur Çalışkan.*

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