

Nursing Principles Practice Basic Competencies Scale – Turkish Adaptation Study

Nurcan Uysal¹, Emine Türkmen², Nuray Şahin Orak³, Hatice Demirdağ¹

¹ Üsküdar University, Faculty of Health Sciences, Nursing Department, İstanbul, Türkiye.

² İstinye University, Faculty of Health Sciences, Nursing Department, İstanbul, Türkiye.

³ İstanbul Arel University, Faculty of Health Sciences, Department of Nursing, İstanbul, Türkiye.

Correspondence Author: Nurcan Uysal

E-mail: nurcan.uysal@uskudar.edu.tr

Received: 30.12.2023

Accepted: 20.08.2024

ABSTRACT

Objective: The main objectives of clinical education in nursing education are to develop the student's competences in cognitive, affective and psychomotor areas. Reliable measurement tools are needed for the evaluation of these competences that begin to be gained with the first clinical practice. This methodological study investigated the cultural and Turkish validity of the Core Competence in Basic Nursing Practice Scale (CCFNPS) for undergraduate nursing students.

Methods: A methodological research has been carried out on the cultural validation and adaptation of the scale. The construct's validity was examined using both exploratory and confirmatory factor analysis in a sample of 466 students. The scale's internal consistency reliability was evaluated using Cronbach's alpha. Test-retest reliability was assessed using a dependent sample t-test and intraclass correlation with a sample of 30 students.

Results: The scale's content validity index was 0.98. The results of exploratory factor analysis revealed a five-factor structure similar to the original scale, the variance explained was 69.62%, but four items were removed from the scale due to low factor loading. Confirmatory factor analysis results (fit indices values) applied to the twenty – one items and five sub-dimensional structure were found to be acceptable. Scale Cronbach's alpha values were above 0.70.

Conclusion: The 21-item Turkish version of CCFNPS was found to be a valid and reliable scale for measuring the competencies acquired by students after their first clinical training.

Keywords: Clinical competence, clinical practice, self-assessment, nursing students, reliability.

1. INTRODUCTION

Competent nurses provide safe and effective care in health care delivery. For this reason, nursing competencies have been identified and nursing competencies that must be acquired during the nursing education have been defined (1). Field practices in nursing education are critical in the acquisition of these competencies (2). During these practices, nursing students apply their theoretical knowledge to practical experience, develop the necessary technical skills, learn interpersonal skills, make clinical judgements, ensure professional socialization, develop professional values and learn to provide systematic care through the nursing process (3).

The Fundamentals of Nursing Course (FNC) offers nursing students their first clinical field experiences. The aim of the FNC, which forms the basis of vocational courses and practices, is to build knowledge, skills and attitudes related

to the main principles, basic skills and understanding of the nursing process of the profession. This course consists of theoretical learning, professional skills, laboratory studies and clinical education. The most essential objectives of clinical education in the nursing education are to improve the student's competencies in cognitive, affective and psychomotor areas; to instill habits for lifelong learning; and and to cultivate critical thinking and problem-solving abilities (4,5). As the process of assessment of student nurses' competence in clinical practical (6), clinical evaluation determines the extent to which these skills are mastered. Literature reviews indicate that the evaluation of nursing students in clinics is difficult, may be far from objectivity and there are unresolved problems (3,4,7-11). Two systematic reviews indicate that clinical assessment is a complex task for educators, emphasize the necessity of developing reliable

and valid assessment tools, as well as consistent assessment approaches. (4,11).

Clinical competence assessment usually involves educators and clinical mentor nurses. Multidimensional evaluation is considered valuable in evaluation of clinical proficiency and students' self-evaluation is considered an integral part of this (8,4). However, students may overestimate their competencies while self-assessing and may need support to make an objective self-assessment (10). The reliability of students' self-assessments is still unclear (4,7). Students should clearly understand the desired level of nursing competence and determine their weaknesses and strengths according to these standards (4,11).

The literature states that scales assessing biomedical knowledge, basic clinical skills, critical reasoning and judgement, care and life-long learning evaluate the competence of final year nursing students in clinic practical (5,12,13). Chang et al. developed the "Core Competence in Fundamental Nursing Practicum Scale-CCFNPS" measurement tool because they found the existing tools unsuitable for evaluating the nursing students' self-efficacy entering clinical practice. To provide a new measurement tool, they determined a reliable scale to validly measure nursing students' perceptions of core competence during their first clinical practice. This measurement tool can be used by educators to define basic competencies that students perceive as weak and to improve these areas.

Nursing education in Turkey begins in the first or second year with the FNC, which is the basic professional course. In the third and fourth years, students are given other professional courses such as Internal Medicine and Surgery Nursing. The expectations of the students who follow these courses in clinical practice vary according to the objectives of the courses and the criteria for assessment become more demanding. As the FNC covers basic nursing knowledge and skills, the assessment criteria for clinical practice should be at a basic level consistent with the objectives of the course. In Turkey, there no scale has been developed to evaluate students' self-assessment of their efficacy in clinical practice within the scope of the FNC. For this reason, we planned to conduct a Turkish reliability and validity study to use Chang et al.'s scale in our country.

2. METHODS

2.1. Aim

This methodological research investigated the cultural and Turkish validity of the CCFNPS for undergraduate nursing students.

2.2. Design

This research was carried out in two stages: cultural adaptation, and translation and validation of CCFNPS in Turkish. International guidelines (14,15) were used for the

translation, validation and adaptation phase of the scale. Permission from the author of the original CCFNPS was obtained to adapt it into Turkish. This study was approved by İstinye University Human Research Ethics Committee (Number /date: 22-101/July 21,2022). Participation in this research was voluntary.

The CCFNPS was translated into Turkish by two native Turkish-speaking linguists who also teach English as a second language. The scale was then back-translated into English by two native Turkish-speaking translators. The translators and members of the research group checked the translation and back-translation against the initial version in order to clarify concepts and reach consensus. Meanwhile, in two of the scale items (items 23 and 24), there was no semantic consensus in translation and retranslation. The original scale author was consulted to clarify the meaning and these two items were reformulated in the back translation and Turkish version.

This research interviewed 30 first-year nursing students for pilot testing. Because the students stated that the scale statements and the instructions for completion were understandable, no changes were made to the scale. Next, ten experts were consulted to ensure the scale's conceptual and content equivalence; 6-10 experts is considered a sufficient number for this (14,15). For the expert panel, the study selected faculty experienced in scale development and adaptation studies who teach the FNC in university nursing departments. The experts were requested to evaluate every statement in scale and to convey their opinions by choosing one of the responses: "not appropriate (1)", "the item should be adapted (2)", "appropriate, but minor changes are required (3)" or "very appropriate (4)". The content validity ratio of the instrument items and the content validity index (CVI) of the scale were calculated according to the responses of the experts. For this, the Davis technique was used (16). The mean Item-CVI of the scale items was 0.86 (Min=0.80 – Max=1.0) and the sum CVI of the scale was 0.98. Since the CVI scores of the scale items and the sum of the instrument were 0.80 and above, design reliability and validity analyses of the instrument items were initiated (14,15).

2.3. Setting and Sample

This research was conducted in the nursing schools of one state and two private universities in a city in western Turkey. The FNC, which includes theory and practical courses, is given in the spring of the first year in two of the nursing programme where the research was conducted and in the spring of the second year in the remaining programme. In the three nursing schools where the research was conducted, 563 students were taking the FNC in the 2021-2022 academic year. The CCFNPS evaluates the competencies gained by students after their first professional laboratory and clinical practical training (13). The study included 471 students who had successfully completed the first iteration of the FNC course and voluntarily participated in the research. Students who had attended the course and

clinical practice for a second time and students whose first language was different from Turkish were excluded from the study. The study sample comprised 466 students who completed the questionnaires. A minimum of 30 pairs of data should be included in the retest (17). In this study, the retest was carried out with 30 students from the third school. Data were collected from these students twice at an interval of 30 days (18).

2.4. Instrument

Data collection used a Demographics Form and a form entitled CCFNPS. The demographics form consisted of 6 questions surrounding age, gender, grade point average, high school graduated, place of residence and willingness to enter the profession. CCFNPS is a 5-point Likert-type scale consisting of five factors and a total of 25 items. The first factor is "Communication (COM)" (3 items), the second is "Application of nursing processes (ANP)" (6 items), the third is "Basic biomedical science (BBS)" (4 items), the fourth is "Nursing skills and ability to perform a care process (NSAPCP)" (7 items) and the fifth is "Professional attitude (PA)" (5 items). Each item was rated on a 5-point Likert scale (1-not satisfied at all, 5-very satisfied). Total scale and each factor points were analysed by the average of the total item scores. A high score indicates more competence (better performance) during the application of nursing principles. Cronbach's alpha for CCFNPS subscales ranged from 0.83 to 0.92, and for the total scale it was 0.94 (13).

2.5. Data Collection

Following the FNC clinical practice at two universities, three researchers collected data for construct validity and internal consistency analyses and completed the examination and grade evaluations. The students were explained about the research and the questionnaires were handed to them. The students who ticked the box "I want to participate in the research" in the questionnaire were given 15 minutes to complete the questionnaire. For the test-retest, same questionnaire was administered to the students of the third university. For this, the students were asked to put a pseudonym on the questionnaire and the questionnaire was re-administered one month after.

2.6. Analysis of Data

The data analysis was conducted using SPSS 26 and AMOS 22. Student demographic characteristics (number, percentage, mean and standard deviation) and scale scores (Skewness, Kurtosis) were analyzed by descriptive statistics. Pearson Correlation Analysis was used to analyze the relationship between the scores of the sub-dimensions of the total scale.

The scale's construct validity was evaluated through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) using AMOS 22. Factor analysis identifies

clusters of relevant variable dimensions underlying a broad construct (19). For the purpose of construct validity, the total sample size was divided into two parts: the EFA was carried out with data from 233 nursing students, followed by the CFA with data from the same number of students. Prior to conducting the EFA test, we evaluated the data's suitability for factor analysis by performing the Kaiser-Meyer-Olkin test (KMO, range 0-1) and Bartlett's test ($p < .05$) (20). Validity analyses provided us with values for composite reliability (CR), average variance extracted (AVE), maximum reliability (MaxR), and maximum shared variance (MSV). To assess internal consistency, we calculated Cronbach's alpha scores. The scale's invariance was tested using dependent group t-tests and intraclass correlation (ICC) analyses.

3. RESULTS

Of the nursing students, 80.5% were female, 85.8% were between the ages of 18-22 years, and 66.3% lived with their families, 76.6% chose the profession willingly and the mean age of all subjects was 20.29 ± 1.92 years.

3.1. Construct Validity

An exploratory factor analysis was conducted using principle components analysis and varimax rotation to identify the items included in the different dimensions of the CCFNPS. The KMO value was 0.843 ($\geq .70$ are desired) and Bartlett's test result was meaningful (Chi-Square:2125.349; Bartlett's Test Sphericity (df): 210; $p < .01$) indicating a sufficient sample size. (20) EFA determined that the scale items showed a five-factor structure. Due to low factor loadings, items 5, 7, 15, and 21 were eliminated from the scale (20,21). The factors including the remaining items in the scale were the same as the original scale and the factor loadings ranged between 0.41 and 0.86 (Table 1). As a result of EFA, the total explained variance was 62.69%.

Table 1 presents the item-total score correlation coefficients of the scale items and Cronbach's alpha coefficients after the items were removed. Item-total score correlation coefficients were found to be between 0.42 and 0.63, a value above the desired value (>0.30 is desired) (21). When the item was removed, the Cronbach's alpha coefficient was 0.89.

Confirmatory factor analysis was applied to verify EFA structure determined in the scale, which was resized with the Varimax method. Model fit index values (22) were taken into consideration in interpreting the CFA analysis. Figure 1 presents the CFA sub-dimensions visualizations resulting from EFA analysis. Table 2 presents model fit index values. It was seen that χ^2/sd , goodness of fit index (GFI), normed fit index (NFI), incremental fit index (IFI), comparative fit index (CFI) and root mean square error of approximation (RMSEA) were within the "acceptable fit value ranges". Table 3 presents validity statistics for the model shown in Figure 1. $CR > 0.7$, $AVE > 0.5$ and $MaxR > 0.7$, and $MSV < AVE$ (23)

Table 1: Varimax rotated structures matrix (n=233)

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	NSAPCP	ANP	BBS	PA	COM
Q17.Ability to complete required homework or report assignments.	.607	.887	.738				
Q18.Ability to operate instruments correctly when performing nursing skills.	.634	.886	.700				
Q19.Ability to properly perform nursing skills to patients.	.631	.886	.687				
Q20.Ability to properly prepare tools or materials for conducting nursing skills.	.594	.887	.612				
Q16.Ability to search for information.	.525	.889	.512				
Q14.Ability to organize data when writing a report.	.521	.889	.411				
Q6.Ability to execute care plans developed for patients.	.445	.891		.693			
Q9.Ability to correctly perform physical assessments of patients.	.498	.890		.636			
Q8.Ability to evaluate changes to patients after the implementation of care plans.	.526	.889		.537			
Q4.Ability to make appropriate nursing diagnoses for patients.	.447	.891		.456			
Q11.Ability to understand reasons for prescribing specific medications for patients.	.427	.892			.857		
Q10.Ability to understand the side effects of medications used by patients.	.419	.892			.622		
Q13.Ability to understand mechanisms of medication used by patients.	.580	.887			.619		
Q12.Ability to instruct patients on medication use.	.529	.889			.538		
Q24.Ability to perform self-reflections**.	.516	.889				.667	
Q25.Ability for proper time management after the practicum.	.428	.892				.656	
Q22.Possession of a positive learning attitude.	.507	.889				.593	
Q23.Ability to perform emotional self-regulation.*	.403	.893				.533	
Q2.Ability to use communication skills to communicate with caregivers.	.542	.889					.814
Q1.Ability to use communication skills to communicate with patients.	.525	.889					.766
Q3.Ability to observe the nonverbal needs of patients..	.420	.892					.468

Note: It should be noted that in order to utilise this scale, permission must be obtained from the author who developed the original scale.

ANP: Application of Nursing Processes, BBS: Basic Biomedical Science, COM: Communication, NSAPCP:Nursing Skills and Ability to Perform a Care Process, PA: Professional Attitude

*p<.001***Emotion regulation skills** are the skills that persons can identify, control and express their emotions, and transfer them to their environment. Emotion regulation involves controlling not only positive emotions but also negative emotions of the persons and not allowing these negative emotions to affect their lives.

** **Reflection** is concentrating one's all thoughts on a problem, thinking through and examining a subject in detail.

Table 2. Model fit index values (n=233)

Fit Indexes	Good Fit	Acceptable Fit	Model Fit Index
χ^2/df (CMIN/DF)	$0 \leq \chi^2/df \leq 2$	$2 < \chi^2/df \leq 5$	1.799
GFI	$0.95 \leq GFI < 1.00$	$0.90 \leq GFI < 0.95$.951
AGFI	$0.95 \leq GFI < 1.00$	$0.90 \leq GFI < 0.95$.916
NFI	$0.95 \leq NFI < 1.0$	$0.90 \leq NFI < 0.95$.951
IFI	$0.95 \leq IFI < 1.00$	$0.90 \leq IFI < 0.95$.963
TLI	$0.95 \leq TLI < 1.00$	$0.90 \leq TLI < 0.95$.934
CFI	$0.95 \leq CFI < 1.00$	$0.90 \leq CFI < 0.95$.962
RMSEA	$0 \leq RMSEA \leq .05$	$.05 \leq RMSEA \leq .08$.058
RMR	$0 \leq RMR \leq .05$	$.05 \leq RMR \leq .08$.034

AGFI: Adjustment Goodness of Fit Index; CFI: Comparative Fit Index; GFI: Goodness of Fit Index; IFI: Incremental Fit Index; NFI: Normed Fit Index; RMR: Root Mean Square Residual RMSEA: Root Mean Square Error of Approximation; TLI: Tucker Lewis Index χ^2 : Chi-square; df: Degrees of Freedom

Table 3. Validity analysis results (n=233)

	MaxR								
	CR	AVE	MSV	(H)	COM	NSAPCP	ANP	BBS	PA
COM	0.815	0.602	0.316	0.857	0.776				
NSAPCP	0.858	0.518	0.406	0.872	0.505	0.711			
ANP	0.738	0.541	0.319	0.745	0.562	0.565	0.644		
BBS	0.801	0.513	0.289	0.811	0.385	0.526	0.538	0.710	
PA	0.742	0.529	0.406	0.747	0.481	0.637	0.543	0.408	0.647

ANP: Application of Nursing Processes, BBS: Basic Biomedical Science, COM: Communication NSAPCP: Nursing Skills and Ability to Perform a Care Process, PA: Professional Attitude AVE: Average Variance Extracted, CR: Composite Reliability, MSV: Maximum Shared Variance, MaxR(H): Maximal Reliability.

3.2. Internal Consistency and Correlation Analysis

The mean scores, Cronbach's alpha values and correlation values of the sub-dimensions of the scale are presented in

Table 4. The Cronbach's alpha value for the total scale was found to be 0.92, with sub-dimension scores ranging from 0.73 to 0.85. Correlation values between the subscale scores ranged from 0.31 to 0.53, indicating a positive and statistically significant relationship between the sub-dimensions ($p < .01$).

Table 4. Scale sub-dimensions mean scores and correlation analysis results ($n=233$)

	Min- Max	Mean±SD		NSAPCP	ANP	BBS	PA	COM
NSAPCP	1-5	4.06±0.55	r	1	.481	.451	.530	.437
			p		.000*	.000*	.000*	.000*
ANP	1-5	3.87±0.55	r		1	.416	.332	.493
			p			.000*	.000*	.000*
BBS	1-5	3.62±0.70	r			1	.306	.325
			p				.000*	.000*
PA	1-5	3.96±0.63	r				1	.306
			p					.000*
COM	1-5	4.04±0.64	r					1
			p					
Cronbach Alfa	Overall	0.92	-	0.85	0.73	0.80	0.76	0.79

ANP: Application of Nursing Processes, BBS: Basic Biomedical Science, COM: Communication, NSAPCP: Nursing Skills and Ability to Perform a Care Process, PA: Professional Attitude r: Pearson Product-moment Correlation Test, * $p < .001$

Table 5. CCFNPS total and sub-dimensional test-retest and confidence coefficients ($n=30$)

CCFNPS	Application	Mean	SD	t p	r p	ICC p
Factor 1: COM	1. Application	4.16	.51	t=.560	r=.961	ICC=.997
	2. Application	4.14	.49	p=.580	p=.000*	p=.000*
Factor 2: ANP	1. Application	4.35	.52	t=-1.608	r=.908	ICC=.950
	2. Application	4.29	.49	p=.119	p=.000*	p=.000*
Factor 3: BBS	1. Application	3.61	.53	t=-1.901	r=.897	ICC=.946
	2. Application	3.69	.52	p=.067	p=.000*	p=.000*
Factor 4: NSAPCP	1. Application	3.92	.25	t=-.369	r=.708	ICC=.828
	2. Application	3.93	.27	p=.715	p=.000*	p=.000*
Factor 5: PA	1. Application	3.84	.54	t=-.565	r=.821	ICC=.901
	2. Application	3.87	.52	p=.576	p=.000*	p=.000*
Overall CCFNPS	1. Application	4.16	.40	t=-1.794	r=.994	ICC=.997
	2. Application	4.14	.40	p=.083	p=.000*	p=.000*

ANP: Application of Nursing Processes, BBS: Basic Biomedical Science, COM: Communication, NSAPCP: Nursing Skills And Ability To Perform A Care Process, PA: Professional Attitude

ICC: Intraclass Correlation Coefficient, r: Pearson Product-moment Correlation Test, SD: Standard Deviation, t: t Test in Dependent Samples, * $p < .001$

3.3. Test-Retest Reliability

Table 5 shows the scores of the dependent groups t-test and intraclass correlation values applied to determine the difference in scores of the two measurements applied one month apart to thirty students. The test-retest reliability analyses of CCFNPS resulted in a first measurement mean score of 4.16±0.40 and a second measurement mean score of 4.14±0.40. Mean scale

scores between the first and second administrations were not statistically significantly different ($t = -1.794$, $p > .05$). Correlation analysis comparing the scale scores of the two measurements identified a statistically significant, positive correlation ($r = 0.99$, $p < .001$). The ICC between the scale total scores of the two interventions performed one month apart was found to be statistically significant (ICC: 0.99, $p < .001$).

4. DISCUSSION

This research adapted Chang et al.'s CCFNPS (13) to Turkish in order to obtain a tool for evaluating the basic competencies of nursing students at the end of their first clinical practice.

The language and content of the instrument were examined for validity. The psychometric properties of the Turkish version of the instrument were evaluated using internal consistencies, item reliability, construct validity and test-retest methods.

Before using a measurement tool in a different culture, language and cultural adaptation is necessary, then psychometric testing to determine whether it is valid and reliable for that society (24,25). In the adaptation phase, translation, expert panel evaluation, back translation and piloting took place, followed by necessary corrections to two items. The scale was re-translated into English and sent to the authors, who developed meaning-concept equivalence. Following positive feedback, it was decided that language equivalence had been reached.

Content validity evaluated the scale items' measurement of the concept in question (26); for this, the research obtained expert opinions from 10 faculty members and evaluated them accordance with the Davis method. The scale items CVI value was between 0.90 and 1.00. Davis accepted the value of 0.80 as a benchmark for CVI. According to this reference value, it was seen that the Turkish form of the scale met the desired criteria for content validity (16).

This research tested the structural validity of the instrument with CFA and EFA. KMO (0.843) and Bartlett's value ($p < .001$) evaluated the suitability of the measurement tool for factor analysis and showed that the sampling sizes were adequate (20).

According to EFA results, the scale items showed a five-factor structure as in the original scale. However, the factor loadings of four items were below 0.40. Since the factor loading should be above 0.40 (20,21,26), "Item 5, 7, 15 and 21" were removed from the Turkish version of CCFNPS.

In factor analysis models are re-tested after item removals due to factor loadings and item-total score correlation examinations (27). After 4 items were excluded from the instrument, the 21-item and five-factor model was re-examined with CFA. The items' factor loadings ranged from 0.41 to 0.86. As they were above 0.40, path coefficients showing the relationship between the items and the sub-dimension met the validity criterion. The 21-item 5-factor structure explained 62.69% of the total variance, a ratio deemed sufficient; the criteria that the explained

variance ratio should be 40-60% and each factor should have at least three met items (28,29). Confirmatory factor analysis confirmed the factor structure of the items in the scale, formed as a result of EFA. A series of descriptive and inferential fit indices of CFA help to evaluate the goodness of fit of the overall CFA model. It was seen that χ^2/sd , GFI, NFI, IFI, CFI, RMSEA and RMR, which are among the CFA model goodness of fit index values, were within the “good fit value ranges” and AGFI and TLI values were within the “acceptable fit value ranges”(30). These results indicate that the scale items are interrelated and that the data is consistent with the model.

Tests for internal consistency, time invariance and equivalence are recommended for the evaluation of reliability (19). The test-retest method was used to determine the time invariance of the scale; individuals perform the first test and then repeat the test for ten days to one month later to identify the coefficient of correlation between the two measurements. The closer the correlation coefficient to 1, the more reliable the test (18). This research conducted the retest after 30 days. The test-retest correlation results of the instrument were 0.96 for communication, 0.90 for application of nursing processes, 0.89 for basic biomedical science, 0.70 for nursing skills and ability to perform a care process and 0.82 for professional attitude, and 0.99 for the total instrument. The results indicate that the instrument has high reliability and consistency over time, as shown by the test-retest results.

Cronbach's alpha value in internal consistency analysis is acceptable at a value > 0.7 (31). The Cronbach's alpha values of the original 25-item CCFNPS are 0.94, with sub-dimension values between 0.83 and 0.92. In our study, the Cronbach's alpha values of the 21-item CCFNPS were 0.92, with sub-dimension values between 0.73 and 0.85, showing the scale adapted into Turkish is reliable according to accepted criteria.

It is possible that the data may be biased as the students who participated in the research were studying at nursing schools where the researchers were employed. In order to guarantee generalisation, it is recommended that the validity and reliability of the scale be validated with the participation of students nationally.

5. CONCLUSIONS

The research goal to determine the reliability and validity of the Turkish version of CCFNPS. The findings indicate that the scale is a reliable and valid instrument for evaluating the basic competencies acquired by nursing students after their first clinical practice. The Likert-type scale's 21 items include five sub-dimensions. The Turkish form of CCFNPS can be used to determine the basic competences that students gain after the first clinical practice. Determining the areas where students are least competent will provide important information for the development of educational strategies that will ensure the development of the student. Future research conducted with this scale will contribute significantly to recognition of

the scale's measurement power. Still, it is recommended that studies be carried out to verify the reliability and validity of the instrument in other populations.

Acknowledgments: We wish to thank the nursing students who contributed to this research.

Conflict of interest: The authors declare no conflicts of interest.

Funding: This research was not funded by any institution or organisation.

Ethics Committee Approval: This study was approved by İstinye University Human Research Ethics Committee (Number/date: 22-101/July 21,2022).

Author Contributions:

Research idea: NU

Design of the study: NU, ET, NŞO

Acquisition of data for the study: NU, ET, NŞO, HD

Analysis of data for the study: NU, ET

Interpretation of data for the study: NU, ET, NŞO, HD

Drafting the manuscript: NU, ET, NŞO, HD

Revising it critically for important intellectual content: NU, ET

Final approval of the version to be published: NU, ET, NŞO, HD

REFERENCES

- [1] International Council of Nurses. ICN regulation series icn framework of competencies for the nurse specialist. Published [2009]. Accessed [2023 July 31]. p. 1–49. https://siga-fsia.ch/files/user_upload/08_ICN_Framework_for_the_nurse_specialist.pdf
- [2] Eng CJ, Pai HC. Determinants of nursing competence of nursing students in Taiwan: The role of self-reflection and insight. *Nurse Educ Today* 2015;35(3):450–455. DOI: 10.1016/j.nedt.2014.11.021
- [3] Rafiee G, Moattari M, Nikbakht N A, Kojuri J, Mousavinasab M. Problems and challenges of nursing students' clinical evaluation: A qualitative study. *Iran J Nurs Midwifery Res*. 2014;19(1):41-49.
- [4] Immonen K, Oikarainen A, Tomietto M, Kääriäinen M, Tuomikoski AM, Kaučič BM, Filej B, Riklikiene O, Vizcaya-Moreno MF, Perez-Cañaveras RM, De Raeve P, Mikkonen K. Assessment of nursing students' competence in clinical practice: A systematic review of reviews. *Int J Nurs Stud*. 2019;100:103414. DOI: 10.1016/J.IJNURSTU.2019.103414
- [5] Jao JY, Chen SL, Sun JL. A predictive model of student nursing competency in clinical practicum: A structural equation modelling approach. *Nurse Educ Today* 2020;95:104579. DOI: 10.1016/J.NEDT.2020.104579
- [6] Zafrir H, Nissim S. Evaluation in clinical practice using an innovative model for clinical teachers. *Journal of Nursing Education* 2011;50(3):167–171. DOI: 10.3928/01484.834.20101130-04
- [7] Helminen K, Johnson M, Isoaho H, Turunen H, Tossavainen K. Final assessment of nursing students in clinical practice: Perspectives of nursing teachers, students and mentors. *J Clin Nurs*. 2017;(23-24):4795-4803. DOI: 10.1111/jocn.13835.
- [8] Gurková E, Žiaková K, Zanovitová M, Cibříková S, Hudáková A. Assessment of nursing student performance in clinical settings-usefulness of rating scales for summative evaluation. *Cent Eur J Nurs Midw*. 2018;9(1):791–798. DOI: 10.15452/CEJNM.2018.09.0006
- [9] Helminen K, Coco K, Johnson M, Turunen H, Tossavainen K. Summative assessment of clinical practice of student nurses: A

- review of the literature. *Int J Nurs Stud.* 2016;53:308-319. DOI: 10.1016/j.ijnurstu.2015.09.014.
- [10] Helminen K, Tossavainen K, Turunen H. Assessing clinical practice of student nurses: Views of teachers, mentors and students. *Nurse Educ Today* 2014;34(8):1161–1166. DOI: 10.1016/J.NEDT.2014.04.007
- [11] Wu XV, Enskär K, Lee CCS, Wang W. A systematic review of clinical assessment for undergraduate nursing students. *Nurse Educ Today* 2015;35(2):347–359. DOI: 10.1016/J.NEDT.2014.11.016
- [12] Hsieh SI, Hsu LL. An outcome-based evaluation of nursing competency of baccalaureate senior nursing students in Taiwan. *Nurse Educ Today* 2013;33(12):1536–1545. DOI: 10.1016/j.nedt.2013.01.012
- [13] Chang YH, Huang SH, Shun SC, Lin PC. Core Competence in Fundamental Nursing Practicum Scale: A validity and reliability analysis. *Nurse Educ Pract.* 2022;62(78):103352. DOI: 10.1016/j.nepr.2022.103352
- [14] Hernández A, Hidalgo MD, Hambleton RK, Gómez-Benito J. International test commission guidelines for test adaptation: A criterion checklist. *Psicothema.* 2020;32(3):390–398. DOI: 10.7334/PSICOTHEMA2019.306
- [15] Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: A clear and user-friendly guideline. *J Eval Clin Pract.* 2011;17(2):268–274. DOI: 10.1111/j.1365-2753.2010.01434.x
- [16] Grant JS, Davis LL. Selection and use of content experts for instrument development. *Res Nurs Health* 1997;20(3):269–274. DOI: 10.1002/(sici)1098-240x(199706)20:3<269::aid-nur9>3.0.co;2-g
- [17] Tavşancıl E. Tutumların ölçülmesi ve SPSS ile veri analizi. 6. Basım. Ankara: Nobel Akademik Yayıncılık; 2019 (Turkish).
- [18] Alpar R. Uygulamalı çok değişkenli istatistiksel uygulamalar. 6. Basım. Ankara: Detay Yayıncılık; 2020 (Turkish).
- [19] Polit DF, Beck CT. *Essentials of nursing research: Appraising evidence for nursing practice.* 8th ed. Philadelphia: Lippincott Williams & Wilkins; 2014.
- [20] Watkins MW. Exploratory factor analysis: A guide to best practice. *Journal of Black Psychology.* 2018;44(3):219–246. DOI: 10.1177/009.579.8418771807
- [21] Arafat S, Chowdhury H, Qusar M, Hafez M. Cross cultural adaptation and psychometric validation of research instruments: A methodological review. *J Behav Health* 2016;5(3):129-136. DOI: 10.5455/jbh.201.606.15121755
- [22] Alavi M, Visentin DC, Thapa DK, Hunt GE, Watson R, Cleary M. Chi-square for model fit in confirmatory factor analysis. *J Adv Nurs.* 2020;76(9):2209–2211. DOI: 10.1111/JAN.14399
- [23] Gaskin J, Lim J. Model fit measures. AMOS plugin. Published [2016]. Accessed [2023 Feb 6]. <https://statwiki.gskination.com/index.php?title=Plugins>
- [24] Çapık C, Gözüm S, Aksayan S. Intercultural scale adaptation stages, language and culture adaptation: Updated guideline. *Florence Nightingale J Nurs.* 2018;26:199–210. DOI: 10.26650/FNIN397481
- [25] World Health Organization (WHO). Guidelines on Translation and Adaptation of Instruments. Published [2021]. Accessed: [2023 Feb 6] http://www.who.int/substance_abuse/research_tools/translation/en/.
- [26] Büyükoztürk Ş. Sosyal bilimler için veri analizi el kitabı istatistik, araştırma deseni SPSS uygulamaları ve yorum. 29. Basım. Ankara: Pegem Akademi; 2021 (Turkish).
- [27] Güngör D. Psikolojide ölçme araçlarının geliştirilmesi ve uyarlanması kılavuzu. *Türk Psikoloji Yazıları* 2016;19(38):104–112 (Turkish).
- [28] Seçer İ. Psikolojik test geliştirme ve uyarlama süreci. 2. Basım. Ankara: Anı Yayıncılık; 2018 (Turkish).
- [29] Goretzko D, Pham TTH, Bühner M. Exploratory factor analysis: Current use, methodological developments and recommendations for good practice. *Current Psychology* 2021;40(7):3510–3521. DOI: 10.1007/S12144.019.00300-2
- [30] Özdamar K. Ölçek ve test geliştirme yapısal eşitlik modellemesi. 1. Basım. Eskişehir: Nisan Kitapevi; 2016 (Turkish).
- [31] Taber KS. The use of cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ.* 2018;48(6):1273–1296. DOI: 10.1007/S11165.016.9602-2/TABLES/1

How to cite this article: Uysal N, Türkmen E, Şahin Orak N, Demirdağ H. Nursing Principles Practice Basic Competencies Scale – Turkish Adaptation Study. *Clin Exp Health Sci* 2024; 14: 768-774. DOI: 10.33808/clinexphealthsci.1413843