Original Article

The Turkish validity and reliability study of the Nurse Codependency Questionnaire

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Abstract

Objectives: The aim of this study was to adapt the Nurse Codependency Questionnaire (NCQ) into Turkish and to ensure its validity and reliability.

Methods: This study was conducted with 538 nurses working at five state hospitals and one university hospital in Gaziantep Province from March 3 to 29 August 29, 2014. The data were collected using a personal information form and the Nurse Codependency Questionnaire after ensuring the equivalency of the questionnaire's items in the Turkish language. The statistical analysis of the data was done using SPSS 22 for Windows. The analysis of factor groups used confirmatory factor analysis. The analysis of data conformity used Barlett's test and the Kaiser-Meyer-Olkin test in the determination of internal consistency. Cronbach's alpha reliability coefficient and test-retest correlation tests were used to determine internal consistency.

Results: The linguistic validity of the NCQ was determined to be sufficient after translation and back-translation, and consulting expert opinion. For the NCQ, sample size was calculated using the KMO (0.81) and Barlett's test (1,965.419). The root mean square error of approximation (RMSEA) of the questionnaire was 0.051, the comparative fit index (CFI) was 0.88, the normed fit index (NFI) was 0.84, and the standardized root mean square residual (SRMR) was 0.046. The Cronbach's alpha reliability coefficient for the 15 items in factor 1 was 0.74. For the 9 items in factor 2 it was 0.50, and it was 0.77 for all 24 items on the questionnaire. The test-retest correlation value was r=0.79, and there was a significant correlation between the results of the both tests (p<0.000).

Conclusion: The Nurse Codependency Questionnaire has high levels of validity and reliability and can be used to determine levels of nurse codependency in Turkey.

Keywords: Nurse Codependency Questionnaire; questionnaire; reliability; validity.

The concept of codependency has recently become more popular in the literature on addiction. It has been suggested that practicing a profession that teaches caregiving and being sensitive to the needs of other people increases nurses' levels of codependency.[1] Since the nature of the nursing profession may involve codependency, codependency has been attributed to many or all nurses with little discrimination.[2]

Codependency is a form of learned behavior that involves troubled and agonizing relationships between people who feel excessive responsibility for others and hide from their own identities. Codependency can significantly affect people for their entire lives.[3,4] Hughes-Hammer et al.[5] (1998) describe codependency as a learned behavior on the part of people who rely on others and objects instead of themselves. They say that codependency emerges as a result of neglecting and undervaluing one's own identity. The typical characteristics of codependency include: identity complexity, the need for approval from others, failure to identify and express emotions, a sense of secret weakness, difficulty setting limits, a strong

What is known on this subject?
- Codependency is a new concept that has recently begun to be addressed by the literature. It is thought that nurses' codependency levels may be higher because nursing is a profession that teaches caregiving.

What is the contribution of this paper?
- In Turkey, there is no scale for measuring nurses' codependency levels. This article contributes to the field of psychiatric nursing by performing the Turkish validity and reliability of the Nurse Codependency Questionnaire (NCQ).

What is its contribution to the practice?
- The NCQ is a highly reliable scale that can be used to determine the codependency levels of nurses.

desire to look at others, having problems with authorities, establishing long-term relationships with partners who suffer from an addiction or dysfunction and having any addictive behaviors.[6]

Codependency in nursing manifests itself as a loss of professional identity, excessive identification with the role of caregiving, inability to distinguish between personal responsibilities and the responsibilities of others, a false fear-induced sense of duty towards others rather than care, and reliance on others in order to feel valuable. Codependency in nursing increases care receivers' dependency on caregivers and is defined as a disorder that causes them to feel guilty.[7]

Studies have reported increased codependency among nurses.[8–11] One of the most important tasks of the nursing profession is caregiving. Nurses are required to know their professional boundaries while performing their caregiving duties and not allow themselves to develop codependent care behaviors. Professional caregiving, unlike codependency, is intended to improve the health of care receivers and lead to the growth of both care receivers and caregivers. However, codependency limits growth and increases care receivers' dependency on caregivers.[7,12]

It is predicted that codependency will continue to be a controversial diagnosis for nurses in the coming years. It is very important for nurses to be aware of their tendency to be codependent. When nurses wonder whether they have a codependency problem, they should use a self-reporting inventory, and in particular, they should ask themselves whether the care they give involves their own needs and feelings. Thus, it is thought that studies of the materials that have been developed to diagnose codependency will be beneficial.

Materials and Method

This methodological study was conducted in order to test the Turkish validity and reliability of the Nurse Codependency Questionnaire developed by Sarah Allison.

Population and Sample of the Study

The study was conducted with the nurses of five state hospitals and one university hospital in Gaziantep from March 3 to August 29, 2014. In validity and reliability studies for scales,

the sample size should be five to ten times higher than the number of scale items.[13] The sample size for the Nurse Codependency Questionnaire (NCQ) was 240 for 24 items. No sampling method was used to increase the reliability of the statistical analyses, and the sample consisted of 538 nurses who agreed to participate in the study. At least 20% of the nurses at each hospital were included.

Research Question

Is the Turkish version of the NCQ a valid and reliable measurement tool?

Dependent Variables

The NCQ is the study's dependent variable.

Independent Variables

The items on the NCQ are its independent variables.

Data Collection Tools
Personal Information Form

This form was developed by the researchers based on a review of the literature. It includes questions about the nurses' sociodemographic characteristics such as age, gender, place of birth, education level, work experience, work hours and shifts, and hospital units.[8–11]

The Nurse Codependency Questionnaire (NCQ)

The Nurse Codependency Scale was developed in 2004 by Sarah Allison who works at the University of Texas in the US, and its validity and reliability studies were conducted. This 24-item scale is a kind of attitude scale that assesses nurses' codependency. Items on the scale are scored as: 1=true, 2=mostly true, 3=neutral (equally true and untrue), 4=mostly untrue, and 5=untrue. The NQS has two subscales, codependent caretaking and lack of voice. The codependent caretaking subscale includes items 1, 2, 3, 5, 6, 8, 9, 11, 13, 14, 15, 16, 19, 20 and 23, and the lack of voice subscale includes items 4, 7, 10, 12, 17, 18, 21, 22 and 24. Items 4 and 24 are reverse scored. The total score is obtained by adding the scores for the 24 items. Scores range from 24 to 120. There is no cutoff point in the assessment of the questionnaire. As scores increases, dependence levels decrease.[7]

Data Analysis

Translation-back translation was used to assess the language validity of the Nurse Codependency Questionnaire, and its content validity, carried out based on experts' opinions, was evaluated by using the Davis method. The questionnaire's construct validity was evaluated using confirmatory factor analysis , and the adequacy of the sample before the factor analysis was examined using the Kaiser-Meyer-Olkin test. The

adequacy of the sample size was evaluated using Barlett's test, and Cronbach's alpha reliability coefficient was used to determine internal consistency. Test-retest analysis and Pearson's moments multiplication correlation coefficient were used to evaluate the scale's time invariance. The data were analyzed using SPSS 22 for Windows and Lisrel 8.0.

Ethical Considerations

Permission from Sarah Allison, who developed the Nurse Codependency Questionnaire, was obtained by e-mail. The approval of Gaziantep University Directory of Ethics Committee (number 2014/18) was obtained on January 7, 2014, and the approvals of Gaziantep University Şahinbey Research and Application Hospital (October 30, 2013) and the Public Hospitals Union (March 5, 2014) were obtained before the study began. The nurses who agreed to participate in the study were informed about its aim, and their written and verbal consent was obtained.

Results

Of the nurses, 89% were women, 64.1% were married, and 65.5% had undergraduate or higher degrees. Of them, 52.2% lived in Southeastern Anatolia, and their mean age was 30.84±7.333 (min=17, max=57). Of the nurses, 8.2% had less than one year of work experience, 29.4% of them had 1–5 years of work experience, and 27.7% had 6–10 years. Of them, 12.3% had 11-15 years of work experience, 13.2% had 15–20 years, and 9.3% had 21 years or more. Of the nurses, 45% were working in the daytime, 27.5% were working shifts, 20.1% were on the extra duty shift, and 7.4% were working at night. On a shift, 61.9% of the nurses worked for 8 hours, 37% worked 16 hours or more, and 1.1% worked for 12 hours. Of the nurses, 32.5% worked in intensive care units, 24.2% worked in surgical clinics, 23.4% worked in internal clinics, and 19.8% worked in other departments (such as polyclinics and managerial positions).

Language and Scope Validity

To ensure the language validity of the Nurse Codependency Questionnaire (NCQ), the questionnaire was translated separately into Turkish by three instructors from the department of foreign languages (preliminary translation). The translated forms of the questionnaire were assessed by another faculty member, and the version that was thought to be translated best was selected. The Turkish translation was translated back into English by a native language expert, and the back-translation of the questionnaire was sent to Allison by e-mail, and she said that there was no difference between the back-translation of the questionnaire. For the content validity of the scale, Turkish translation and scientific opinion forms were sent to 10 faculty members who are experts in psychiatric nursing and five faculty members who are experts in psychiatry. Of the faculty members, 10 gave feedback. The experts' opinions were evaluated us-

ing the Davis method.[14] These calculations determined that item 4 was 0.80, items 3, 11 and 13 were 0.90, and all the other items were 1. Thus, items 3, 4, 11 and 13 were revised for the final version. To assess the clarity of the questionnaire, a pilot study was conducted with 25 nurses. No problems were reported regarding the clarity of the items on the scale. The participants completed the questionnaire in approximately 10 minutes. Consulting expert opinion and the pilot study ensured the content validity of the questionnaire, and that it is compatible with Turkish culture.

Construct Validity

High level confirmatory factor analysis (CFA) was used to determine the construct validity of the questionnaire. The literature says that it is important for sample size to be large enough to provide correlation reliability before the construct validity of the scale is evaluated.[15] The Kaiser-Meyer-Olkin (KMO) index is used to determine the adequacy of the sample size and whether the data matrix is suitable for factor analysis. Barlett's test determines if the data is suitable for factor analysis. The KMO index value should be at least 0.60.[16] The KMO sample adequacy of the NCQ was found to be 0.81 (KM0=0.81, p=0.001). Barlett's test score was found to be 1,965.419, which was statistically significant (p<0.05). In both analyses, p<0.001 and was significant. The questionnaire was found to have sufficient sample size, be suitable for factor analysis and have sample adequacy (Table 1).

CFA is performed to determine whether the factor structure of the original scale has been validated.[17] The comparative fit index (CFI), which is sensitive to errors in determining models, the normed fit index (NFI) and the mean root mean square error of approximate (RMSEA) values were used in the confirmatory factor analysis. The literature says that RMSEA values <0.05 and 0.05-0.10 indicate good fit and mediocre fit, respectively. For CFI and NFI, values >0.95, >0.90 and >0.80 indicate best fit, good fit and mediocre fit, respectively. For SRMR, value <0.09 indicates mediocre fit.[18] The NCQ's RMSEA value was 0.051. Its CFI value was 0.88, its NFI value was 0.84, and its SRMR value was 0.046. These results indicated that the model fit the data (Table 2).

Reliability Study of Nursing Codependency Questionnaire

Cronbach's alpha reliability coefficient, which is the internal consistency coefficient, is calculated for Likert-type scales that

Table 1. The Results of the Kaiser-Meyer-Olkin (KMO) and Barlett's tests		
KMO test and Bartlett's test		
KMO		0.810
Bartlett's Test	Chi-square	1965.419
	P	0.000
(KM0=0.810, p=0.000)		

Table 2. Confirmatory factor analysis results of the Nurse Codependency Questionnaire

Confirmatory analysis		Value ranges*
Comparative Fit Index (CFI)	0.88	>0.95 best fit, >0.90 good fit, >0.80 mediocre fit
Normed Fit Index (NFI)	0.84	>0.95 best fit, >0.90 good fit, >0.80 mediocre fit
Root Mean Square Error of Approximation (RMSEA)	0.051	<0.05 best fit or 0.05-0.10 mediocre fit
Standardized Root Mean Square Residual (SRMR)	0.046	<0.09 good fit

*18. Hu L, Bentler P. Cuttoff criteria for fit indices in coverience structure analysis: conventional criteria versus new alternatives. Structural Equation Modeling 1999;6:1-55.

measure attitudes. A high Cronbach's alpha reliability coefficient indicates that the group is homogeneous, that the items are compatible with each other, and that the scale is valid. [19,20] Cronbach's alpha reliability coefficients below 0.40 indicate that the scale is unreliable. Values of 0.40–0.59 indicate low reliability, and values of 0.60–0.79 indicate that the scale is reliable. Values of 0.80–1.00 indicate high reliability. For scales that measure attitudes, 0.70 is the acceptable level.[17,21] The Cronbach's alpha reliability coefficients of the NCQ were 0.74 for the 15 items in factor 1, 0.50 for the 9 items in factor 2, and 0.77 for the entire scale. The scale items were found to have high internal consistency and reliability (Table 3).

Results Regarding the Time Invariance of the NCQ

The time invariance of the NCQ was evaluated using a test and retest. The first test was administered to 41 nurses, and the same test was re-administered after four weeks. Spearman's correlation analysis was used to determine whether there was a significant relationship between the test and retest. It indicated a highly significant positive correlation between the test and the retest (r=0.786, p=0.001) (Table 4).

The NCQ has 24 items in two factors: codependent (factor 1) caretaking and lack of voice (factor 2). The Cronbach's alpha reliability coefficients of the scale were 0.77 for the entire questionnaire, 0.74 for factor 1 and 0.50 for factor 2. The correlation coefficient of the reliability between the test and the retest was 0.786, and there was a highly significant relationship (p<0.000).

Table 3. The Cronbach's alpha reliability coefficients of the Nurse Codependency Questionnaire

	Cronbach's α
Factor 1: 1-2-3-5-6-8-9-11-13-14-15-16-19-20-23	0.74
Factor 2: 4-7-10-12-17-18-21-22-24	0.50
All 24 items	0.77

Table 4. Test-retest results of the Nurse Codependency Questionnaire

	r	p	N
Test	1.000	0.001	41
Retest	0.78	0.001	41

Discussion

The first step in scale adaptation studies is language adaptation. In scale adaptation studies, differences should be minimized, and the translated scale should be meaningful.[22] This study used translation and back-translation, the world's most widely used method. First, the NCQ was translated into Turkish by three language experts.[23,24] After these translations were evaluated by another linguist, a common form was obtained. The Turkish translation of this form was back-translated by a native language expert.

Content validity refers to the extent to which a measurement represents all facets of a given construct (as a whole and for each item).[25] The questionnaire was sent to 15 academics, who are experts in the field of psychiatry, to evaluate its content validity, and 10 of them expressed their opinions. The literature says that scale adaptation and development studies should score scale items from 1–4, and that the number of experts consulted may vary from 3–20.[20] The Davis method was used for content validity.[14] For the content validity of the scale, the value of each item should be above 0.80. The value of one item on the NCQ was 0.80, three items were 0.90, and the other items were 1. A pilot study was administered to a group of 25 nurses who met the inclusion criteria, and it indicated that there was no need for any revisions.

Construct validity is very important for psychological scales. In scale adaptation studies, confirmatory factor analysis is used to determine the structure and consistency of scale items.[17,22] The Kaiser-Meyer-Olkin (KMO) test should be used to determine whether there is enough data before confirmatory factor analysis. Bartlett's test is used to evaluate whether the sample is suitable for factor analysis, and the result should be significant. [15,26,27] In this study, the KMO test value of the NCQ was 0.81, and the Bartlett's test value was 1,965.419, which is statistically significant. These findings indicate that the data were normally distributed, that the results were not affected by the sample size, and that the sample was suitable for factor analysis. Confirmatory factor analysis determined that the scale had a two-factor structure. The original version of the questionnaire also had two factors: factor 1 (codependent caretaking) included items 1, 2, 3, 5, 6, 8, 9, 11, 13, 14, 15, 16, 19, 20 and 23; and factor 2 (lack of voice) included items 4, 7, 10, 12, 17, 18, 21, 22 and 24.[7]

Confirmatory factor analysis (CFA) determined that the RMSEA value of the scale was significant and equal to or less than

0.08, which indicates that the CFA fit was high. [18] The RMSEA value of the NCQ was found to be 0.051, which indicates good fit. Its CFI value was 0.88, which is acceptable, and its SRMR value was 0.046, which indicates that the NCQ is a compatible scale. The CFA indices were found to be sufficient.

The literature says that the internal consistency of a Likert-type scale is confirmed when the Cronbach's alpha value is as close to 1 as possible. This value should be 0.90 or higher in physiological measurements and at least 0.70 above for scales that measure attitudes.[16] In this study, the Cronbach's alpha reliability coefficient was 0.77 for the entire questionnaire, 0.74 for factor 1 and 0.50 for factor 2. The reliability coefficients of the original version of the questionnaire were 0.80 for the entire questionnaire, 0.81 for factor 1 and 0.64 for factor 2.[7]

Test-retest reliability is defined as a measuring instrument's ability to yield consistent results from one application to another and time invariance.[28] The correlation coefficient is calculated by comparing the values obtained by two applications. This coefficient is the reliability coefficient of the scale. Correlation coefficients range between -1.00 and +1.00. In general, they are positive, and 0.70 and above indicates the reliability of the scale.[29] The test-retest was administered to 41 nurses over a four-week interval in order to determine the reliability of the NCQ. The test-retest correlation value was r=0.79, and there was a highly significant relationship between the two measurements (p<0.000). The reliability coefficient of the questionnaire was high. The test-retest correlation value of the original version of the questionnaire was 0.90, indicating high correlation and good reliability.[7] The test-retest correlation result of the NCQ was 0.79, which indicates that the questionnaire yielded similar results over time and is very consistent.

Conclusion

As a result of consulting expert opinion and statistical analyses, the Nurse Codependency Questionnaire was found to have high validity and reliability, and it can and should be used to determine the codependency levels of nurses in Turkey.

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