Original Article

Validity and reliability of the palliative nursing care quality scale in Türkiye

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Abstract

Objectives: The aim of this study was to evaluate the validity and reliability of the Palliative Nursing Care Quality Scale (PNCQS) in nursing in Türkiye. Measurement tools are important in the evaluation of care quality. It is important to assess the quality of care provided by nurses to improve the well-being of palliative patients.

Methods: This was a methodological study. This was conducted in Türkiye. The study sample included a total of 210 participants. Linguistic validity, content validity, item validity (item difficulty and discriminating index), and construct validity were tested for the validity of the scale. The reliability of the tool was evaluated by conducting internal consistency and a split-half-test analysis.

Results: Internal consistency is high for all domains of the PNCQS (Cronbach's $\alpha \geq 0.91$). While the content validity index (CVI) for the items varies between 0.81 and 1.00, the CVI for the scale (Scale-CVI) is 0.92. As a result of confirmatory factor analysis, fit indices of the scale (χ^2/df [2.136], GFI [0.85], adjusted good fit index [0.80], comparative fit index [0.91], normed fit index [0.85], Tucker–Lewis index [0.89], and root mean square error of approximation [0.075]).

Conclusion: The PNCQS-TR is a valid and reliable tool for palliative nursing in the Turkish community.

Keywords: End-of-life; nursing care; psychometrics; quality of care.

Providing palliative care is complex and challenging for health-care professionals, patients, and their informal caregivers.[1] Experts argue that health-care professionals should adopt palliative care approaches to manage processes, especially when the prognosis is uncertain.[2] Palliative care focuses on enhancing patients' quality of life in lifelong treatment, regardless of the degree of their illness or whether additional treatments are needed.[3] Palliative care ensures that the needs of patients are addressed with an integrated care approach. It also focuses on high-quality assessment and management of symptoms.[4] Recently, developed countries have adopted palliative care as an important specialty.

Nurses are crucial palliative care providers because they must always be in the clinic for patients.[5,6] In addition, in palliative care, nurses play a leading role in managing the process. This role encompasses a wide range of responsibilities, from medical treatment to managing patients' physical, mental, social, spiritual, and cultural needs.[7] Research shows that palliative care improves patient satisfaction and quality of life. It also provides symptom relief.[8] Earlier research has also shown that palliative care benefits patients and the health-care system financially.[9] Therefore, not only the provision of care should be assessed but also the quality of care. The main theme of the nursing profession is care. It is important to protect our autonomy in this regard. When considered in this context, evaluating the quality of care guides nurses' practices. Researchers often determine how satisfied patients, family members, and caregivers are with palliative care to assess the quality of care.[10] In reviewing recent studies, it was found

that evaluations of the quality of care provided by palliative care nurses were predominantly qualitative.[11–13]

The European Association for Palliative Care recommends that researchers design and use measurement tools to evaluate the quality of palliative care.[14] Some of the scales related to palliative care in the literature are as follows: "Quality Measure for Palliative Nursing scale,"[15] which aims to measure the quality of care provided by palliative care specialist nurses from the patients' perspective. The other scales are the "Palliative Care Self-Reported Practices Scale" and the "Palliative Care Difficulties Scale." The Palliative Care Self-Reported Practices Scale has a total of 15 items assessing six domains, including "end-of-life care," "patient and family-centered care," "pain," "delirium," "dyspnea," and "communication." This scale was developed to determine the level of performance of palliative care practices in the subdimensions of care. The Palliative Care Difficulties Scale has a total of 15 items in five domains, including "communication in multidisciplinary teams," "communication with the patient and family," "expert support," "alleviation of symptoms," and "community coordination." This scale was developed to assess nurses' perceived difficulties in palliative care.[16] Another scale is the "Palliative Care Nursing Self-Efficacy Scale."[2] This 12-item scale has two subscales related to the perceived capacity to answer patients' palliative care concerns and respond to patients' palliative symptoms. This scale was developed to assess nurses' perceived ability to perform palliative care roles. Another scale is the "Palliative Care Nursing Quality Scale." It is a particular scale that defines good nursing in palliative care. Palliative care nurses evaluate the quality of care given to patients, family members, and caregivers using this scale. Therefore, the assessment tool adopts the holistic care philosophy of palliative care and recognizes the needs of patients and caregivers in this context.[17]

Palliative care services for adult patients were first introduced in Türkiye in 2012 and have become widespread since then.[18] However, to the best of our knowledge, no research has been conducted to evaluate the quality of care provided by nurses in this field. Therefore, valid and reliable measurement tools are needed to assess the quality of palliative care services in Türkiye. The aim of this study was to assess the validity and reliability of the "Palliative Care Nursing Quality Scale" for the Turkish language and culture.

Materials and Method

Aim

The study aimed to evaluate the validity and reliability of the "Palliative Nursing Care Quality Scale" (PNCQS-TR) in Türkiye.

Study Design

A methodological design was used in this study.

What is presently known on this subject?
- Valid and reliable measurement tools related to the quality of palliative care can provide data to assess the quality of care provided by nurses to palliative patients.

What does this article add to the existing knowledge?
- "Palliative Nursing Care Quality Scale-TR" is a valid and reliable data collection tool in Türkiye for nurses
- The quality of palliative care provided by nurses can now be measured with a valid and reliable tool.

What are the implications for practice?
- Palliative care nursing can provide a holistic evaluation of the care given by nurses working in palliative care services in Türkiye and increase the quality of care
- Palliative Nursing Care Quality Scale-TR could play a guiding role in the assessment of the quality of palliative care
- Managers can organize training programs to improve nursing performance in palliative care by encouraging using the "Palliative Nursing Care Quality Scale-TR."

Participants

The sample consists of 210 palliative care nurses in Türkiye. The inclusion criteria were (1) being a palliative care nurse (Palliative care centers are not common in Türkiye. This service is also provided in oncology, intensive care units, adult and pediatric services, and geriatric clinics), (2) communicating effectively, (3) volunteering, and (4) filling out the data collection tools. One of the recommendations in the literature for scale adaptation is to have a sample of 5–10 times the number of items in the scale.[19,20] The PNCQS consists of 20 items. The recommended sample size for reliability studies ranges from 200 to 1000. The recommended sample size for validity studies is ten participants per item.[21,22] Therefore, the researchers planned on recruiting at least 200 nurses. Participants were recruited using random sampling. Two hundred and ten nurses agreed to participate in the study. The data were collected with a Google survey due to the pandemic between September and December 2021.

Instruments

Data were obtained using a descriptive questionnaire and the PNCQS-TR.

Descriptive Questionnaire

The descriptive characteristics questionnaire included five items (age, gender, education, unit of duty, and work experience as a palliative care nurse).

PNCQS

This scale aims to provide a holistic assessment of the quality of palliative care provided by the nurse. The PNCQS was developed by Zulueta Egea et al.[17] The scale is a 5-point Likert type ("1=almost never" to "5=almost always"). It consists of 20 items. The scale consists of a single dimension. There are no reverse-coded items. The scale has no cutoff point (points that

can be obtained from the scale: Minimum 20 and maximum 100 scores). A high score indicates a good quality of care. Cronbach's alpha of the scale was 0.94.

Procedure

The recommendations of Koenig and Zaben (2021)[23] were taken into consideration in the translation of PNCQS into Turkish. The researchers emailed the developer of the PNCQS to receive authorization to adapt to Turkish. In the next phase methods recommended by the World Health Organization and the International Commission on Testing for the adaptation of instruments developed in different languages were used to establish language validity. First, two nurses translated the scale into Turkish. Second, two linguists, who were familiar with both cultures and spoke both languages fluently, translated it into Turkish. The researchers compared the translations and finalized. Another linguist, who was familiar with both cultures, spoke both languages fluently and did not see the original scale, translated the Turkish version back into English. The researchers compared the back-translated and the original versions and saw they were similar. Therefore, they used it as the Turkish version (PNCQS-TR).

In the following stage, the appropriateness of the scale to Turkish culture was evaluated by six expert nurses (nurses with a Ph.D. degree). All items were assessed for language and content validity based on expert opinion. The researchers used the content validity index (CVI)[24] to analyze expert feedback. They calculated the CVI for each item and the whole scale. The researchers consulted six nurse academics to establish the content validity of the PNCQS-TR. They made minor modifications to the scale based on expert feedback. They established the language and content validity of the PNCQS-TR and then conducted a pilot study with 10 participants. The participants found the items intelligible and clear. The pilot study participants were also included in the main sample because no modification was made to the scale.

Data Collection

The researchers converted the data collection forms into an electronic format (Google Forms). The data were collected online due to preventive measures to respond to the COVID-19 pandemic (lockdowns, social isolation, quarantine, etc.). Before collecting the study data, the researchers emailed the Oncology Nurses Association and the Palliative Care Nurses Association, which provide palliative care services, to ask them to participate in the study, and the study link was provided to these associations for sending to nurses. In addition, the managers of nurses (oncology, intensive care units, adult and pediatric services, and geriatric clinics) were sent an electronic link through e-mail or WhatsApp and asked to share it with all participants. Initial participants were

asked to send the link to the questionnaire to nurses who met the research criteria. Participants were recruited using random sampling. The researchers asked the initial participants to help identify other participants who fit the inclusion criteria. They also emailed the data collection forms to the Palliative Care Nurses Association and the Oncology Nurses Association to recruit more nurses. They briefed all nurses on the research purpose and procedure before data collection. Nurses who agreed to participate marked the "I agree to participate" box and filled out the data collection forms.

Ethical Considerations

The study protocol adhered to the principles of the Declaration of Helsinki. Authorization was received from Mar Zulueta Egea, one of the developers of the scale, to adapt it into Turkish. The Ethics Committee of this study was obtained from a university in Türkiye (Date: February 06, 2021 and No: 19). The permission to participate in the study was included on the first page of the Google form.

Data Analysis

This research was analyzed using (SPSS) 25.0 software and LISREL 8.80 software. The significance level for all analyses was determined as 0.05 ($p<0.05$). Descriptive statistics were used for descriptive characteristics. Normality was tested by skewness and kurtosis coefficients and a QQ plot. The validity of the scale, the CVI, the validity of the multiple-choice test items, and confirmatory factor analysis (CFA) were employed to test the scale's construct validity. Item difficulty and discrimination indices were calculated. Before factor analysis, KMO, and Barlet tests (were conducted to determine sample adequacy and suitability for factor analysis. KMO coefficient was 0.91, and Bartlett's test of sphericity was 2173.485 (df=0.190, p<0.000). Cronbach's alpha coefficient, item-total correlation, split-half, and base-ceiling effect were calculated to ensure the reliability of the scale.

Results

Descriptive Characteristics

The sample consisted of 210 nurses providing palliative care. Table 1 shows their descriptives characteristics (Table 1).

Validity

CVI, Validity of the multiple-choice test items, and construct validity were calculated.

As suggested by Purwanto et al.[25] (2021), we used the Davis technique for content validity. According to this technique, expert nurses evaluated the scale. As a result of the evaluation, CVI value of the scale was calculated as 92%, that is, content validity was achieved.[26] The items had a difficulty index of

Table 1. Descriptives characteristics (n=210)		
Descriptives characteristics	n	%
Age (year)		32.8±7.94
Gender		
Female	176	83.8
Male	34	16.2
Education (degree)		
High school	17	8.1
Associate	22	10.5
Bachelor's	140	66.7
Master's	31	14.8
Palliative care unit		
Palliative unit	52	24.8
Oncology	32	15.2
Adult intensive care	67	31.9
Pediatric intensive care	12	5.7
Adult service	27	12.9
Child service	3	1.4
Geriatrics	7	3.3
Work experience as a palliative care nurse (year)		3.6±1.24

Table 2. Validity of the multiple-choice test items (n=210)		
Item	Item difficulty (p-value)	Discriminating index (D-value)
1	90.4	0.16
2	87.8	0.17
3	85.8	0.60
4	80.4	0.21
5	81.5	0.20
6	75.2	0.46
7	81.9	0.38
8	81.1	0.46
9	74.3	0.35
10	87.7	0.43
11	90.3	0.62
12	83.7	0.48
13	74.3	0.27
14	78.0	0.33
15	81.0	0.18
16	82.0	0.62
17	74.9	0.24
18	74.9	0.46
19	88.5	0.27
20	89.9	0.33

0.74–0.90. All items were very easy (Table 2). The discriminatory indices ranged from 0.16 to 0.62. Five items had moderate discriminatory indices. Twelve items had good discriminatory indices. Three items had reasonable discriminatory indices. Four items had poor discriminatory indices (Table 2). CFA was conducted to test the construct validity of the scale. The results showed that the model did not fit the data adequately. At this stage, modification index values were examined. Covariance values offer some development tips for analysis. A new correlation link is added if the value is greater than 20 for variables in the same group. Therefore, as can be seen from the model's shape, new links were added between some variables, and the model was rerun. The items had standardized factor loadings of 0.41–0.78 (Fig. 1). The fit indices of the PNCQS -TR were as follows: Root mean square error of approximation (RMSEA)=0.075, Tucker-Lewis index (TLI)=0.89, normed fit index (NFI)=0.85, comparative fit index (CFI)=0.91, adjusted good fit index (AGFI)=0.80, GFI=0.85, and χ^2/df=2.13 (Table 3).

Reliability

Cronbach's alpha coefficients, item-total correlation, split-half, base, and ceiling effect were calculated. The scale had a Cronbach's alpha of 0.91. As a result of the split-half analysis, the Cronbach's alpha value of the first half was 0.857, the Cronbach's alpha value of the second half was 0.898, the Spearman–Brown coefficient was 0.882, the Guttman-Split-Half coefficient was 0.879 and the correlation coefficient between the two halves was 0.789 (Table 4). Table 5 shows the total item correlation coefficients. The analysis of the scale items for

base and ceiling effects did not reveal any significant clustering. In addition, the participants' responses to the scale items were evaluated for equality using the Hotelling T2 test. The results of this test indicated that Hotelling T2=125.869, p<0.001, and that there was no response bias in the scale.

Discussion

The results of this study, which was conducted to evaluate the validity and reliability of the "Palliative Nursing Care Quality Scale" (PNCQS-TR) in Türkiye, are discussed under the headings of validity and reliability.

Validity

The suitability of the sample for factor analysis was determined by calculating the KMO coefficient, which was found to be 0.91. The Bartlett's test of sphericity analysis resulted in 2173.485 (df=0.190, p<0.01), indicating that the correlation matrix of the items in the scale was appropriate for factor analysis. Similarly, the Chinese version of the PNCQS had a KMO value of 0.96, and Bartlett's global test value was 3314.49 with a significance level of p<0.01.[27]

CVI analysis was performed. Based on expert opinions, the CVI value of the scale was calculated to be 92%, meaning that content validity was ensured. Values above 0.78 and 0.80 are recommended for I-CVI and S-CVI, respectively.[28]
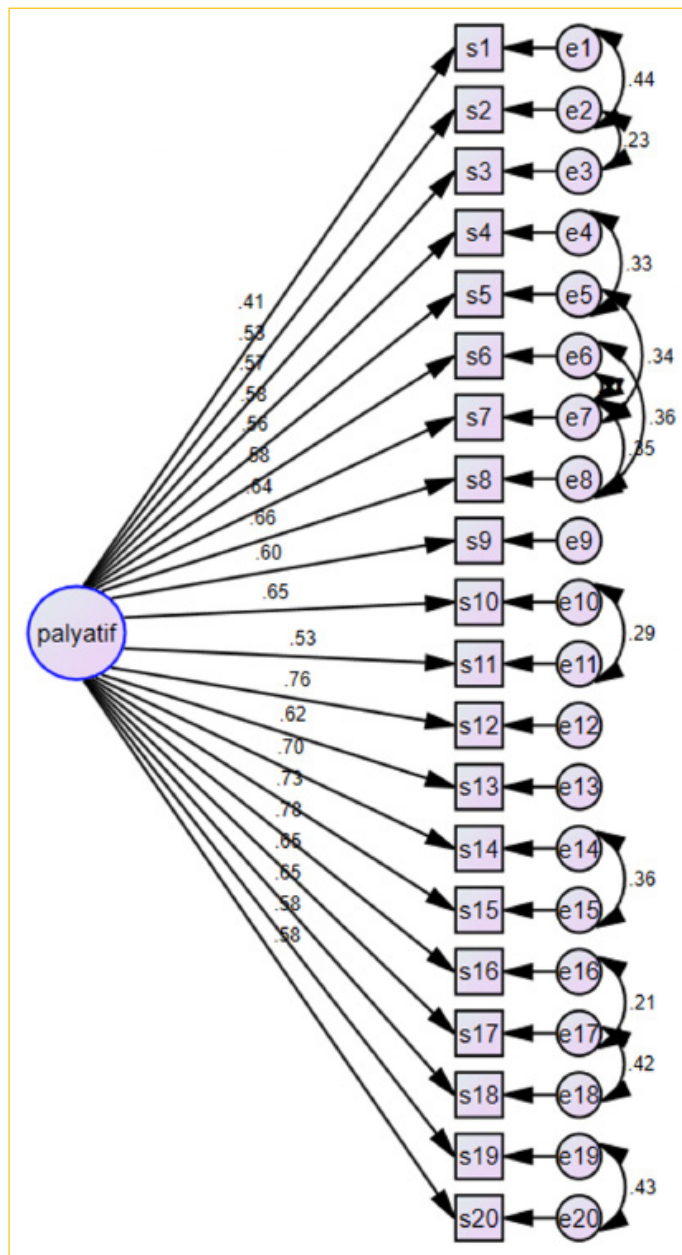
Figure 1. Final construct validity.

Our results showed that the PNCQS-TR had excellent reliability. In this study, both indexes were above those values, indicating expert agreement.

Item analysis was used to determine which items needed to be revised or removed.[28,29] We used the difficulty indices suggested for items rated on a 5-point Likert-type scale to interpret item difficulty and discrimination indices (a difficulty index below 0.10 indicates that the item is very difficult, while a value above 0.90 indicates that it is very easy).[30] In this study, most items had a difficulty index >0.74. An item discrimination index below 0.10 is considered poor. An item discrimination index between 0.10 and 0.20 is considered fair. An item discrimination index between 0.20 and 0.30 is considered moderate.

Table 3. CFA fit and fit index values

	Calculated	Fit indices	
		Excellent	Acceptable
CMIN/df	**2.136**	≤3	≤4–5
GFI	0.85	≥0.90	≥0.85
AGFI	0.80	≥0.90	≥0.85
CFI	**0.91**	≥0.97	≥0.90
NFI	0.85	0.90≤NFI≤0.95	0.95≤NFI≤1.00
TLI	0.89	≥0.95	≥0.95
RMSEA	**0.075**	≤0.05	0.06–0.08

CFA: Confirmatory factor analysis; CMIN: Chi-square/df; df: Degrees of freedom; GFI: Good fit index; AGFI: Adjusted good fit index; CFI: Comparative fit index, NFI: Normed fit index; TLI: Tucker-Lewis index; RMSEA: Root mean square error of approximation.

Table 4. Cronbach's alpha values and split-half analysis

	Cronbach's alpha	Spearman–Brown value	Guttman-split half value
Total	0.91	0.88	0.87

Table 5. Item total correlations

Items	Corrected item-total correlation	Cronbach's alpha if an item deleted
1	0.420	0.927
2	0.524	0.926
3	0.567	0.925
4	0.612	0.924
5	0.595	0.924
6	0.608	0.924
7	0.664	0.923
8	0.681	0.922
9	0.566	0.925
10	0.615	0.924
11	0.497	0.926
12	0.699	0.922
13	0.597	0.925
14	0.653	0.923
15	0.704	0.922
16	0.733	0.922
17	0.627	0.924
18	0.604	0.924
19	0.555	0.925
20	0.567	0.925

An item discrimination index above 0.30 is considered good.[30] In this study, most items had good discriminatory power, and none had a discrimination index below 0.10. Therefore, we removed none of the items. A CFA was performed to confirm the fit of the sample with the construct of the original scale. The

CFA results of the 20-item PNCQS-TR had an acceptable fit to the data. There is no consensus regarding the goodness of fit indices that should be reported in CFA.[31] The most common goodness of fit indices was used in this study (RMSEA=0.075, TLI=0.89, NFI=0.85, CFI=0.91, AGFI=0.80, GFI=0.85 and χ^2/df=2.13). Fit indices, calculated using the CFA to investigate the validity of the PNCQS, indicate that the model may be considered good if χ^2/standard deviation (SD) ≤2, whereas the indices of value ≤5 indicate that the model is acceptably fit.[32] The χ^2/SD value of 2.66 obtained in the study indicated that the model was a good fit. An RMSEA value close to zero indicates a very good fit, whereas values equal to or <0.08 represent an acceptable fit.[33] The RMSEA value of the scale was estimated to be 0.075 in this study, indicating that the scale had an acceptable fit. A review of the literature revealed that, for the CFI, RFI, NNFI, and GFI indices, a value of 0.90 was considered a good fit, whereas a value of 0.95 represented a perfect fit.[33–35] The CFI value obtained in the study was above 0.90. The study calculated TLI, NFI, AGFI, and GFI values that were below the reference values (TLI=0.89, NFI=0.85, AGFI=0.80, and GFI=0.85), indicating a poor fit. In conclusion, the estimated indices of χ^2/SD, RMSEA, and CFI indicated that the model had an acceptable fit. The fit indices of the original scale (Chi-square [χ^2/Df] 452.856/170=2.66; CFI=0.96; TLI=0.95; and RMSEA=0.09 [CI% 90=0.086, 0.01]) are consistent with our results.[18] The Chinese version of the scale yielded good fitting indices (χ^2/df=2.267, RMSEA=0.077, CFI=0.912, TLI=0.901, and IFI=0.913).[27] As to which fit indices should be accepted as the standard, there is currently no consensus.[36] According to Schreiber et al.[37] (2006), it is important to use multiple fit indices and if they indicate an acceptable fit, then there is likely an acceptable fit. According to Byrne (2011), it is not appropriate to evaluate the fit of a model to reality based on a single statistic.[38] Instead, multiple statistics should be examined together, within their own conditions and model conditions. The small sample size of <250 may explain the poor fit indices.

Reliability

Like the original scale,[17] the PNCQS-TR has a one-factor structure and adequate reliability, internal consistency, and split-half reliability. The PNCQS-TR has a Cronbach's alpha of 0.91, while the original scale has a Cronbach's alpha of 0.94.[17] The Chinese version of the scale of Cronbach's alpha of 0.96. [27] Cronbach's alpha of 0.60–0.79 indicates good reliability, whereas Cronbach's alpha >0.80 indicates high reliability. The results show that the PNCQS-TR has good reliability.[39] Moreover, in the split-half reliability analysis, the Spearman–Brown coefficient and the Guttman Split Half coefficient were at high levels. These results indicate that the survey has acceptable internal consistency and reliability. The Chinese version of the scale was evaluated by test and retest (0.79).[27]

These results show that the PNCQS-TR has acceptable psychometric properties and can be used to assess the quality of palliative care by nurses providing palliative care in Türkiye. To successfully execute quality of care with palliative care nurses must believe that their care activities will lead to a positive outcome and that they have the necessary skills to do so. The PNCQS-TR allows to assessment of the quality of care being delivered by palliative care nurses. The PNCQS-TR scale enables nurses to conduct self-assessments. The data from this scale can be used as a guide for quality improvement activities in health care and palliative care.

Limitations

This study had one limitation. The data were collected online. Therefore, the sample consisted of nurses who could fill out online questionnaires. Moreover, since the data were collected online, participants could not ask the questions they might have in mind.

Conclusion

The PNCQ-TR has acceptable psychometric properties and suggests that it can be used in clinical practice and research to assess the quality of care of nurses providing palliative care in Türkiye. We recommend that palliative care nurses and managers use the PNCQ-TR to evaluate the quality of palliative care. In future studies, it is recommended that different analyses be conducted to assess PNCQS's validity. It is also recommended that research with larger sample groups be conducted. It is recommended that the PNCQS be tested in different cultures.

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