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Validity and Reliability of the Wound-QoL-14 questionnaire in a Turkish population

Kronik Yaralarda Yaşam Kalitesi Ölçeğinin Türk Popülasyonunda Geçerlik ve Güvenirliği

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ABSTRACT

Objective: This study aimed to evaluate the validity and reliability of the Turkish version of the Wound-QoL-14 questionnaire.

Methods: This methodological study included 141 patients with chronic wounds (mean age 63.52±13.94 years; 57% male) treated in a university hospital in Istanbul between March 2022 and April 2023. Content validity was assessed using both expert panel and patient feedback. Internal consistency was assessed with Cronbach's alpha, and item-total correlations were analyzed using Pearson correlation coefficient. Test–retest reliability was evaluated in 35 patients after one week interval. Convergent validity was tested using the SF-12 Health Survey. Construct validity was assessed through confirmatory factor analysis (CFA).

Results: Based on the Davis method, the item-level content validity indices ranged from 0.90 to 1.00. Cronbach's alpha coefficients for scale items ranged from 0.76 to 0.97, and item–total correlations ranged from 0.42 to 0.78. The test–retest intraclass correlation coefficient was 0.95. Wound-QoL total scores showed a significant negative correlation with SF-12 sub-dimensions (r = -0.284 to -0.718). CFA confirmed the four-factor structure (body, psyche, everyday life, and a separate item 5) with factor loadings ranging from 0.67 to 0.93.

Conclusion: The Turkish version of the Wound-QoL-14 is a valid and reliable instrument for assessing wound-related quality of life in patients with chronic wounds.

Keywords: Wound management, chronic wounds, quality of life, questionnaires, validity and reliability

ÖZ

Amaç: Bu araştırmanın amacı Wound-QoL-14 ölçeğinin Türkçe versiyonunun geçerlik ve güvenirliğini değerlendirmektir.

Yöntemler: Metodolojik olarak tasarlanan araştırmaya, Mart 2022 ve Nisan 2023 tarihleri arasında İstanbul'da bir üniversite hastanesinde tedavi gören kronik yarası olan 141 hasta (yaş ortalaması: 63,52±13,94 yıl; %57'si erkek) dahil edilmiştir. Kapsam geçerliği hem uzman değerlendirmeleri hem de hasta geri bildirimleri alınarak değerlendirilmiştir. İç tutarlılık Cronbach alfa ile incelenmiş, madde-toplam korelasyonları ise Pearson korelasyon katsayısı kullanılarak analiz edilmiştir. Test-tekrar test güvenirliği 35 hastada bir hafta sonra değerlendirilmiştir. Yakınsak geçerlik SF-12 Sağlık Anketi kullanılarak test edilmiştir. Yapı geçerliği doğrulayıcı faktör analizi (DFA) ile değerlendirilmiştir.

Bulgular: Davis yöntemi sonucunda, madde düzeyinde kapsam geçerlik indeksleri 0,90 ile 1,00 arasında değişmiştir. Ölçek maddelerinin Cronbach alfa katsayıları 0,76 ile 0,97 arasında, madde-toplam korelasyonları ise 0,42 ile 0,78 arasında bulunmuştur. Test-tekrar test sınıf içi korelasyon katsayısı 0.95 olarak hesaplanmıştır. Wound-QoL-14 toplam puanları ile SF-12 alt boyutları ile anlamlı negatif korelasyon saptanmıştır (r = -0,284 ila -0,718). DFA, faktör yükleri 0,67 ila 0,93 arasında değişen dört faktörlü yapıyı (beden, psikoloji, günlük yaşam ve bağımsız 5. madde) doğrulamıştır.

Sonuç: Wound-QoL-14 ölçeğinin Türkçe versiyonu, kronik yarası olan hastalarda yara ilişkili yaşam kalitesini değerlendirmek için geçerli ve güvenilir bir araçtır.

Anahtar Kelimeler: Yara bakımı, kronik yara, yaşam kalitesi, anketler, geçerlilik ve güvenilirlik

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INTRODUCTION

Chronic wounds are those that do not heal within the expected timeframe for normal tissue repair.[1,2] It is estimated that between 1% and 2% of the global population will experience a chronic wound at some point in their lifetime.[3] With the increasing prevalence of chronic diseases and an aging population, the incidence of chronic wounds has been on the rise. Among older adults, these wounds significantly contribute to both morbidity and mortality.[4] According to recent international clinical guidelines and current evidence, chronic wounds are primarily classified into four major categories based on their underlying etiology: pressure injuries, diabetic foot ulcers, venous leg ulcers, and arterial ulcers.[5,6]

Chronic wounds can significantly affect health-related quality of life (HRQoL), and the effects can vary from individual to individual. They often cause pain, which also has indirect effects on HRQoL because of its negative impact on daily life, physical activity, sleep, and social life.[7,8] Pain at the wound site may cause restriction of movement.[9] Daily routine activities of the patient who must have dressings at regular intervals may be affected. Long-term deterioration in sleep quality can lead to constant feeling of fatigue.[10] The discharge from the wound and the odor can affect the person physically and psychologically.[10] Problems such as stress, anxiety, depression, and social isolation may occur as a result of prolonged wound healing.[11] The patient's dependence on others and decreased activity may lead to isolation from society. Treatment of chronic wounds can often be expensive.[12]

Therefore, assessing HRQoL in patients with chronic wounds is essential to capture the multidimensional impact of these conditions and to inform individualized care strategies. Determining wound-related QoL can help healthcare providers understand the impact of chronic wounds on patients and tailor the treatment and nursing care plans according to the specific needs of patients.[7] Nurses play a key role in evaluating and managing HRQoL in patients with chronic wounds. Beyond monitoring clinical healing, they assess patients' subjective experiences, including pain, psychological wellbeing, and social participation.[13] Nurse-led wound care interventions have been shown to improve both clinical outcomes and HRQoL while reducing healthcare costs.[11] Integrating structured, patient-centered HRQoL assessments, such as the Wound-QoL, into routine nursing care is essential to provide holistic, individualized wound care and improve patient outcomes.[14]

In this context, it is recommended to evaluate the HRQoL of this specific group of patients with standardized, valid, and reliable instruments and to identify the factors affecting their HRQoL. Although there are generic tools available to assess HRQoL, using a chronic wound-specific instrument is more sensitive to the unique physical, psychological, and social burdens experienced by this patient population. To date, in Türkiye, the validity and reliability study of the Pressure Ulcer Quality of Life (PU-QoL) instrument has been conducted.[15] However, the PU-QoL is specifically designed for patients with pressure injuries and is not suitable for evaluating patients with other types of chronic wounds. The Wound-QoL is a validated, disease-specific questionnaire developed to assess HRQoL across all chronic wound types, enabling a broader and more comprehensive evaluation of this diverse patient group. This study can be an important resource for Turkish researchers and clinicians interested in assessing the effects of wound healing on HRQoL. It may also pave the way for future international comparative studies. Furthermore, such tools adapted to the Turkish population will allow wound care and treatment processes to be better tailored to individual needs.

AIM

This study aimed to translate, culturally adapt, and evaluate the psychometric properties of the Wound-QoL-14 questionnaire in a Turkish patient population.

Research questions/hypothesis

- How valid and reliable is the Turkish version of the Wound-QoL-14 questionnaire for assessing the quality of life of patients with chronic wounds?

METHODS

Design

This methodological study followed the COSMIN checklist to ensure methodological quality in evaluating the measurement properties of health-related patient-reported outcomes.[16,17]

Sample and Population

The study was conducted between March 2022 and April 2023 in the Wound Care Unit of a university hospital in Istanbul. Inclusion criteria were: aged 18 years or older, having a chronic wound for at least 3 months, being conscious and able to communicate, and having Turkish as their native language.

In line with established guidelines for scale adaptation, the recommended sample size is 5 to 10 times the number of scale items.[18] As the Wound-QoL-14 includes 14 items, a minimum of 140 participants was required. A total of 200 patients were initially screened for eligibility. Among these, 39 patients with neurological disorders (e.g., dementia,

Alzheimer's disease), 12 patients with diagnosed psychiatric conditions, and 8 patients who declined to participate were excluded. The final sample comprised 141 patients who met the criteria and agreed to participate.

Data Collection Tools

Data were collected with the Patient Information Form, the Wound QoL-14 questionnaire, and the SF-12 Health Survey. The researchers designed the Patient Information Form to collect demographic data of the patients (such as age, gender, and education level) and the clinical characteristics of their wounds (including wound type, number of wounds, and wound duration). All data collection tools, including the Patient Information Form, the Wound-QoL-14 questionnaire, and the SF-12 Health Survey, were administered using the self-report method. Patients completed these forms on paper under the supervision of the researchers while waiting for their wound assessment. The entire data collection process required approximately 10 to 15 minutes per patient.

Wound-QoL-14 Questionnaire: The Wound-QoL questionnaire was developed by Blome et al.[19] It consists of 17 items, with a short version consisting of 14 items (Wound-QoL-14). In this study, the 14-item Wound-QoL-14 version was used. The Wound-QoL is a self-report questionnaire.[19,20] The Wound-QoL-14 evaluates health-related quality of life in patients with chronic wounds across three sub-dimensions: "Body" (items 1, 2, 3, 4), "Psyche" (items 6, 7, 8, 9), and "Everyday Life" (items 10, 11, 12, 13, 14), consistent with the original questionnaire. Item 5 ("...the treatment of my wound burdened me") is not assigned to any sub-dimension but is included in the total score calculation. Each item is scored on a 5-point Likert scale ranging from 0 (not at all) to 4 (very much). Sub-dimension scores are calculated by summing the scores of the relevant items within each sub-dimension and dividing by the number of items in that sub-dimension. The total score is calculated by summing the scores of all 14 items and dividing by the total number of items. In both the sub-dimensions and the total score, higher scores indicate a worse the QoL.[20,21]

SF-12 Health Survey: The SF-12 Health Survey was created as a brief alternative to the SF-36 scale.[22] The validity and reliability of its Turkish version were evaluated by Soylu and Kütük[23] in 2021. This survey includes 12 items across eight sub-dimensions: physical functioning, role limitations due to physical health, bodily pain, general health, energy/fatigue, social functioning, role limitations due to emotional health, and mental well-being. Higher scores indicate better overall health. In this study, the SF-12 was utilized to assess the convergent validity of the Wound-QoL-14.

Translation and Cultural Adaptation Phase

Permission: Permission to use and translate the Wound-QoL-14 questionnaire was obtained from the scale developers.

Translation: The Turkish version of the questionnaire, including the user guide, was officially translated and provided by the original scale developer in cooperation with their professional translation agency.

Expert Opinions: To assess content validity, the Turkish version of the Wound-QoL-14 was reviewed by 10 experts in wound care (nurse academics, specialized wound nurses, wound physicians), who evaluated each item's relevance and clarity using a four-point Likert scale, in line with recommended practices for scale adaptation.[24,25] Based on expert feedback, minor adjustments were made to the wording.

Pilot study (Cognitive Interviews): Subsequently, cognitive debriefing interviews were conducted with 20 patients (10 female; aged 45–92 years; with varying educational backgrounds) to evaluate the clarity, comprehensibility, and cultural relevance of the translated items.[24] Patients were instructed to "think aloud" while completing the questionnaire. They were also asked to describe their understanding of each item and indicate if any item was uncomfortable or difficult to understand, using open-ended questions. Minor suggestions were incorporated to improve understandability.

All linguistic revisions were documented and discussed collaboratively with the original scale developers and a professional translator. The final Turkish version was reviewed and approved by the developer's official translation agency. No substantive changes were necessary, as all items were deemed clear and culturally relevant by the participants. This finalized version was subsequently employed in the psychometric validation study.

Methodological Testing - Validity Phases

Construct validity: Construct validity of the Turkish Wound-QoL-14 was assessed using confirmatory factor analysis (CFA) to evaluate the fit between the predefined factor structure and the observed data. CFA examines the dimensional structure of a scale through model fit indices.[26] Several fit indices were employed to assess model adequacy, including the root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), comparative fit index (CFI), and goodness-of-fit index (GFI).

Convergent validity: Convergent validity was assessed using the SF-12 Health Survey to determine whether different measures of the same concept produce similar results. In this study, the relationship between scale scores and related constructs was examined using the Pearson product-moment correlation coefficient. Stronger correlation coefficients provided evidence supporting convergent validity.[18,26]

Methodological Testing - Reliability Phases

Internal Consistency: Cronbach's alpha coefficient were used to measure the internal consistency of the scale. Cronbach's alpha is used to assess the internal consistency of scale items, indicating the degree to which individual items within the scale are correlated with each other in relation to the total score.[18,26]

Test-retest reliability: A re-test was conducted to assess how reproducible the patients' performance was, i.e. how consistent their scores were over time.[27] The 35 patient in the sample (25%) were reached again after one weeks of the first interview and the scale was filled out again and Intraclass Correlation Coefficient (ICC) was analysed for test-retest reliability.[28] To prevent bias from repeated measurements, data from the 35 patients were excluded from the main validity and reliability analyses.[29]

Data Analysis

The data were analyzed using IBM SPSS Statistics 26 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including frequency, percentage, mean, and standard deviation, were calculated. The Kolmogorov–Smirnov test was used to assess the normality of continuous variables, and Pearson's correlation coefficient was used to examine relationships between continuous variables. The internal consistency of the scale was evaluated using Cronbach's alpha coefficients, while test–retest reliability was assessed using the ICC. Content validity was assessed by calculating the Content Validity Index (CVI) based on expert ratings using the Davis method. Construct validity was evaluated using CFA, and model fit was assessed using standard goodness-of-fit indices. Results were interpreted within a 95% confidence interval, and statistical significance was considered at $P<.05$.

Ethical Approval

This study complied with the ethical principles of the Declaration of Helsinki. Ethical approval was granted by the Acıbadem Mehmet Ali Aydınlar University Medical Research Ethics Committee (Date: 14.02.2022; Number: 2022-03/06) and renewed after the inclusion of additional researchers (2024-4/137). Patients were informed about the study's aim and procedures, and written consent was obtained.

RESULTS

A total of 141 patients with chronic wounds were included in the study. The mean age of the patients was 63.52±13.94 years (range, 21-95), 81 of the patients (57%) were male. More than half (57%) of the wounds were diabetic foot and most (82%) occurred within 1 year. A single wound was present in 114 patients (81%) (Table 1).

Table 1. Demographic Characteristics of Patients (n=141)

Variables	n (%)
Age mean±SD: 63.52±13.94	
Age group	
<65 years	64 (45.4)
≥65 years	77 (54.6)
Gender	
Female	60 (42.6)
Male	81 (57.4)
Wound Type	
Diabetic foot	81 (57.4)
Venous ulcer	24 (17.0)
Surgical wound	16 (11.3)
Pressure injury	12 (8.5)
Traumatic wound	8 (5.7)
Number of wounds	
1	114 (80.9)
2-3	27 (19.1)
Wound onset time	
3-6 months	69 (48.9)
7-12 months	46 (32.6)
≥ 13 months	26 (18.4)

SD, Standard deviation

Reliability Analyses

The reliability coefficient for the total score of the Wound-QoL questionnaire was α=0.94, α=0.97 for the "everyday life" sub-dimension, α=0.76 for the "body" sub-dimension and α=0.96 for the "psyche" sub-dimension. The corrected item-total score correlation coefficients of the 14 items of the Wound-QoL questionnaire were between r=0.38 and r=0.81 (Table 2).

High agreement was found between test and retest total scores (ICC=0.95; α=0.97; r=0.94; $P<.001$). Similar results were obtained in the analyses performed for the Wound-QoL sub-dimensions (Table 2).

Validity Analyses

The content validity of the scale was assessed based on the evaluations of 10 experts using the Davis method. Item-level content validity indices (I-CVI) ranged from 0.90 to 1.00, and the overall content validity index (S-CVI/Ave) of the scale was calculated as 0.99.

CFA was applied to evaluate the construct validity in the Turkish adaptation of the Wound-QoL. CFA was evaluated

Table 2. Wound-QoL Questionnaire Item Statistics and Reliability Analyses

Sub-dimensions / Items	Mean (SD)	CITC*	Cronbach α	ICC	r	*P*-value
Everyday life			0.971			
Item 10	2.05 (0.95)	0.754				
Item 11	2.09 (0.96)	0.755				
Item 12	2.09 (0.97)	0.793				
Item 13	2.11 (1.00)	0.767				
Item 14	1.92 (0.98)	0.714				
Total (Everyday life)	**10.26 (4.59)**			**0.948**	**0.918**	**<.001**
Body			0.755			
Item 1	1.50 (1.01)	0.375				
Item 2	0.86 (0.82)	0.454				
Item 3	1.06 (0.82)	0.519				
Item 4	1.99 (1.22)	0.704				
Total (Body)	**5.41 (2.97)**			**0.869**	**0.787**	**<.001**
Psyche						
Item 6	1.89 (1.13)	0.814	0.963			
Item 7	1.88 (1.10)	0.799				
Item 8	1.82 (1.08)	0.784				
Item 9	1.74 (1.11)	0.704				
Total (Psyche)	**7.34 (4.19)**			**0.915**	**0.847**	**<.001**
Item 5	2.01 (0.90)	0.805	N/A			
Total Scale	**25.02 (10.49)**		0.937	**0.953**	**0.935**	**<.001**

*CITC: Corrected item-total correlation, SD: Standard deviation, N/A: Not available, ICC: Intraclass correlation coefficient, r: Pearson's correlation test

in two stages. In the first stage, the structure of the sub-dimensions without the 5th item of the scale was confirmed (Figure 1 and 2). In the second stage, firstly, the sub-dimension scores were standardized (sub-dimension total item score/sub-dimension item count). The 5th item of the scale was added to the 3 standardized sub-dimensions, and the total structure of the Wound-QoL questionnaire was confirmed with a 4-item structure (model factor loadings ranged between 0.67-0.93).

The fit index values obtained as a result of CFA. The RMSEA, SRMR, CFI, and GFI values of the first model for the sub-dimensions were 0.076, 0.036, 0.978, and 0.901, respectively, and the values of the model for the total construct were 0.000, 0.015, 0.999, and 0.995,

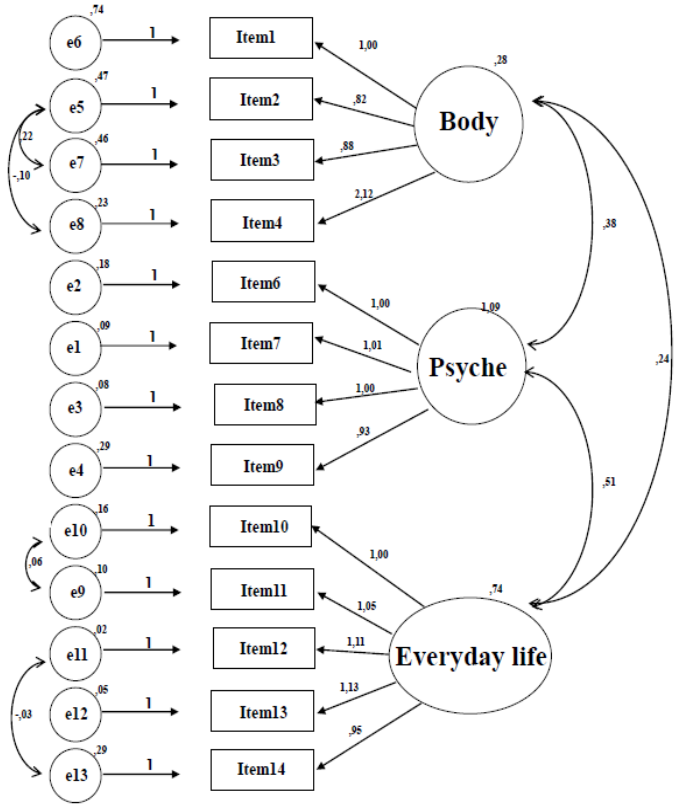

Figure 1. Sub-dimension unstandardized path coefficients

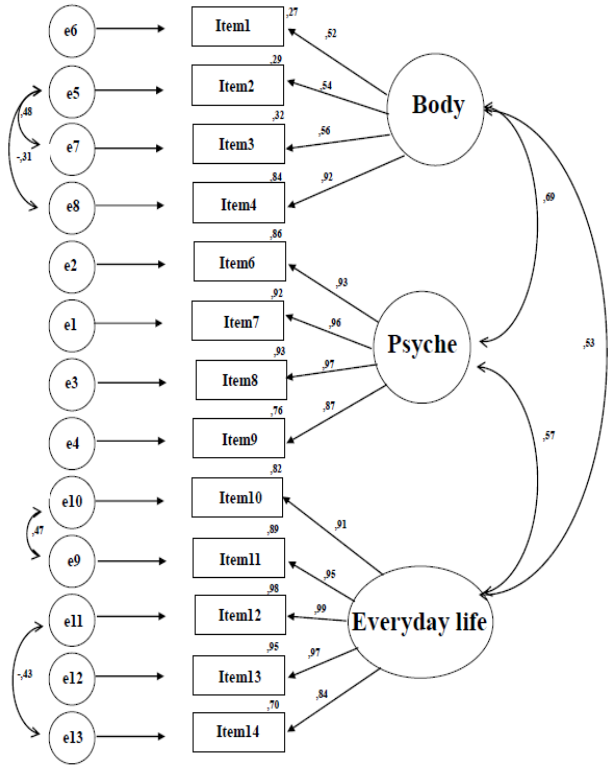

Figure 2. Sub-dimension standardized path coefficients

respectively. The chi-square value was significant for the first model (χ2=105.296; df=58; χ2/df=1.815; *P*<.001) and insignificant for the second model (χ2=1.533; df=2; χ2/df=0.767; *P*=.465) (Table 3).

In the structural equation model, the relationship between the items constituting the sub-dimensions and the total structure of the scale in which item 5 was included was found to be statistically significant (β=0.52 to 0.98; *P*<.001) (Table 4).

A statistically significant negative correlation was observed between the total Wound-QoL score and all sub-dimensions of the SF-12 Health Survey (r=-0.284 to -0.718; *P*<.001 and *P*<.01) (Table 5).

Table 3. Fit Indices of the Structural Equation Model

Fit Criterion	Acceptable Fit Criteria	Fit Index Results	
		Sub-dimension	Scale overall structure
χ2/df	2≤ χ2/df ≤3	1.815	0.767
RMSEA	0.05<RMSEA<0.08	0.076	0.000
SRMR	0.05<SRMR<0.10	0.036	0.015
NFI	0.90<NFI<0.95	0.952	0.994
NNFI(TLI)	0.95<NNFI<0.97	0.970	0.999
CFI	0.95<CFI<0.97	0.978	0.999
GFI	0.90<GFI<0.95	0.901	0.995

RMSEA: Root Mean Square Error of Approximation, SRMR: Standardized Root Mean Square Residual, NFI: Normed Fit Index, NNFI: Non-Normed Fit Index, CFI: Comparative Fit Index, GFI: Goodness of Fit Index

Table 4. Path Coefficients in the Structural Equation Model

Items	←	Structural relations for the whole structure	B	S.E.	β	C.R.	*P*-value
Item 5	←	Wound-QoL	1		0.926		
Body	←	Wound-QoL	0.652	0.066	0.731	9.883	**<.001**
Psyche	←	Wound-QoL	0.966	0.091	0.769	10.571	**<.001**
Everyday life	←	Wound-QoL	0.739	0.084	0.671	8.813	**<.001**
Items	←	**Structural relationships for sub-dimensions**	**B**	**S.E.**	**β**	**C.R.**	***P*-value**
Item 1	←	Body	1		0.522		
Item 2	←	Body	0.822	0.190	0.536	4.325	**<.001**
Item 3	←	Body	0.878	0.174	0.565	5.05	**<.001**
Item 4	←	Body	2.119	0.364	0.919	5.815	**<.001**
Item 6	←	Psyche	1		0.925		
Item 7	←	Psyche	1.008	0.044	0.961	23.056	**<.001**
Item 8	←	Psyche	0.999	0.043	0.966	23.483	**<.001**
Item 9	←	Psyche	0.926	0.055	0.873	16.782	**<.001**
Item 10	←	Everyday life	1		0.908		
Item 11	←	Everyday life	1.047	0.038	0.946	27.523	**<.001**
Item 12	←	Everyday life	1.108	0.046	0.989	23.952	**<.001**
Item 13	←	Everyday life	1.128	0.050	0.973	22.637	**<.001**
Item 14	←	Everyday life	0.949	0.065	0.837	14.518	**<.001**

B, Estimates of unstandardized regression weights, β:Estimates of standardized regression weights; SE, Standard error; CR, Critical ratio

Table 5. Wound-QoL Questionnaire Convergent Validity Analysis (SF 12 QoL)

	Wound-QoL		Everyday life		Body		Psyche	
SF 12 QoL	**r**	***P*-value**	**r**	***P*-value**	**r**	***P*-value**	**r**	***P*-value**
General Health	-0.529	**<.001***	-0.516	**<.001***	-0.320	**<.001***	-0.424	**<.001***
Physical Functioning	-0.613	**<.001***	-0.678	**<.001***	-0.389	**<.001***	-0.407	**<.001***
Role-Physical	-0.284	**.001***	-0.369	**<.001***	-0.163	.053	-0.149	.078
Role-Emotional	-0.443	**<.001***	-0.331	**<.001***	-0.227	**.007***	-0.506	**<.001***
Bodily Pain	-0.623	**<.001***	-0.561	**<.001***	-0.593	**<.001***	-0.416	**<.001***
Mental Health	-0.602	**<.001***	-0.484	**<.001***	-0.348	**<.001***	-0.616	**<.001***
Energy/fatique	-0.513	**<.001***	-0.425	**<.001***	-0.355	**<.001***	-0.458	**<.001***
Social Functioning	-0.718	**<.001***	-0.712	**<.001***	-0.493	**<.001***	-0.534	**<.001***

**P*<.001, r: Pearson's correlation test

DISCUSSION

Information on patients' HRQoL is very important for healthcare professionals. Especially for patients with chronic wounds, HRQoL data are crucial because the treatment of chronic wounds takes a long time, affects the patient multidimensionally. This study aimed to evaluate the validity and reliability of the Turkish version of the Wound-QoL-14 questionnaire, and the findings support its use as a reliable and valid assessment tool.

According to the COSMIN guidelines, content validity includes relevance, comprehensiveness, and understandability.[24] In this study, content validity was evaluated by obtaining both expert and patient input, as recommended by COSMIN. High I-CVI values (0.90–1.00) and an S-CVI/Ave of 0.99 demonstrated excellent expert agreement regarding the relevance and clarity of the items.[17] Additionally, patient feedback was collected to assess the understandability and cultural appropriateness of the items, which contributed to ensuring that the Turkish version of the Wound-QoL-14 is both conceptually valid and linguistically clear. For scale validity and reliability studies, the sample size ought to be 5-10 times the total amount of items,[18] which means that the 141 patients included in this study represented a large enough sample to test the 14-item Wound-QoL.

Cronbach's α of the three dimensions was 0.755–0.971 and 0.937 for the total score, all > 0.70 and thus indicating that the scale had good consistency and stability.[26] Similar results were found in Danish, Spanish, Chinese and other reliability studies of the scale.[30-33]

CFA results demonstrated that the model had an acceptable to good fit. Specifically, the fit indices for the sub-dimension model (RMSEA = 0.076, SRMR = 0.036, CFI = 0.978, GFI = 0.901) and the total model (RMSEA = 0.000, SRMR = 0.015, CFI = 0.999, GFI = 0.995) all met the recommended thresholds, indicating a well-fitting model. Moreover, the χ^2/df ratios (1.815 and 0.767, respectively) fell below the suggested cut-off value of 3, further supporting model adequacy.[34,35] These findings confirm the construct validity of the Turkish version of the Wound-QoL, suggesting that the model is both statistically sound and theoretically meaningful.

Although the COSMIN guidelines do not prescribe a fixed number of days for the test–retest interval, a two-week interval is commonly accepted in the literature as sufficiently short to avoid real change and sufficiently long to minimize recall bias.[17,29] In order to minimize wound-related changes, we found a period of no longer than 10 days to be appropriate for an unstable construct such as HRQoL. In this study, 35 patients who took part in the survey were randomly chosen for a retest of the questionnaire after one week, yielding a high retest reliability for the total scale with an ICC of 0.953.

In previous studies, different validated scales have been used to evaluate the convergent validity of the Wound-QoL. The most commonly used scales for convergent validity are 5-level version of the EQ-5D,[31] 3-level EuroQol 5-dimensional and Freiburg Life Quality Assessment for wounds (FLQA-wk).[30,33] In this study, the SF-12 Health Survey, which is commonly used in Türkiye, was used. Similarly, convergent validity was satisfactory since there were significantly good correlations with the SF-12 Health Survey.

Limitations

The study has some limitations. The study was conducted in a single center and with a limited sample. This may limit the generalizability of the scale to larger and diverse populations with different socio-demographic characteristics. Only individuals older than 18 years with a chronic wound problem for at least 3 months were included in the study, which limits generalizability to individuals with shorter duration wound problems or pediatric/adolescent patients. Data collection was conducted between March 2022 and April 2023, which may have been influenced by limiting factors related to healthcare, clinical practice and pandemic impacts. Self-report completion of scales such as the Wound-QoL 14 and SF-12 may pose a risk of bias depending on participants' perceptions, mood or cognitive state.

The Turkish version of the Wound-QoL-14 demonstrated good psychometric properties, including strong internal consistency, test–retest reliability, and construct validity. These findings support its use as a reliable and valid instrument for assessing wound-related QoL in Turkish patient populations. Using the disease-specific Wound-QoL-14 can contribute to understanding the patient's needs, guide treatment decisions, and promote patient participation in medical decision-making. Importantly, for nursing practice, the Wound-QoL-14 provides a valuable tool to comprehensively evaluate the patient's quality of life, enabling nurses to deliver more holistic, patient-centered care.

In future studies, including individuals with different socio-demographic characteristics (education level, income status, rural/urban area) in the study may provide information about how the scale performs according to these variables. This scale can also be tested in different wound types (diabetic ulcer, venous ulcer, pressure injuries etc.). Analyses with such subgroups may provide more

information about the validity and reliability of the Wound-QoL14 in these groups. Healthcare organizations can use this scale to assess the effectiveness of wound care services and create quality improvement projects. Health policy makers can consider the data obtained with the Wound-QoL-14 when developing quality indicators for wound care services.

Etik Komite Onayı: Etik kurul onayı Acıbadem Mehmet Ali Aydınlar Üniversitesi Tıbbi Araştırmalar Değerlendirme Kurulu'ndan alınmıştır (Tarih: 14.02.2022, Sayı: 2022-03/06) sonrasında araştırma ekibine yeni yazar katılımı nedeniyle 2024 yılında yeniden onay (Tarih: 14.03.2024, Sayı: 2024-4/137) alınmıştır.
Hasta Onamı: Araştırmaya katılan hastalardan yazılı ve sözlü onam alınmıştır.
Hakem Değerlendirmesi: Dış bağımsız.
Yazar Katkıları: Fikir- YU, UK, EÖ; Tasarım- YU, UK; Denetleme- YU, UK, EÖ; Kaynaklar- YU, UK, CB, EÖ; Veri Toplanması ve/veya İşlemesi- YU, EO; Analiz ve/ veya Yorum- YU, CB; Literatür Taraması- YU, UK, CB, EO; Yazıyı Yazan- YU, UK, CB, EO; Eleştirel İnceleme- YU, UK, CB, EO
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Ethics Committee Approval: Ethical approval was obtained from the Acıbadem Mehmet Ali Aydınlar University Medical Research Evaluation Board (Date: 14.02.2022; No: 2022-03/06). Subsequently, due to the inclusion of a new author in the research team, renewed approval was obtained in 2024 (Date: 14.02.2024; No: 2024-4/137).
Informed Consent: Written and verbal informed consent was obtained from all patients who participated in the study.
Peer-review: Externally peer-reviewed.
Author Contributions: Concept – YU, UK, EO; Design – YU, UK; Supervision – YU, UK, CB, EO; Resources - YU, UK, CB, EO; Materials - YU, UK, CB, EO; Data Collection and/or Processing - YU, EO; Analysis and/or Interpretation - YU, CB; Literature Search - YU, UK, CB, EO; Writing Manuscript - YU, UK, CB, EO; Critical Review - YU,UK,CB,EO
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REFERENCES

1. Järbrink K, Ni G, Sönnergren H, et al. Prevalence and incidence of chronic wounds and related complications: a protocol for a systematic review. *Syst Rev.* 2016;5:1-6. https://doi.org/10.1186/s13643-016-0329-y
2. Martinengo L, Olsson M, Bajpai R, et al. Prevalence of chronic wounds in the general population: systematic review and meta-analysis of observational studies. *Ann Epidemiol.* 2019;29(1):8-15. https://doi.org/10.1016/j.annepidem.2018.10.005
3. Sen CK. Human wound and its burden: updated 2020 compendium of estimates. *Adv Wound Care.* 2021;10(5):281-292. https://doi.org/10.1089/wound.2021.0026
4. Ozkan S, Yilmaz E, Baydur H, Ertugrul MB. Factors affecting the quality of life of hospitalized persons with chronic foot and lower leg wounds. *Adv Skin Wound Care.* 2021;34(12):645-650. https://doi.org/10.1097/01.ASW.0000797956.61055.87
5. Gould LJ, Alderden J, Aslam R, et al. WHS guidelines for the treatment of pressure ulcers—2023 update. *Wound Repair Regen.* 2024;32(1):6-33. https://doi.org/10.1111/wrr.13130
6. Powers JG, Higham C, Broussard K, Phillips TJ. Wound healing and treating wounds: chronic wound care and management. *J Am Acad Dermatol.* 2016;74(4):607-625. https://doi.org/10.1016/j.jaad.2015.08.070
7. Dantas JS, Silva CCM, Nogueira WP, et al. Health-related quality of life predictors in people with chronic wounds. *J Tissue Viability.* 2022;31(4):741-745. https://doi.org/10.1016/j.jtv.2022.07.017
8. McCosker L, Tulleners R, Cheng Q, et al. Chronic wounds in Australia: a systematic review of key epidemiological and clinical parameters. *Int Wound J.* 2019;16(1):84-95. https://doi.org/10.1111/iwj.12996
9. Júnior SAO, Oliveira ACS, Dantas Araújo MP, Dantas BAS, Sánchez MCG, Torres GV. Influence of pain on the quality of life in patients with venous ulcers: Cross-sectional association and correlation study in a brazilian primary health care lesions treatment center. *Plos one.* 2023;18(8):1-15. https://doi.org/10.1371/journal.pone.0290180
10. Johnson-Kunjukutty S, Delille C. Impact of chronic osteomyelitis on wound healing and the quality of life of the patient with a chronic wound. *World Council of Enterostomal Therapists Journal.* 2019;39(2):34-40. https://doi.org/10.3316/informit.525753621837957
11. Zhu X, Olsson MM, Bajpai R, Järbrink K, Tang W, Car J. Health-related quality of life and chronic wound characteristics among patients with chronic wounds treated in primary care: A cross-sectional study in Singapore. *Int Wound J.* 2022;19(5):1121-1132. https://doi.org/10.1111/iwj.13708
12. Graves N, Phillips CJ, Harding K. A narrative review of the epidemiology and economics of chronic wounds. *Br J Dermatol.* 2022;187(2):141-148. https://doi.org/10.1111/bjd.20692
13. Monaco D, Iovino P, Lommi M, et al. Outcomes of wound care nurses' practice in patients with pressure ulcers: an integrative review. *J Clin Nurs.* 2021;30(3-4):372-384. https://doi.org/10.1111/jocn.15583
14. Reinboldt-Jockenhöfer F, Babadagi Z, Hoppe HD, et al. Association of wound genesis on varying aspects of health-related quality of life in patients with different types of chronic wounds: results of a cross-sectional multicentre study. *Int Wound J.* 2021;18(4):432-439. https://doi.org/10.1111/iwj.13543
15. Gül Ş, Avşar P, Karadağ A, Karaçay P, Gökmen D. The validity and reliability of the Pressure Ulcer Quality of Life instrument: A methodological study. *J Tissue Viability.* 2023;32(1):102-106. https://doi.org/10.1016/j.jtv.2022.12.003
16. Mokkink LB, Prinsen CA, Patrick DL, et al. COSMIN Study Design checklist for Patient-reported outcome measurement instruments. *Amsterdam, The Netherlands.* 2019:1-32. https://gut.bmj.com/content/gutjnl/70/1/139/DC1/embed/inline-supplementary-material-1.pdf

17. Mokkink LB, Terwee CB, Patrick DL, et al. The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: an international Delphi study. *Qual Life Res.* 2010;19:539-549. https://doi.org/10.1007/s11136-010-9606-8
18. Gökdemir F, Yılmaz T. Processes of using, modifying, adapting and developing likert type scales. *Journal of Nursology.* 2023;26(2):148-160. https://dergipark.org.tr/en/pub/jnursology/issue/78303/1319364
19. Blome C, Baade K, Sebastian Debus E, Price P, Augustin M. The "W ound-QoL": A short questionnaire measuring quality of life in patients with chronic wounds based on three established disease-specific instruments. *Wound Repair Regen.* 2014;22(4):504-514. https://doi.org/10.1111/wrr.12193
20. von Stulpnagel CC, da Silva N, Augustin M, et al. Assessing the quality of life of people with chronic wounds by using the cross-culturally valid and revised wound-QoL questionnaire. *Wound Repair Regen.* 2021;29(3):452-459. https://doi.org/10.1111/wrr.12901
21. Janke TM, Kozon V, Valiukeviciene S, et al. Validation of the Wound-QoL-17 and the Wound-QoL-14 in a European sample of 305 patients with chronic wounds. *Int Wound J.* 2023;4(3):e14505. https://doi.org/10.1111/iwj.14505
22. Ware JE, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Med Care.* 1996;34(3):220-233. https://doi.org/10.1097/00005650-199603000-00003
23. Soylu C, Kutuk B. Reliability and Validity of the Turkish Version of SF-12 Health Survey. Turk Psikiyatri Derg. 2021:1-9. https://doi.org/10.5080/u25700
24. Terwee CB, Prinsen C, Chiarotto A, et al. COSMIN methodology for assessing the content validity of PROMs–user manual. *Amsterdam: VU University Medical Center.* 2018. https://cosmin.nl/wp-content/uploads/COSMIN-methodology-for-content-validity-user-manual-v1.pdf
25. Davis LL. Instrument Review: Getting Instrument review: Getting the most from a panel of experts. *Appl Nurs Res.* 1992;28(4):563-575. https://doi.org/10.1016/S0897-1897(05)80008-4
26. Boateng GO, Neilands TB, Frongillo EA, Young SL. Best practices for developing and validating scales for health, social, and behavioral research: a primer. F*ront Public Health.* 2018;11:366616. https://doi.org/10.3389/fpubh.2018.00149
27. Byrne BM. Structural Equation Modeling With AMOS, EQS, and LISREL: Comparative approaches to testing for the factorial validity of a measuring instrument. *Int J Test.* 2001;1(1):55–86. https://doi.org/10.1207/S15327574IJT0101_4
28. Liljequist D, Elfving B, Skavberg Roaldsen K. Intraclass correlation - A discussion and demonstration of basic features. *PLoS One.* 2019;14(7):e0219854. https://doi.org/10.1371/journal.pone.0219854
29. Noble S, Scheinost D, Constable RT. A guide to the measurement and interpretation of fMRI test-retest reliability. *Curr Opin Behav Sci.* 2021;40:27-32. https://doi.org/10.1016/j.cobeha.2020.12.012
30. Montero EC, Sommer R, Augustin M, et al. Validation of the Spanish Wound-QoL Questionnaire. *Actas Dermosifiliogr (Engl Ed).* 2021;112(1):44-51. https://doi.org/10.1016/j.ad.2020.09.007
31. Wei M, Yang Q, Ji H, et al. Psychometric evaluation of the Wound-QoL questionnaire to assess health-related quality of life in Chinese people with chronic wounds. *Int Wound J.* 2023;20(6):1903-1910. https://doi.org/10.1111/iwj.14050
32. Knudsen JT, Johansen CW, Hansen AØ, Eshoj HR. The Danish wound-quality of life (Wound-QoL) questionnaire: translation and psychometric properties. *Wound Repair Regen.* 2021;29(6):973-984. https://doi.org/10.1111/wrr.12957
33. Augustin M, Conde Montero E, et al. Validity and feasibility of the wound-QoL questionnaire on health-related quality of life in chronic wounds. *Wound Repair Regen.* 2017;25(5):852-857. https://doi.org/10.1111/wrr.12583
34. Kang H, Ahn JW. Model Setting and Interpretation of Results in Research Using Structural Equation Modeling: A Checklist with Guiding Questions for Reporting. *Asian Nurs Res (Korean Soc Nurs Sci).* 2021;15(3):157-162. https://doi.org/10.1016/j.anr.2021.06.001
35. Putnick DL, Bornstein MH. Measurement Invariance Conventions and Reporting: The State of the Art and Future Directions for Psychological Research. *Dev Rev.* 2016;41:71-90. https://doi.org/10.1016/j.dr.2016.06.004