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Psychometric testing of the self-care of chronic illness inventory in a Western Asian country

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ABSTRACT

Aim: This study investigated the psychometric properties of the Self-Care of Chronic Illness Inventory (SC-CII) among individuals with chronic conditions living in a Western Asian (WA) country.
Design: This was a methodological, observational, cross-sectional study.
Methods: The study sample comprised patients in inpatient and outpatient settings with at least one chronic condition. The participants completed the SC-CII, which comprises three scales: self-care maintenance, self-care monitoring, and self-care management. Factorial validity was tested by confirmatory factor analysis (CFA). Internal consistency was explored using Cronbach's alpha, the composite reliability coefficient, and the global reliability index for multidimensional scales. The intraclass correlation coefficient was calculated to determine test–retest reliability. Construct validity was assessed through hypothesis testing. The measurement error was evaluated to estimate responsiveness to change.
Results: A total of 215 participants were included (mean age, 65.73 ± 8.65; 56.7% female; 39.1% elementary school-level education). The participants reported an average of 2.11 ± 0.77 chronic conditions. CFA supported a two-factor structure for the self-care maintenance and self-care management scales, and a unidimensional structure for the self-care monitoring scale. Internal consistency was satisfactory, with reliability indices ≥ 0.80. The intraclass correlation coefficients for test–retest reliability ranged from 0.884 to 0.907 across the scales. Significant positive correlations were observed among the three dimensions of self-care and between self-care behaviors and self-care self-efficacy, supporting convergent validity.
Conclusion: The SC-CII is a reliable instrument that produces valid data for evaluating self-care behaviors in clinical and research settings. Its use may help identify patients at risk for inadequate self-care and guide the development of tailored educational and behavioral interventions.
Reporting Method: The results are reported in accordance with COSMIN guidelines.

Introduction

Chronic conditions and multimorbidity are increasing global challenges with significant implications for individuals, health systems, and societies.[1,2] It is estimated that by 2030, chronic conditions will account for approximately 75% of all deaths,[3] and by 2050, the number of people with chronic conditions will increase by 40%, doubling the disability rate among older adults.[4] These trends are particularly pronounced in Western Asian (WA) countries, where the prevalence of multimorbidity in adults aged 65 years and older surpasses that observed in Europe.[5–7] The growing prevalence of multimorbidity in WA countries is associated with increased healthcare demands, escalating costs, and considerable losses in workforce productivity.[8] Given these demographic and epidemiological shifts, the development of effective and sustainable strategies to support chronic condition management has become critical in WA countries.[9] In this context, self-care has emerged as a pivotal strategy for managing chronic conditions, improving health outcomes, and reducing the associated economic and societal burdens.[10]

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Background

Clinicians are increasingly focused on empowering individuals to take an active role in managing their health through consistent self-care behaviors.[11] According to the Middle-Range Theory of Self-Care of Chronic Illness,[12] self-care is conceptualized as a multidimensional process involving three key components: (i) self-care maintenance, which refers to routine behaviors aimed at preserving health and adherence to treatment; (ii) self-care monitoring, defined as the observation of bodily signs, symptoms, and changes in health status; and (iii) self-care management, which involves the implementation of actions and decisions in response to signs and symptoms.[12]

Evidence consistently demonstrates that adequate self-care can enhance individuals' ability to cope with chronic conditions, as it increases self-care self-efficacy, reduces health care utilization,[13] decreases mortality risk and length of hospitalization, improves clinical outcomes,[14] and contributes to a better quality of life.[15,16] Theoretically grounded, psychometrically robust instruments are needed to evaluate interventions that enhance self-care; however, most available instruments target specific condition contexts or assess isolated constructs, such as patient experiences or self-efficacy, and fail to capture the full behavioral complexity defined by theoretical models. The Self-Care of Chronic Illness Inventory (SC-CII), developed explicitly according to the Middle-Range Theory of Self-Care, addresses this gap.[14] The SC-CII includes three scales aligned with the theoretical dimensions: self-care maintenance (with a two-factor structure encompassing illness-related and health-promoting behaviors), self-care monitoring (unidimensional), and self-care management (two-factor structure reflecting autonomous and consultative behaviors).[14] The instrument, which is freely available (https://self-care-measures.com/available-self-care-measures-patient-versions/self-care-of-chronic-illness-inventory/) in 14 languages, has been evaluated through psychometric testing in various international contexts.

Previous studies have confirmed the structural validity of the SC-CII via confirmatory factorial analysis (CFA); furthermore, its cross-cultural robustness has been demonstrated in a study of 1629 patients with chronic conditions from the United States (US), Sweden, and Italy,[14,17] which revealed partial scalar invariance and high internal consistency across these populations. Another study[18] of 452 Italian patients with inflammatory bowel disease confirmed the theoretical factorial structural validity observed by Riegel[14] and De Maria[17] and colleagues. However, a recent CFA-based study in Albania, a lower-middle-income country, revealed differences in the self-care maintenance structure, suggesting that cultural and socioeconomic factors may shape how self-care is understood and practiced.[19]

To our knowledge, no studies have yet assessed the psychometric properties of the SC-CII in the WA context, which is characterized by unique cultural, socioeconomic, and healthcare factors. Thus, we conducted this study to assess the psychometric properties of the SC-CII in a sample of patients with chronic conditions living in a WA country, specifically focusing on validity, internal consistency, and measurement error. Introducing a validated, theoretically grounded instrument in this context is essential to accurately measure self-care behaviors, assess their impact on clinical outcomes, and evaluate the effectiveness of educational interventions in improving self-care in individuals with chronic conditions.

Study aim

This study was conducted to assess the validity, internal consistency, and responsiveness to change of the SC-CII (version 4.c) in a sample of chronic patients living in a WA country.

Methods

Study design

This observational, cross-sectional, methodological study was conducted in accordance with the COnsensus-based Standards for the Selection of Health Measurement INstruments (COSMIN) reporting guidelines for studies on measurement properties.

Study settings and participants

A convenience sample of adult patients was recruited from inpatient and outpatient clinical settings in Türkiye from December 2023 to March 2024. The inclusion criteria were as follows: (a) age $\geq$ 18 years; (b) presence of at least one chronic condition diagnosed by a healthcare provider; and (c) sufficient fluency in Turkish to complete the study procedures. Patients who were diagnosed with cancer, dementia, or Alzheimer's disease were excluded, as were those presenting with a $\leq$ 6-month history of any sensory or neurological condition that could significantly impair communication (e.g., a severe hearing or visual impairment).

Measurements

Self-Care of chronic illness inventory

Riegel et al.[14] developed the SC-CII to measure patient self-care behaviors across different types or numbers of chronic conditions. The SC-CII comprises 19 items across three scales: self-care maintenance (seven items, two factors: disease-related and health-promoting), self-care monitoring (five items, one dimension), and self-care management (seven items, two factors: autonomous and consultative). Possible answers for the self-care maintenance and self-care monitoring scales are on a five−point Likert scale, ranging from Never (1) to Always (5). Answers for the self-care management scale range from Unlikely (1) to Very Likely. A standardized score is computed for each scale, ranging from 0 to 100, with higher scores indicating better self-care.

Self-Care self-efficacy scale

The Self-Care Self-Efficacy Scale (SC-SES)[20] is a 10-item instrument used to assess participants' self-care self-efficacy. The total SC-SES score is standardized and ranges from 0 to 100, with higher scores indicating greater self-efficacy in self-care behaviors. In previous studies, the SC-SES has demonstrated good construct validity and internal consistency (Cronbach's alpha $\geq$ 0.90) across diverse cultural contexts, including samples from the US, China, Italy, and Brazil.[20] In the present study, we used the SC-SES to assess the convergent validity of the SC-CII, hypothesizing that patients with higher self-care self-efficacy would exhibit more self-care behaviors.[14]

SC-CII translation and cultural adaptation

Riegel et al.[14] provided email permission for the Turkish adaptation of the SC-CII (version 4.c). The translation and cultural adaptation process was conducted in accordance with the internationally recognized guidelines outlined by Wild et al.[21] The original English version of the SC-CII was independently translated into Turkish by two bilingual researchers with expertise in English. The two forward translations were compared and reconciled into a single preliminary version (version 1). This version was then evaluated by a panel of five Turkish-speaking experts with doctoral degrees in nursing and familiarity with chronic disease management and self-care concepts. These experts assessed the conceptual, semantic, and experiential equivalence of the translated version, and a revised version (version 2) was produced according to their feedback. This revised Turkish

version was backward-translated into English by two independent translators unfamiliar with the original inventory. The backward-translated English versions were then reviewed and approved by Riegel et al. to ensure the conceptual fidelity of the Turkish adaptation (SC-CII vers. 4.c-Turkish; SC-CII-Tr), which has been published online (https://self-care-measures.com/).

Data collection

Data collection was conducted by a nurse researcher trained in the research methodology. The researcher identified participants who met the inclusion criteria, provided study information to participants, obtained their verbal and written consent, and administered the research instruments. Each data collection instrument took an average of 15 min to administer.

Data analysis

Descriptive statistics, including frequencies, percentages, means, and standard deviations (SD), where appropriate, were calculated to summarize the participant characteristics and SC-CII items. Kurtosis and skewness were analyzed to assess the normality of the SC-CII items.[22] In line with established literature, the analysis began with a test of the SC-CII-Tr's dimensionality, followed by an evaluation of its reliability.[23]

Consistent with the approach employed in previous studies,[14,17] CFA was conducted to assess the dimensionality of the SC-CII-Tr. As in prior validations, CFAs were performed individually for the self-care maintenance, monitoring, and management scales. For the self-care maintenance scale, a two-factor model was tested, including health-promoting behaviors (items #1, 3, 7) and illness-related behaviors (items #2, 4, 5, 6). For the monitoring scale, a one-factor model (items #8–12) was tested. For the self-care management scale, a two-factor model was tested, comprising autonomous (items #14–16, 19) and consultative (items #17–18) behaviors. Second-order models were also tested for the maintenance and management scales to account for factor correlations. Robust maximum likelihood (MLR) estimation was used because the items were non-normally distributed.[24]

A comprehensive approach was employed to evaluate the adequacy of the tested models,[25] comprising the following fit indices: the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR).[26,27] The criteria for assessing model fit were as follows: CFI and TLI values ≥ 0.95 indicated a good fit, whereas values between 0.90 and 0.95 were considered acceptable. For the RMSEA, values ≤ 0.05 signified a well-fitting model, values between 0.05 and 0.08 indicated a moderate fit, and values ≥ 0.10 suggested a poor fit. Additionally, RMSEA values with 90% confidence intervals (CIs) ranging from ≤ 0.05 to ≤ 0.08, accompanied by a p value > 0.05, were interpreted as indicative of a good fit. SRMR values ≤ 0.08 were also considered representative of a good fit.[28] A chi-square (χ^2) test was conducted and interpreted together with the indices mentioned above.

Internal consistency reliability was assessed using estimates derived from the factorial model parameters, as reported in recent guidelines.[29] Specifically, the composite reliability coefficient was computed for each factor of the self-care maintenance and self-care management scales.[30] The Global Reliability Index for multidimensional scales,[31] which accounts for the multidimensionality of the scale, was tested to assess the overall internal consistency reliability of the self-care maintenance and self-care management scales, which showed a hierarchical factorial structure. Regarding the self-care monitoring scale, considering the unidimensional factorial structure, internal consistency was evaluated using Cronbach's alpha, with values ≥ 0.70 deemed acceptable.[32]

SC-CII-Tr stability was assessed by examining test–retest reliability. Specifically, the instrument was administered twice within a two-week interval to a subset of 38 participants. Intra-class correlation coefficients (ICCs) were calculated for each scale using a two-way random-effects model. An ICC ≥ 0.75 was considered to indicate good reliability, whereas an ICC ≥ 0.90 indicated excellent reliability.[33]

SC-CII-Tr construct validity was assessed through hypothesis testing derived from the Middle Range Theory of Self-care of Chronic Illness[14] and using Pearson's correlation coefficient. We used Cohen's recommendations to assess the effect size of the correlations.[34] Two hypotheses were formulated: (1) the scores for self-care maintenance, self-care monitoring, and self-care management are positively and significantly correlated with each other, and (2) the self-care self-efficacy score is positively and significantly correlated with these dimensions.

The SC-CII-Tr's responsiveness to change, reflecting its precision, was assessed by calculating the standard error of measurement (SEM) and the smallest detectable change (SDC). The SEM reflects the magnitude of measurement error associated with a single score and should be interpreted relative to the variability of the observed scores (e.g., the standard deviation or the scale range). SEM was computed as SD $\times \sqrt{(1 - \text{reliability coefficient})}$,[35] using Cronbach's alpha for unidimensional scales and model-based reliability for bidimensional scales. The SEM indicates a more precise instrument if its value is $<$ SD/2. The SDC represents the minimum change required to ensure that an observed difference exceeds measurement error. The SDC was computed using the following formula: $1.96 \times \sqrt{2} \times \text{SEM}$.[36] Changes smaller than the SDC may be attributable to measurement error, whereas changes equal to or greater than the SDC can be interpreted as true changes.

Descriptive statistical analyses were conducted using SPSS Version 26. Factor analyses were performed using Mplus Version 8.4. A p value below 0.05 was considered to indicate significance.

Ethical considerations

This study was conducted in accordance with the tenets of the Declaration of Helsinki. Study approval from the University Clinical Research Ethics Committee (approval date: XX; number: XX) and institutional permission from the XXX Provincial Health Directorate were obtained. Verbal and written informed consent documentation was obtained from all participants before enrollment. Anonymity was ensured throughout the data analysis process, with an alphanumeric code assigned to each participant.

Results

Participant characteristics

A total of 215 patients were enrolled (mean age: 65.73 ± 8.65 years); 56.7% were female, 65.6% were married, and 84.2% lived with a partner or child. Overall, 39.1% had a primary school education, 77.7% were retired or unemployed, 72.6% reported sufficient income, and 76.7% received caregiver support. Participants had an average of 2.11 ± 0.77 chronic conditions; 33.5% had pulmonary disease, 36.7% had hypertension, and 38.6% had diabetes mellitus (Table 1).

SC-CII-Tr item description

Across the self-care maintenance, monitoring, and management scales, the highest and lowest scores were obtained for item #2 (mean: 4.24; SD: ± 0.68) and #7 (2.63 ± 0.96), #8 (3.44 ± 0.76) and #10 (2.70 ± 0.87), and #16 (3.91 ± 0.77) and #18 (1.93 ± 1.05),

Table 1
Sociodemographic and clinical characteristics of the sample (N = 215).

Sociodemographic characteristics	Mean (± SD) *Range*
Age	65.73 (8.65) 45–82
	N (%)
Sex	
Female	122 (56.7)
Marital status	
Married	141 (65.6)
Single	74 (34.4)
Lives alone	
Yes	34 (15.8)
No	181 (84.2)
Education	
Primary school (5 years)	84 (39.1)
Middle school (8 years)	54 (25.1)
High school (12 years)	38 (17.7)
University (14–16 years)	35 (16.3)
Master and advance (>16 years)	4 (1.9)
Employment status	
Employed	48 (22.3)
Retired /Unemployed	167 (77.7)
Perceived income adequacy	
İncome less than expenditure (Less than needed)	59 (27.4)
İncome equals expenditure (Enough for living)	156 (72.6)
	Mean (± SD) *Range*
Number chronic conditions	2.11 (0.77) *1–4*
	N (%)
Diabetes mellitus	83 (38.6)
Hypertension	79 (36.7)
Pulmonary disease (Chronic obstructive pulmonary disease, asthma)	72 (33.5)
Hearth failure	69 (32.1)
Kidney failure	46 (21.4)
Thyroid diseases	22 (10.2)
Coronary artery disease	16 (7.4)
Osteoclasis	12 (5.6)
Other (e.g., Benign prostatic hyperplasia, Migraine, Stroke)	62 (28.9)

Legend. SD, standard deviation.

respectively (Table 2). A slight deviation in skewness and kurtosis was present for items #18–19. Finally, for item #13, which assesses how quickly participants recognized a given symptom as part of their health condition, 24.2% reported not recognizing it as such.

Psychometric properties of the SC-CII-Tr self-care maintenance scale

The two-factor model comprising the 'health-promoting behavior' and 'illness-related behavior' factors, developed by Riegel et al.,[14] was tested and demonstrated poor goodness-of-fit indices: $\chi^2(13, N = 215) = 85.153$, $p < 0.001$, CFI = 0.910, TLI = 0.854, RMSEA = 0.161 (90% CI = 0.129–0.194, $p < 0.001$), and SRMR = 0.058. The misfit was caused by an excessive covariance between items #5 ('Keep appointments for routine or regular health care?') and #6 ('Take prescribed medicines without missing a dose?'). This finding may be attributable to the proximity of the items within the scale, potentially increasing shared covariance, a phenomenon referred to as the proximity effect by Weijters, Geuens, and Schillewaert.[37] The covariance between these two items is consistent with the Middle-Range Theory of Self-Care of Chronic Illness,[12] which groups both behaviors under the dimension of self-care maintenance, emphasizing their interdependence in promoting long-term health outcomes and disease control. Following the recommendations of Bagozzi[32] and Fornell,[38] these covariances were specified in the model, with a covariance parameter added between the error terms for items #5 and #6. This specification resulted in a substantial improvement in fit indices: χ^2 (12, N = 215) = 40.404, $p < 0.001$, CFI = 0.965, TLI = 0.938, RMSEA = 0.105 (90% CI = 0.070–0.141, $p = 0.006$), and SRMR = 0.032. All factor loadings were significant and exceeded 0.696. Given the significant correlation between the two factors ($r = 0.984$, $p < 0.01$), a second-order model was subsequently tested. This model also showed acceptable fit indices: χ^2 (13, N = 215) = 42.626, $p < 0.001$, CFI = 0.963, TLI = 0.940, RMSEA = 0.103 (90% CI = 0.070–0.138, $p = 0.001$), and SRMR = 0.052. These findings suggest that the self-care maintenance scale exhibits a hierarchical structure with a two-factor first-order structure and a single second-order factor (Fig. 1).

Reliability

The internal consistency reliability of the two self-care maintenance factors, assessed using composite reliability coefficients, was excellent: 0.821 and 0.837 for the health-promoting behavior and illness-related behavior factors, respectively. The overall self-care maintenance scale demonstrated robust reliability, with a global reliability index of 0.798 for the multidimensional scale.

Table 2
Shows the means, standard deviations, skewness, and kurtosis of the Turkish version of the Self-Care of Chronic Illness Inventory (N = 215).

Items	M	SD	Skewness	Kurtosis
How often or routinely do you do the following?				
1. Make sure to get enough sleep?	3.33	0.66	−0.07	−0.30
3. Do physical activity (e.g. take a brisk walk, use the stairs)?	2.93	0.88	0.18	−0.63
7. Do something to relieve stress (e.g., medication, yoga, music)?	2.63	0.96	0.17	−0.69
2. Try to avoid getting sick (e.g., flu shot, wash your hands)?	4.24	0.68	−0.51	−0.04
4. Eat a special diet?	3.21	0.86	0.15	−0.54
5. See your healthcare provider for routine health care?	3.70	0.79	−0.21	−0.33
6. Take prescribed medicines without missing a dose?	3.63	0.78	0.04	−0.47
How often do you do the following?				
8. Monitor your condition?	3.44	0.76	−0.06	−0.37
9. Pay attention to changes in how you feel?	2.70	0.87	0.14	−0.73
10. Monitor for medication side-effects?	3.31	0.94	0.27	−0.63
11. Monitor whether you tire more than usual doing normal activities?	3.27	0.73	0.05	−0.34
12. Monitor for symptoms?	3.38	0.86	0.10	−0.61
When you have symptoms, how likely are you to				
14. Change what you eat or drink to make the symptom decrease or go away?	3.58	0.79	−0.16	−0.36
15. Change your activity level (e.g. slow down, rest)?	3.38	0.88	0.01	−0.75
19. Did the treatment you used make you feel better?	2.71	1.10	−0.21	−0.82
16. Take a medicine to make the symptom decrease or go away?	3.91	0.77	−0.29	−0.31
17. Tell your healthcare provider about the symptom at the next office visit?	3.98	0.81	−0.61	0.63
18. Call your healthcare provider for guidance?	1.93	1.05	0.89	−0.18

Legend. M, Mean; SD, Standard Deviation. Item #13 ("how quickly did you recognize the symptom of the illness patient is suffering from") were excluded from all analyses, consistent with previous studies conducted on the SC—CII by the scale's authors.

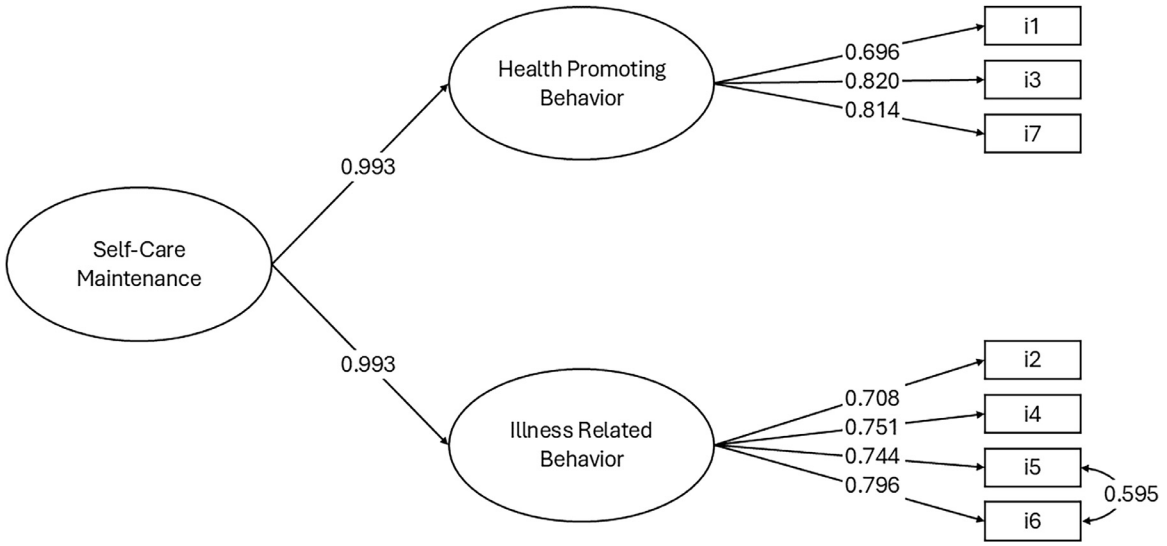

Fig. 1. Confirmatory factor analysis of Self-Care Maintenance scale (N = 215 participants). Note. The results are derived from Mplus fully standardized solutions, with all coefficients reaching statistical significance ($p < 0.05$). The values shown next to the single-headed arrows represent factor loadings, while the value next to the double-headed arrow indicate correlation between residual covariance.

Test–Retest

The self-care maintenance scale demonstrated high test–retest reliability, with an intra-class correlation coefficient of 0.903 (95% CI = 0.850–0.942).

Measurement errors

The SEM for the self-care maintenance scale was 0.20, and the SDC was 0.55. These values indicate limited measurement error; changes greater than 0.55 points can be interpreted as true changes beyond measurement error.

Psychometric properties of the SC-CII-Tr self-care monitoring scale

Dimensionality

A one-factor model was specified to test the hypothesis that a single underlying factor accounts for the five items of the self-care monitoring scale.[14] The model demonstrated good fit indices: χ^2 (5, N = 215) = 6.914, $p < 0.001$, CFI = 0.996, TLI = 0.992, RMSEA = 0.042 (90% CI = 0.000–0.110, $p = 0.494$), and SRMR = 0.017. All factor loadings were significant and greater than 0.722 (Fig. 2).

Reliability

The internal consistency reliability of the self-care monitoring scale, assessed using Cronbach's alpha coefficient, was 0.902, supporting excellent reliability.

Test–Retest

The self-care monitoring scale demonstrated high test–retest reliability, with an intra-class correlation coefficient of 0.907 (95% CI = 0.848–0.947).

Measurement errors

The SEM for the self-care monitoring scale was 0.22, and the SDC was 0.61. These values indicate limited measurement error; changes greater than 0.61 points can be interpreted as true changes beyond measurement error.

Psychometric properties of the SC-CII-Tr self-care management scale

Dimensionality

The two-factor model, comprising the 'autonomous behavior' and 'consulting behavior' factors, was evaluated and demonstrated good fit indices: χ^2 (8, N = 215) = 21.386, $p < 0.001$, CFI = 0.975, TLI = 0.954, RMSEA = 0.088 (90% CI = 0.044–0.134, $p = 0.073$), and SRMR = 0.028. All factor loadings were significant and greater than 0.623. The correlation between the two factors was $r = 0.778$, $p = 0.01$. Considering this correlation, a second-order model was tested, yielding the same fit indices as the first-order model (Fig. 3).

Reliability

The internal consistency reliability of the two self-care management factors, evaluated using composite reliability coefficients, was 0.853 and 0.845 for the autonomous behaviors and consulting behaviors factors, respectively. The overall self-care management scale

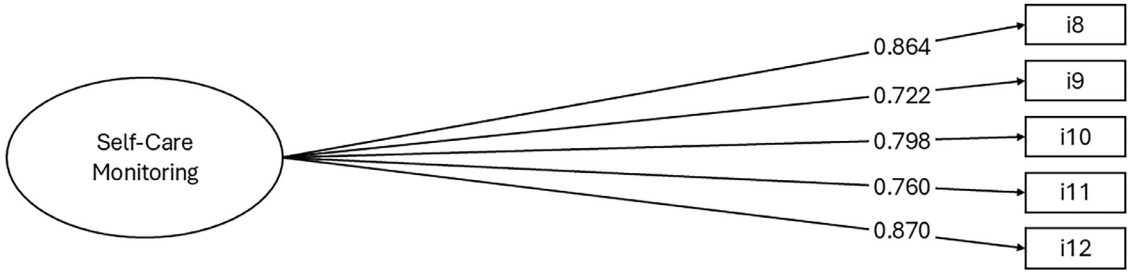

Fig. 2. Confirmatory factor analysis of Self-Care Monitoring scale (N = 215 participants). Note. The results are derived from Mplus fully standardized solutions, with all coefficients reaching statistical significance ($p < 0.05$). The values shown next to the single-headed arrows represent factor loadings.

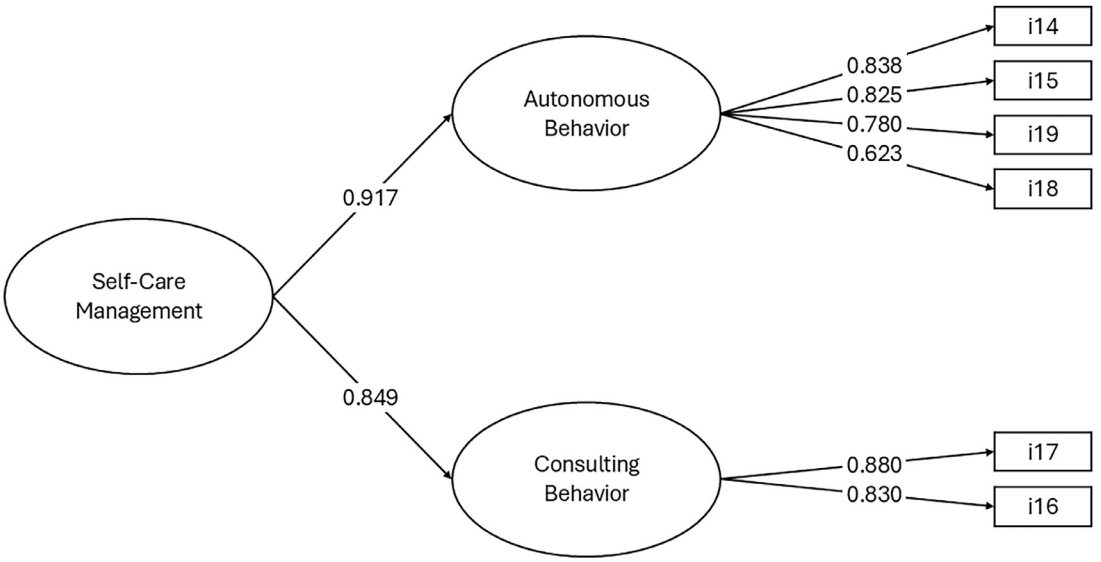

Fig. 3. Confirmatory factor analysis of Self-Care Management scale (N = 215 participants). Note. The results are derived from Mplus fully standardized solutions, with all coefficients reaching statistical significance ($p < 0.05$). The values shown next to the single-headed arrows represent factor loadings.

demonstrated a global reliability index of 0.881 for multidimensional scales.

Test–Retest

The self-care management scale demonstrated high test–retest reliability, with an intra-class correlation coefficient of 0.884 (95% CI = 0.791–0.937).

Measurement errors

The SEM for the self-care management scale was 0.21, and the SDC was 0.58. These values indicate limited measurement error; changes greater than 0.58 points can be interpreted as true changes beyond measurement error.

Construct validity

The analysis showed positive, significant correlations among all self-care dimensions (Table 3). These results support the hypothesis that the three self-care components are positively interrelated.[14] Moreover, we hypothesized that self-care self-efficacy scores would be positively and significantly correlated with all of the self-care scale scores. Our results showed positive and significant correlations between self-care self-efficacy and self-care maintenance (r = 0.859, $p < 0.01$), self-care monitoring (r = 0.861, $p < 0.01$), and self-care management (r = 0.861, $p < 0.01$) (Table 3).

Discussion

This study was conducted to test the psychometric properties of the SC-CII-Tr in patients with chronic illness living in a WA country. We demonstrated that the SC-CII-Tr shows good structural, construct validity, and internal consistency reliability in this population. The factorial structure of the SC-CII-Tr in our sample was consistent with that reported in previous validation studies.[14,17,18] These findings support the cross-cultural stability of the instrument and confirm that people with chronic conditions living in WA countries adopt similar self-care processes to those living in other regions.

Regarding the participants' behavioral profile in terms of **self-care maintenance**, the highest-rated item concerned efforts to *"try to avoid getting sick"*, whereas the lowest-rated item pertained to the implementation of behaviors aimed at relieving stress. This pattern may reflect cultural and religious practices in Türkiye, where regular hand washing and ritual ablution, common in the predominantly Muslim population, are integrated into daily routines. Such practices may promote greater awareness of infection-prevention behaviors. In contrast, the limited use of stress-relief practices suggests that techniques common in Western contexts, such as mindfulness, meditation, and yoga, are less familiar or culturally accepted in Türkiye. This finding aligns with evidence that individuals with chronic conditions often struggle with stress management,[39] relying instead on strategies such as religious coping, emotional venting, problem-solving, or, at times, maladaptive behaviors such as substance use.[40] Collectively, these findings underscore the need for culturally tailored assessments and interventions in self-care maintenance, particularly regarding stress management. Regarding the factorial structure, no substantial differences were observed when compared with previous validation studies of the self-care monitoring scale.[14] However, higher correlations were found between the two factors of self-care maintenance: health-promoting behavior and illness-related behavior. This finding supports construct stability across populations and suggests stronger interdependence between the two factors in this sample. This finding reinforces the Middle-Range Theory of Self-Care, indicating that self-care maintenance behaviors may be more closely linked in this population than previously observed.

Regarding the **self-care monitoring** behavioral profile of the participants, the item *"Monitor your condition"* received the highest rating, whereas *"Pay attention to changes in how you feel"* received the lowest. A recent study suggested that symptom interpretation and responses to self-care monitoring behaviors may differ across cultural contexts.[41] In our study population, lower scores on paying attention to mood or emotional changes might reflect limited awareness or recognition of mood alterations as relevant symptoms in managing chronic illness.[42,43] Indeed, individuals with chronic conditions

Table 3
Bivariate correlation of construct validity of SC—CII scale.

Variable	1	2	3
1. SC—CII Maintenance	-		
2. SC-CII Monitoring	0.821		
3. SC-CII Management	0.808	0.805	
4. SC-SE	0.859	0.861	0.861

Legend. SC—CII, Self-Care Chronic Illness Inventory; SC-SE, Self-Care Self-efficacy.
Note. All correlations are significant at the 0.01 level (two-tailed).

typically monitor their health according to explicit symptoms, subjective health perceptions, and information from healthcare professionals rather than subtle emotional shifts.[44] Regarding the factorial structure, no substantial differences were observed when compared with previous validation studies of the self-care monitoring scale. This finding supports the generalizability of the construct of self-care maintenance, as conceptualized by the Middle-Range Theory,[12] to this population.

Regarding **self-care management**, the highest-rated behavior involved *"taking medication to relieve symptoms"*, while the lowest-rated behavior was *"contacting a healthcare provider for guidance"*. This finding suggests autonomy in pharmacological management but limited use of remote consultations, likely due to the public hospital–focused structure of the Turkish healthcare system and minimal telehealth integration. These findings highlight the need to improve patient awareness regarding symptom monitoring and expand telehealth access in public care.[45] Regarding the factorial structure, no substantial differences emerged for the self-care management scale when compared with previous validation studies.[14,46] This result is fully consistent with the theoretical model and supports the scale's validity in this Western population. Notably, we observed a stronger correlation between the two factors (r = 0.778) than that observed in samples from other cultural contexts. This higher correlation may reflect differences in how self-care behaviors are conceptualized and enacted. In Western countries, chronic disease management is typically structured and integrated, linking treatment adherence, lifestyle changes, and monitoring into a cohesive process that enhances covariance between self-care behaviors.[47] In contrast, in non-Western or low- and middle-income settings, factors such as cultural values, health literacy, and limited resources may lead to a more fragmented approach, in which routine management and symptom response are treated as separate tasks.[48] These findings confirm that the self-care processes of individuals with chronic illness in this context align with the constructs defined by the Middle-Range Theory of Self-Care of Chronic Illness.[12]

Our findings support the strong internal consistency and test–retest reliability of the SC-CII-Tr in assessing self-care among chronic patients in the WA context. High ICC values indicate excellent stability; the SEM values across the three scales indicate limited measurement error, whereas the SDC values suggest that relatively small changes in scores can be interpreted as true changes beyond measurement error. These results confirm the suitability of the SC-CII-Tr for both research and clinical use in this setting.

This study has some limitations. First, although a multicenter approach was employed, data collection was conducted in a single WA country. Consequently, the generalizability of our findings to other countries or cultural contexts may be limited. Future studies in other WA countries are needed to strengthen the cross-cultural psychometric evidence. The cross-sectional design also limits the assessment of temporal stability, and longitudinal research is recommended. Despite its limitations, a major strength of this study is the Turkish adaptation and validation of the SC-CII, which enhances our understanding of the inventory's psychometric properties in the WA context. Furthermore, this version lays the groundwork for future self-care research and supports chronic illness management in Turkish-speaking populations.

Implications for policy and practice

The SC-CII can be used by health professionals to assess and monitor self-care behaviors of individuals with chronic conditions in WA countries. This instrument can be used to test the effectiveness of interventions aimed at improving self-care. Understanding the various dimensions of self-care can help guide the development of individualized treatment and care plans. Furthermore, this understanding can be used to train patients to maintain, monitor, and manage their self-care. As chronic conditions are increasing in prevalence as the population ages, expanding self-care knowledge through practices and interventions that use self-care instruments may be an important step for clinicians and researchers to improve public health.

Conclusion

This study provides evidence that the SC-CII has adequate validity, reliability, stability, and robustness in chronic patients living in a WA country. The SC-CII-Tr can be used in clinical practice and research to assess self-care behaviors among adults diagnosed with chronic conditions in Turkish-speaking WA countries. Furthermore, when needed, the SC-CII could be useful for planning psychoeducational interventions to support self-care among chronic patients in WA countries.

Ethics committee

Ethical approval for the study was obtained from the Akdeniz University Clinical Research Ethics Committee.

Ethics committee ID

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Yeliz Karaçar: Conceptualization, Methodology, Investigation, Data curation, Writing – original draft. **Şenay Takmak:** Conceptualization, Methodology, Investigation, Data curation, Writing – original draft. **Ercole Vellone:** Conceptualization, Methodology, Supervision, Writing – review & editing. **Rosaria Alvaro:** Methodology, Supervision, Writing – review & editing. **Rocco Mazzotta:** Methodology, Conceptualization, Writing – review & editing. **Maddalena De Maria:** Conceptualization, Methodology, Supervision, Writing – review & editing.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.gerinurse.2026.104155.

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