# Psychometric evaluation of the Farsi version of the Self-Care of Coronary Heart Disease Inventory version 3

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**Original Article**

## Abstract

**BACKGROUND:** The Self-Care of Coronary Heart Disease Inventory -Patient Version 3 (SC-CHDI v3) is a globally used tool for assessing self-care behaviors among patients with coronary heart disease (CHD). This study aimed to translate the SC-CHDI v3 into Farsi, validate it, and evaluate its psychometric properties among Iranian patients.

**METHODS:** The translation of the original SC-CHDI v3 into Farsi was conducted in 2022 at Shaheed Rajaie Cardiovascular, Medical & Research Center, Tehran, Iran, following a standard forward-backward approach. The validation process included face, content, and construct validity. A panel of 10 experts scored each item's necessity on an ordinal Likert scale of three. The content validity ratio (CVR) was computed using the Lawshe formula. Ten judges from the predefined panel rated each item on a 4-point Likert scale regarding relevancy, clarity, and simplicity for individual CVI calculation. The mean individual-CVI was used to determine the Scale-CVI for each domain. Questions with minimum values of CVR and CVI were retained for reliability evaluation. Construct validity was assessed through confirmatory factor analysis. Internal consistency reliability was evaluated using Cronbach's α and McDonald's Omega. Test-retest reliability was determined using intraclass correlation coefficients (ICC).

**RESULTS:** All questions achieved CVR values exceeding 0.62 and CVI scores of 0.80 or higher, and thus were retained in the questionnaire. Face validity evaluation indicated that all questions were deemed acceptable in terms of relevance and clarity. Cronbach's α coefficients for self-care maintenance and monitoring were 0.802 and 0.817, respectively, while McDonald's Omega for the self-care management scale was 0.725. The ICC was 0.81, demonstrating good test-retest reliability. Confirmatory factor analysis revealed relative goodness of fit for all dimensions.

**CONCLUSION:** The Farsi version of the SC-CHDI v3 proved to be a reliable tool for assessing self-care behaviors among Iranian CHD patients, enabling healthcare professionals to develop personalized self-care interventions.

**KEYWORDS:** Coronary Heart Disease; Self-Care; Validity; Reliability

## Introduction

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Cardiovascular diseases (CVDs), a cluster of non-communicable diseases, account for most mortality and disability-adjusted life years worldwide.[1] CVDs, also known as heart disease, refer to heart and blood vessel conditions. Coronary heart disease (CHD),

stroke, and hypertension, in the same particular order, are the leading causes of the total number of lives lost attributed to CVDs in both developed and developing nations.[2] The presence of plaque characterizes CHD, indicating the pathological process of atherosclerosis. Atherosclerosis-causing CHD initiates and develops throughout a lifetime, and non-modifiable and modifiable risk factors trigger it.[3] The non-modifiable risk factors include age, gender, and positive family history. The modifiable risk factors, which present as behavioral patterns, include (but are not limited to) unhealthy diet, obesity, tobacco use, and physical inactivity.[4,5]

CHD is responsible for 9 million deaths worldwide. However, its occurrence varies in every country. According to the Global Burden of Disease (GBD, 2019), CHD's highest prevalence and mortality rates are observed in the Middle East, Central Asia, Eastern Europe, and North Africa. In Iran, CHD's prevalence is alarming, causative to nearly 46% of deaths due to CVDs.[6] However, the rapid scientific and interventional improvements, advanced healthcare, and the progression of preventive methods in recent years have resulted in the reduction of mortality rates, and it has been predicted that by 2050 the survival rates will increase significantly. Preventive strategies, namely pharmacological therapy, and non-intensive and intensive surgical treatments, improve the long-term prognosis of individuals diagnosed with CHD through early detection.[7]

Regardless of the chosen therapeutic methods by the cardiologists, to prevent and postpone future heart conditions, lifestyle modification, including maintaining a heart-healthy diet, diabetes mellitus and weight management, physical activity, avoiding first- or secondhand smoke and blood monitoring, remain essential fragments of secondary prevention in patients with established CHD.[8] From an epidemiological perspective, studies indicate that CHD patients are at higher risk of recurrent events, and most of the rehospitalizations are due to alarming levels of treatment non-adherence, lack of self-care, and patients' failure to implement and adjust adequately to lifestyle modifications. Self-care is crucial to long-term CHD management, significantly reducing hospital readmissions and enhancing treatment plan adherence.[9,10] The World Health Organization (WHO) Guidelines on Self-care Interventions on Health and Well-Being has defined self-care as "The ability of individuals, families, and communities to promote health, prevent disease, maintain health, and cope with illness and disability with or without the support of a health worker".[11]

The Self-Care of Coronary Heart Disease Inventory-Patient Version 3 (SC-CHDI v3), designed to evaluate self-care behaviors among CHD patients,[12] has been validated in numerous languages such as Turkish,[13] Thai (Siamese),[14] and Chinese,[15] and different cultural contexts,[16] helping healthcare providers identify patients requiring further support. Translating and validating this tool into Farsi would allow an evaluation of self-care behaviors among Iranian CHD patients, accounting for culturally specific practices. The SC-CHDI v3 has been used extensively to evaluate self-care behaviors across multiple cultures, showcasing psychometric solid properties. Studies have attested to the positive association between self-care behaviors, as measured by SC-CHDI v3, and health outcomes among CHD patients.[17]

A culturally-adapted Farsi version of the SC-CHDI v3 could be a reliable tool for Iranian healthcare professionals and researchers. The American Heart Association emphasizes the importance of diversity in cardiovascular health to ensure equitable healthcare practices.[16] Therefore, a culturally adapted and validated Farsi version of SC-CHDI v3 would offer a valuable instrument for the assessment

of self-care behaviors among Iranians diagnosed with CHD.

Moreover, patient-centered preventive strategies, namely self-care, have significantly been associated with treatment outcomes.[10] Studies indicate that self-care behaviors in patients diagnosed with CHD prevent recurrent events.[9,10] Hence, this article examines the reliability and validity of the Farsi version of the SC-CHDI v3 by discussing the translation of the questionnaire into Farsi and the evaluation of its psychometric properties, including internal consistency, test-retest reliability, and construct validity. By providing a culturally adapted and validated Farsi version of the SC-CHDI v3, healthcare professionals and researchers can more effectively assess self-care behaviors among Iranian patients diagnosed with CHD.

This study aimed to evaluate the validity and reliability of a new instrument in the Farsi language designed to measure self-care practices in Iranian patients diagnosed with CHD. The Farsi version was translated, and its psychometric properties were analyzed using the valid and reliable SC-CHDI.

## Methods

The presented cross-sectional study was conducted between July and September 2022 at the Shaheed Rajaie Cardiovascular, Medical & Research Center, a leading cardiac care center in Tehran, Iran. The study aimed to translate, culturally adapt, and validate the SC-CHDI v3.0 for use among Iranian patients diagnosed with CHD. The SC-CHDI v3 was developed to assess self-care behaviors among patients diagnosed with CHD and has been validated in multiple languages and cultural contexts namely, Turkish, Thai, and Chinese.[13-15]

The sample comprised a convenience sample of adult patients with a clinical diagnosis of CHD. The inclusion criteria included patients aged 45-60 years, a confirmed clinical diagnosis of CHD (angina, myocardial infarction, stent placement, or coronary artery bypass surgery), and the capability to provide informed consent. The exclusion criteria comprised cognitive impairments, mental illness, frailty, or communication difficulties as identified by patients' medical records.

The study conformed to the principles outlined in the Declaration of Helsinki. All participants were given a thorough explanation of the study, its procedures, potential benefits, potential risks, and their rights. Participants were assured of the confidentiality of their responses and were informed that they could withdraw from the study at any time. Those who agreed to participate provided written informed consent.

The SC-CHDI v3 includes 23 items split into three subscales: self-care maintenance (9 items), self-care monitoring (7 items), and self-care management (7 items). The self-care maintenance scale assesses routine behaviors such as keeping healthcare appointments, taking medications, and participating in physical activities. The self-care monitoring scale measures how often patients monitor their symptoms and health status. The self-care management scale evaluates patients' response strategies when they experience symptoms.

Permission to translate the SC-CHDI v3 was granted by the original developers, Professor Victoria Vaughan Dickson and Professor Barbara Riegel. The translation process followed rigorous forward and backward translation steps. The original English version was translated into Farsi by two independent translators proficient in English and Farsi. Discrepancies between the two Farsi versions were resolved by a panel of healthcare professionals and researchers with expertise in CHD and self-care, resulting in a unified Farsi version. This Farsi version was then back-translated into English by two new independent translators blind to the original

English version. The back-translated English version was compared with the original to ensure the accuracy of the translation. The final Farsi version was pre-tested with a small sample of Iranian CHD patients and adjusted based on their feedback. The study received ethical approval from the Institutional Review Board of the Iranian National Committee for Ethics in Biomedical Research (IR.UT.PSYEDU.REC.1400.050).

To evaluate the cultural relevance of the translated instrument, a Content Validity Index (CVI) was calculated based on the expert panel's item relevance ratings. Items with a CVI score of 0.8 or above were deemed relevant.

*Construct Validity and Reliability:* Exploratory factor analysis (EFA) with varimax rotation was performed using SPSS software (version 28; IBM Corp., Armonk, NY, USA). Factor extraction was carried out based on an eigenvalue criterion of > 1. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were also computed. Confirmatory factor analysis (CFA) was conducted using Stata/BE (version 17; StataCorp LLC, College Station, TX, USA) to evaluate the structure of the Farsi version of the SC-CHDI v3. The goodness of fit indices such as GFI (>0.90), AGFI (>0.90), CFI (>0.95), TLI (>0.95), RMSEA (<0.08), SRMR (<0.08), and CMIN/df (values of 2 or lower) were used to assess model fit. Reliability was assessed using Cronbach's alpha and McDonald's omega coefficients. Values > 0.7 were considered acceptable. The item-to-scale correlation should exceed 0.3. This methodological framework provided an effective means to translate, culturally adapt, and validate the SC-CHDI v3 for Iranian CHD patients.

## Results

Patients' Characteristics: A sample of Iranian patients diagnosed with CHD was recruited from Shaheed Rajaie Cardiovascular, Medical & Research Center, Tehran, Iran. The frequency of male and female patients was 294 (73.5%) and 106 (26.5%), respectively. The mean age of patients was 54.13 ± 10.99 years. Among the patients, 218 (54.5%) were ≤ 60 years of age, and 182 (45.5%) were older than 60 years. The educational levels of the patients were as follows: 56 (14%) were illiterate, 194 (48.5%) had completed primary school, 116 (29%) had completed secondary school/college, and 34 (8.5%) had completed undergraduate and master's degree programs. The professions of the patients were as follows: 76 (19%) were unemployed/students, 58 (14.5%) were employees, 72 (18%) were business owners/traders, 40 (10%) were public employees, and 154 (38.5%) were farmers. Regarding marital status, 336 (84%) patients were married, 34 (8.5%) were single, and 30 (7.5%) were divorced or widowed. The comorbidities observed in the patients were diabetes (18%), hypertension (39.5%), and dyslipidemia (42.5%). The mean number of years since CHD diagnosis was 2.74 ± 2.52 years. Among the patients, 154 (38.5%) had been diagnosed with CHD for less than 1 year, 194 (48.5%) had been diagnosed for 1-5 years, 47 (11.75%) had been diagnosed for 6-10 years, and 5 (1.25%) had been diagnosed for more than 10 years.

Table 1 to 4 present the descriptive statistics of participants' behaviors, perceptions, and experiences related to self-care, symptom recognition, and treatment effectiveness. Table 1 presents an analysis of the self-care maintenance and self-care monitoring scales, illustrating the distribution of responses across different questions. The respondents' engagement in self-care activities was found to vary with percentages corresponding to "Never or rarely," "Sometimes," and "Always or daily." Table 2 shifts its focus to question 17, which investigates the duration required to identify symptoms of a heart attack. The responses are classified into distinct tiers, which correspond to the time it took to recognize the symptoms.

**Table 1. Descriptive Statistics for Questionnaire Items (self-care maintenance scale and self-care monitoring scale)**

| Dimension | Question | Never or rarely | Sometimes | | | Always or daily |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| | | n (%) | n (%) | n (%) | n (%) | n (%) |
| Self-care maintenance scale | q1 | 57 (14.3) | 58 (14.5) | 101 (25.3) | 114 (28.5) | 70 (17.5) |
| | q2 | 85 (21.3) | 74 (18.5) | 90 (22.5) | 100 (25.0) | 51 (12.8) |
| | q3 | 50 (12.5) | 56 (14.0) | 104 (26.0) | 88 (22.0) | 102 (25.5) |
| | q4 | 54 (13.5) | 70 (17.5) | 87 (21.8) | 101 ()25.3 | 88 (22.0) |
| | q5 | 64 (16.0) | 62 (15.5) | 101 (25.3) | 101 (25.3) | 72 (18.0) |
| | q6 | 92 (23.0) | 72 (18.0) | 102 (25.5) | 91 (22.8) | 43 (10.8) |
| | q7 | 77 (19.3) | 56 (14.0) | 96 (24.0) | 109 (27.3) | 62 (15.5) |
| | q8 | 61 (15.3) | 65 (16.3) | 106 (26.5) | 87 (21.8) | 81 (20.3) |
| | q9 | 60 (15.0) | 66 (16.5) | 89 (22.3) | 88 (22.0) | 97 (24.3) |
| Self-care monitoring scale | q10 | 59 (14.8) | 64 (16.0) | 68 (17.0) | 128 (32.0) | 81 (20.3) |
| | q11 | 86 (21.5) | 73 (18.3) | 55 (13.8) | 136 (34.0) | 50 (12.5) |
| | q12 | 41 (10.3) | 56 (14.0) | 64 (16.0) | 135 (33.8) | 104 (26.0) |
| | q13 | 58 ()14.5 | 62 (15.5) | 64 (16.0) | 150 (37.5) | 66 (16.5) |
| | q14 | 86 (21.5) | 44 (11.0) | 60 (15.0) | 146 (36.5) | 64 (16.0) |
| | q15 | 36 (9.0) | 59 (14.8) | 73 (18.3) | 141 (35.3) | 91 (22.8) |
| | q16 | 79 (19.8) | 49 (12.3) | 63 (15.8) | 125 (31.3) | 84 (21.0) |

Table 3 provides an in-depth analysis of the self-care management scale, presenting a summary of participants' propensity to participate in self-care activities. Table 4 examines question 23, evaluating the influence of planned treatment procedures or interventions on the participants' condition. The range of responses, varying from "I did not do anything" to "Yes," offers valuable insights into the perceived efficacy of the interventions.

*Face Validity:* The results of the face validity evaluation showed that all of the questionnaire items were acceptable in relevance and clarity. In addition, the experts found the questionnaire items to be clear and easily understandable

*Content validity index and content validity ratio:* The content validity assessment involved a panel of 10 experts, including cardiologists, clinicians, researchers, and experts. The

experts were asked to rate each item on the questionnaire for relevance, clarity, and comprehensiveness using a 4-point rating scale (1 = not relevant/clear/comprehensive, 2 = somewhat relevant/clear/comprehensive, 3 = quite relevant/clear/comprehensive, and 4 = highly relevant/clear/comprehensive).

The content validity index (CVI) and content validity ratio (CVR) were calculated for each item on the questionnaire based on the ratings provided by the panel of experts. The CVI was calculated as the proportion of experts who rated the item as either 3 or 4 on the relevance, clarity, and comprehensiveness scales. The CVR was calculated using Lawshe's formula, which considers the number of experts on the panel.

The results showed that all 23 items on the SC-CHDI had a CVI score of 0.80 or higher, indicating good content validity.

**Table 2. Descriptive Statistics for Question 17 (How quickly did you recognize it as a heart symptom?)**

| Dimension | Question | Did not recognize the sign or signs | Recognizing the signs took time | | Somewhat fast | | Very fast |
|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 |
| | | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| How long did it take to recognize it as a heart attack symptom? | q17 | 72 (18.0) | 47 (11.8) | 46 (11.5) | 48 (12.0) | 113 (28.3) | 74 (18.5) |

**Table 3. Descriptive Statistics for Questionnaire Items (self-care management scale)**

| Dimension | Question | Unlikely | Somewhat | | | Very likely |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| | | n (%) | n (%) | n (%) | n (%) | n (%) |
| Self-care management scale | q18 | 76 (19.0) | 60 (15.0) | 61 (15.3) | 138 (34.5) | 65 (16.3) |
| | q19 | 39 (9.8) | 58 (14.5) | 54 (13.5) | 157 (39.3) | 92 (23.0) |
| | q20 | 56 (14.0) | 69 (17.3) | 75 (18.8) | 121 (30.3) | 79 (19.8) |
| | q21 | 75 (18.8) | 71 (17.8) | 60 (15.0) | 142 (35.5) | 52 (13.0) |
| | q22 | 27 (6.8) | 58 (14.5) | 70 (17.5) | 145 (36.3) | 100 (25.0) |

The CVR for each item was also calculated, and all items had a CVR score higher than the critical value (0.62), indicating that they are essential to the questionnaire and should not be eliminated.

*Reliability:* Table 5 reports the exploratory factor analysis and reliability of the Self-Care Maintenance Scale. Each question's component and factor loadings are presented along with the corrected item-total correlation, Cronbach's alpha if the item is deleted, and the overall Cronbach's alpha. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.886, and Bartlett's test of sphericity was significant ($\chi^2 = 728.662$; P < 0.001). The results indicated that all items had good factor loadings (> 0.5) and corrected item-total correlations (> 0.4). The overall Cronbach's alpha coefficient was 0.802, suggesting good internal consistency reliability. Furthermore, table 5 shows the exploratory factor analysis and reliability of the Self-Care Monitoring Scale. Each question's component and factor loadings are provided, along with the corrected item-total correlation, Cronbach's alpha if the item is deleted, and the overall Cronbach's alpha. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.893, and Bartlett's test of sphericity was significant ($\chi^2 = 710.414$; P < 0.001). All items had good factor loadings (> 0.5) and corrected item-total correlations (> 0.4). The overall Cronbach's alpha coefficient was 0.817, indicating high internal consistency reliability.

In addition table 5 displays the exploratory factor analysis and reliability of the Self-Care Management Scale. Each question's component and factor loadings are presented, along with the corrected item-total correlation, McDonald's omega if the item is deleted, and the overall McDonald's omega. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.828, and Bartlett's test of sphericity was significant ($\chi^2 = 473.710$; P < 0.001). All items had good factor loadings (> 0.5) and corrected item-total correlations (> 0.4). The overall McDonald's omega coefficient was 0.725, indicating good internal consistency reliability.

*Construct Validity of the Self-care Maintenance Scale:* In CFA, the model demonstrated good fit indices: a ratio of chi-square (CMIN) to degrees of freedom (df) of 0.82, Comparative Fit Index (CFI) of 1.000, Tucker-Lewis Index (TLI) of 1.000, Standardized Root Mean Square Residual (SRMR) of 0.025, Root Mean Square Error of Approximation (RMSEA) of 0.000 (95% CI: 0.000, 0.029). The standardized estimated factor loadings ranged from 0.48 to 0.61, as shown in figure 1.

**Table 4. Descriptive Statistics for Question 23 (Did the treatment you used make you feel better?**

| Dimension | Question | I did not do anything | Maybe | | Somewhat | | Yes |
|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 |
| | | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| Did the intended treatment process/intervention improve your condition? | q23 | 62 (16.3) | 53 (13.3) | 41 (10.3) | 51 (12.8) | 118 (29.5) | 72 (18.0) |

**Table 5. Exploratory factor analysis and reliability of the self-care constructs**

| Construct | Question | Component and factor loadings | Corrected Item-Total Correlation | Cronbach's Alpha if Item Deleted | Cronbach's Alpha | KMO | Bartlett's Test |
|---|---|---|---|---|---|---|---|
| Self-care maintenance scale | q1 | 0.605 | 0.474 | 0.785 | 0.802 | 0.886 | $\chi^2$ = 728.662 (P < 0.001) |
| | q2 | 0.587 | 0.455 | 0.787 | | | |
| | q3 | 0.667 | 0.538 | 0.777 | | | |
| | q4 | 0.653 | 0.524 | 0.778 | | | |
| | q5 | 0.600 | 0.474 | 0.785 | | | |
| | q6 | 0.643 | 0.515 | 0.780 | | | |
| | q7 | 0.617 | 0.486 | 0.783 | | | |
| | q8 | 0.678 | 0.549 | 0.775 | | | |
| | q9 | 0.549 | 0.424 | 0.792 | | | |
| Self-care monitoring scale | q10 | 0.651 | 0.515 | 0.800 | 0.817 | 0.893 | $\chi^2$ = 710.414 (P < 0.001) |
| | q11 | 0.706 | 0.572 | 0.791 | | | |
| | q12 | 0.678 | 0.543 | 0.796 | | | |
| | q13 | 0.657 | 0.522 | 0.799 | | | |
| | q14 | 0.700 | 0.566 | 0.792 | | | |
| | q15 | 0.711 | 0.578 | 0.790 | | | |
| | q16 | 0.734 | 0.603 | 0.785 | | | |
| Self-care management scale | q17 | 0.651 | 0.515 | 0.800 | 0.817 | 0.828 | $\chi^2$ = 473.710 (P < 0.001) |
| | q18 | 0.706 | 0.572 | 0.791 | | | |
| | q19 | 0.678 | 0.543 | 0.796 | | | |
| | q20 | 0.657 | 0.522 | 0.799 | | | |
| | q21 | 0.700 | 0.566 | 0.792 | | | |
| | q22 | 0.711 | 0.578 | 0.790 | | | |
| | q23 | 0.734 | 0.603 | 0.785 | | | |

KMO: Kaiser-Meyer-Olkin
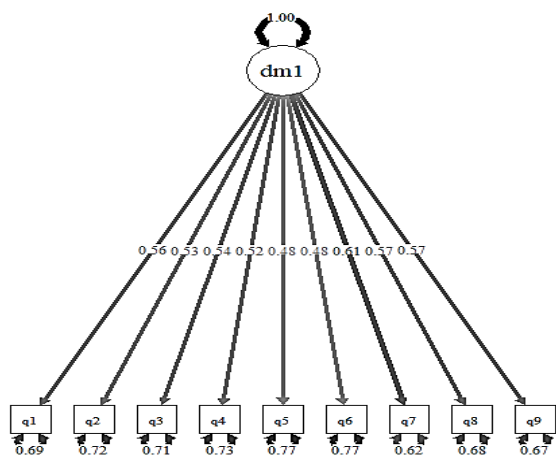


**Figure 1. Confirmatory factor analysis of the self-care maintenance scale**
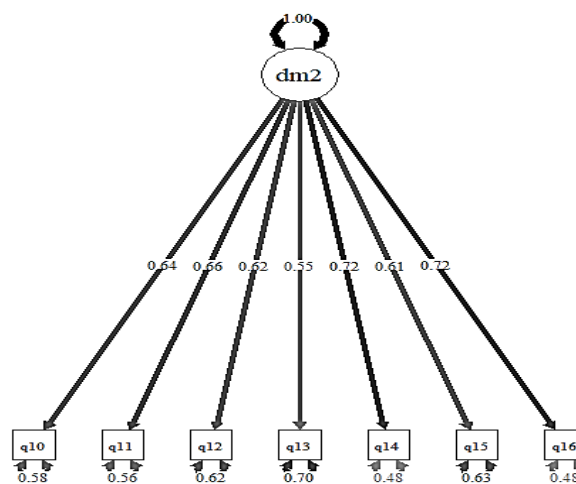


**Figure 2. Confirmatory factor analysis of the self-care monitoring scale**

*Construct Validity of the Self-care Monitoring Scale:* According to the results of CFA, the model exhibited a good fit with the following fit indices: CMIN/df = 1.03, CFI = 1.000, TLI = 0.999, SRMR = 0.021, and RMSEA < 0.001 (Table 3). The standardized estimated factor loadings ranged from 0.55 to 0.72 (Figure 2).

*Construct Validity of the Self-care Management Scale:* In CFA, the model demonstrated a good fit: CMIN/df = 0.71, CFI = 1.000, TLI = 0.999, SRMR = 0.022, RMSEA = < 0.001. Standardized estimated factor loadings ranged from 0.40 to 0.66 (Figure 3).
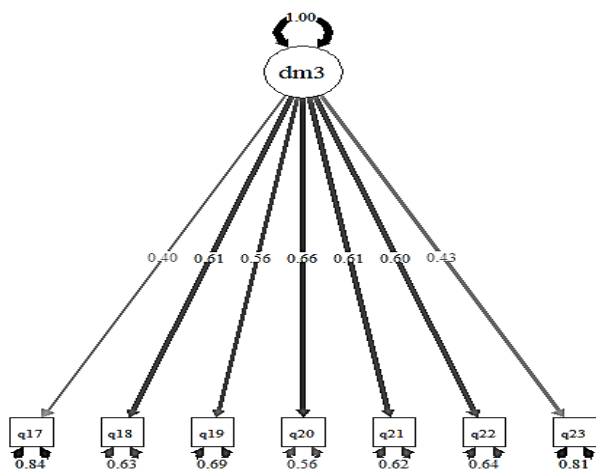
**Figure 3. Confirmatory factor analysis of the self-care management scale**

*Sample Characteristics:* The sample consisted of Iranian patients with CHD, with a mean age of 60 years. Most participants were men, had a history of hypertension, and were taking multiple medications for their condition.

*Internal Consistency:* The Cronbach's alpha for the Farsi version of the SC-CHDI v3 was found to be 0.85, indicating acceptable internal consistency.

*Test-Retest Reliability:* The ICC for the Farsi version of the SC-CHDI v3 test-retest reliability was 0.81, demonstrating acceptable stability over time.

*Construct Validity:* The exploratory factor analysis revealed a three-factor structure consistent with the original SC-CHDI v3. The factors identified were symptom monitoring, treatment adherence, and lifestyle adjustments. The confirmatory factor analysis supported this factor structure, with all fit indices meeting the recommended criteria for good model fit.

## Discussion

In the present study, the SC-CHDI v3 was translated and the psychometric properties of the Farsi version of the SC-CHDI v3 were examined. The inventory includes three scales: self-care maintenance, self-care monitoring, and self-care management. To the best of our knowledge, this is the first study performed within an Iranian population, making it a pivotal contribution to the field. The scales of the Iranian version of the SC-CHDI v3 were psychometrically sound, indicating that this tool can reliably and validly measure self-care ability among Iranian patients with CHD.

The construct validity across the three scales was found to be acceptable, a finding that is consistent with previous studies performed in different cultural contexts, including studies conducted in the United States,[12] Turkey,[13] Thailand,[14] and China.[15] Such consistency indicates that the SC-CHDI v3 could serve as a valuable instrument for healthcare professionals assessing self-care ability among Iranian patients with CHD.

The self-care maintenance scale could potentially identify patients who may or may not adhere to healthcare appointments or medication schedules. Similarly, the self-care monitoring scale could serve to spot patients who may or may not be attentive to their health status and any variations resulting from it or its treatment. Finally, the self-care management scale could be useful in determining patients who are likely or unlikely to react swiftly and adequately to any unusual signs or symptoms when they happen. The 9-item self-care maintenance scale exhibits a well-fitting two-factor structure: 'autonomous behavior' indicating self-motivation, and 'consultative behavior' influenced by others. The new item, 'try to avoid getting sick,' aligns with the "Behavioral Health mindset".[12,18,19]

The 7-item self-care monitoring scale and the 6-item self-care management scale demonstrated good fit statistics, suggesting their usefulness for self-care in the studied population.[21] Notably, the management scale displayed a unique two-factor structure of 'early' and 'delayed' responses, potentially influenced by recent increased awareness about the benefits of early self-administration of medications like aspirin and nitro-glycerine in preventing adverse CHD events.[21,22]

Our findings were in line with that of a study conducted in Thailand that demonstrated a good fit for the scales within the respective cultural context. However, differences were noted with other studies, possibly due to cultural differences and diverse characteristics of the sample populations. The discrepancies highlight the importance of further validating the SC-CHDI v3 in different cultural and clinical contexts.[14,15]

The strength of the study lies in the meticulous translation and validation of an instrument designed to support Iranian patients with CHD in self-care, including additional measures to account for cultural differences in translation. Consistency was demonstrated through a variety of statistical measures, and robust internal consistency was identified for the inventory and its three scales, supporting the instrument's validity in the context of self-care.[23,24]

Our study had some limitations. First, data collection was performed on one occasion, preventing us from estimating the stability of the scale items. Second, we employed a convenience sample, introducing a potential selection bias and limiting the generalizability of our findings. Additionally, as a result of conducting the study at a single center, we might have yet to capture Iran's CHD patients' full cultural and socioeconomic diversity.

Given these limitations, we recommend conducting future studies with more diverse and larger sample sizes of Iranian CHD patients, ideally across various healthcare settings nationwide. It will also be valuable to explore the relationship between the self-care behaviors assessed by the Iranian version of SC-CHDI v3 and relevant clinical outcomes, such as hospitalization rates and quality of life (QOL).[15]

This study, along with future investigations, holds the potential to significantly contribute to patient-centered care within the clinical practice for CHD in Iran. By providing a robust instrument to evaluate CHD patients' self-care behaviors accurately, healthcare professionals are better equipped to identify those who need more support, develop tailored interventions, and ultimately enhance patient self-care and improve health outcomes.[16]

## Conclusion

Our findings demonstrate that the Farsi version of the SC-CHDI v3 is reliable and valid for assessing self-care behaviors among Iranian patients with CHD. The translation process successfully maintains the psychometric properties of the original SC-CHDI v3, providing healthcare professionals with a culturally adapted tool to identify patients needing additional support and develop tailored interventions. The availability of this instrument can enhance patient-centered care, leading to improved self-care and better health outcomes in the Iranian CHD population. Additionally, the study's successful translation and validation process can serve as a model for adapting self-care assessment instruments in other languages and cultural contexts, thus advancing patient-centered research globally. Further research can explore the instrument's relationships with clinical outcomes and applicability in diverse populations and settings.

## Conflict of Interests

Authors have no conflict of interests.

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