Enfermería Global
ISSN 1695-6141 Revista electrónica cuatrimestral de Enfermería
Nº 78 Enero-Abril 2026
www.um.es/eglobal/

REVIEWS

Functional status and self-care of patients with heart failure: a scoping review

Capacidade funcional e autocuidado de pacientes com insuficiência cardíaca: uma scoping review

Capacidad funcional y autocuidado de pacientes con insuficiencia cardíaca: una revisión de alcance

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https://doi.org/10.6018/eglobal.677601

elocation-id:e677601

Received:01/09/2025
Accepted: 29/01/2026

ABSTRACT:

Objective: To map the scientific evidence on the relationship between functional capacity and self-care in patients with heart failure.

Methods: Scoping review conducted in accordance with the Joanna Briggs Institute and guided by PRISMA-ScR. Seven electronic databases and gray literature were consulted. Primary studies with adults (aged 18 years or older) diagnosed with heart failure, published in any language, were included, with independent and double-blind selection.

Results: 18 studies were included. Self-care was predominantly assessed using the Self-Care of Heart Failure Index. Functional capacity was primarily assessed using the New York Heart Association functional classification. The relationship between the two is complex and varied, with positive, negative, or absent correlations.
Conclusion: The relationship between functional capacity and self-care in patients with heart failure is heterogeneous. Understanding the relationship between self-care and functional capacity can guide healthcare professionals in the assessment and development of personalized interventions (education, exercise support, motivation) for patients with heart failure.

Keywords: Functional Status; Self Care; Heart Failure; Scoping Review.

RESUMO:

Objetivo: Mapear as evidências científicas sobre a relação entre capacidade funcional e autocuidado de pacientes com insuficiência cardíaca.
Métodos: *Scoping review* elaborada conforme o *Joanna Briggs Institute* e orientada pelo PRISMA-ScR. Sete bases de dados eletrônicas e literatura cinzenta foram consultadas. Incluíram-se estudos primários com adultos (idade igual ou superior a 18 anos) diagnosticados com insuficiência cardíaca, publicados em qualquer idioma, com seleção independente e duplo-cega.
Resultados: Dezoito estudos foram incluídos. O autocuidado foi avaliado predominantemente pelo instrumento *Self-Care of Heart Failure Index*. A capacidade funcional foi principalmente avaliada pela classificação funcional da *New York Heart Association*. A relação entre ambos é complexa e variada, com relações positivas, negativas ou ausentes.
Conclusão: A relação entre capacidade funcional e autocuidado em pacientes com insuficiência cardíaca é heterogênea. A compreensão da relação entre autocuidado e capacidade funcional pode guiar profissionais de saúde na avaliação e no desenvolvimento de intervenções personalizadas (educação, suporte ao exercício, motivação) de pacientes com insuficiência cardíaca.

Palavras-chave: Estado Funcional; Autocuidado; Insuficiência Cardíaca; Revisão de Escopo.

RESUMEN:

Objetivo: Mapear la evidencia científica sobre la relación entre la capacidad funcional y el autocuidado en pacientes con insuficiencia cardíaca.
Métodos: Revisión de alcance realizada de acuerdo con el Joanna Briggs Institute y guiada por PRISMA-ScR. Se consultaron siete bases de datos electrónicas y literatura gris. Se incluyeron estudios primarios con adultos (de 18 años o más) diagnosticados con insuficiencia cardíaca, publicados en cualquier idioma, con una selección independiente y a doble ciego.
Resultados: Se incluyeron 18 estudios. El autocuidado se evaluó predominantemente utilizando el Self-Care of Heart Failure Index. La capacidad funcional se evaluó principalmente a través de la clasificación funcional de la New York Heart Association. La relación entre ambos es compleja y variada, con correlaciones positivas, negativas o ausentes.
Conclusión: La relación entre la capacidad funcional y el autocuidado en pacientes con insuficiencia cardíaca es heterogénea. La comprensión de la relación entre el autocuidado y la capacidad funcional puede orientar a los profesionales de la salud en la evaluación y el desarrollo de intervenciones personalizadas (educación, apoyo al ejercicio, motivación) para pacientes con insuficiencia cardíaca.

Palabras clave: Estado Funcional; Autocuidado; Insuficiencia Cardíaca; Revisión de Alcance.

INTRODUCTION

Cardiovascular diseases (CVDs) are the leading cause of global mortality. In recent years, advances in the treatment of CVDs have contributed significantly to increased longevity, making the analysis of the disease burden essential to guide health policies focused on both risk factor prevention and improvement of quality of life (QoL)[1]. In this scenario, heart failure (HF) stands out as the main cause of hospital admission in Brazil, with high rates of short- and long-term mortality and readmission[2].

Approximately 64.3 million people worldwide have HF. In Brazil, the prevalence is around 2 million[3,4]. In the adult population, prevalence ranges from 1% to 3%, being more frequent among the elderly. Incidence varies from 1 to 20 cases per 1,000 people per year[4].

HF is defined as a clinical and multifactorial syndrome, characterized by signs and symptoms resulting from structural or functional cardiac disorders. It is associated with low functional capacity (FC) and a greater need for therapeutic resources, which results in high costs for the healthcare system[2,4]. As a progressive and debilitating condition, HF requires continuous, lifelong management to achieve control of functional status[5].

Symptoms such as dyspnea, fatigue, fluid retention, and lower limb edema are present in HF and can limit exercise tolerance and FC[2]. This contributes to a decrease in the performance of activities of daily living (ADL) and, consequently, lower QoL. A systematic review and meta-analysis, which evaluated the use of functional tests in people with HF, showed that patients with low physical performance, such as in the Six-Minute Walk Test (6MWT), have a worse prognosis for HF, with a higher risk of hospitalization and mortality[6]. A cross-sectional study showed that the higher the functional class of the New York Heart Association (NYHA), the lower the functional performance, such that patients with NYHA III and IV were those who presented the worst functionality[7].

In patients with NYHA functional class II and III and preserved ejection fraction, FC demonstrates a direct impact on the management of self-care (SC), but is not directly or indirectly related to the maintenance of SC. Individuals with limited FC may have difficulties managing their symptoms, but this does not necessarily impede their ability to maintain SC routines, such as following a specific diet or using prescribed medication[8].

HF influences FC, so it is essential for patients to maintain clinical stability through the effective adoption of SC practices. This requires incorporating habits of monitoring and controlling fluid and salt intake, following a healthy diet, adhering to medication, and practicing regular physical exercise. These practices enable better QoL and lower rates of adverse outcomes[9]. For this reason, SC in patients with HF contributes to the maintenance of clinical stability and ADL with greater efficiency[10].

The results found in the literature regarding the relationship between FC and SC are limited, and the findings may not be applicable to all HF patients. Therefore, more research is needed to better elucidate this relationship in different contexts and populations. Given the above, the objective was to map the scientific evidence on the relationship between FC and SC in patients with HF.

MATERIAL AND METHOD

Study design

This is a scoping review, developed in nine sequential steps, as recommended by the Joanna Briggs Institute (JBI) manual for evidence synthesis[11]: 1) Structuring the title; 2) Developing the title and the question; 3) Writing the introduction and objective; 4) Developing and aligning the inclusion criteria with the objective and research question;

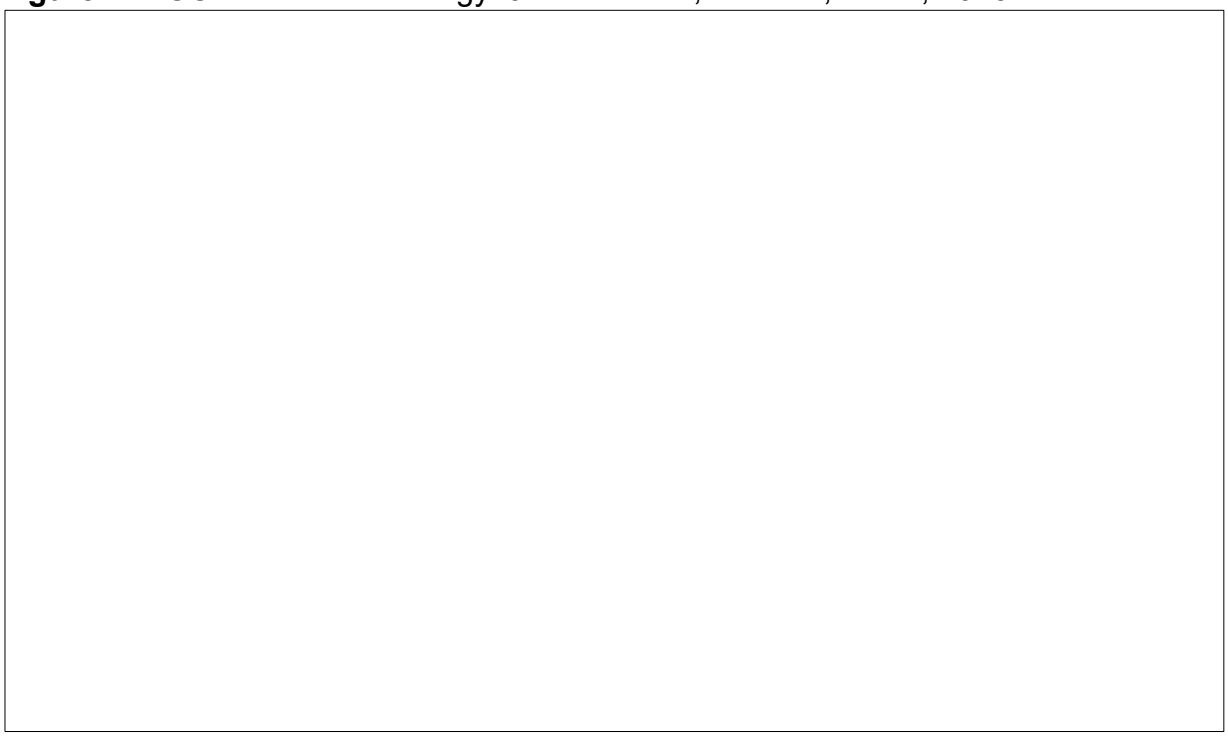
5) Building the search strategy to be as comprehensive as possible; 6) Selecting the evidence source; 7) Data extraction process; 8) Analyzing the evidence; and 9) Presenting the results.

The methodological recommendations of the Preferred Reporting Items for Systematic reviews and Meta-Analyses for scoping reviews, PRISMA-ScR[12], were followed. The study protocol was previously registered on the Open Science Framework – OSF platform (https://doi.org/10.17605/OSF.IO/JRUY3).

IDENTIFICATION OF THE RESEARCH QUESTION

The research question was formulated based on the PCC mnemonic strategy (Population, Concept, and Context)[11], as illustrated in Figure 1.

Figure 1: PCC mnemonic strategy. João Pessoa, Paraíba, Brazil, 2025.



Source: Prepared by the authors, 2025.

Thus, the following guiding question was established: What is the relationship between the functional capacity and self-care of people with heart failure?

Identification of studies

The sources of information consisted of the following databases: National Library of Medicine (PubMed), Index to Nursing and Allied Health Literature (CINAHL), Web of Science (WoS), Latin American and Caribbean Health Sciences Literature (LILACS), Cochrane Library, Embase, and SCOPUS via Elsevier. For gray literature, the following were used: CAPES Catalog of Theses and Dissertations, Brazilian Digital Library of Theses and Dissertations (BDTD), WHO Library Database, and ProQuest Dissertations and Thesis Global.

The databases were accessed through the CAPES Journal Portal (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*), using the Federated Academic Community (CAFe), via access provided by a public federal university. Finally, searches were conducted in the reference lists of the studies included in the sample of this scoping review. The searches were carried out after the protocol registration, between December 2024 and March 2025.

The search strategies were based on the elements of the PCC mnemonic, with the aid of Health Sciences Descriptors (DeCS) or Medical Subject Headings (MeSH), in conjunction with the Boolean operators AND and OR. The search strategies were defined based on initial tests on the PubMed and CINAHL portals, and were subsequently applied to the other databases as recommended[11]. The search strategies and the results obtained from the respective information sources are displayed in Table 1.

Table 1: Search strategies, João Pessoa, Paraíba, Brazil, 2025.

Information sources	Search strategies	Identified studies
PubMed	("Heart Failure"[MeSH Terms] OR "Heart Failure"[Title/Abstract]) AND ("Functional Status"[MeSH Terms] OR "Functional Status"[Title/Abstract] OR "Functional Capacity"[Title/Abstract]) AND ("self care"[MeSH Terms] OR "self care"[Title/Abstract] OR "self care"[MeSH Terms] OR "self care"[Title/Abstract])	73
CINAHL	"Heart Failure" AND "Functional Status" OR "Functional Dependence" OR "Functional Independence" AND "Self Care"	1026
WoS	(((((TS=("Heart Failure")) OR TS=("Cardiac Failure")) OR TS=("Heart Decompensation")) AND TS=("Functional Status")) OR TS=("Functional Dependence")) AND TS=("Self Care")	75
LILACS	("Heart Failure") OR ("Cardiac Failure") OR ("Heart Decompensation") OR ("Congestive Heart Failure") OR ("Insuficiência Cardíaca") OR ("Descompensação Cardíaca") OR ("Falência Cardíaca") OR ("Falência Cardíaca Congestiva") OR ("Insuficiência Cardíaca Congestiva") OR ("Insuficiencia Cardíaca") OR ("Descompensación Cardíaca") OR ("Falencia Cardíaca") OR ("Fallo Cardíaco Congestivo") OR ("Insuficiencia Cardíaca Congestiva") AND ("Functional Status") OR ("Functional Dependence") OR ("Functional Independence") OR ("Estado Funcional") OR ("Capacidade Funcional") OR ("Dependência Funcional") OR ("Independência Funcional") OR ("Saúde Funcional") OR ("Status Funcional") OR ("Dependencia Funcional") OR ("Estatus Funcional") OR ("Independencia Funcional") AND ("Self Care") OR ("Self-Care") OR (Autocuidado) OR (Autoajuda) OR (Autoayuda)	05
Cochrane Library	"Heart Failure" in Title Abstract Keyword OR "Cardiac Failure" in Title Abstract Keyword AND "Functional Status" in Title Abstract Keyword AND "Self Care" in Title Abstract Keyword	169

Information sources	Search strategies	Identified studies
Embase	('heart failure'/exp OR 'cardiac failure' OR 'heart decompensation' OR 'congestive heart failure'/exp OR 'myocardial failure') AND ('functional status'/exp OR 'functional dependence' OR 'functional independence') AND ('self care'/exp OR 'self-care') AND [embase]/lim	181
SCOPUS	(TITLE-ABS-KEY ('heart AND failure' OR 'cardiac AND failure' OR 'heart AND decompensation' OR 'congestive AND heart AND failure' OR 'myocardial AND failure') AND ALL ('functional AND status' OR 'functional AND dependence' OR 'functional AND independence') AND ALL ('self AND care' OR 'self-care'))	74
BDTD	"Heart Failure" AND "Functional Status" AND "Self Care"	02
Who Library Database	"Heart Failure" OR "Cardiac Failure" OR "Heart Decompensation" AND "Functional Status" OR "Functional Dependence" OR "Functional Independence" AND "Self Care" OR "Self-Care"	28
ProQuest	"Heart Failure" AND "Functional Status" AND "Self Care"	133

Source: Prepared by the authors, 2025.

Selection of studies

In this review, the defined inclusion criteria were: studies involving adults (aged ≥18 years) with a clinical diagnosis of HF, published in any language, and without time restriction. Research conducted in all healthcare settings (follow-up, home care, long-term care facilities, primary health care, and hospital) was considered, without restrictions on geographical location, as were primary studies that answered the guiding question.

Studies excluded were editorials, abstracts in event proceedings, project phases, research protocols, expert opinions, and studies that did not relate to the objective of the review. Exclusion was carried out based on reading the title and abstract, associated theme, unavailable full text, and study duplicates.

The search results were exported to the Zotero reference manager (version 7.0.11)[13], which assisted in identifying duplicate studies and organizing references. The selection of studies was performed independently, by pairs, and in a double-blind manner, using the Rayyan - Intelligent Systematic Review platform[14]. Cases of reviewer disagreements were resolved by a third reviewer. The entire selection process is represented in the PRISMA-ScR flowchart (Figure 2).

Data analysis

Data from the included studies were extracted and entered into a specific instrument, developed by the authors, which included: database; year and language of publication; journal; study design; objectives; location; environment or healthcare setting; population and sample; methods for assessing SC and FC; observed relationship between SC and FC; limitations; and outcomes.

RESULTS

Initially, 1,603 publications were identified in the databases PubMed, CINAHL, WoS, LILACS, Cochrane Library, Embase, and SCOPUS. Of these, 124 duplicate publications were removed (123 flagged by automation and 1 manually excluded). After this initial screening, 1,479 publications were examined, which resulted in the exclusion of 1,391 for not meeting the established criteria. The remaining 88 publications were assessed for eligibility: 2 were excluded for being research protocols, 3 for addressing different populations, and 69 for not corresponding to the object of study, totaling 14 included studies.

In parallel, 163 publications were identified in the gray literature (135 from websites – BDTD and ProQuest – and 28 from organizations – WHO Library Database). Finally, citation searches were performed, where 15 studies were analyzed. Thus, a total of 178 studies were obtained by other methods. After analysis, 174 were excluded for not fitting the focus of the review, resulting in 4 new included studies. At the end of the process, the review included 18 studies, as illustrated in the PRISMA-ScR flowchart (Figure 2).

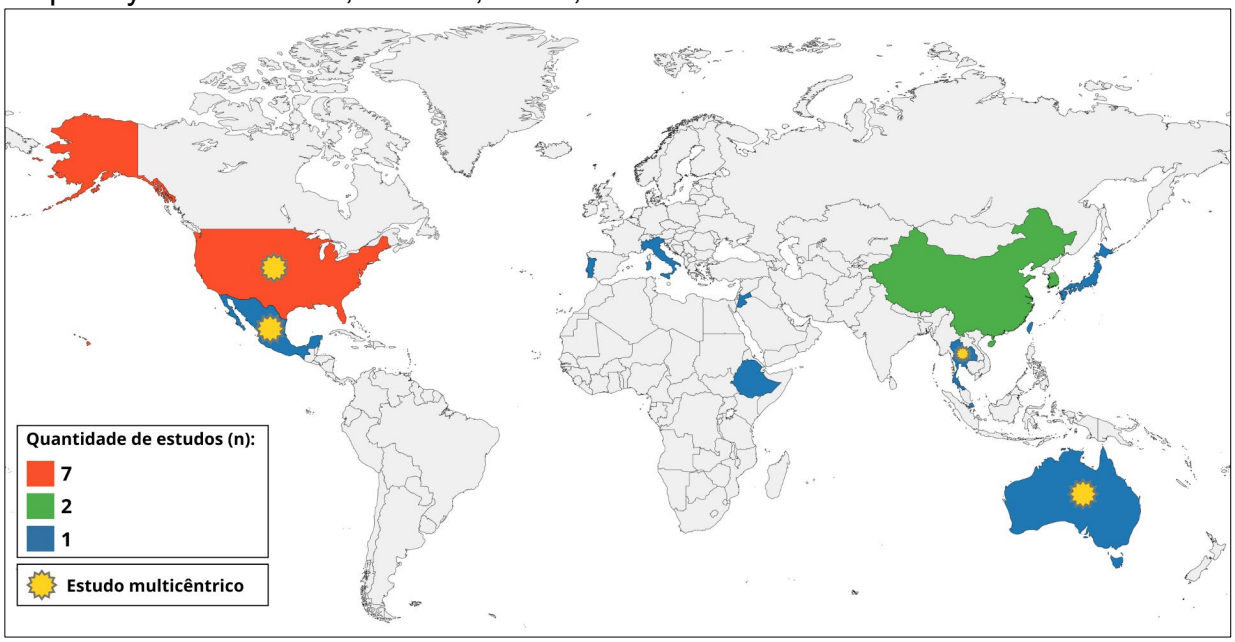
The selected studies were identified in four distinct databases. The majority, eight articles, were found in PubMed[15-22], five in Embase[23-27], one in CINAHL[28], and four via reverse citations[29-32].

The selected studies were predominantly conducted in the United States[15-18,20,23,29], with seven studies, followed by South Korea[29,31] and China with two each[19,24]. A single study was carried out in each of the following countries: Australia[23], Ethiopia[32], Italy[30], Japan[25], Jordan[27], Mexico[23], Portugal[21], Singapore[26], Taiwan[22], and Thailand[23]. There was also one multicenter study[23] that involved the United States, Australia, Thailand, and Mexico. The thematic map presented in Figure 3 provides a choropleth representation of the articles, considering the countries where the studies were developed.

Figure 2: PRISMA-ScR Flowchart for identification, screening, and inclusion of publications. João Pessoa, Paraíba, Brazil, 2025.

Source: Adapted [12].

Figure 3: Geographical distribution of published articles according to absolute frequency. João Pessoa, Paraíba, Brazil, 2025.



Source: Prepared by the authors, 2025.

Table 2 presents a narrative synthesis of the general characteristics of the included studies and the relationships found between FC and SC in patients with HF.

Table 2: Characterization of the included studies and main outcomes found, João Pessoa, Paraíba, Brazil, 2025.

AUTHORS (YEAR)	OBJECTIVES	METHOD	POPULATION AND CONTEXT	RELATIONSHIP BETWEEN SC AND FC
Jean M. Rockwell and Barbara Riegel (2001)[29]	To test a model of individual patient characteristics, encompassing symptom severity, comorbidity, social support, education, age, socioeconomic status, and gender, derived from Connelly's Self-Care in Chronic Disease Model as predictors of SC in HF.	Cross-sectional and correlational study	209 patients diagnosed with HF, in a hospital setting.	Patients with more severe symptoms showed higher SC scores, meaning those who were more symptomatic and functionally impaired were better informed about the symptoms requiring SC and tended to adopt SC behaviors.
Seongkum Heo et al. (2008)[15]	To identify factors related to SC behaviors in patients with HF.	Cross-sectional and correlational study	122 patients with HF, mean age 60 years, followed in outpatient clinics.	For women, worse FC predicted better SC behaviors, suggesting that functional impairment facilitated SC. Although men and women had similar initial

AUTHORS (YEAR)	OBJECTIVES	METHOD	POPULATION AND CONTEXT	RELATIONSHIP BETWEEN SC AND FC
				levels of knowledge, psychological status, and SC behaviors, men exhibited better functional status. Finally, distinct factors affected SC for each gender.
Barbara Riegel et al. (2009)[23]	To describe and compare SC in two developed countries—USA and Australia—and two developing countries—Thailand and Mexico.	Descriptive and comparative study	2082 patients with HF, in various healthcare settings (hospitals, clinics, outpatient, and home settings).	NYHA class was a significant determinant in SC maintenance, and functional status was associated with SC confidence. Higher education, experience with diagnosis, NYHA class, and country were determinants in SC maintenance; SC maintenance was highest in Australia and lowest in Thailand; SC management was highest in the United States and lowest in Thailand; SC confidence was highest in Mexico and lowest in Thailand.
Catherine N. Marti et al. (2012)[16]	To comprehensively evaluate patient-reported adherence to 8 SC recommendations for HF, predictors of adherence, and its association with outcomes.	Prospective cohort study	308 outpatient patients with HF, recruited from 3 hospitals.	There was no significant association between SC adherence and FC measured by the 6-minute walk test. There was also no association between adherence and clinical events or FC.
Angela P. Clark et al. (2015)[17]	To examine the effects of an educational support intervention delivered in the home setting, using strategies to improve health status and SC in adults/elderly with NYHA class I-III HF.	Prospective, randomized, controlled study	50 non-hospitalized patients diagnosed with NYHA class I-III HF, aged 45 years or older. Study conducted remotely.	There was a relationship between FC and SC, as there was an improvement in functional status scores in the intervention group, and these results demonstrated a positive impact on participants' health status, highlighting the self-efficacy component present in the SC

AUTHORS (YEAR)	OBJECTIVES	METHOD	POPULATION AND CONTEXT	RELATIONSHIP BETWEEN SC AND FC
				assessment, which increased by 20 points, indicating an increase in SC levels after the improvement in functional status.
Antonello Cocchier et al. (2015)[30]	To describe SC maintenance, SC management, and SC confidence in Italian adults with HF.	Cross-sectional descriptive study	1192 adults with HF followed in cardiovascular centers.	A higher NYHA functional class predicted worse SC. Patients with more significant physical limitations tended to have a reduced ability to recognize and interpret symptoms of HF exacerbation, implement treatments to relieve them, and assess the effectiveness of those treatments.
Jin Shil Kim et al. (2015)[31]	To examine the association of cognitive function with SC adherence in Korean patients with HF.	Prospective study	86 outpatient patients with HF, aged >30 years, diagnosed with HF for at least 6 months.	Patients with ≥ NYHA II had significantly lower SC levels compared to NYHA I patients. Those with more functional limitation demonstrated worse cognitive function and worse SC confidence. Importantly, memory loss was a significant predictor of SC confidence.
Jong Sun Ok and Heejung Choi (2015)[28]	To assess knowledge about HF and adherence to SC behaviors in Korean patients with HF. To identify factors affecting adherence to SC behaviors in these patients.	Correlational study	280 outpatient patients with HF.	Patients with worse FC were more likely to adhere to SC behaviors. Specifically, FC was a significant independent variable in the multiple regression analysis, with a beta coefficient of 0.19 and p=0.036.
McCarthy, Margaret et al. (2016)[18]	To evaluate the feasibility of an exercise counseling intervention for racially/ethnically diverse adults with HF. To assess the	Quasi-experimental, prospective study	15 adults with a diagnosis of stable HF, followed in a clinic.	The intervention led to improvements in both FC and SC maintenance. A brief nurse-led intervention may be a possible approach to improve SC

AUTHORS (YEAR)	OBJECTIVES	METHOD	POPULATION AND CONTEXT	RELATIONSHIP BETWEEN SC AND FC
	potential of the intervention to improve overall physical activity, FC, and HF SC.			in patients with HF. Exercise counseling using motivational interviewing may be an option for promoting physical activity and improving FC.
Huijing Zou et al. (2017)[19]	To explore factors associated with SC behaviors and examine the mediating role of SC confidence.	Cross-sectional study	321 patients with HF recruited from three hospital cardiovascular units.	There was an association of FC with SC management, but not with SC maintenance.
Xiaoling Lei and Minsui Cai (2018)[24]	To describe SC skills and associated factors in patients with HF.	Cross-sectional study	91 patients with HF admitted to a hospital setting.	The study found a negative relationship between NYHA and SC capacity. Patients with NYHA IV had lower SC capacity. Patients with NYHA II had better SC capacity. Disease knowledge also influences SC capacity, with patients who have a greater understanding of HF tending to have better SC capacity. Patient mobility was also related to disease knowledge and cardiac functional classification.
Bruno Delgado et al. (2021)[21]	To understand the relationship between gender and pathophysiological characteristics with SC behavior.	Multicenter cross-sectional study	225 hospitalized patients with HF from eight hospitals.	Patients in NYHA class II showed a worse level of self-management and self-confidence compared to patients in classes III and IV.
Kazushi Sakane et al. (2021)[25]	To describe a case of advanced HF with reduced ejection fraction where motivational interviewing leads to the stabilization of the patient's condition.	Case report	1 patient with HF and reduced ejection fraction hospitalized in a hospital setting.	Following motivational interviewing, there was an improvement in both the patient's SC and FC, demonstrated by reduced post-effort heart rate and improvement in NYHA functional class. There was a positive relationship between SC

AUTHORS (YEAR)	OBJECTIVES	METHOD	POPULATION AND CONTEXT	RELATIONSHIP BETWEEN SC AND FC
				and FC after the intervention.
Enu Sitotaw et al. (2022)[32]	To understand SC practices and their associated factors among patients with HF in Southern Ethiopia.	Cross-sectional study	229 hospitalized patients with HF in a hospital setting.	Participants in NYHA classes III and IV were twice as likely to have good SC behaviors compared to those in classes I and II. Only 34% of participants had good SC scores.
Rebecca A. Gary et al. (2022)[20]	To evaluate the efficacy of a 12-week home-based aerobic exercise program combined with computerized cognitive training (EX/CCT) on HF SC behaviors, disease-specific QoL, and FC, compared to exercise alone (EX) or a usual care stretching and flexibility program.	Three-group randomized controlled trial, with pre- and post-intervention assessments	69 participants aged 40 to 75 years, with left ventricular ejection fraction (LVEF) ≥ 10%, NYHA class II-III, followed in HF clinics.	It was observed that the combined intervention resulted in significant improvements in both SC and FC. The combination of exercise and cognitive training can improve SC, QoL, and FC in people with HF. CCT may be a more effective intervention strategy than exercise alone.
Chetna Malhotra et al. (2024)[26]	To evaluate the pattern of hospital readmissions among patients with advanced HF symptoms.	Prospective cohort study	250 patients with HF recruited from two public hospitals.	Patients with worse functional status and inadequate SC behaviors had a higher risk of hospital readmission. The study identified that patients with weak handgrip strength and worse functional status had a higher risk of hospital readmission.
Loai Issa Tawalbeh (2024)[27]	To identify the predictors of SC behaviors among patients with HF in Jordan.	Correlational cross-sectional study	254 patients with HF recruited from three outpatient clinics.	NYHA functional class was a significant predictor of SC management and confidence aspects, since a better NYHA functional status was correlated with better SC management activities and better SC confidence.

AUTHORS (YEAR)	OBJECTIVES	METHOD	POPULATION AND CONTEXT	RELATIONSHIP BETWEEN SC AND FC
Chih-Wen Chen et al. (2025)[22]	To evaluate the effects of a nurse-led collaborative healthcare model on self-management, functional status, rehospitalization, and medical costs of HF patients.	Two-group randomized clinical trial	100 patients diagnosed with HF, aged ≥ 20 years from the cardiology department of a hospital.	The intervention significantly improved both SC and functional status over time, indicating a positive relationship between the two. Functional status significantly improved with an increase in patients in NYHA class I and a decrease in class III.

Source: Prepared by the authors, 2025

To assess SC and FC, various instruments and approaches were used. SC was predominantly evaluated using the Self-Care of Heart Failure Index (SCHFI), in its different versions and cultural adaptations for various countries[15,17-21,23,26,27,30,31]. Two publications used the European Heart Failure Self-care Behaviour Scale[22,28], and one used a similar tool, such as the European Self-care Behaviour Practice Tool, to measure SC[32].

Other SC assessments included the Self-Management of Heart Failure Instrument[SMHF] subscale[29], the Medical Outcomes Study Specific Adherence Scale (MOS-SAS) questionnaire[16], the CHF patient comprehensive self-care ability evaluation scale questionnaire (MCHFCSQ)[24], and, in a case report, observation of patient behaviors and adherence to medical recommendations occurred through motivational interviewing[25].

FC, in turn, was assessed predominantly by the NYHA functional classification in thirteen studies[15,17,21-28,30,31-32]. The Duke Activity Status Index (DASI) was used in four studies[15,18-19,28], while the 6-minute walk test (6MWT) was employed in three investigations[16,18,20]. Additional FC assessments included the Specific Activity Scale (SAS)[29], the Kansas City Cardiomyopathy Questionnaire (KCCQ) for physical limitations[17], the London Chest Activities of Daily Living (LCADL) scale, the Barthel Index (BI)[21], and the modified Balke treadmill exercise test[20].

DISCUSSION

The geographical distribution of the included studies revealed a predominance of publications originating from the United States. The analysis also covered countries with different socioeconomic levels, such as Ethiopia, Mexico, and Thailand. Evident geographical gaps are observed, along with the absence of studies conducted in South America, which justifies the relevance of new research.

To assess SC, the predominant instrument was the SCHFI in its various versions. This instrument is based on the Situation-Specific Theory of Heart Failure Self-care, first published in 2008[33] and updated in 2016[34].

The authors define SC as a naturalistic decision-making process that involves choosing behaviors to maintain physiological stability and responding to symptoms when they occur. The instrument evaluates three dimensions: SC Maintenance: Refers to behaviors performed proactively to maintain physiological stability; Symptom Perception: Added to the theory in 2016, it is a specific form of SC monitoring in HF; and SC Management: Involves a reactive response to symptoms, meaning managing symptoms when they occur[34].

The SCHFI version 6.2 has been adapted for Brazil[35,36], presents adequate validity evidence, and stands out as an instrument of great relevance for clinical practice in various international contexts[37,38].

In this review, the NYHA functional classification was the most common measure for FC assessment. Originally developed in the United States, NYHA is widely used in clinical practice and research as a standardized system for stratifying the severity of HF symptoms. This classification allows for estimating the functional limitation perceived by patients during physical activities, offering a subjective but clinically significant measure of disease progression. Its routine application contributes to therapeutic decision-making, prognosis, and the understanding of FC[2,39].

NYHA categorizes the patient into four levels: I: Asymptomatic patients; II: Patients present mild symptoms, occurring during ordinary physical activities; III: Moderate symptoms, where less intense physical activities cause symptoms. There is a significant limitation, but the patient remains comfortable at rest; and IV: Severe symptoms, the patient is unable to perform any physical activity without discomfort, and symptoms may be present even at rest[2].

The NYHA class was a significant determinant in SC maintenance, and functional status was associated with SC confidence. Therefore, the symptomatology presented by patients is directly associated with the ability to perform behaviors to maintain physiological stability, which involves the concept of SC maintenance, and functional status is associated with confidence (self-efficacy) to perform SC actions related to their functional status[33,34]. Research demonstrated an association of FC with SC management, but not with SC maintenance[19]. According to the theory, the abilities to perform ADLs involve FC and are associated with the capacity to respond to symptoms in the face of an SC decision[33,34].

The use of NYHA reflects its long tradition and ease of use in clinical practice; however, its subjective nature and inherent limitation have been progressively recognized, opening opportunities for more accurate assessments. In parallel, the DASI and SAS are examples of other alternative measures used. The DASI offers a standardized assessment, in addition to a better correlation with objective markers such as maximum oxygen consumption[40,41]. Although the Cardiopulmonary Exercise Test (CPET) remains the gold standard, its complexity and cost limit its use in clinical practice. The combined use of DASI with other instruments and with CPET, as a screening tool for patients with HF, can substantially enhance clinical assessment and follow-up of this population, allowing for more precise and personalized therapeutic decisions[40].

The SAS assesses cardiovascular functional class based on the metabolic costs of personal, domestic, and recreational activities. It uses a quick questionnaire to determine the most strenuous activity performed by the patient, classifying them

according to the metabolic load achieved, regardless of symptoms or reasons for non-performance[42]. Researchers compared functional classification using NYHA and SAS with CPET in outpatient HF patients and concluded that SAS can reclassify patients initially categorized as asymptomatic by NYHA[43].

In this review, heterogeneous studies were identified regarding the relationship between FC and SC. Some indicated that better functional status is associated with better SC[17,20,22,25]. Others reported that worse FC correlates with worse SC[15,24,26-27,30-31]. In contrast, some studies observed that patients with worse FC were more likely to adhere to SC behaviors[28,29,32]. One study found no significant association between SC adherence and FC[16]. The heterogeneity of assessment methods and clinical contexts, ranging from more stable outpatients to hospitalized patients with greater symptom burden and functional limitations, may explain the divergence of findings.

Overall, it was observed that NYHA functional class III was the most prevalent, indicating moderate symptoms and significant limitation in activities. In this sense, studies indicate that higher NYHA class represents an important risk factor for unfavorable clinical outcomes during hospitalization of HF patients[39,46].

Self-care is fundamental in the long-term management of HF, positively impacting QoL, mortality, and readmission rates for clinical outcomes. Given this, regular physical activity and exercise training are recommended because they improve FC and QoL, in addition to reducing hospitalizations[9].

Adherence to SC behaviors related to physical exercise in patients with HF shows variability across different studies. In one analysis, adherence to regular exercise was reported as "good" by only 26.3% of the patients investigated[16]. A study in Ethiopia found that only 34.1% of participants had good SC practice[32]. Results from Korean patients indicated a good adherence of 41.7% to regular exercise[28], although adherence to SC behaviors in general and knowledge about HF were lower than reported in previous studies[28]. In contrast, an Italian study revealed that only 13.3% of patients exercised frequently or always/daily for 30 minutes[30].

Some of the results obtained were similar to a study carried out in southern India with HF patients, where only 32.3% of participants practiced physical exercise and exhibited unsatisfactory SC behavior[44]. Furthermore, a multicenter study conducted in Turkey that evaluated patient perception, knowledge, and adaptation in HF treatment, identified that only 27% of participants practiced physical exercise, suggesting they received little guidance on this non-pharmacological strategy[45].

The variability observed in adherence to SC behaviors, and specifically to physical exercise, in HF patients is a consistent concern, often attributed to a combination of factors, including barriers in adapting to lifestyle changes, dietary restrictions, and difficulty recognizing symptoms. Furthermore, low health literacy and non-adherence to treatment plans contribute significantly to high readmission rates and unfavorable clinical outcomes[46].

Divergent results were observed regarding the relationship between FC and SC[15,24,26-27,30-31]. In some studies, patients with worse FC showed greater adherence to SC behaviors[28-29,32]. These findings can be understood considering the challenges and barriers to SC, reflecting the multidimensional nature of the process, influenced by

interdependent cognitive, emotional, and physical factors. Cognitive decline, depressive symptoms, frailty, sleep disturbances, and poor adherence to medication therapy are conditions associated with HF that impact both SC behavior and FC[9]. Such factors can act alone or in combination, sometimes hindering the implementation of SC practices, and sometimes motivating especially those patients with greater functional impairment to adopt them[47].

SC assessment in HF patients frequently reveals gender disparities, although the nature and extent of these differences may show contextual and cultural variations[48]. In a Chinese cohort, SC was frequently inadequate in both sexes, with suboptimal scores[49]. An Italian cohort demonstrated that men had a four times higher risk of inadequate SC compared to women, although they were approximately 60% more likely to present adequate SC self-confidence than women[48].

In this review, it was identified that women had a higher average in the concept of SC maintenance compared to men. However, men demonstrated higher averages in the SC management and confidence components. Nevertheless, no difference was found between the sexes in overall SC behavior, which was shown to be inadequate in both groups[21]. Regardless of sex, SC scores were below 70 points, which highlights gaps and challenges for the effective implementation of SC behaviors in this population[15].

Educational interventions and support programs proved effective in improving both SC and FC. Nurse-led exercise counseling interventions improved both FC and SC[18]. A nurse-led collaborative healthcare model also significantly improved SC and functional status[22]. The use of the motivational interviewing technique contributed to the stabilization of the patient's condition, and the improvement of both SC and FC[25]. Another example of success found was the use of educational support in improving functional status and increasing SC self-efficacy[17].

Thus, it is suggested that educational interventions on SC in HF result in adequate levels of SC skills and clinically relevant changes in SC maintenance, symptom perception, and SC management[50].

It is noted that the exploratory nature of the study does not delve into the critical appraisal of the methodological quality of the articles, which may compromise the robustness of the evidence presented. It is suggested that more studies with longitudinal designs be conducted to establish causality between FC and SC, and the long-term effectiveness of therapeutic interventions. Therefore, the results of this scoping review should be interpreted with caution.

Implications for practice

Given the complexity of the relationship between FC and SC and the influence of multiple factors, this study contributes to guiding professionals from the multidisciplinary team, especially nurses, in the assessment of FC and SC, both in clinical practice and in research. It is recommended, therefore, to develop new investigations and implement personalized interventions, focusing on education, exercise support, motivation strategies, and patient-centered care. Such actions aim to optimize SC and improve FC in different care settings, geographical regions, and populations.

CONCLUSION

The studies included in this review indicate that the relationship between FC and SC in patients with HF is complex, with heterogeneous findings regardless of the care context. In some research, better functional status is associated with better SC; in others, with worse SC. SC assessment was predominantly performed by the SCHFI, while FC was mostly stratified by the NYHA functional class.

A predominance of studies conducted in the United States was also observed, highlighting geographical gaps, including the absence of research in South America. Disparities between sexes were found in SC assessment; however, the level of SC proved to be inadequate in both groups.

CONFLICTS OF INTEREST

The authors declare the absence of any conflicts of interest.

FUNDING

There were no funding sources for this scoping review.

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