

## Review

# The effectiveness of self-care management in treating heart failure: A scoping review

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## Abstract

**Introduction:** Heart failure is a common chronic disease associated with increased mortality and rehospitalization rates. Self-care management provided in various ways is one approach to avoiding the need for rehospitalization by lowering recurrence rates. Therefore, this study aims to determine the most effective self-care management interventions for heart failure patients.

**Design and Methods:** The databases Science Direct, Google Scholar, and PubMed were used to conduct literature reviews over ten years. In September 2021, a full-text article search was conducted using the keywords “Self-Care,” “Self-Management,” “Intervention,” “Heart Failure Patients,” and “Randomized Control Trial” in PubMed ScienceDirect and Google Scholar databases. The inclusion and exclusion criteria were determined using the PICOS technique. After the screening, 39 articles met the criteria.

**Results:** Self-care management is provided through education programs, training programs, and the utilization of apps and websites to improve its self-care abilities.

**Conclusions:** Therefore, one way to provide self-care management during the COVID-19 pandemic was through the program’s website, which is viewed “remotely” and used to track patient progress.

## Introduction

Heart failure has become the most common chronic disease over the past 20 years, accounting for half of all deaths in developing countries, and it reduces labor productivity, causing disability and economic damage.<sup>1</sup> Heart failure has become a serious concern worldwide, with a significant increase in morbidity and death<sup>2</sup> to increase the use of healthcare facilities, decrease the quality of life for patients and their families, and a greater economic burden on individuals and society due to the required and frequent hospitalizations of heart failure patients.<sup>3</sup>

Patients with complex chronic diseases, such as heart failure, need to follow a comprehensive treatment plan that includes diet and medications, monitoring symptoms, assessment of health

changes signs, and coordination with care professionals to access prior care in emergency cases.<sup>4</sup> The symptoms of heart failure were linked to self-care activities, while lower self-care levels were associated with worsening heart failure symptoms.<sup>5</sup> Self-care is essential in heart failure patients and multidisciplinary heart failure management programs globally. Also, it is considered effective for reducing mortality, rehospitalization, and improving quality of life.<sup>6</sup>

Nurses play an essential role in patient interaction, including providing information about self-care before their discharge from the hospital.<sup>7</sup> Furthermore, the information about the management of heart failure and the variables that influence self-care are used to design culturally acceptable and successful disease maintenance and management methods.<sup>8</sup> The heart failure education provided by nurses has been shown to enhance knowledge and self-care practices.<sup>9</sup> This information is provided in the form of educational interventions through booklets, training programs, applications, and websites.<sup>10–13</sup> Therefore, the use of digital health communication technology enhances the efficiency and quality of self-care management in heart failure patients.<sup>14</sup>

The COVID-19 epidemic has presented nurses with new problems of providing direct education in hospitals.<sup>15</sup> Furthermore, web-based education programs effectively allow nurses to carefully view their feelings and emotions and the emotional and cultural factors that influence their decision-making.<sup>16</sup> These new technologies offer “remotely” opportunities to provide patients with constant education, the incentive to take action in their treatment, and aid in frequent monitoring, hence the World Health Organization is focused on providing them with leverage to change healthcare.<sup>17</sup> Technology provides new ways to improve people’s self-care by measuring their progress and cost-effectively enhancing patient empowerment.<sup>18</sup> The web-based interventions promote the involvement of heart failure patients in self-care, however web-based self-care interventions for heart failure patients are still uncommon.<sup>19</sup> Therefore, this study aims to determine the most effective self-care management interventions for heart failure patients.

## Significance for public health

*The self-care management methods are widely used in patients with heart failure. Furthermore, the development of its strategies is facilitated by advances in technology. According to the conclusion of this study, website usage is one of the self-care management measures of patients with heart failure study. It improves the effectiveness of self-care by lowering rehospitalization rates and enhancing the quality of life.*

## Design and Method

According to the PRIS-MA guidelines, a data-driven literature search was performed in September 2021, selecting credible publications. The studies, being limited to those published between 2011 and 2021, were carefully evaluated to collect empirical data on the effectiveness of self-care management treatments in heart failure patients through the use of search engines such as ScienceDirect, PubMed, and Google Scholar. This was accomplished by combining the terms “Self-Care,” “Self-Management,” “Intervention,” “Heart Failure Patients,” and “Randomized Control Trial” with Boolean search methods like “AND,” “OR” and “NOT” to discover relevant study that matches the review’s objectives. Table 1 shows how inclusion and exclusion criteria were determined using the PICOS (population, intervention, comparators, outcomes, and study design) technique, which was adjusted to the review’s aims (Table 1). The results, including publications from three databases, showed that 2997 items matched the keywords selected. Figure 1 shows the selection results in a flowchart using the PRIS-MA method, and 288 articles with identical material were deleted after a duplication check, leaving 2709 items. Furthermore, 631 papers were admitted after additional filtering by title and abstract. After which, they were filtered by complete text, resulting in correlated articles. The eligibility assessment of the 631 articles was based on the overall text and conformity with the criteria. As a result, 592 articles were considered inappropriate, while 39 were used in this study.

## Result and Discussion

The current guidelines emphasize the joint provision of heart failure management education to patients and family caregivers and the significance of knowledge sharing between patient and caregiver.<sup>54</sup> The self-care management interventions are performed through education and self-management programs, motivational interviewing, applications, websites, and follow-up via telemonitoring (Supplementary Table S1).<sup>13,23,24,26,30,34</sup>

### Educational programs

Educational programs on heart failure are made available using booklets, board games, or multimedia.<sup>10,22,26,32</sup> Furthermore, the booklets are created based on the theory of heart failure self-care and should include daily follow-up charts in which their weight, edema status, blood pressure, pulse, additional drugs taken such as diuretics, and other daily notes are recorded.<sup>10</sup> Game board educational programs increase the knowledge of patients on heart failure and self-care behavior compared to traditional educational approaches.<sup>22</sup> These various educational programs can improve knowledge, performance, self-care behavior, and quality of life.<sup>10,22,26</sup> However, this educational program does not have a significant impact on self-care confidence and failed to identify the effect of rehospitalization.<sup>22,32</sup>

**Table 1. Inclusion and exclusion criteria.**

Criteria	Inclusion	Exclusion
P (population)	Studies that focus on heart failure patients	Oother than patients with heart failure, such as nurses
I (intervention)	Studies that addressed the self-care management intervention	Studies that do not address the self-care management intervention
C (comparison)	Studies with control or comparison intervention	They were no exclusion criteria
O (outcomes)	Studies explain the effectiveness of self-care management interventions in heart failure patients	They were no exclusion criteria
S (study design)	Randomized control trial	Nonrandomized control trial, systematic review, meta-analysis review

### Self-management programs

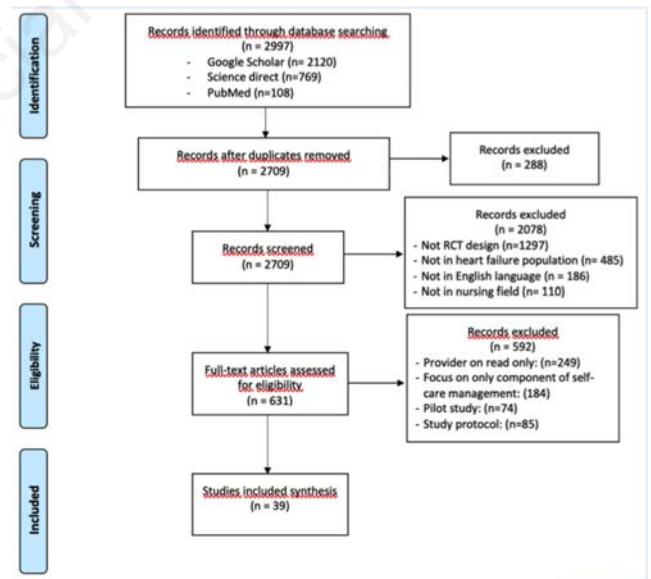
Patient-centered self-management programs were more effective than traditional care education in achieving certain self-management outcomes.<sup>24</sup> Several approaches are employed in the self-management program, which include the follow-up strategy.<sup>24,29</sup> Certain aspects of self-management competence (self-monitoring and insight) and the incidence of repeated treatments were significantly influenced.<sup>24,29</sup> However, there was no significant effect on self-efficacy and knowledge or understanding of subjective behavior.<sup>24,29</sup>

### Motivational Interviewing (MI)

Furthermore, Motivational Interviewing is used in a new behavioral intervention led by nurses to help patients with Heart Failure improve their self-care.<sup>35</sup> It enhances self-care maintenance (primary endpoint), management, and behavior after three months of enrolment.<sup>25,40</sup> Lack of Motivational Interviewing intervention in heart failure patients does not promote self-efficacy.<sup>40</sup> The loss of participants to follow-up was also a key drawback of Motivational Interviewing. This nurse-led intervention included one home visit and three to four follow-up calls over 90 days.<sup>35</sup>

### Application

This study used android application in the self-care management of heart failure patients.<sup>12,34,43</sup> The application offers different



**Figure 1. Flowchart of scoping review with selection process using PRIS-MA.**

features, including daily weighing, symptom assessment, responding to customized alerts, monitoring vital signs, heart failure education, and performing breathing and walking exercises.<sup>12</sup> On the other hand, the content of the Avatar app is based on the booklet “Living Well with Heart Failure” by the Heart Foundation of Australia.<sup>34</sup> The use of apps to implement self-care management help patients understand more and improve symptom control and self-care scores.<sup>12,34,43</sup> HeartApp needs an update in integrating wrist-worn Bluetooth devices for vital sign monitoring<sup>12</sup> and the Avatar application is not available for free download.<sup>34</sup>

### Website Interventions

The COVID-19 pandemic has posed major challenges for healthcare organizations to address public information demands.<sup>55</sup> Patients believe there are gaps in information and knowledge on testing and therapy. However, the experiences of other heart failure patients are considered essential in providing support, which is bridged by the website.<sup>56</sup> The web-based interventions enhance self-care, clinical results, and the required number of treatments.<sup>57</sup> It is used by patients to provide accurate self-care information from the comfort of their own home, make an educated choice about how to best manage their symptoms, and determine when to see their doctor.<sup>58</sup> Based on the previous study, it appears that Web-based, interactive interventions improve self-determination and physical activity in patients with various chronic diseases.<sup>59</sup> This website facilitated the follow-up of patients in remote monitoring programs, thereby improving clinical outcomes and reducing rehospitalization rates.<sup>51</sup> Therefore, web-based programs are effective and accessible to nurses and patients for learning; even when nurses work different shifts, they can participate without restrictions on time or place of learning because of the development of web-based educational programs.<sup>13</sup>

Most of these RCT articles included follow-up activities separated into several periods, such as 1 month, 3 months, 4 months, 6 months, and 12 months.<sup>28,35,48,50</sup> This follow-up activity may be conducted by telephone or by home visits<sup>28,35</sup>. The intervals have a major impact on heart failure patients because they enable them to take better care of themselves and improve their quality of life.<sup>10,40</sup> Meanwhile, a follow-up period is required for the long-term progress of the intervention, especially in terms of outcomes such as readmission, mortality, and quality of life.<sup>21</sup> The website program is being used for follow-up in cancer patients, and it is a method of managing patients with a low risk of recurrence.<sup>60</sup>

The limitation of this review is that the follow-up program did not explain the frequency of follow-up and the duration of the follow-up. The development of web-based self-care interventions is currently uncommon, it is suggested that web-based self-care interventions for heart failure patients be developed in the future.

### Conclusions

A variety of self-care management strategies have been developed in patients with heart failure. These interventions aim to increase patient awareness, improve self-care management abilities, reduce hospitalizations, and improve quality of life. Therefore, web-based self-care management is one of the strategies used during the COVID-19 pandemic. Furthermore, it is considered useful to improve the self-care management of heart failure patients by increasing their knowledge and abilities. Also, it is used to monitor the effectiveness of prior interventions offered to patients.

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