

# Interventions on the social dimension of people with chronic heart failure: a systematic review of randomized controlled trials

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## Aims

The symptom burden of patients with chronic heart failure (CHF), together with social determinants and psychosocial factors, results in limitations to maintain adequate social life and roles, participate in social events and maintain relationships. This situation's impact on health outcomes makes it of utmost importance to develop meaningful social networks for these patients. The primary objective aimed to identify randomized controlled trials that impact the social dimension of people with CHF. The secondary objectives were to analyze the methodological quality of these interventions, establish their components, and synthesize their results.

## Methods and results

A systematic review following PRISMA guidelines was conducted in Pubmed, Scopus, Cochrane CENTRAL, PsychINFO, and CINAHL databases between 2010 and February 2022. The Revised Cochrane risk-of-bias tool for randomized trials was used. The protocol was registered in PROSPERO. Eight randomized controlled trials were identified, among which two were at 'high risk of bias.' Interventions were synthesized according to the following categories: delivery format, providers and recipients, and the intervention content domains. Half of the studies showed statistical superiority in improving the intervention group's social support in people with CHF.

## Conclusion

This review has highlighted the scarcity of interventions targeting the social dimension of people with CHF. Interventions have been heterogeneous, which limits the statistical combination of studies. Based on narrative review and vote counting, such interventions could potentially improve social support and self-care, which are important patient reported outcomes, thus warrant further research. Future studies should be co-created with patients and families to be adequately targeted.

## Registration

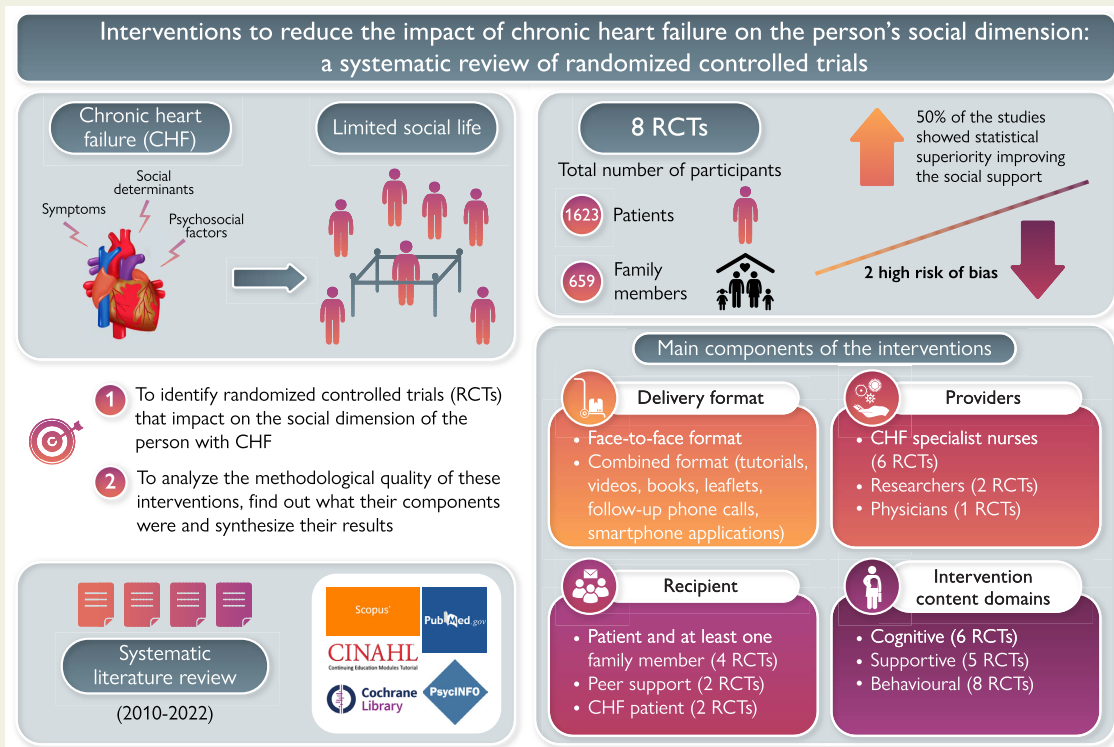
PROSPERO CRD42021256199

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## Graphical Abstract



## Keywords

Chronic heart failure • Social isolation • Social support • Social participation • Systematic review • Randomized controlled trials

## Introduction

Chronic heart failure (CHF) is one of the most common chronic conditions in elderly people, and its incidence has been increasing significantly in recent years.<sup>1</sup> This illness causes an intense change in all areas of a person's life, requiring them to adopt new lifestyles, take on new and complex treatments and adapt their life to their new situation.<sup>2</sup> These circumstances affect the physical and emotional sphere of the person and have a marked impact on their social dimension.<sup>3</sup> This social dimension refers to the persons' role in the family, social, and work dynamics, as well as his or her responsibilities, commitments, and relationships.<sup>4</sup>

The high prevalence of symptoms such as dyspnoea and fatigue,<sup>5</sup> together with social determinants and psychosocial factors, results in limitations for people with CHF to maintain adequate social life and roles, participate in social events and maintain relationships beyond the immediate close family environment.<sup>6,7</sup> This has a negative impact on patients' well-being and health status.<sup>8</sup> In addition to being a significant predictor of psychological problems such as depression and anxiety, social isolation and a lack of social support are associated with overall morbidity and mortality in adult populations.<sup>9,10</sup> This situation is further exacerbated in people with CHF by the effect of social determinants,<sup>11</sup> which refers to non-medical factors that influence health outcomes and are derived from the circumstances in

which a person is born, grows up, works, lives, and ages, and the social and economic policies that influence daily life.<sup>12</sup> Despite these challenges, several recent studies exploring aspects of social dimensions in people with CHF suggest it is possible to induce improvements in this area, leading to positive results in terms of self-care, better adherence to treatment, a decrease in hospital readmissions, and, consequently, a decrease in the use of health care resources.<sup>13,14</sup>

To a large extent, the health and development of people are marked by their involvement in community social activities, their ability to take care of themselves, their level of control over the circumstances of their lives, and the context in which their relationship with the neighbourhood, community, and society takes place.<sup>15</sup> All this, together with the impact that the alteration of the social dimension of the person with CHF has on health outcomes, makes it of utmost importance that patients suffering from CHF develop extensive and meaningful social networks and enjoy their social relationships. Consequently, health professionals should help them establish or strengthen these relations by designing interventions.<sup>16</sup>

To address this problem, it is first necessary to identify the types of interventions used and possible effects on the social dimensions. In addition, no systematic review has investigated interventions that aim to reduce the impact of CHF on the social dimension of the person. Therefore, the primary aim of this systematic review was to identify randomized controlled trials (RCTs) that impact on the

social dimension of the person with CHF. The secondary objectives were to analyse the methodological quality of these interventions, establish their components, and synthesize their results.

## Methods

### Search strategy

This review was performed following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>17</sup> The search strategy was reviewed for accuracy using the Peer Review of Electronic Search Strategies criteria<sup>18</sup> and the PRISMA extension for searching.<sup>19</sup> The study protocol was registered in PROSPERO on 20 May 2021 under registration number CRD42021256199.

The search strategy was developed by two librarian experts in collaboration with the other authors. The search was deliberately broad to include all relevant articles. A validated search filter was used and modified to ensure that no randomized controlled studies would be missed.<sup>20</sup>

The proposed PICO question was population (people with CHF), intervention (randomized controlled trial to reduce the impact of CHF on the social dimension), comparison (no intervention, usual care or other intervention), and outcomes (measures of social isolation, loneliness, social support, social life, social relationships, and social participation). A test search was conducted and evaluated before the final search strategy was set in PubMed and then translated to the four databases Scopus, Cochrane CENTRAL, PsychINFO, and CINAHL. All databases were searched from 2010 until the beginning of February 2022 (Appendix S1). Table 1 contains the inclusion and exclusion criteria that were used for the selection of the articles.

**Table 1** Selection criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>Articles in which the sample comprised of people with CHF.</li> <li>Randomized controlled trials.</li> <li>Intervention studies whose components were aimed at improving the person's social skills.</li> <li>Intervention studies aimed at reducing social isolation.</li> <li>Intervention studies aimed at reducing loneliness.</li> <li>Intervention studies aimed at increasing social relationships or social networks.</li> <li>Intervention studies aimed at increasing participation in social activities.</li> <li>Intervention studies aimed at improving social integration.</li> <li>Intervention studies aimed at increasing social support.</li> </ul>	<ul style="list-style-type: none"> <li>Intervention studies aimed at improving only clinical parameters.</li> <li>Intervention studies in which social factors were not part of the intervention strategy and/or main outcomes.</li> <li>People with ventricular assist devices.</li> <li>Quasi-experimental studies, pilot studies, study protocols and trials without a control group.</li> <li>Observational and qualitative studies.</li> <li>Narrative reviews, systematic reviews and meta-analyses.</li> <li>Development and validation of scales.</li> <li>Grey literature.</li> </ul>

### Study selection

The records were downloaded into the Rayyan web application for systematic reviews to facilitate the review process.<sup>21</sup> The four reviewers were divided into pairs (M.O.-L and A.W.; S.W. and J.M.-M.), and each pair reviewed the title and abstract of half of the eligible articles independently and blindly. After this first screening, the results were unblinded, and each pair of reviewers compared the results and resolved any conflicts. The articles considered eligible by each pair were merged and reviewed with their full text by the four reviewers independently and blindly, thus ensuring transparency in the selection process. A subsequent group meeting was held to compare the results and resolve conflicts. The unanimity of the four researchers determined the final decision on the inclusion of articles.

### Risk of bias

As all selected articles were RCTs, the risk of bias was assessed using the latest version of the Revised Cochrane risk-of-bias tool for randomized trials (RoB 2).<sup>22</sup> This made it possible to identify whether there was any risk of systematic error, or deviation from the truth, in the results, leading to underestimation or overestimation of the intervention's true effect.<sup>23</sup> Two of the reviewers (M.O.-L and J.M.M.) jointly assessed the risk of bias of the selected articles based on the five established domains: bias arising from the randomization process; bias due to deviations from the intended interventions; bias due to missing outcome data; bias in the measurement of the outcome; and bias in the selection of the reported result. Based on the criteria established in the protocol mentioned above, a judgement was first made of the set of items comprising each dimension, and then an overall assessment of each study was made. For this, the indications provided by Higgins *et al.*<sup>22</sup> were followed exhaustively. This assessment resulted in the judgement that the study had 'Low risk of bias,' 'Some concerns,' or 'High risk of bias.'

### Data extraction

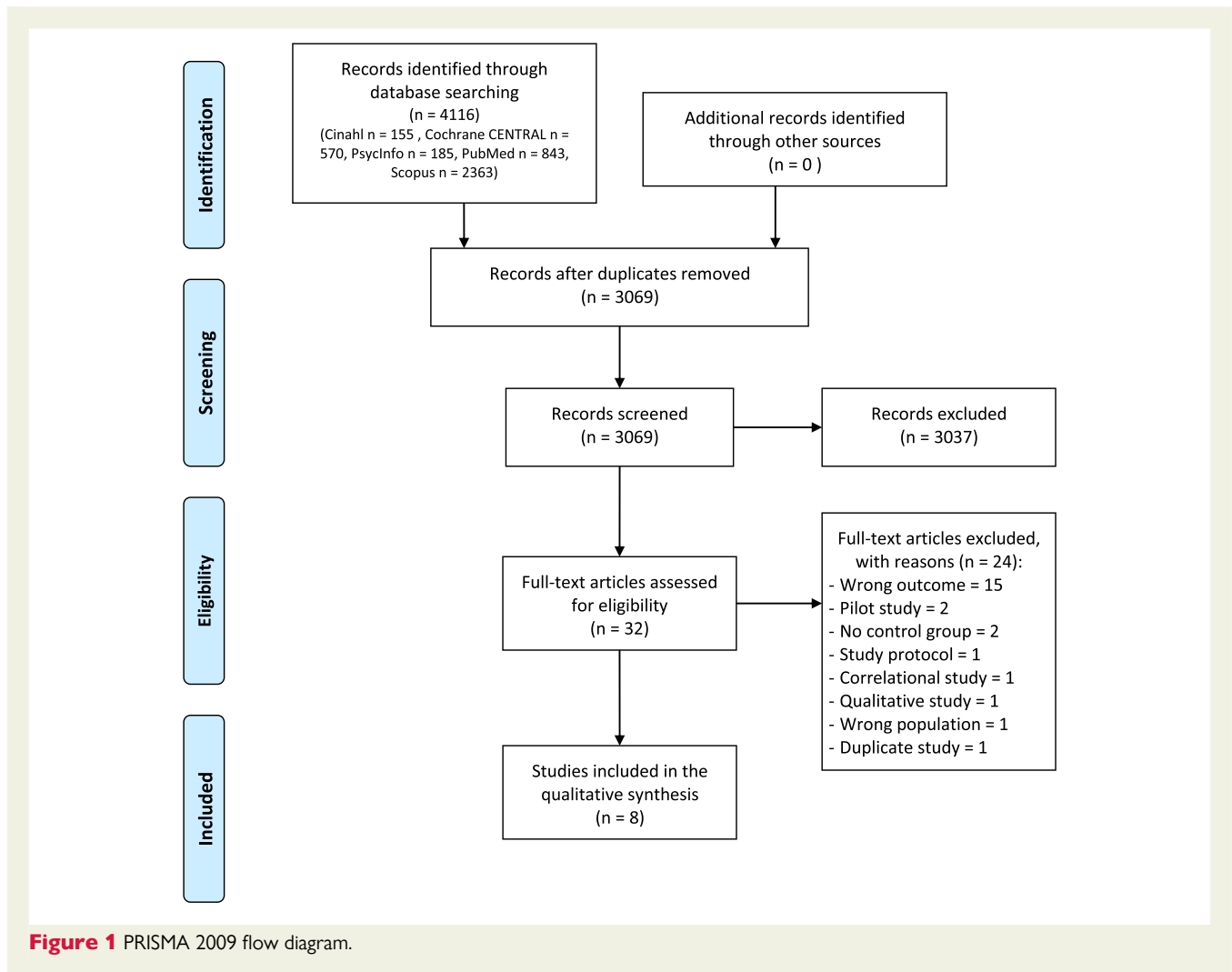
The data extracted from the studies were as follows: authors and date of the study; country and setting where the study was conducted; characteristics of the participants; study design; type of intervention (components: delivery format, providers and recipients of the interventions, and intervention content domains); outcomes (variables measured, instruments used, effectiveness of the interventions, and conclusions of the original authors); and quality of the studies (risk of bias).

## Results

The main characteristics of the studies, the results of the bias analysis, and synthesis of the results, including the delivery format of the interventions, the providers and recipients of the latter, the content domains of the interventions, and, finally, an overview of the effectiveness of interventions are presented below.

### Results of the search

The search resulted in 4116 reports; after de-duplication, 3069 reports remained. All authors screened all titles and abstracts independently, resulting in 32 reports included for the eligibility assessment. After full-text reading and risk of bias appraisal, eight reports were included,<sup>24–31</sup> and 24 reports were excluded (Figure 1). An additional hand search of the references of the included reports resulted in no additional studies that met the selection criteria. Figure 1 shows the PRISMA flowchart of the study selection and inclusion process.



## Characteristics of the included studies

The eight studies together comprised a sample of 1623 people with CHF (662 were controls) and 659 family members. Two studies were conducted in Iran,<sup>27,30</sup> one of the studies was conducted in the USA,<sup>26</sup> one in the Netherlands,<sup>29</sup> one in Sweden,<sup>24</sup> one in China,<sup>25</sup> one in Denmark,<sup>28</sup> and one in Singapore.<sup>31</sup>

The mean age of the patients in the intervention groups was 64.3 years, and 62.58% of the totals were men. Among the studies that collected information on NYHA functional class, there was a predominance of Class II in two studies<sup>28,29</sup> and Class III–IV in three other studies.<sup>25,30,31</sup>

Most patients had one or more co-morbidities with a high prevalence of coronary artery disease,<sup>24,25,28,31</sup> arterial hypertension,<sup>24–26,28,30,31</sup> diabetes mellitus,<sup>24–26,30,31</sup> and atrial fibrillation.<sup>26,28</sup>

A summary of the main characteristics of the selected studies is presented in [Table 2](#).

## Risk of bias

A low risk of bias was found for six studies,<sup>24,26,28–31</sup> and there was a high risk for two studies.<sup>25,27</sup> The main reasons for these risks of bias were that, in the study by Cui *et al.*,<sup>25</sup> one of the scales used for the outcome measurement has no published evidence of reliability and validity, and it is

not clear whether they used an adequate analysis to estimate the effect of allocation to the intervention. In the study by Khaledi *et al.*,<sup>27</sup> there was no information on the blinding of the groups, so it could not be determined whether this could have influenced the results. In addition, they did not describe what type of care they offered to the control group participants. At this point, it should be noted that a meta-analysis of the results could not be performed, since of all the outcomes that were measured among the eight selected studies, the same measurement instrument was used in only four studies that measured the level of self-care.

## Synthesis of Results

### Delivery format

All reviewed interventions had a face-to-face or combined format. In all of them, the face-to-face intervention took place in hospitals or outpatient clinics, except in two studies where patients could also choose to do it at home.<sup>24,31</sup> Interventions using combined formats added tutorials or videos in four (50%) studies,<sup>24–26,30</sup> books or leaflets in seven (87.5%) studies,<sup>24–26,28–31</sup> follow-up phone calls in four (50%) studies,<sup>24–26,30</sup> and the use of smartphone applications only in one (12.5%) study<sup>30</sup> in addition to face-to-face sessions.

The interventions applied in these studies lasted between 4 weeks for the shortest<sup>27</sup> and 12 months for the longest<sup>25</sup>; intervention

**Table 2** Main characteristics of included studies

Author, year, country	Aim	Design and sample	Intervention	Control	Patient involvement in the design	Outcome measures	Main results	Risk of bias
Ågren <i>et al.</i> (2012) Sweden	To design and evaluate the effects of an integrated dyad care program with education and psychosocial support on self-reported outcomes at 3 and 12 months after a hospital admission for acute CHF decompensation.	Randomized controlled trial $n = 155$ dyads ( $n = 71$ EG; $n = 84$ CG) Age: 67 years EG; 70 years CG Sex: 69,1% female EG; 80,9% female CG Setting: two hospitals	12-week intervention with education and psychosocial support delivered in three 60 minutes sessions (2, 6 and 12 weeks after discharge) to patient-partner dyads. Duration: 12 weeks Intervention leader: CHF specialist nurse Follow-up: 12 months (basal, 3 months and 12 months measurement)	Usual care	No	<ul style="list-style-type: none"> <li>Short Form (SF)-36</li> <li>Beck Depression Inventory (BDI-II)</li> <li>Control Attitude Scale (CAS)</li> <li>European Heart Failure Self-Care Behaviour Scale (EH-FscBS) (only patients)</li> <li>Caregiver Burden Scale (CBS) (only caregivers)</li> </ul>	<p>In patients:</p> <ul style="list-style-type: none"> <li>(+) Perceived control after 3 months but not after 21 months</li> <li>(-) Health related quality of life</li> <li>(-) Symptoms of depression</li> <li>(-) Self-care behavior in caregivers:</li> <li>(-) Perceived control</li> <li>(-) Health related quality of life</li> <li>(-) Symptoms of depression</li> <li>(-) Caregiver burden</li> </ul>	Low
Cui <i>et al.</i> (2019) China	To determine the effect of a structured nurse-led education program on patient self-management, symptom control and hospital readmission.	Randomized controlled trial $n = 96$ ( $n = 48$ EG; $n = 48$ CG) Age: 55,1 year EG; 56, 6 years CG Sex: 72,9% male EG; 68,8% male CG Setting: two hospitals	A structured education programme. 2 face-to-face 1 h sessions before discharge; Telephone or face-to-face 15–30 minutes meetings every 4 weeks; Outpatient follow-up every 8 weeks. Duration: 12 months Intervention leader: CHF specialist nurse and physician Follow-up: 12 months (before hospital discharge and 12 months measurement)	Usual care (including 2-monthly follow ups)	No	<ul style="list-style-type: none"> <li>All-cause mortality</li> <li>Hospital admission due to cardiac problems</li> <li>Chinese version of the questionnaire originally developed by DeVellis and DeVellis to assess the self-management ability</li> </ul>	<p>(+) Readmission</p> <p>(-) Duration of readmission</p> <p>All patients survived</p> <p>(+) Self-management: medication adherence, diet modification, social support, symptoms control</p>	High

Continued

Table 2 Continued

Author, year, country	Aim	Design and sample	Intervention	Control	Patient involvement in the design	Outcome measures	Main results	Risk of bias
Heister et al. (2013) USA	To compare the reciprocal peer support program with usual heart failure nurse care management in an RCT in a community-based clinical setting	Randomized controlled trial $n = 267$ ( $n = 136$ EG; $n = 131$ CG) Age: 70, 4 years EG; 67, 9 years CG Sex: 51,9% female EG; 51, 9% male CG Setting: inpatient and outpatient HF clinic	Reciprocal Peer Support: 3 h group session. Weekly talks with their peer partners. And 3 optional 1.5 h group sessions at months 1, 3 and 6. Duration: 6 months Intervention leader: CHF specialist nurse and researcher Follow-up: 12 months (baseline, 6 and 12 months measurement)	Usual care enhanced by 1.5 h self-management group, the schedule of appointments and educational materials.	No	12-month: • Time to death • First rehospitalization • Death • Number of hospitalizations • 6-month: • Minnesota Living with Heart Failure Questionnaire • Diabetes Social Support Scale (adapted to HF)	• (-) Time to death • (-) Rehospitalization • (-) Death within 365 days • (-) Number of hospitalizations within 365 days • (-) HF-specific quality of life • (-) HF-specific social support	Low
Jiang et al. (2021) Singapore	To evaluate the effect of a nurse-led, home-based self-management psychosocial education intervention (HOM-HEMP)	Three-arm stratified randomized controlled trial $n = 213$ ( $n = 71$ EG-A; $n = 70$ EG-B; $n = 72$ CG) Age: 69, 1 year EG-A; 66, 8 year EG-B; 68, 8 years CG Sex: 71, 4% male EG-A; 70, 2% male EG-B; 66, 1% male CG Setting: hospital	Group A: HF patient education and self-management toolkit and three home visits by the research every 2 weeks during 6 weeks (HOM-HEMP). Group B: HOM-HEMP + supplemental smartphone application Duration: 6 weeks Intervention leader: research nurse Follow-up: 6 months (baseline, 6 weeks, 3 and 6 months measurement)	Medical, nursing allied health, and follow-up services provided by the study hospital. Regular outpatient follow-up appointments with their cardiologist and other allied health professionals, such as physiotherapists and dietitians	No	• Self-Care of Heart Failure Index SCHFI (V6.2) • Cardiac Self-Efficacy Scale (CSES) • Hospital Anxiety and Depression Scale (HADS) • Minnesota Living with Heart Failure Questionnaire (MLHFQ) • Short Form of the Social Support Questionnaire (SSQ6) • NYHA Functional Classification • Unplanned hospital admissions • Emergency room visits	• (+) Self-Care • (+) Self-Efficacy • (-) Anxiety • (+) Depression • (+) Health related quality of life • (-) Perceived social support • (+) NYHA Class • (+) Admissions and ER visits	Low

Continued

Table 2 Continued

Author, year, country	Aim	Design and sample	Intervention	Control	Patient involvement in the design	Outcome measures	Main results	Risk of bias
Khaledi et al. (2015) Iran	To evaluate the effect of perceived social support on promoting self-care behaviours among heart failure patients	Randomized controlled trial $n = 64$ ( $n = 32$ EG; $n = 32$ CG) Age: 54, 8 year EG; 54, 3 year CG Sex: 68, 8% male EG; 68, 8% male CG Setting: hospital	4 educational intervention sessions: one 2 h session per week (patients and their closest persons). Duration: 4 weeks Intervention leader: researcher Follow-up: 3 months (baseline, 1 and 3 months measurement)	No information	No	<ul style="list-style-type: none"> <li>Perceived Social Support Questionnaire</li> <li>European Heart Failure Self-care Behaviour Scale (EHFScBS)</li> </ul>	<ul style="list-style-type: none"> <li>(+) Perceived social support</li> <li>(+) Self-care behaviours</li> </ul>	High
Kola et al. (2021) Iran	To compare the effect of the teach-back method, multimedia and blended training on self-care and social support in patients with HF and knowledge in their caregivers	Three arm randomized controlled trial $n = 150$ ( $n = 50$ in each group) Age: 65, 3 years teach-back; 67, 2 years multimedia; 56.7 years blended Sex: 52% male teach-back; 66% male multimedia; 60% male blended. Setting: two hospitals and home	Teach-back method group: 4 consecutive days training sessions face-to-face and, 4 sessions (every 2 weeks) by phone. Multimedia group: 4 consecutive days training sessions using multimedia and, four sessions (every 2 weeks) by phone and messages. Blended training method group: 4 consecutive days training sessions face-to-face and using multimedia and, four sessions (every 2 weeks) by phone and messages. Duration: 8 weeks Intervention leader: No information Follow-up: 8 weeks (baseline, 1 day before discharge 4 and 8 weeks measurement)	No control group	No	<ul style="list-style-type: none"> <li>European Heart Failure Self-care Behaviour Scale (EHFScBS)</li> <li>Multidimensional Scale of Perceived Social Support (MSPSS)</li> </ul>	<ul style="list-style-type: none"> <li>(+) Self-care behaviours in three groups</li> <li>(+) Perceived social support (only in the blended training group)</li> </ul>	Low

Continued

Table 2 Continued

Author, year, country	Aim	Design and sample	Intervention	Control	Patient involvement in the design	Outcome measures	Main results	Risk of bias
Østergaard et al. (2021) Denmark	This study evaluates the short-term (3 months), medium-term (6 months) and long-term (12 months) effect of family nursing therapeutic conversations added to conventional care vs. conventional care on social support, family health and family functioning in outpatients with heart failure and their family members.	Randomized multicentre trial $n = 468$ patients and 322 family members ( $n = 232/162$ EG; $n = 236/160$ CG) Age: 66, 5 years EG patients; 67 years CG patients Sex: 74% male EG patients; 73, 7% male CG patients Setting: two HF outpatient clinics	Family Nursing Therapeutic Conversations: three meetings throughout 6–12 weeks Duration: 6–12 weeks Intervention leader: CHF specialist nurse Follow-up: 12 months (baseline, 3, 6 and 12 months measurement)	Usual care	No	<ul style="list-style-type: none"> <li>Family functioning, Family health and Social support (FAFHES) questionnaires:</li> <li>Social support (SS) scale</li> <li>The family health (FH) scale</li> <li>The family functioning (FF) scale</li> </ul>	<ul style="list-style-type: none"> <li>(+) Social support scale (in patients and family members)</li> <li>(-) Family health</li> <li>(-) Family functioning</li> </ul>	Low
Smeulders et al. (2010) Netherlands	To assess the effects of the Chronic Disease Self-Management Programme on psychosocial attributes, self-care behaviour and quality of life among patients with CHF who experienced slight to marked limitation of physical activity.	Randomized controlled trial $n = 317$ patients ( $n = 186$ experimental group; $n = 131$ control group) Age: 66, 6 years EG; 66,8 years CG Sex: 75,8% male EG; 67, 9% male CG Setting: six hospitals	6-week self-management group programme in addition to usual care. Duration: 6 weeks Intervention leader: CHF specialist nurse Follow-up: 12 months (baseline, after intervention, 6 and 12 months after intervention measurement)	Usual care (regular check-ups with the cardiologist and/or the CHF nurse specialist)	No	<ul style="list-style-type: none"> <li>General Self-efficacy Scale</li> <li>Two sub-scales of the Cardiac Self-Efficacy Questionnaire</li> <li>Perceived control scale</li> <li>Coping with Symptoms Scale</li> <li>European Heart Failure Self-Care Behaviour Scale (EHFScBS)</li> <li>RAND 36-item Health Survey</li> <li>Kansas City Cardiomyopathy Questionnaire</li> <li>Hospital Anxiety and Depression Scale</li> </ul>	<ul style="list-style-type: none"> <li>(+) Cognitive symptom management (only in short-term)</li> <li>(-) Self-efficacy expectancies</li> <li>(-) Perceived control</li> <li>(+) Self-care behaviour (only in short-term)</li> <li>(+) Cardiac-specific quality of life (only in short-term)</li> <li>(-) General quality of life</li> <li>(-) Perceived autonomy</li> <li>(-) Symptoms of anxiety and feelings of depression</li> </ul>	Low

EG = experimental group; CG = control group; (+) Statistical superiority favouring intervention. (–) No statistical superiority favouring intervention.



duration was shorter than 12 weeks in seven (87.5%) of the studies,<sup>24,26–31</sup> and only one (12.5%) lasted more than 6 months.<sup>25</sup> The number of meetings between patients/families and health professionals for the intervention ranged from one to eight face-to-face meetings (mean 4.75) and from 1 to 20 phone calls. The duration of the face-to-face sessions ranged from 20 min to 3 h (mean 69.4 min).

### Providers and recipients of interventions

Most of the interventions (five studies, 62.5%) were carried out by CHF specialist nurses.<sup>24–26,28,29</sup> One of the studies mentioned above also involved a physician,<sup>24</sup> and two (25%) interventions were implemented by the researchers themselves.<sup>26,30</sup> As reflected in *Table 2*, there was no patient involvement in the design of any intervention in the studies reviewed.

Regarding the population subject to the intervention, four (50%) of the studies had an approach that included both the patient and at least one member of their family.<sup>24,27,28,30</sup> In comparison, another two (25%) studies intervened in peer support,<sup>25,28</sup> and the remaining 25% focused solely on the individual with CHF.<sup>24,30</sup>

### Intervention content domains

After integrating the content of the eight interventions analysed, three domains were identified as encompassing the orientation of the topics covered: cognitive, supportive, and behavioural.

#### (i) Cognitive

This domain was present in six (75%) of the interventions.<sup>24,25,27,29–31</sup> This component of the interventions aimed to increase the knowledge of patients and/or families on aspects related to the illness and its management. Therefore, theoretical and practical content was presented to increase their knowledge about the definition of CHF and its precipitating factors, interpretation of symptoms, treatment, self-care activities (nutrition, salt and fluid intake, weight control, among others), and physical and sexual activity.

#### (ii) Supportive

This domain was present in five (62.5%) of the interventions.<sup>24–28</sup> In some of these interventions, participants received psychosocial support to maintain and strengthen their perception of control to feel more involved, reduce their stress, and relieve the burden on their partners.<sup>24</sup> In addition, attempts were made to identify psychological and social support needs and long-term care.<sup>24,26</sup>

Other interventions tried to increase peer support and support within the family. In the first one, patients were trained in communication skills to build relationships with other CHF patients to share experiences, concerns, strategies, and progress.<sup>25</sup> However, in the Østergaard *et al.* study,<sup>27</sup> efforts were made to improve the support given to the family and within the family members themselves. Thus, they were encouraged to talk about how they saw their family situation, their thoughts about CHF and how it influenced their lives, and explain what they would like to change, how to do so, and set goals.

#### (iii) Behavioural

This domain was addressed in all the interventions reviewed. These activities aimed to provide patients with strategies to improve

their attitudes and behaviours around their situation. Most of them focused on improving their self-care skills through motivational interviewing, reflective activities, and resources to monitor changes in their condition (notebooks or technological tools).<sup>24–26,29,30</sup> However, there were interventions where the development of these strategies was taken further and was used to support the partners in recognising and modifying the factors contributing to their physical and emotional distress, changing their thoughts and behaviours towards a more positive approach, and helping them to develop problem-solving skills.<sup>24</sup> Smeulders *et al.*<sup>29</sup> incorporated various strategies to increase self-efficacy as: skill training, comprising the identification of goals and action plans; and modelling and social persuasion, where other group members or the group leader motivated participants to change their behaviours and beliefs.

### Effectiveness of interventions

Given the heterogeneity of the outcome measures used in the studies reviewed, it does not seem possible to determine which intervention is more effective in reducing the impact of CHF on the social dimension of the person. Nevertheless, it is worth mentioning that some statistically significant results were identified as a result of the interventions. As described below, the only social dimension variable measured in the studies was social support. *Table 3* includes a graphic summary of the effectiveness of interventions in each study. The most significant results of these studies are briefly summarized in the following context.

Six studies (75% of those reviewed) measured the effect of their intervention on social support, and all of them used different measurement instruments to do this (see *Table 2*).<sup>25–28,30,31</sup> Among these, three studies (50%) were shown to have a statistical superiority favouring intervention in all measurements<sup>25,27,28</sup>; furthermore, in one of these<sup>28</sup> for both the patients and the participating relatives. In contrast, two studies (33.3%) showed no change in this outcome after the intervention,<sup>26,31</sup> and one study (16.6%) showed a statistically significant improvement in only one of the three intervention groups.<sup>30</sup> Self-care and self-management behaviours were also assessed in six studies (75% of the total),<sup>24,25,27,29–31</sup> of which five (83.3%) studies showed statistical significant differences after the intervention.<sup>25,27,29–31</sup> However, one<sup>29</sup> was only effective immediately after the intervention and not during follow-up. In four (66.6%) of these studies, this effect was measured by the European Heart Failure Self-Care Behaviour Scale.<sup>24,27,29,30</sup>

Quality of life improved (on all measures) after the intervention in only one<sup>29</sup> of the four (50%) studies that measured this,<sup>24,26,29,31</sup> and partially in one study, in which there was a significant change in the cardiac-specific quality of life only just after the intervention.<sup>29</sup> The measurement instruments were different for each study (*Table 2*). Depression and anxiety were assessed in three (37.5%) studies,<sup>24,29,31</sup> of which only one showed a statistically significant improvement in the domain 'depression' of the intervention group.<sup>31</sup> The same applies to readmission rates during the post-intervention follow-up period, which showed a statistically significant decrease in the intervention group in two<sup>25,31</sup> of the three (37.5%) studies that reported it.<sup>26</sup>

Self-efficacy and NYHA functional class<sup>31</sup> and cognitive symptoms<sup>29</sup> improved in a single study due to the intervention. The remaining outcomes did not show statistically significant differences from the control group: perceived control; deaths; perceived

**Table 3** Summary of the effectiveness of interventions

	RISK OF BIAS	Social support	Self-care / management	Quality of life	Depression and anxiety	Perceived control	Readmissions	Deaths	NYHA class	Self-efficacy	Perceived autonomy	Cognitive symptoms	Caregiver burden	Family health and functioning
Ågren et al. (2012) <sup>a</sup>	Low		●	●	●	●							●	●
Cui et al. (2019)	High	●	●				●							
Heisler et al. (2013)	Low	●	●	●			●	●						
Jiang et al. (2021)	Low	●	●	●			●		●	●				
Khaledi et al. (2015) <sup>b</sup>	High	●	●		●				●					
Kola et al. (2021)	Low	●	●											
Østergaard et al. (2021) <sup>a</sup>	Low	●	●											●
Smeulders et al. (2010)	Low	●	●	●	●	●						●	●	

White, not measured; Green, statistical superiority favouring intervention; yellow, statistical superiority favouring intervention only at some measurement time or in one intervention group; Red, no statistical superiority favouring intervention.  
<sup>a</sup>It includes the results obtained in both patients and their partners.  
<sup>b</sup>Outcomes of participating family members were not measured.

autonomy; caregiver burden; and family health and functioning. See [Table 3](#) for more information.

## Discussion

To the best of our knowledge, this is the first systematic review of the literature on randomized controlled trials that have been conducted to intervene in the social dimension of people with CHF. Only eight RCTs including 1623 patients and 659 family members were identified.

The scarcity of the evidence found and, above all, the variability in the format and content of the interventions, the outcomes measured, the measurement instruments used, and the results obtained, have prevented obtaining a conclusion that can be transferred to clinical practice. Thus, a profound gap in terms of effective interventions to reduce the impact of CHF on the social dimension of the person has been identified. Although the eight articles reviewed sought to measure the impact of their interventions in relation to social or psychosocial factors, only six of them measured a variable of the social spectrum, and all of them assessed only social support, leaving aside other key components of this dimension. Given this, the discussion section will be oriented towards the improvements introduced in future interventions.

The demonstrated effectiveness of these RCTs in intervening in the social dimension of people with CHF was low. This finding is in line with a scoping review conducted by Clayton *et al.*<sup>32</sup> within the cardiovascular context. In this review, caregiver-focused interventions were the most effective, as in our study, where 50% of the interventions were targeted at the patient and family,<sup>24,27,28,30</sup> of which 75% showed an improvement of the intervention group in social support.<sup>27,28,30</sup> This approach is well founded because the family is considered one of the primary sources of social support for patients and is the leading health care provider.<sup>33</sup> As in our review, the second approach that dominated the study of Clayton,<sup>32</sup> 'peer support',<sup>26,29</sup> did not produce significant improvements in social support. These two findings imply an urgent need for more research and more suitable protocols for such an intervention, as social isolation has a serious impact on patients. Studies have shown that CHF patients experience high perceived social isolation,<sup>14</sup> and those who report having a poor social network and low perceived social support<sup>34</sup> have a more than 75% increased risk of hospital readmission. Likewise, having CHF and living alone increases the risk of death by more than three times.<sup>14</sup> Several cross-sectional studies of people with CHF have shown a significant negative association between social support and quality of life<sup>35,36</sup> and adherence to self-care behaviours<sup>37</sup> and higher rates of depression.<sup>14,38</sup> Given such evidence, it is striking to note that several of these variables have not been explored or did not find significant changes in the RCTs reviewed.

It should also be pointed out that to a large extent, the main professionals involved in the design and implementation of the interventions were nurses. Although these were mostly CHF specialist nurses, it may have been more appropriate to have had the advice of a multidisciplinary team comprised psychologists, social workers and occupational therapists, as well as patients and relatives, as this could have enriched the focus of the interventions. Perhaps, one of the critical aspects of the success of these interventions would be the involvement of the patient/family in the planning of the intervention; as shown in [Table 2](#), none of the studies reviewed did so.

It has been shown that when a person-centred approach between professionals and patients takes place, it improves the understanding of each person's situation, capabilities, and goals, and the patient can discuss care alternatives.<sup>39</sup> The success of this practice has been demonstrated in multiple RCTs.<sup>40</sup> In this context, patients feel that they are listened to and known as persons, taking into account their individual needs and concerns.<sup>41</sup> Being involved and having shared responsibility for their situation gives them a sense of security and control. This leads them to feel the need to be more active in their care,<sup>42</sup> making them more interested in their condition and more receptive to suggestions made by professionals.<sup>41</sup> Similarly, as reported by Khatib *et al.*,<sup>43</sup> patient involvement during the development of clinical guidelines has been shown to facilitate their implementation. When guidelines are person-centred, this results in improved quality of care, patient empowerment and self-care behaviours while decreasing complications and health care costs caused by chronic conditions.<sup>43</sup> Furthermore, to achieve progressive and durable changes and correct adherence to the intervention, patients should be involved based on their health goals, capabilities and resources<sup>40</sup> to help them increase their motivation and participation in social roles and activities that are meaningful to them.<sup>44</sup> We consider that this is of significant importance if the duration of the effect is to be prolonged, as these interventions involve changes in behaviour, life expectations, and changes in the person's environment that require a period of transition and adaptation.

The analysis of the methodological limitations of the RCTs included in this review, as well as the results measured and obtained in the interventions, lead to the conclusion that, to achieve the design and implementation of a successful intervention in this field, it is necessary to take into account a series of aspects and to undertake an innovative approach. In particular, the evidence shows that an adequate sample size analysis should be carried out, and appropriate outcomes and measurement instruments should be selected to measure the effectiveness of the intervention. Several of the included studies had small patient samples or secondary analyses that lacked power. In Ågren *et al.*,<sup>24</sup> the small sample could lead to a Type II error and influence the statistical power of the results, as the intervention did not show any significant change in the measurements performed. In the study by Smeulders *et al.*,<sup>29</sup> the full sample target was not reached, which may have decreased the power of the trial to find long-term effects. Despite having a large sample in Østergaard *et al.*,<sup>28</sup> the sample was calculated based on the primary objective of the original trial (this was a secondary analysis), which may have influenced the statistical power, limiting the results.

## Limitations

This review has several limitations. On the one hand, it should be noted that despite carrying out a broad, transparent and exhaustive search strategy for RCTs that studied interventions in the social dimension of the person with CHF, few studies were identified that met the selection criteria. All of the studies focused only on addressing social support without paying attention to other phenomena, such as the quality of social relationships, social integration or social participation. Moreover, as previously mentioned, several of the RCTs had methodological weaknesses, so the results of this review could be biased by this. Another limitation of the present study is that despite having analyzed the characteristics and effects of the

interventions in-depth, it was not possible to perform a meta-analysis of the results since there was a disparity between the outcome variables measured in the studies and the measuring instruments used in each study.<sup>45</sup>

## Conclusions

Despite the close and evident relationship between CHF and the social dimension of the person, this review has highlighted the scarcity of interventions targeting the social dimension of people with CHF. Among the studies that have assessed the impact of the intervention on this dimension, all of them only evaluated social support and only half of them have demonstrated an improvement in this endpoint, leaving aside other key components of this dimension. Interventions to date have been heterogeneous in terms of all PICO characteristics, which limits the statistical combination of studies. Based on narrative review and vote counting, such interventions could potentially improve social support and self-care, which are important patient reported outcomes, thus warrant further research. Moreover, we recommend promoting and measuring other essential aspects that may underlie some of the social challenges of those with CHF, namely social relationships, social integration, social participation and the ability to participate in social roles and activities. Future studies should be co-created with patients and families to be adequately targeted.

## Supplementary material

Supplementary material is available at *European Journal of Cardiovascular Nursing* online.

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## Data availability

All data are incorporated into the article and its online supplementary material.

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