

Review

Elements Characterising Multicomponent Interventions Used to Improve Disease Management Models and Clinical Pathways in Acute and Chronic Heart Failure: A Scoping Review

Cristina Pedroni ^{1,2}, Olivera Djuric ^{3,4,*}, Maria Chiara Bassi ⁵, Lorenzo Mione ², Dalia Caleffi ⁶, Giacomo Testa ⁷, Cesarina Prandi ⁸, Alessandro Navazio ⁹  and Paolo Giorgi Rossi ³

- ¹ Direzione delle Professioni Sanitarie, Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia, 42122 Reggio Emilia, Italy; cristina.pedroni@ausl.re.it
- ² Laurea Magistrale in Scienze Infermieristiche e Ostetriche, University of Modena and Reggio Emilia, 42122 Reggio Emilia, Italy; mione.lorenzo@gmail.com
- ³ Epidemiology Unit, Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia, 42122 Reggio Emilia, Italy; paolo.giorgirossi@ausl.re.it
- ⁴ Centre for Environmental, Nutritional and Genetic Epidemiology (CREAGEN), Section of Public Health, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, 41125 Modena, Italy
- ⁵ Medical Library, Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia, 42123 Reggio Emilia, Italy; mariachiara.bassi@ausl.re.it
- ⁶ Cardiology Division, Azienda Ospedaliera Universitaria di Modena, 41124 Modena, Italy; caleffi.dalia@aou.mo.it
- ⁷ UO Medicina, Ospedale Giuseppe Dossetti, Azienda Unità Sanitaria Locale di Bologna, 40053 Bologna, Italy; giacomo.testa@ausl.bologna.it
- ⁸ Department of Business Economics, Health & Social Care, University of Applied Sciences & Arts of Southern Switzerland, CH-6928 Manno, Switzerland; cesarina.prandi@supsi.ch
- ⁹ Cardiology Division, Arcispedale Santa Maria Nuova, Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia, 42123 Reggio Emilia, Italy; alessandro.navazio@ausl.re.it
- * Correspondence: olivera.duric@ausl.re.it



Citation: Pedroni, C.; Djuric, O.; Bassi, M.C.; Mione, L.; Caleffi, D.; Testa, G.; Prandi, C.; Navazio, A.; Giorgi Rossi, P. Elements Characterising Multicomponent Interventions Used to Improve Disease Management Models and Clinical Pathways in Acute and Chronic Heart Failure: A Scoping Review. *Healthcare* **2023**, *11*, 1227. <https://doi.org/10.3390/healthcare11091227>

Academic Editors: Victoria Alikari and Alexandra Mantoudi

Received: 10 March 2023

Revised: 17 April 2023

Accepted: 23 April 2023

Published: 25 April 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Abstract: This study aimed to summarise different interventions used to improve clinical models and pathways in the management of chronic and acute heart failure (HF). A scoping review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement. MEDLINE (via PubMed), Embase, The Cochrane Library, and CINAHL were searched for systematic reviews (SR) published in the period from 2014 to 2019 in the English language. Primary articles cited in SR that fulfil inclusion and exclusion criteria were extracted and examined using narrative synthesis. Interventions were classified based on five chosen elements of the Chronic Care Model (CCM) framework (self-management support, decision support, community resources and policies, delivery system, and clinical information system). Out of 155 SRs retrieved, 7 were considered for the extraction of 166 primary articles. The prevailing setting was the patient's home. Only 46 studies specified the severity of HF by reporting the level of left ventricular ejection fraction (LVEF) impairment in a heterogeneous manner. However, most studies targeted the populations with $LVEF \leq 45\%$ and $LVEF < 40\%$. Self-management and delivery systems were the most evaluated CCM elements. Interventions related to community resources and policy and advising/reminding systems for providers were rarely evaluated. No studies addressed the implementation of a disease registry. A multidisciplinary team was available with similarly low frequency in each setting. Although HF care should be a multi-component model, most studies did not analyse the role of some important components, such as the decision support tools to disseminate guidelines and program planning that includes measurable targets.

Keywords: heart failure; disease management; clinical pathways; chronic care model; multidisciplinary

1. Introduction

Chronic heart failure (CHF) is a major public health problem because of its high prevalence and complexity. Although the prognosis of CHF has improved, it remains a severe condition with a high frequency of acute decompensations requiring frequent hospitalisations and continuous care imposing complex health needs upon patients.

The prevalence of HF increases with age, ranging from about 1% in those younger than 55 years to more than 10% in those older than 70 years [1–3]. However, the true prevalence of heart failure is likely higher since epidemiological studies include only diagnosed cases [4]. The incidence of heart failure in Europe and the USA ranges widely from 1 to 9 cases per 1000 person-years. Among studies limited to older adults, the average incidence reaches 16 cases per 1000 person-years [5,6]. According to recent epidemiological studies conducted in high-income countries, the age-adjusted incidence of HF is decreasing, partly as a result of better management of hypertension and other conditions causing HF. However, with the ageing of the population and increase in hypertension diagnosis, the number of newly diagnosed HF cases increased as well as the number of prevalent cases leading to the increased number of re-hospitalisations, deaths, and overall burden of the disease, imposing an urgent need for reorganisation of current HF management models of care and reprioritisation of resources [7,8].

Reallocation of CHF diagnostic and care to the primary care and community was advocated to improve the care of patients with this chronic disease and multiple comorbidities and to make it more patient-oriented. Programs involving multi-component interventions and multidisciplinary teams represent a recommended strategy to improve outcomes in patients with CHF as they effectively reduce HF hospitalisations, mortality, and all-cause hospitalisations [5]. Moreover, they improve adherence to guidelines and facilitate the approach to complex health and social problems that affect patients and caregivers. There is a vast body of evidence showing the effectiveness of multidisciplinary HF care implemented in various settings and using a range of delivery models, including home-based, clinic-based, and telemonitoring approaches, depending on the patient's needs, health system organisation, and available resources [9]. Among these strategies, the Chronic Care Model has been defined by the US Health Resources and Service Administration as “a model with key elements of a health care system that encourage high-quality chronic disease care: the community, the health system, self-management support, delivery system design, decision support, and clinical information systems” [10].

Chronic Care Models (CCM) adopting multidisciplinary healthcare programs and diagnostic-therapeutic paths (PDTA) have been shown to be effective in improving health outcomes in different chronic diseases, at least in some studies [11–14]. However, the evidence about the effectiveness of a CCM approach to HF care is inconclusive [15–21]. With the exception of self-care interventions [22], it is unknown which elements or combination of CCM elements could improve healthcare practice and health outcomes since there is substantial heterogeneity in the interventions implemented in primary care to improve CHF care delivery [23].

The study aimed to summarise and characterise the interventions used to improve disease management models and clinical pathways in the management of the chronic and acute phases of HF patients and to describe prevalent settings of care, the severity of targeted patients, and the professionals involved.

2. Materials and Methods

This scoping review tried to answer the following research question “What are the common features that distinguish and/or unite the different disease management interventions and clinical pathways to manage chronic and acute phases of adult patients with heart failure at different levels of LVEF?” The protocol is available on request from the corresponding author. We have used the PRISMA Extension for Scoping Reviews checklist [24] in the reporting of this review (Supplementary Table S1).

2.1. Eligibility Criteria

We examined primary articles of the systematic reviews already present in the literature evaluating the effect of disease management interventions and clinical pathways for patients with heart failure in both phases of the disease, acute and chronic. This choice focused on interventions that were submitted to an evaluation and that were considered similar enough to other interventions to be grouped in a systematic review. The PICO(S) framework (Population, Intervention, Comparator, Outcomes, Study design) was used to frame the search strategy (Table 1).

Table 1. PICO question.

Description	Scope
Population	Adult patients with heart failure at any stage of the disease
Intervention	Multicomponent disease management interventions and clinical pathways to manage the chronic and acute phases of HF patients
Comparator	Standard care (routine or standard care, as defined by the primary studies)
Outcomes	Studies investigating any outcome of efficacy, effectiveness, and costs will be considered
Study design	All study designs were included, given the broad scope of the review. No limits were given on the duration of the intervention or the length of follow-up.

2.2. Inclusion and Exclusion Criteria

Due to the broad scope of the review and the substantial number of studies anticipated, only systematic reviews describing multicomponent interventions were considered in the first phase. All primary articles cited in the identified systematic reviews were included in the review.

Studies were relevant for this systematic review if they considered the adult population with HF at any stage of the disease, while patients with cardiac disorders other than HF, with less than 18 years of age, or with congenital HF were excluded. The intervention was any disease management intervention or a clinical pathway used to manage the chronic and acute phases of HF. Studies that did not consider multicomponent interventions were excluded. The comparison group received standard care as defined by the primary studies.

2.3. Information Sources, Search Strategy and Selection Process

A search strategy (Supplementary Table S2) was developed, including author keywords and database subject headings (MeSH) for three main concepts: heart failure, disease management interventions, and clinical pathways to manage the chronic and acute phases of HF patients.

The search strategy adapted to each database queried was used to search for SRs in the following databases: MEDLINE (via PubMed), Embase, The Cochrane Library, and CINAHL published in the last 5 years in English. The selection by title and abstract of articles to be included for full-text evaluation was carried out by two reviewers (CP, PGR). The selection of full-text articles was carried out by a single reviewer (CP), with a cross-check by another reviewer (OD) on 20% of the selected full-text articles. All inconsistent results were discussed by the reviewers and supervisor (PGR). The study selection process is described in the PRISMA flow chart (Figure 1).

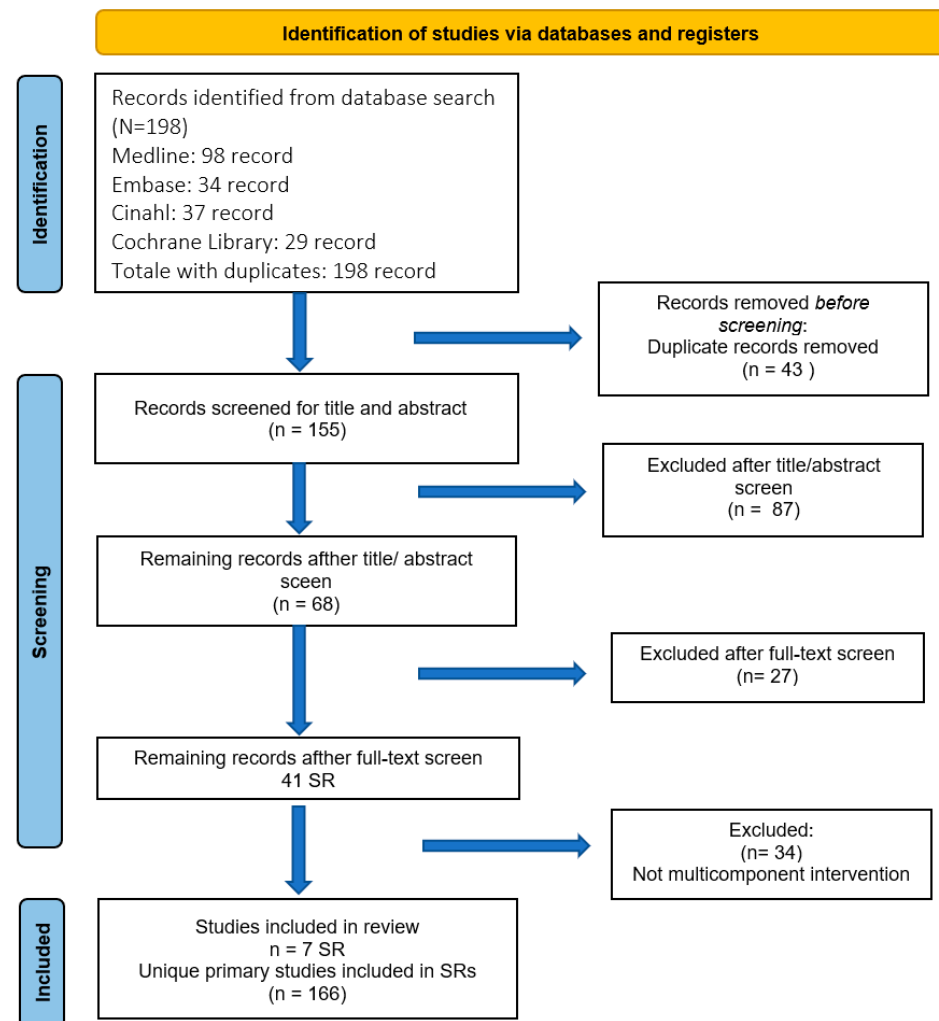


Figure 1. Flowchart of study selection.

2.4. Data Charting Process and Data Items

Data extraction from the full-text articles included in the selected SRs [15–21] by two reviewers (CP and LM) using a data extraction form. It included the year of publication, the country of publication, the name of the first author, the name of the article, the objective of the study, the study design, the characteristics of the population included (inclusion criteria and sample size), the duration of the study and the follow-up, the description of the intervention, the care settings and the actors involved in the intervention whether health, social or community resources. A shorter version of the extraction form was developed for the description purposes, including study author, year of publication, number of patients overall and in each group, the population included in terms of % of LVEF impairment, aim, intervention, and control description and follow up period, is presented in Supplementary Table S3.

2.5. Classification of Interventions and Actions

The classification was made by two reviewers (OD and CP) and consequently approved by the supervisor (PGR). The identification of conceptual areas of intervention and their components was based on the Chronic Care Model framework [25] (Table 2). Based on the available literature [26–28], the intervention components were classified as relevant for one of the CCM elements: self-management support, decision support, community resources and policies, delivery system, and clinical information system. We did not consider the health system as a separate element, since most of the interventions were

carried out in the health system and classifying their components as targeting the health system or not would be arbitrary. A detailed description with examples of intervention components within each CCM element is provided in Table 2. Interventions retrieved were classified by level of LVEF impairment, setting (inpatient, outpatient, primary care, and home), and study size (<100, 100–1000, >1000). Due to heterogeneity in LVEF classification, disease severity was classified for convenience in the following categories based on levels of LVEF impairment:

- standard or common classification according to the European Society of Cardiology (ESC) guidelines [29]:
 - $\geq 50\%$ (normal LVEF or HF with preserved EF (HFpEF))
 - 40–49% (HF with mid-range ejection fraction (HFmrEF)),
 - $<40\%$ (HF with reduced EF (HFrEF)),
- other classification containing LVEF cut-offs that overlap with ESC criteria, and
- not specified, in case of missing information on LVEF classification.

Table 2. Classification of conceptual areas of intervention disease management and its components based on the Chronic Care Model framework [25].

CCM Element	Description of the CCM Element	Intervention Components	Description and Example
Self-management support	Emphasis on the importance of the central role the patients have in managing their own care.	Educational interventions	Educational interventions on self-monitoring, medical management, decision making, or adoption and maintenance of health-promoting behaviours, divided into: <ul style="list-style-type: none"> - mHealth-based interventions (delivery of health messages, interventions, and verification of notions provided through education via mobile phones, tablets, and other wireless technologies), - eHealth (web-based computer-tailored interventions) and - face-to-face teaching sessions conducted by educators using written or printed materials
		Motivational counselling and/or behavioural therapy/support	Telephonic or face-to-face motivational counselling sessions focused on self-monitoring and medical management, decision-making, or adoption and maintenance of health-promoting behaviours.
		Family and caregiver education/support	Any kind of educational, motivational, behavioural intervention oriented towards a family member or caregiver.
		Physical activity	Provision of individual or group physical activity lessons, instructions, or programs.
		Self-monitoring and medical management tools	Distributed logs, notebooks, calendars, and dosette boxes or provided technological aids (electronic reminders, phone cues) for self-monitoring, for example, salt intake or weight control.
		Telephone advice lines	Working hours or out-of-hours answerphone system providing advice/support service about self-management.

Table 2. Cont.

CCM Element	Description of the CCM Element	Intervention Components	Description and Example
Decision support	Integration of evidence-based guidelines into daily clinical practice	Integrated CHF protocols into routine practice	Implementation of protocols or guidelines into daily clinical practice.
		Provider education	Any kind of education or case discussions with care providers, usually nurses.
		Linkages between primary and speciality care	Organisation or coordination of patient care activities and sharing of clinical information between different professionals involved in primary care and speciality health services.
Community resources and policies	Developing partnerships with community organisations that support and meet patients' need	Linking patients to outside resources	Referring a patient to a local community health program, church-based support groups, and clinic-based support groups.
		Logistic support	Providing transport to patients from home to the outpatient clinic or community intervention site.
		Third sector involvement	Activities with community-based organisations, volunteer groups, self-help groups, centres for the elderly, etc.
		Community-based self-management programs	Group intervention attended in the community aims to improve disease control and promote self-efficacy.
		Social support	Social support provided by community-based organisations or involvement in social structures within the community.
Delivery system	Focus on teamwork and an expanded scope of practice for a team member to support chronic care	Patient care planning/discharge planning	Development of an individualised discharge plan or adaptation of recommendations and prescriptions for a patient prior to their discharge from the hospital.
		Telemedicine/remote monitoring	Use of telecommunication equipment to remind patients or detect early signs and symptoms of heart failure.
		Multidisciplinary team	Involvement of three or more providers from different healthcare specialities in patient care.
		Advanced practice nurse involvement	Advanced practice nurses are involved in the provision of care services.
		Nurse-led/Nurse case manager	The activities of management, assessment, planning, and coordination of patient care are carried out under the responsibility of the nurses.
Clinical information system	Developing information systems based on patient populations to provide relevant client data	Disease registry	Computer or web-based applications or systems used to capture, manage, and provide information about the specific condition to support organised care management of patients.

Table 2. *Cont.*

CCM Element	Description of the CCM Element	Intervention Components	Description and Example
		Monitoring indicators and feedback to the provider	Collecting and sharing biometric data and patient-reported insights with care teams who evaluate trends and intervene, if necessary.
		Advising/reminders systems for providers	E-mails or messages sent to nurses that contain reminders, instructions, and/or guidelines.
		System for sharing information between providers	Web-based medical records accessible to all health professionals involved in the care of the patient.

2.6. Synthesis of Results

To better represent the heterogeneity that emerged in the conceptual frameworks of the intervention and its components, the results were aggregated following the Chronic Care Model framework [25]. This model was used for the classification given that at the clinical practice level, five areas or elements of the Chronic Care Model are considered to influence the ability to provide effective chronic disease care: self-management support, delivery system design, decision support, community resources and policies and clinical information systems. Description with definitions and examples of the CCM elements and intervention components are presented in Table 2.

3. Results

3.1. Selection of Sources of Evidence

Out of 155 unique SRs retrieved, 41 SRs were considered relevant in the screening phase, of which seven SRs [15–21] were considered for the extraction of primary articles. Overall, 166 unique primary studies were included in this review (Figure 1) [30–195].

3.2. Characteristics of Included Studies

Characteristics of the included studies are reported in Supplementary Table S3. Of the 166 studies included, 161 had different quantitative study designs (139 RCT, 1 non-randomised trial, 9 cohort studies, 12 other study designs), and five were qualitative studies. Most of the evaluated interventions were implemented in North America (USA: 73, Canada: 6), followed by EU countries (63, of which 11 were from the UK), Australia (7), Asia (11), and South America (6). The sample size ranged from 10 to 3031, with 13 studies including more than 1000 patients. Studies with small samples were usually conducted in academic settings, while larger samples were used in studies that usually evaluate the efficacy or feasibility of the intervention. The home was most frequently the setting of the intervention (118), followed by equally represented inpatient and outpatient clinics (56 and 53 studies, respectively), while only 13 studies evaluated interventions in the primary care setting.

Out of 166 studies included, only 46 specified the severity of HF by reporting the level of LVEF impairment. The majority of studies included HF patients with HFrEF (LVEF < 40%) (n = 19), while only four [41,49,50,122] and one study [154] considered patients with HFmrEF (LVEF 40–49%) and HFpEF (LVEF ≥ 50%), respectively. Twenty-two studies examined specific target populations with LVEF range that overlap with the ESC classification, such as LVEF ≤ 55% (3 studies) [107,177,178], LVEF ≥ 45% (4 studies) [86,128,141,146], and LVEF ≤ 45% (21 studies) [36,41,44,49,50,73,80,91,93,115,122,126,136,141,143,145,146,155,163,177,180].

Overall, self-management (152 studies) and delivery system interventions (132 studies) were the mostly evaluated CCM elements, followed by decision support (69 studies) and clinical information system (53 studies) (Table 3). Interventions related to community resources and policy were subject to evaluation only in 7 out of 166 included studies. Face-to-face education, self-monitoring and medical management tools, and mHealth education were the most analysed aspects of self-management support, while eHealth education and physical activity were the least represented ones. Telemedicine/remote monitoring and advanced practitioner nurse involvement were the two most evaluated components of the delivery system. All three aspects of the decision support (integrated CHF protocols into routine practice, provider education, and linkage between primary and speciality care) were equally represented. Monitoring indicators and feedback to providers and sharing information between providers were the two predominant components of the clinical information system element. Only eight of 53 studies assessed the effectiveness of the advising/reminding system for providers, while no studies addressed the implementation of a disease registry. Few studies that evaluated community resources and policy focused mostly on social support while linking patients to outside resources, logistic support, third-sector involvement, and community-based self-management programs were even less represented.

[illegible]

Figure 2. Venn diagram of intervention components. D, delivery system; DS, decision support; CIS, clinical information system; SMS, self-management support; CRP, community resource, and policy.

Table 3. The number of studies by type of setting, type of intervention, and HF severity (level of LVEF impairment).

		Severity (LVEF)							Overall n = 166	
		Not Specified n = 120	ESC Classification			Other Classification				
			≥50% N = 1	40–49% N = 4	<40% N = 19	≥45% N = 4	≤45% N = 15	≤55% N = 3		
Setting	Inpatient	44	1	1	6	/	4	/	56	
	Outpatient	34	1	/	10	/	7	1	53	
	Primary care	9		/	1	/	3	/	13	
	Home	87	1	3	13	4	7	3	118	
Self-management support	m-Health education	57	/	2	8	3	5	/	74	
	e-Health education	17	/	/	5	/	1	/	23	
	Face-to-face didactic session	84	1	3	12	4	13	3	120	
	Motivation counselling and/or behavioural therapy/support	35	1	/	6	2	3	/	47	
	Family and caregiver education/support	36	/	2	4	3	8	3	56	
	Physical activity	8	/	/	1	2	2	1	15	
	Self-monitoring and medical management tools	62	1	1	6	3	6	/	79	
	Telephone advice lines	41	1	/	5	/	3	2	52	
	Overall	109	1	4	16	4	15	3	152	
	Decision support	Integrated CHF protocols into routine practice	28	/	1	2	/	2	/	33
		Provider education	18	/	/	2	2	3	/	25
		Linkage between primary and speciality care	19	/	/	5	/	3	2	29
		Overall	50	0	1	9	2	5	2	69
Intervention	Linking patients to an outside resource	4	/	/	/	/	1	/	5	
	Logistic support		/	/	1	/	1	/	2	
	Third sector involvement	1	/	/	/	/	1	/	2	
	Community-based self-management programs	2	/	/	/	/	/	/	2	
	Social support	8	/	/	1	/	3	/	12	
	Overall	5	0	0	1	0	1	0	7	
Delivery system	Patient care planning/discharge planning	25	/	/	2	/	2	/	29	
	Telemedicine/remote monitoring	56	/	2	12	/	2	3	75	
	Multidisciplinary team	23	/	/	5	/	3	1	32	
	Advanced practitioner nurse involvement	37	1	2	7	3	7	1	58	
	Nurse-led/nurse case manager	25	/	/	4	/	4	2	35	
	Overall	97	1	3	14	3	11	3	132	
Clinical information system	Disease registry	/	/	/	/	/	/	/	/	
	Monitoring indicators and feedback to the provider	21	/	1	12	/	1	1	36	
	Advising/reminding system for providers	7	/	/	1	/	/	/	8	
	Sharing information between providers	12	/	2	3	/	2	1	20	
	Overall	35	0	2	12	0	2	2	53	

3.4. Type of Intervention Components by Level of LVEF Impairment, Setting, and Size

When considering studies that specified HF severity, populations with LVEF $\leq 45\%$ and LVEF $< 40\%$ were analysed the most (Table 3). Consequently, all CCM elements and interventions were mostly analysed in these groups of patients.

Self-management support, decision support and delivery system were mostly implemented in the home setting and to a lesser extent in inpatient and outpatient setting, while clinical information system was predominantly related to home and outpatient care due to the collection and processing of clinical information data within the remote monitoring (Table 4). Interestingly, provider education was frequently offered to health workers conducting interventions in the home setting, while workers in other health settings were less subject to educational interventions. Only half (23 out of 56) studies conducted in inpatient settings offered a discharge/care planning intervention.

Table 4. Intervention type by setting.

		Inpatient n = 56	Outpatient n = 53	Primary Care n = 13	Home n = 118	Overall n = 166
Self-management support	m-Health education	23	17	6	58	104
	e-Health education	6	8	1	19	34
	Face-to-face didactic session	49	43	10	84	186
	Motivation counselling and/or behavioural therapy/support	21	14	4	35	74
	Family and caregiver education/support	23	17	5	45	90
	Physical activity	3	4	2	8	17
	Self-monitoring and medical management tools	33	26	8	58	125
	Telephone advice lines	28	16	3	41	88
	Overall	53	49	12	108	222
Decision support	Integrated CHF protocols into routine practice	11	13	4	22	50
	Provider education	7	5	2	14	28
	Linkage between primary and speciality care	9	12	2	19	42
	Overall	22	23	6	45	76
Community resource and policy	Linking patients to outside resources	1	2	1	2	6
	Logistic support	/	1	1	1	3
	Third sector involvement	1	/	1	1	3
	Community-based self-management programs	1	1	/	1	3
	Social support	/	/	/	/	/
	Overall	2	3	1	4	10

Table 4. Cont.

		Inpatient n = 56	Outpatient n = 53	Primary Care n = 13	Home n = 118	Overall n = 166
Delivery system	Patient care planning/discharge planning	23	6	1	26	56
	Telemedicine/remote monitoring	26	20	5	64	115
	Multidisciplinary team	17	14	4	19	59
	Advanced practitioner nurse involvement	17	22	3	42	83
	Nurse-led/nurse case manager	12	14	3	29	58
	Overall	49	40	8	101	198
Clinical information system	Disease registry	/	/	/	/	/
	Monitoring indicators and feedback to the provider	8	13	/	30	51
	Advising/reminding system for providers	1	3	/	5	9
	Sharing information between providers	4	5	2	15	26
	Overall	11	17	4	40	72

All CCM elements were predominantly analysed in studies with medium sample sizes (100–1000 patients) and in home settings (Table 5). Studies with more than 1000 patients were conducted mostly in home settings and analysed self-management interventions, delivery systems, and clinical information systems.

Table 5. Intervention type by study size.

		Study Size			
		<100 n = 35	100–1000 n = 118	>1000 n = 13	Overall n = 166
Setting	Inpatient	8	36	6	50
	Outpatient	11	36	3	50
	Primary care	2	10		12
	Home	26	77	11	114
Intervention	m-Health education	19	47	6	72
	e-Health education	5	15	2	22
	Face-to-face didactic session	22	83	7	112
	Motivation counselling and/or behavioural therapy/support	11	28	6	45
	Family and caregiver education/support	9	39	5	53
	Physical activity	4	8	/	12
	Self-monitoring and medical management tools	15	51	6	72
	Telephone advice lines	6	37	5	48

Table 5. Cont.

		Study Size			
		<100 n = 35	100–1000 n = 118	>1000 n = 13	Overall n = 166
Decision support	Overall	32	102	10	142
	Integrated CHF protocols into routine practice	3	23	3	29
	Provider education	5	15	3	23
	Linkage between primary and speciality care	1	23	4	28
	Overall	9	47	7	63
Community resource and policy	Linking patients to an outside resource	/	4	/	/
	Logistic support	/	12	/	/
	Third sector involvement	/	1	/	/
	Community-based self-management programs	/	/	/	/
	Social support	/	/	/	/
	Overall	/	5	/	5
Delivery system	Patient care planning/discharge planning	3	19	4	26
	Telemedicine/remote monitoring	13	54	6	73
	Multidisciplinary team	6	21	3	30
	Advanced practitioner nurse involvement	13	37	7	57
	Nurse-led/nurse case manager	20	57	8	85
	Overall	28	85	12	125
Clinical information system	Disease registry	/	/	/	/
	Monitoring indicators and feedback to the provider	8	24	3	35
	Advising/reminding system for providers	3	2	2	7
	Sharing information between providers	3	15	2	20
	Overall	11	35	15	61

3.5. Team Organisation Structure by Setting and LVEF Impairment

Interventions with the multidisciplinary team were available with similarly low frequency in each setting, except the primary setting, where only 4 out of 59 studies with multidisciplinary intervention were conducted (Table 4).

Nurses and cardiologists were the most involved professionals in all settings (Table 6). Around half of the included studies had APC nurse involved, while nurse case manager was involved in 53 studies. They were involved mostly in studies conducted in the home and outpatient settings. In all cases, they were responsible for coordinating and managing care, supporting patient self-care, and ensuring that planned follow-ups were carried out. Other professionals, such as pharmacists, nutritionists, physiotherapists, social workers, physicians, geriatricians, psychologists, and psychiatrists, were considered in multidisciplinary care but not as a part of the dedicated team.

Table 6. Professionals involved by type of setting and HF severity.

	Setting				HF Severity (LVEF)							Overall
	Inpatient n = 56	Outpatient n = 53	Primary Care n = 13	Home n = 118	Overall	≥50% N = 1	40–49% N = 4	<40% N = 19	≥45% N = 4	≤45% N = 15	≤55% N = 3	
Advance practice nurse	19	22	3	44	88	1	2	7	3	7	1	21
Nurse-led	10	14	3	26	53	/		4		4	2	10
Nurse	29	19	6	50	104	/	1	6	1	7	1	16
Cardiologist	19	22	7	32	80	/	2	10	/	2	1	15
Geriatrician	2	1	/	1	4	/	/	/	/	/	/	/
Pharmacist	7	4	3	13	27	/	/	2	/	2	1	5
Physician	/	1	/	1	2	/	/	7	/	2	1	10
Psychiatrist	2	/	1	1	4	/	/	1	/	3	/	4
Psychologist	2	2	2	1	7	/	/	/	/	/	/	/
Physiotherapist	1	/	/	/	1	/	/	/	/	1	/	1
Dietist/nutritionist	12	6	2	12	32	/	/	/	/	2	/	2
Social worker	7	5	1	9	22	/	/	1	/	/	/	1
Occupational therapist	/	/	1	/	1	/	/	/	/	/	1	1
Students pursuing premedical track	1	/	/	1	2	/	/	/	/	/	/	/
Patients	/	/	/	1	1	/	/	/	1	/	/	1

Studies that included patients with HF with reduced EF (<40% LVEF) involved mostly cardiologists, physicians and APC nurses, while nurse case managers and other health specialists were less often considered.

3.6. Qualitative Studies

All five qualitative studies included [99,114,125,167,185] were conducted with a phenomenological approach. The common objective of these studies was to investigate the most commonly perceived barriers to self-care management. Lack of awareness, depression, weight problems, difficulty in exercising, fatigue, poor communication with the doctor, and poor family support, are the most frequently detected obstacles to self-management. The self-care regimen CHF was perceived by both patients and physicians as work, but patient-physician dyads show divergent interpretations of such labour. Physicians perceived patients as not participating enough in self-care despite they considered instructions being “easy”. Patients perceived themselves as being able to understand what to do but needing help on how to perform self-care.

4. Discussion

We carried out a scoping review of 166 primary articles cited by the 7 SRs to understand better which interventions proposed and evaluated so far have been used to improve disease management models and clinical pathways of the chronic and acute phases of HF. The results were categorised and interpreted following five CCM elements (self-management support, decision support, community resources and policies, delivery system, and clinical information system). Overall, self-management interventions (face-to-face education, self-monitoring and medical management tools and m-health education) and delivery system interventions (telemedicine/remote monitoring and advanced practitioner nurse involvement) were the mostly evaluated CCM elements, while interventions related to community resource and policy were rarely evaluated, as well as advising/reminding system for providers. No studies addressed the implementation of a disease registry. Only one study evaluated all five CCM elements considered in this study [40].

The studies were carried out in different healthcare contexts; nevertheless, some common concepts emerged. The prevailing management setting investigated was the patient's home, given that self-management interventions were the most evaluated CCM elements. Actions to improve or support self-management, such as patient and/or caregiver education, were frequently analysed in the presence of changes in the delivery system, in particular the introduction of telemonitoring, and less frequently in the implementation of clinical information system interventions (monitoring indicators and feedback to provider). Such a combination of interventions was predominantly conducted in the home setting and delivered by APN nurses. Self-care interventions are mainly used in the population with LVEF $\leq 45\%$, as well as for interventions referred to the other intervention areas provided by the CCM. The severity of HF was classified in a heterogeneous manner in the retrieved studies, and only in some cases %LVEF was specified. Greater clarity and harmonisation of HF severity classification are needed to understand which intervention to prioritise according to the severity of HF [9].

Self-care support can be offered to individual patients, the patient-caregiver dyad, or groups of patients through mHealth and eHealth educational interventions on self-monitoring and medical management or through face-to-face didactic sessions by educators using printed or written materials. Educational interventions using eHealth or web approach are less represented, although they could improve healthcare accessibility and overcome geographic inequalities as well as organisational challenges for families and caregivers. Furthermore, the impact on health inequalities of interventions based on mHealth needs to be carefully assessed. In fact, despite the fact that mHealth gives great opportunities given the high penetrance of smartphones in all socio-economic strata and educational levels of the population, it also may introduce barriers to access in those HF patients, usually the oldest and most socially fragile ones, who have low digital literacy.

Discharge planning and follow-up monitoring remain fundamental steps to assure a continuum of care between hospital and primary care management of patients with heart failure. Emphasis is placed on patient/caregiver education as a fundamental intervention of the care pathway, and post-discharge monitoring frequently includes checks on acquired educational notions and reinforcement interventions aimed at increasing self-care and self-monitoring skills. Yet only half of the included studies conducted in inpatient settings offered a discharge/care planning intervention, and discharge planning was rarely analysed together with patient or caregiver education.

When the structure of the care team (physician, nurse, etc.) was studied, nurses and cardiologists were the most frequently involved professionals in all settings, followed by nutritionists and pharmacists. A multidisciplinary team was considered in only one-third of studies that evaluated delivery systems. Multidisciplinarity was the least evaluated in the primary care setting; this may be because the multidisciplinary team in a hospital setting is already a well-established standard, while in outpatient and home care, it is not. Interestingly, health provider education was mostly offered to health workers conducting interventions in the home setting, while workers in other health settings were less frequently targeted by educational interventions. This suggests that the transition of CHF care to primary care in terms of setting and the professionals involved has not been fully developed despite suggestions and efforts [29].

In most cases, multidisciplinary consultation was accompanied and facilitated by the presence of an advanced practice nurse and less frequently by the nurse case manager, although their function was mentioned with different terms (care coordination, nurse management, nurse-led care) but with similar tasks. The advanced practice nurse in the literature does not have a universally accepted definition, as well as the required skills and the level of advanced training required are often not described, despite having an important role in supporting patient self-care and ensuring the planning and conduct of patient follow-up as required by care plans.

Clinical information systems and decision support tools to facilitate the application of the guidelines on which the model is based by healthcare professionals are less represented

in the literature. Telemedicine and quality improvement measures and monitoring need specific information systems. In the retrieved studies, the development of information systems was reported mainly when telemedicine interventions were included, while interventions to improve connections between health providers and between health providers and patients are less represented. Feedback to professionals showing their performance levels against chronic disease indicators and implementation of disease registries were not evaluated at all. The role of clinical information systems has been underestimated or not emphasised in the studies evaluating interventions to improve the new management of chronic diseases in primary care despite its well-recognised role in planning appropriate care for patients with different comorbidities [196].

In the retrieved studies, the involvement of community resources was scarcely considered. In the few studies involving resources outside the health system and the patient's family, these are mostly considered for supporting self-help groups involving peer leaders and student volunteers. We did not find studies evaluating a deeper involvement of public services not related to the health system, nor the involvement of informal social networks to reduce logistical barriers for patients and to sustain caregivers. Despite there is evidence that community involvement can help patients and caregivers be more compliant with certain cues (facilitating travel, helping time balance for caregivers) and can facilitate healthy lifestyle choices [40,45,164], we must note that there are very few experiences reported in the scientific literature for chronic care of HF. Our results should be read in light of some limits. We only tried to describe the main components of the interventions employed to improve disease management models and clinical pathways in the care of the chronic and acute phases of HF patients. Therefore, we decided not to evaluate the quality of the included studies. Furthermore, we could not evaluate the proposed models for their feasibility nor if they have been actually implemented or were just experimented with in academic settings. Moreover, we have described interventions with respect to the CCM, which is considered a high-quality approach to traditional HF management; however, focusing on the complex intervention, we probably missed some of the most innovative parts of HF management, in particular, precision cardiology approaches which use clinical and genetic characteristics of the individual to define personalised and precise disease management [197]. These limits are relevant to the scope of our review, and they should be carefully considered when using our results to construct a new model or to start a systematic review to assess the efficacy of specific components or types of care models. Research through other database analyses and grey literature may have yielded other relevant articles. In addition, because the review was limited to papers published in the English language, it is possible that other potentially relevant articles and reviews were omitted. Nevertheless, including more than 160 studies guaranteed a saturation of the different components of the interventions proposed for the management of HF patients, which was the main goal of our search strategy.

This study has some important implications for future research and clinical practice. The combination of telemedicine and clinical decision support systems is rarely evaluated together despite being essential in enabling physicians to promptly adapt medication doses and, therefore, reducing the number of hospital visits needed. In addition to this, tools to support the adoption of evidence-based guidelines should be evaluated and implemented in practice. The development of eHealth and telemedicine is a very promising area that would merit more in-depth research and development efforts in the future, particularly because of its potential to reduce the burden of self-management on patients and caregivers. Finally, program planning that includes measurable targets for better HF care, which is recommended by the CCM, but scarcely reported in the literature, should become part of health system priorities to support the new management of chronic diseases. If this does not happen, innovations in care processes are unlikely to be introduced and even more unlikely that the quality of care will be rewarded.

5. Conclusions

There is great heterogeneity in the classification of heart failure severity used to target patients. This heterogeneity makes it difficult to understand which HF patients could benefit from interventions and their components and if some interventions could be implemented to a wide range of severity, and which are more focused.

Although all CCM components of interest (patient self-care support, delivery system, decision support, community resource and policy, clinical information system) are represented in the literature, only one study integrated all the conceptual domains related to the CCM interventions for the care of patients with heart failure. This probably reflects the difficulties in evaluating complex interventions but may also reflect the difficulties in implementing interventions simultaneously acting on different aspects of the health system, the community, the patient, and the professionals.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/healthcare11091227/s1>, Table S1: Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist; Table S2: Search strategy; Table S3: Description of studies included.

Author Contributions: Conceptualisation, P.G.R.; methodology, P.G.R. and C.P. (Cristina Pedroni); validation, O.D.; investigation, C.P. (Cristina Pedroni), O.D., M.C.B. and L.M.; data curation, C.P. (Cristina Pedroni); writing—original draft preparation, O.D. and C.P. (Cristina Pedroni); writing—review and editing, P.G.R., D.C., G.T., C.P. (Cesarina Prandi) and A.N.; visualisation, O.D.; supervision, P.G.R. and A.N.; funding acquisition, P.G.R. All authors have read and agreed to the published version of the manuscript.

Funding: The study has been partially funded by the Italian Ministry of Health Ricerca Corrente Annual Programme 2024 and partially supported by the Emilia-Romagna Regional Health Authority (DGR 839/2022).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: This is a scoping review of peer-reviewed scientific literature. Data used came from scientific manuscripts, which can be accessed online. All relevant information is included in the manuscript.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. van Riet, E.E.S.; Hoes, A.W.; Limburg, A.; Landman, M.A.J.; van der Hoeven, H.; Rutten, F.H. Prevalence of Unrecognized Heart Failure in Older Persons with Shortness of Breath on Exertion. *Eur. J. Heart Fail.* **2014**, *16*, 772–777. [\[CrossRef\]](#) [\[PubMed\]](#)
2. Mosterd, A.; Hoes, A.W. Clinical Epidemiology of Heart Failure. *Heart* **2007**, *93*, 1137–1146. [\[CrossRef\]](#)
3. Ceia, F.; Fonseca, C.; Mota, T.; Morais, H.; Matias, F.; de Sousa, A.; Oliveira, A.G.; on behalf of the EPICA Investigators. Prevalence of Chronic Heart Failure in Southwestern Europe: The EPICA Study. *Eur. J. Heart Fail.* **2002**, *4*, 531–539. [\[CrossRef\]](#)
4. van Riet, E.E.S.; Hoes, A.W.; Wagenaar, K.P.; Limburg, A.; Landman, M.A.J.; Rutten, F.H. Epidemiology of Heart Failure: The Prevalence of Heart Failure and Ventricular Dysfunction in Older Adults over Time. A Systematic Review. *Eur. J. Heart Fail.* **2016**, *18*, 242–252. [\[CrossRef\]](#)
5. Emmons-Bell, S.; Johnson, C.; Roth, G. Prevalence, Incidence and Survival of Heart Failure: A Systematic Review. *Heart* **2022**, *108*, 1351–1360. [\[CrossRef\]](#)
6. Groenewegen, A.; Rutten, F.H.; Mosterd, A.; Hoes, A.W. Epidemiology of Heart Failure. *Eur. J. Heart Fail.* **2020**, *22*, 1342–1356. [\[CrossRef\]](#)
7. Conrad, N.; Judge, A.; Tran, J.; Mohseni, H.; Hedgecott, D.; Crespillo, A.P.; Allison, M.; Hemingway, H.; Cleland, J.G.; McMurray, J.J.V.; et al. Temporal Trends and Patterns in Heart Failure Incidence: A Population-Based Study of 4 Million Individuals. *Lancet* **2018**, *391*, 572–580. [\[CrossRef\]](#) [\[PubMed\]](#)
8. Savarese, G.; Lund, L.H. Global Public Health Burden of Heart Failure. *Card. Fail. Rev.* **2017**, *3*, 7–11. [\[CrossRef\]](#)
9. Bodenheimer, T.; Wagner, E.H.; Grumbach, K. Improving Primary Care for Patients with Chronic Illness. *JAMA* **2002**, *288*, 1775–1779. [\[CrossRef\]](#) [\[PubMed\]](#)
10. HRSA Health Resources and Services Administration Chronic Care Model. Available online: <https://www.hrsa.gov/behavioral-health/chronic-care-model> (accessed on 18 January 2023).

11. Baptista, D.R.; Wiens, A.; Pontarolo, R.; Regis, L.; Reis, W.C.T.; Correr, C.J. The Chronic Care Model for Type 2 Diabetes: A Systematic Review. *Diabetol. Metab. Syndr.* **2016**, *8*, 7. [\[CrossRef\]](#)
12. Davy, C.; Bleasel, J.; Liu, H.; Tchan, M.; Ponniah, S.; Brown, A. Effectiveness of Chronic Care Models: Opportunities for Improving Healthcare Practice and Health Outcomes: A Systematic Review. *BMC Health Serv. Res.* **2015**, *15*, 194. [\[CrossRef\]](#) [\[PubMed\]](#)
13. Stellefson, M.; Dipnarine, K.; Stopka, C. The Chronic Care Model and Diabetes Management in US Primary Care Settings: A Systematic Review. *Prev. Chronic Dis.* **2013**, *10*, E26. [\[CrossRef\]](#)
14. Yeoh, E.K.; Wong, M.C.S.; Wong, E.L.Y.; Yam, C.; Poon, C.M.; Chung, R.Y.; Chong, M.; Fang, Y.; Wang, H.H.X.; Liang, M.; et al. Benefits and Limitations of Implementing Chronic Care Model (CCM) in Primary Care Programs: A Systematic Review. *Int. J. Cardiol.* **2018**, *258*, 279–288. [\[CrossRef\]](#)
15. Clark, A.M.; Wiens, K.S.; Banner, D.; Kryworuchko, J.; Thirsk, L.; McLean, L.; Currie, K. A Systematic Review of the Main Mechanisms of Heart Failure Disease Management Interventions. *Heart* **2016**, *102*, 707–711. [\[CrossRef\]](#) [\[PubMed\]](#)
16. Feltner, C.; Jones, C.D.; Cené, C.W.; Zheng, Z.-J.; Sueta, C.A.; Coker-Schwimmer, E.J.L.; Arvanitis, M.; Lohr, K.N.; Middleton, J.C.; Jonas, D.E. Transitional Care Interventions to Prevent Readmissions for Persons with Heart Failure: A Systematic Review and Meta-Analysis. *Ann. Intern. Med.* **2014**, *160*, 774. [\[CrossRef\]](#) [\[PubMed\]](#)
17. Gorthi, J.; Hunter, C.B.; Mooss, A.N.; Alla, V.M.; Hilleman, D.E. Reducing Heart Failure Hospital Readmissions: A Systematic Review of Disease Management Programs. *Cardiol. Res.* **2014**, *5*, 126–138. [\[CrossRef\]](#) [\[PubMed\]](#)
18. Jensen, L.; Troster, S.M.; Cai, K.; Shack, A.; Chang, Y.-J.R.; Wang, D.; Kim, J.S.; Turial, D.; Bierman, A.S. Improving Heart Failure Outcomes in Ambulatory and Community Care: A Scoping Study. *Med. Care Res. Rev.* **2017**, *74*, 551–581. [\[CrossRef\]](#)
19. Rice, H.; Say, R.; Betihavas, V. The Effect of Nurse-Led Education on Hospitalisation, Readmission, Quality of Life and Cost in Adults with Heart Failure. A Systematic Review. *Patient Educ. Couns.* **2018**, *101*, 363–374. [\[CrossRef\]](#)
20. Takeda, A.; Martin, N.; Taylor, R.S.; Taylor, S.J. Disease Management Interventions for Heart Failure. *Cochrane Database Syst. Rev.* **2019**, *2019*, CD002752. [\[CrossRef\]](#)
21. Van Spall, H.G.C.; Rahman, T.; Mytton, O.; Ramasundarahettige, C.; Ibrahim, Q.; Kabali, C.; Coppens, M.; Brian Haynes, R.; Connolly, S. Comparative Effectiveness of Transitional Care Services in Patients Discharged from the Hospital with Heart Failure: A Systematic Review and Network Meta-Analysis: Comparative Effectiveness of Transitional Care Services in Patients Hospitalized with Heart Failure. *Eur. J. Heart Fail.* **2017**, *19*, 1427–1443. [\[CrossRef\]](#)
22. Ghizzardi, G.; Arrigoni, C.; Dellafiore, F.; Vellone, E.; Caruso, R. Efficacy of Motivational Interviewing on Enhancing Self-Care Behaviors among Patients with Chronic Heart Failure: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. *Heart Fail. Rev.* **2022**, *27*, 1029–1041. [\[CrossRef\]](#)
23. Kadu, M.K.; Stolee, P. Facilitators and Barriers of Implementing the Chronic Care Model in Primary Care: A Systematic Review. *BMC Fam. Pract.* **2015**, *16*, 12. [\[CrossRef\]](#)
24. Tricco, A.C.; Lillie, E.; Zarin, W.; O'Brien, K.K.; Colquhoun, H.; Levac, D.; Moher, D.; Peters, M.D.J.; Horsley, T.; Weeks, L.; et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann. Intern. Med.* **2018**, *169*, 467–473. [\[CrossRef\]](#) [\[PubMed\]](#)
25. Wagner, E.H. Chronic Disease Management: What Will It Take to Improve Care for Chronic Illness? *Eff. Clin. Pract.* **1998**, *1*, 2–4. [\[PubMed\]](#)
26. Bonomi, A.E.; Wagner, E.H.; Glasgow, R.E.; VonKorff, M. Assessment of Chronic Illness Care (ACIC): A Practical Tool to Measure Quality Improvement. *Health Serv. Res.* **2002**, *37*, 791–820. [\[CrossRef\]](#)
27. Sendall, M.; McCosker, L.; Crossley, K.; Bonner, A. A Structured Review of Chronic Care Model Components Supporting Transition between Healthcare Service Delivery Types for Older People with Multiple Chronic Diseases. *Health Inf. Manag.* **2017**, *46*, 58–68. [\[CrossRef\]](#)
28. Si, D.; Bailie, R.; Weeramanthri, T. *Effectiveness of Chronic Care Model-Oriented Interventions to Improve Quality of Diabetes Care: A Systematic Review*; Centre for Reviews and Dissemination: York, UK, 2008.
29. McDonagh, T.A.; Metra, M.; Adamo, M.; Gardner, R.S.; Baumbach, A.; Böhm, M.; Burri, H.; Butler, J.; Čelutkienė, J.; Chioncel, O.; et al. 2021 ESC Guidelines for the Diagnosis and Treatment of Acute and Chronic Heart Failure. *Eur. Heart J.* **2021**, *42*, 3599–3726. [\[CrossRef\]](#) [\[PubMed\]](#)
30. Abraham, W.T.; Adamson, P.B.; Bourge, R.C.; Aaron, M.F.; Costanzo, M.R.; Stevenson, L.W.; Strickland, W.; Neelagaru, S.; Raval, N.; Krueger, S.; et al. Wireless Pulmonary Artery Haemodynamic Monitoring in Chronic Heart Failure: A Randomised Controlled Trial. *Lancet* **2011**, *377*, 658–666. [\[CrossRef\]](#)
31. Adamson, P.B.; Gold, M.R.; Bennett, T.; Bourge, R.C.; Stevenson, L.W.; Trupp, R.; Stromberg, K.; Wilkoff, B.L.; Costanzo, M.R.; Luby, A.; et al. Continuous Hemodynamic Monitoring in Patients with Mild to Moderate Heart Failure: Results of The Reducing Decompensation Events Utilizing Intracardiac Pressures in Patients with Chronic Heart Failure (REDUCEhf) Trial. *Congest. Heart Fail.* **2011**, *17*, 248–254. [\[CrossRef\]](#)
32. Adlbrecht, C.; Huelsmann, M.; Berger, R.; Moertl, D.; Strunk, G.; Oesterle, A.; Ahmadi, R.; Szucs, T.; Pacher, R. Cost Analysis and Cost-Effectiveness of NT-ProBNP-Guided Heart Failure Specialist Care in Addition to Home-Based Nurse Care. *Eur. J. Clin. Investig.* **2011**, *41*, 315–322. [\[CrossRef\]](#)
33. Ågren, S.; Evangelista, L.S.; Hjelm, C.; Strömberg, A. Dyads Affected by Chronic Heart Failure: A Randomized Study Evaluating Effects of Education and Psychosocial Support to Patients with Heart Failure and Their Partners. *J. Card. Fail.* **2012**, *18*, 359–366. [\[CrossRef\]](#) [\[PubMed\]](#)

34. Ågren, S.; Evangelista, L.S.; Davidson, T.; Strömberg, A. Cost-Effectiveness of a Nurse-Led Education and Psychosocial Programme for Patients with Chronic Heart Failure and Their Partners. *J. Clin. Nurs.* **2013**, *22*, 2347–2353. [\[CrossRef\]](#) [\[PubMed\]](#)
35. Agrinier, N.; Altieri, C.; Alla, F.; Jay, N.; Dobre, D.; Thilly, N.; Zannad, F. Effectiveness of a Multidimensional Home Nurse Led Heart Failure Disease Management Program—a French Nationwide Time-Series Comparison. *Int. J. Cardiol.* **2013**, *168*, 3652–3658. [\[CrossRef\]](#) [\[PubMed\]](#)
36. Aguado, O.; Morcillo, C.; Delàs, J.; Rennie, M.; Bechich, S.; Schembari, A.; Fernández, F.; Rosell, F. Long-Term Implications of a Single Home-Based Educational Intervention in Patients with Heart Failure. *Heart Lung* **2010**, *39*, S14–S22. [\[CrossRef\]](#)
37. Agvall, B.; Alehagen, U.; Dahlström, U. The Benefits of Using a Heart Failure Management Programme in Swedish Primary Healthcare. *Eur. J. Heart Fail.* **2013**, *15*, 228–236. [\[CrossRef\]](#)
38. Albert, N.M.; Buchsbaum, R.; Li, J. Randomized Study of the Effect of Video Education on Heart Failure Healthcare Utilization, Symptoms, and Self-Care Behaviors. *Patient Educ. Couns.* **2007**, *69*, 129–139. [\[CrossRef\]](#)
39. Aldamiz-Echevarría Iraúgui, B.; Muñoz, J.; Rodríguez-Fernández, J.A.; Vidán-Martínez, L.; Silva-César, M.; Lamelo-Alfonsín, F.; Díaz-Díaz, J.L.; Ramos-Polledo, V.; Castro-Beiras, A. Randomized controlled clinical trial of a home care unit intervention to reduce readmission and death rates in patients discharged from hospital following admission for heart failure. *Rev. Esp. Cardiol.* **2007**, *60*, 914–922. [\[CrossRef\]](#)
40. Angermann, C.E.; Störk, S.; Gelbrich, G.; Faller, H.; Jahns, R.; Frantz, S.; Loeffler, M.; Ertl, G. Competence Network Heart Failure Mode of Action and Effects of Standardized Collaborative Disease Management on Mortality and Morbidity in Patients with Systolic Heart Failure: The Interdisciplinary Network for Heart Failure (INH) Study. *Circ. Heart Fail.* **2012**, *5*, 25–35. [\[CrossRef\]](#)
41. Antonicelli, R.; Testarmata, P.; Spazzafumo, L.; Gagliardi, C.; Bilo, G.; Valentini, M.; Olivieri, F.; Parati, G. Impact of Telemonitoring at Home on the Management of Elderly Patients with Congestive Heart Failure. *J. Telemed. Telecare* **2008**, *14*, 300–305. [\[CrossRef\]](#)
42. Artinian, N.T.; Harden, J.K.; Kronenberg, M.W.; Vander Wal, J.S.; Daher, E.; Stephens, Q.; Bazzi, R.I. Pilot Study of a Web-Based Compliance Monitoring Device for Patients with Congestive Heart Failure. *Heart Lung* **2003**, *32*, 226–233. [\[CrossRef\]](#)
43. Atienza, F.; Anguita, M.; Martínez-Alzamora, N.; Osca, J.; Ojeda, S.; Almenar, L.; Ridocci, F.; Vallés, F.; de Velasco, J.A. PRICE Study Group Multicenter Randomized Trial of a Comprehensive Hospital Discharge and Outpatient Heart Failure Management Program. *Eur. J. Heart Fail.* **2004**, *6*, 643–652. [\[CrossRef\]](#) [\[PubMed\]](#)
44. Austin, J.; Williams, R.; Ross, L.; Moseley, L.; Hutchison, S. Randomised Controlled Trial of Cardiac Rehabilitation in Elderly Patients with Heart Failure. *Eur. J. Heart Fail.* **2005**, *7*, 411–417. [\[CrossRef\]](#) [\[PubMed\]](#)
45. Baker, D.W.; DeWalt, D.A.; Schillinger, D.; Hawk, V.; Ruo, B.; Bibbins-Domingo, K.; Weinberger, M.; Macabasco-O’Connell, A.; Grady, K.L.; Holmes, G.M.; et al. The Effect of Progressive, Reinforcing Telephone Education and Counseling Versus Brief Educational Intervention on Knowledge, Self-Care Behaviors and Heart Failure Symptoms. *J. Card. Fail.* **2011**, *17*, 789–796. [\[CrossRef\]](#) [\[PubMed\]](#)
46. Balk, A.H.; Davidse, W.; van Dommelen, P.; Klaassen, E.; Caliskan, K.; van der Burgh, P.; Leenders, C.M. Tele-Guidance of Chronic Heart Failure Patients Enhances Knowledge about the Disease. A Multi-Centre, Randomised Controlled Study. *Eur. J. Heart Fail.* **2008**, *10*, 1136–1142. [\[CrossRef\]](#)
47. Barnason, S.; Zimmerman, L.; Nieveen, J.; Schmaderer, M.; Carranza, B.; Reilly, S. Impact of a Home Communication Intervention for Coronary Artery Bypass Graft Patients with Ischemic Heart Failure on Self-Efficacy, Coronary Disease Risk Factor Modification, and Functioning. *Heart Lung* **2003**, *32*, 147–158. [\[CrossRef\]](#)
48. Bekelman, D.B.; Plomondon, M.E.; Carey, E.P.; Sullivan, M.D.; Nelson, K.M.; Hattler, B.; McBryde, C.F.; Lehmann, K.G.; Gianola, K.; Heidenreich, P.A.; et al. Primary Results of the Patient-Centered Disease Management (PCDM) for Heart Failure Study: A Randomized Clinical Trial. *JAMA Intern. Med.* **2015**, *175*, 725–732. [\[CrossRef\]](#)
49. Benatar, D.; Bondmass, M.; Ghitelman, J.; Avitall, B. Outcomes of Chronic Heart Failure. *Arch. Intern. Med.* **2003**, *163*, 347–352. [\[CrossRef\]](#)
50. Berger, R.; Moertl, D.; Peter, S.; Ahmadi, R.; Huelsmann, M.; Yamuti, S.; Wagner, B.; Pacher, R. N-Terminal pro-B-Type Natriuretic Peptide-Guided, Intensive Patient Management in Addition to Multidisciplinary Care in Chronic Heart Failure a 3-Arm, Prospective, Randomized Pilot Study. *J. Am. Coll. Cardiol.* **2010**, *55*, 645–653. [\[CrossRef\]](#)
51. Bernocchi, P.; Scalvini, S.; Galli, T.; Paneroni, M.; Baratti, D.; Turla, O.; La Rovere, M.T.; Volterrani, M.; Vitacca, M. A Multidisciplinary Telehealth Program in Patients with Combined Chronic Obstructive Pulmonary Disease and Chronic Heart Failure: Study Protocol for a Randomized Controlled Trial. *Trials* **2016**, *17*, 462. [\[CrossRef\]](#)
52. Bernocchi, P.; Vitacca, M.; La Rovere, M.T.; Volterrani, M.; Galli, T.; Baratti, D.; Paneroni, M.; Campolongo, G.; Sposato, B.; Scalvini, S. Home-Based Telerehabilitation in Older Patients with Chronic Obstructive Pulmonary Disease and Heart Failure: A Randomised Controlled Trial. *Age Ageing* **2018**, *47*, 82–88. [\[CrossRef\]](#) [\[PubMed\]](#)
53. Black, J.T.; Romano, P.S.; Sadeghi, B.; Auerbach, A.D.; Ganiats, T.G.; Greenfield, S.; Kaplan, S.H.; Ong, M.K. BEAT-HF Research Group A Remote Monitoring and Telephone Nurse Coaching Intervention to Reduce Readmissions among Patients with Heart Failure: Study Protocol for the Better Effectiveness after Transition—Heart Failure (BEAT-HF) Randomized Controlled Trial. *Trials* **2014**, *15*, 124. [\[CrossRef\]](#) [\[PubMed\]](#)
54. Blue, L.; Lang, E.; McMurray, J.J.; Davie, A.P.; McDonagh, T.A.; Murdoch, D.R.; Petrie, M.C.; Connolly, E.; Norrie, J.; Round, C.E.; et al. Randomised Controlled Trial of Specialist Nurse Intervention in Heart Failure. *BMJ* **2001**, *323*, 715–718. [\[CrossRef\]](#) [\[PubMed\]](#)

55. Bourge, R.C.; Abraham, W.T.; Adamson, P.B.; Aaron, M.F.; Aranda, J.M.; Magalski, A.; Zile, M.R.; Smith, A.L.; Smart, F.W.; O'Shaughnessy, M.A.; et al. Randomized Controlled Trial of an Implantable Continuous Hemodynamic Monitor in Patients with Advanced Heart Failure: The COMPASS-HF Study. *J. Am. Coll. Cardiol.* **2008**, *51*, 1073–1079. [\[CrossRef\]](#)
56. Brandon, A.F.; Schuessler, J.B.; Ellison, K.J.; Lazenby, R.B. The Effects of an Advanced Practice Nurse Led Telephone Intervention on Outcomes of Patients with Heart Failure. *Appl. Nurs. Res.* **2009**, *22*, e1–e7. [\[CrossRef\]](#) [\[PubMed\]](#)
57. Brennan, P.F.; Casper, G.R.; Burke, L.J.; Johnson, K.A.; Brown, R.; Valdez, R.S.; Sebern, M.; Perez, O.A.; Sturgeon, B. Technology-Enhanced Practice for Patients with Chronic Cardiac Disease: Home Implementation and Evaluation. *Heart Lung* **2010**, *39*, S34–S46. [\[CrossRef\]](#) [\[PubMed\]](#)
58. Brotons, C.; Falces, C.; Alegre, J.; Ballarín, E.; Casanovas, J.; Catà, T.; Martínez, M.; Moral, I.; Ortiz, J.; Pérez, E.; et al. Randomized Clinical Trial of the Effectiveness of a Home-Based Intervention in Patients with Heart Failure: The IC-DOM Study. *Rev. Española Cardiol.* **2009**, *62*, 400–408. [\[CrossRef\]](#)
59. Capomolla, S.; Febo, O.; Ceresa, M.; Caporotondi, A.; Guazzotti, G.; La Rovere, M.; Ferrari, M.; Lenta, F.; Baldin, S.; Vaccarini, C.; et al. Cost/Utility Ratio in Chronic Heart Failure: Comparison between Heart Failure Management Program Delivered by Day-Hospital and Usual Care. *J. Am. Coll. Cardiol.* **2002**, *40*, 1259–1266. [\[CrossRef\]](#)
60. Çavuşoğlu, Y.; Zoghi, M.; Eren, M.; Bozçalı, E.; Kozdağ, G.; Şentürk, T.; Alicik, G.; Soylu, K.; Sarı, İ.; Berilgen, R.; et al. Post-Discharge Heart Failure Monitoring Program in Turkey: Hit-PoinT. *Anatol. J. Cardiol.* **2017**, *17*, 107–112. [\[CrossRef\]](#)
61. Chaudhry, S.I.; Mattera, J.A.; Curtis, J.P.; Spertus, J.A.; Herrin, J.; Lin, Z.; Phillips, C.O.; Hodshon, B.V.; Cooper, L.S.; Krumholz, H.M. Telemonitoring in Patients with Heart Failure. *N. Engl. J. Med.* **2010**, *363*, 2301–2309. [\[CrossRef\]](#)
62. Chen, Y.; Funk, M.; Wen, J.; Tang, X.; He, G.; Liu, H. Effectiveness of a Multidisciplinary Disease Management Program on Outcomes in Patients with Heart Failure in China: A Randomized Controlled Single Center Study. *Heart Lung* **2018**, *47*, 24–31. [\[CrossRef\]](#)
63. Clark, A.P.; McDougall, G.; Riegel, B.; Joiner-Rogers, G.; Innerarity, S.; Meraviglia, M.; Delville, C.; Davila, A. Health Status and Self-Care Outcomes after an Education-Support Intervention for People with Chronic Heart Failure. *J. Cardiovasc. Nurs.* **2015**, *30*, S3–S13. [\[CrossRef\]](#)
64. Cleland, J.G.F.; Louis, A.A.; Rigby, A.S.; Janssens, U.; Balk, A.H.M.M. TEN-HMS Investigators Noninvasive Home Telemonitoring for Patients with Heart Failure at High Risk of Recurrent Admission and Death: The Trans-European Network-Home-Care Management System (TEN-HMS) Study. *J. Am. Coll. Cardiol.* **2005**, *45*, 1654–1664. [\[CrossRef\]](#)
65. Cline, C.M.; Israelsson, B.Y.; Willenheimer, R.B.; Broms, K.; Erhardt, L.R. Cost Effective Management Programme for Heart Failure Reduces Hospitalisation. *Heart* **1998**, *80*, 442–446. [\[CrossRef\]](#) [\[PubMed\]](#)
66. Crossley, G.H.; Boyle, A.; Vitense, H.; Chang, Y.; Mead, R.H. CONNECT Investigators The CONNECT (Clinical Evaluation of Remote Notification to Reduce Time to Clinical Decision) Trial: The Value of Wireless Remote Monitoring with Automatic Clinician Alerts. *J. Am. Coll. Cardiol.* **2011**, *57*, 1181–1189. [\[CrossRef\]](#)
67. da Cruz, F.D.; Issa, V.S.; Ayub-Ferreira, S.M.; Chizzola, P.R.; Souza, G.E.C.; Moreira, L.F.P.; Lanz-Luces, J.R.; Bocchi, E.A. Effect of a Sequential Education and Monitoring Programme on Quality-of-Life Components in Heart Failure. *Eur. J. Heart Fail.* **2010**, *12*, 1009–1015. [\[CrossRef\]](#) [\[PubMed\]](#)
68. Dansky, K.H.; Vasey, J.; Bowles, K. Use of Telehealth by Older Adults to Manage Heart Failure. *Res. Gerontol. Nurs.* **2008**, *1*, 25–32. [\[CrossRef\]](#) [\[PubMed\]](#)
69. Dansky, K.; Vasey, J. Managing Heart Failure Patients after Formal Homecare. *Telemed. E-Health* **2009**, *15*, 983–991. [\[CrossRef\]](#)
70. Dar, O.; Riley, J.; Chapman, C.; Dubrey, S.W.; Morris, S.; Rosen, S.D.; Roughton, M.; Cowie, M.R. A Randomized Trial of Home Telemonitoring in a Typical Elderly Heart Failure Population in North West London: Results of the Home-HF Study. *Eur. J. Heart Fail.* **2009**, *11*, 319–325. [\[CrossRef\]](#)
71. Davis, K.K.; Mintzer, M.; Dennison Himmelfarb, C.R.; Hayat, M.J.; Rotman, S.; Allen, J. Targeted Intervention Improves Knowledge but Not Self-Care or Readmissions in Heart Failure Patients with Mild Cognitive Impairment. *Eur. J. Heart Fail.* **2012**, *14*, 1041–1049. [\[CrossRef\]](#)
72. de la Porte, P.W.F.B.-A.; Lok, D.J.A.; van Veldhuisen, D.J.; van Wijngaarden, J.; Cornel, J.H.; Zuithoff, N.P.A.; Badings, E.; Hoes, A.W. Added Value of a Physician-and-Nurse-Directed Heart Failure Clinic: Results from the Deventer-Alkmaar Heart Failure Study. *Heart* **2007**, *93*, 819–825. [\[CrossRef\]](#)
73. de Souza, E.N.; Rohde, L.E.; Ruschel, K.B.; Mussi, C.M.; Beck-da-Silva, L.; Biolo, A.; Clausell, N.; Rabelo-Silva, E.R. A Nurse-Based Strategy Reduces Heart Failure Morbidity in Patients Admitted for Acute Decompensated Heart Failure in Brazil: The HELEN-II Clinical Trial. *Eur. J. Heart Fail.* **2014**, *16*, 1002–1008. [\[CrossRef\]](#)
74. DeBusk, R.F.; Miller, N.H.; Parker, K.M.; Bandura, A.; Kraemer, H.C.; Cher, D.J.; West, J.A.; Fowler, M.B.; Greenwald, G. Care Management for Low-Risk Patients with Heart Failure: A Randomized, Controlled Trial. *Ann. Intern. Med.* **2004**, *141*, 606–613. [\[CrossRef\]](#) [\[PubMed\]](#)
75. Del Sindaco, D.; Pulignano, G.; Minardi, G.; Apostoli, A.; Guerrieri, L.; Rotoloni, M.; Petri, G.; Fabrizzi, L.; Caroselli, A.; Venusti, R.; et al. Two-Year Outcome of a Prospective, Controlled Study of a Disease Management Programme for Elderly Patients with Heart Failure. *J. Cardiovasc. Med.* **2007**, *8*, 324–329. [\[CrossRef\]](#) [\[PubMed\]](#)

76. Dendale, P.; De Keulenaer, G.; Troisfontaines, P.; Weytjens, C.; Mullens, W.; Elegeert, I.; Ector, B.; Houbrechts, M.; Willekens, K.; Hansen, D. Effect of a Telemonitoring-Facilitated Collaboration between General Practitioner and Heart Failure Clinic on Mortality and Rehospitalization Rates in Severe Heart Failure: The TEMA-HF 1 (Telemonitoring in the Management of Heart Failure) Study. *Eur. J. Heart Fail.* **2012**, *14*, 333–340. [[CrossRef](#)] [[PubMed](#)]
77. DeWalt, D.A.; Malone, R.M.; Bryant, M.E.; Kosnar, M.C.; Corr, K.E.; Rothman, R.L.; Sueta, C.A.; Pignone, M.P. A Heart Failure Self-Management Program for Patients of All Literacy Levels: A Randomized, Controlled Trial [ISRCTN11535170]. *BMC Health Serv. Res.* **2006**, *6*, 30. [[CrossRef](#)]
78. DeWalt, D.A.; Schillinger, D.; Ruo, B.; Bibbins-Domingo, K.; Baker, D.W.; Holmes, G.M.; Weinberger, M.; Macabasco-O’Connell, A.; Brouckson, K.; Hawk, V.; et al. Multisite Randomized Trial of a Single-Session Versus Multisession Literacy-Sensitive Self-Care Intervention for Patients with Heart Failure. *Circulation* **2012**, *125*, 2854–2862. [[CrossRef](#)]
79. Domingo, M.; Lupón, J.; González, B.; Crespo, E.; López, R.; Ramos, A.; Urrutia, A.; Pera, G.; Verdú, J.M.; Bayes-Genis, A. Evaluation of a Telemedicine System for Heart Failure Patients: Feasibility, Acceptance Rate, Satisfaction and Changes in Patient Behavior: Results from the CARME (Catalan Remote Management Evaluation) Study. *Eur. J. Cardiovasc. Nurs.* **2012**, *11*, 410–418. [[CrossRef](#)]
80. Domingues, F.B.; Clausell, N.; Aliti, G.B.; Dominguez, D.R.; Rabelo, E.R. Education and Telephone Monitoring by Nurses of Patients with Heart Failure: Randomized Clinical Trial. *Arq. Bras. Cardiol.* **2011**, *96*, 233–239. [[CrossRef](#)]
81. Doughty, R.N.; Wright, S.P.; Pearl, A.; Walsh, H.J.; Muncaster, S.; Whalley, G.A.; Gamble, G.; Sharpe, N. Randomized, Controlled Trial of Integrated Heart Failure Management: The Auckland Heart Failure Management Study. *Eur. Heart J.* **2002**, *23*, 139–146. [[CrossRef](#)]
82. Ducharme, A.; Doyon, O.; White, M.; Rouleau, J.L.; Brophy, J.M. Impact of Care at a Multidisciplinary Congestive Heart Failure Clinic: A Randomized Trial. *CMAJ* **2005**, *173*, 40–45. [[CrossRef](#)]
83. Duffy, J.R.; Hoskins, L.M.; Dudley-Brown, S. Improving Outcomes for Older Adults with Heart Failure: A Randomized Trial Using a Theory-Guided Nursing Intervention. *J. Nurs. Care Qual.* **2010**, *25*, 56–64. [[CrossRef](#)] [[PubMed](#)]
84. Dunbar, S.B.; Reilly, C.M.; Gary, R.; Higgins, M.K.; Culler, S.; Butts, B.; Butler, J. Randomized Clinical Trial of an Integrated Self-Care Intervention for Persons with Heart Failure and Diabetes: Quality of Life and Physical Functioning Outcomes. *J. Card. Fail.* **2015**, *21*, 719–729. [[CrossRef](#)] [[PubMed](#)]
85. Ekman, I.; Andersson, B.; Ehnfors, M.; Matejka, G.; Persson, B.; Fagerberg, B. Feasibility of a Nurse-Monitored, Outpatient-Care Programme for Elderly Patients with Moderate-to-Severe, Chronic Heart Failure. *Eur. Heart J.* **1998**, *19*, 1254–1260. [[CrossRef](#)] [[PubMed](#)]
86. Eyre, V.; Lang, C.C.; Smith, K.; Jolly, K.; Davis, R.; Hayward, C.; Wingham, J.; Abraham, C.; Green, C.; Warren, F.C.; et al. Rehabilitation Enablement in Chronic Heart Failure—a Facilitated Self-Care Rehabilitation Intervention in Patients with Heart Failure with Preserved Ejection Fraction (REACH-HFpEF) and Their Caregivers: Rationale and Protocol for a Single-Centre Pilot Randomised Controlled Trial. *BMJ Open* **2016**, *6*, e012853. [[CrossRef](#)]
87. Feldman, P.H.; Murtaugh, C.M.; Pezzin, L.E.; McDonald, M.V.; Peng, T.R. Just-in-Time Evidence-Based e-Mail “Reminders” in Home Health Care: Impact on Patient Outcomes. *Health Serv. Res.* **2005**, *40*, 865–885. [[CrossRef](#)]
88. Feldman, P.H.; Peng, T.R.; Murtaugh, C.M.; Kelleher, C.; Donelson, S.M.; McCann, M.E.; Putnam, M.E. A Randomized Intervention to Improve Heart Failure Outcomes in Community-Based Home Health Care. *Home Health Care Serv. Q.* **2004**, *23*, 1–23. [[CrossRef](#)]
89. Ferrante, D.; Varini, S.; Macchia, A.; Soifer, S.; Badra, R.; Nul, D.; Grancelli, H.; Doval, H. Long-Term Results after a Telephone Intervention in Chronic Heart Failure: DIAL (Randomized Trial of Phone Intervention in Chronic Heart Failure) Follow-Up. *J. Am. Coll. Cardiol.* **2010**, *56*, 372–378. [[CrossRef](#)]
90. Finkelstein, J.; Dennison, C.R. A Pilot Study of Home Automated Telemanagement (HAT) System in African Americans with Congestive Heart Failure. In Proceedings of the 2010 Second International Conference on eHealth, Telemedicine, and Social Medicine, Washington, DC, USA, 10–16 February 2010; IEEE: St. Maarten, Netherlands Antilles, 2010; pp. 90–94.
91. Flynn, K.J.; Powell, L.H.; Mendes de Leon, C.F.; Muñoz, R.; Eaton, C.B.; Downs, D.L.; Silver, M.A.; Calvin, J.E. Increasing Self-Management Skills in Heart Failure Patients: A Pilot Study. *Congest. Heart Fail.* **2005**, *11*, 297–302. [[CrossRef](#)]
92. Galbreath, A.D.; Krasuski, R.A.; Smith, B.; Stajduhar, K.C.; Kwan, M.D.; Ellis, R.; Freeman, G.L. Long-Term Healthcare and Cost Outcomes of Disease Management in a Large, Randomized, Community-Based Population with Heart Failure. *Circulation* **2004**, *110*, 3518–3526. [[CrossRef](#)]
93. Gattis, W.A.; Hasselblad, V.; Whellan, D.J.; O’Connor, C.M. Reduction in Heart Failure Events by the Addition of a Clinical Pharmacist to the Heart Failure Management Team: Results of the Pharmacist in Heart Failure Assessment Recommendation and Monitoring (PHARM) Study. *Arch. Intern. Med.* **1999**, *159*, 1939–1945. [[CrossRef](#)] [[PubMed](#)]
94. Giordano, A.; Scalvini, S.; Zanelli, E.; Corrà, U.; Longobardi, G.L.; Ricci, V.A.; Baiardi, P.; Glisenti, F. Multicenter Randomised Trial on Home-Based Telemanagement to Prevent Hospital Readmission of Patients with Chronic Heart Failure. *Int. J. Cardiol.* **2009**, *131*, 192–199. [[CrossRef](#)] [[PubMed](#)]
95. Goldberg, L.R.; Piette, J.D.; Walsh, M.N.; Frank, T.A.; Jaski, B.E.; Smith, A.L.; Rodriguez, R.; Mancini, D.M.; Hopton, L.A.; Orav, E.J.; et al. Randomized Trial of a Daily Electronic Home Monitoring System in Patients with Advanced Heart Failure: The Weight Monitoring in Heart Failure (WHARF) Trial. *Am. Heart J.* **2003**, *146*, 705–712. [[CrossRef](#)] [[PubMed](#)]
96. González, B.; Lupón, J.; Herreros, J.; Urrutia, A.; Altimir, S.; Coll, R.; Prats, M.; Valle, V. Patient’s Education by Nurse: What We Really Do Achieve? *Eur. J. Cardiovasc. Nurs.* **2005**, *4*, 107–111. [[CrossRef](#)]

97. González-Guerrero, J.L.; Alonso-Fernández, T.; García-Mayolín, N.; Gusi, N.; Ribera-Casado, J.M. Effect of A Follow-Up Program in Elderly Adults with Heart Failure with Cognitive Impairment after Hospital Discharge. *J. Am. Geriatr. Soc.* **2015**, *63*, 1950–1951. [\[CrossRef\]](#)
98. Gotsman, I.; Zwas, D.; Zemora, Z.; Jabara, R.; Admon, D.; Lotan, C.; Keren, A. Clinical Outcome of Patients with Chronic Heart Failure Followed in a Specialized Heart Failure Center. *Isr. Med. Assoc. J.* **2011**, *13*, 468–473. [\[PubMed\]](#)
99. Granger, B.B.; Sandelowski, M.; Tahshjain, H.; Swedberg, K.; Ekman, I. A Qualitative Descriptive Study of the Work of Adherence to a Chronic Heart Failure Regimen: Patient and Physician Perspectives. *J. Cardiovasc. Nurs.* **2009**, *24*, 308–315. [\[CrossRef\]](#)
100. Hanchett, E.; Torrens, P.R. A Public Health Home Nursing Program for Outpatients with Heart Diseases. *Public. Health Rep.* **1967**, *82*, 683–688. [\[CrossRef\]](#) [\[PubMed\]](#)
101. Harrison, M.B.; Browne, G.B.; Roberts, J.; Tugwell, P.; Gafni, A.; Graham, I.D. Quality of Life of Individuals with Heart Failure: A Randomized Trial of the Effectiveness of Two Models of Hospital-to-Home Transition. *Med. Care* **2002**, *40*, 271–282. [\[CrossRef\]](#) [\[PubMed\]](#)
102. Hebert, P.L.; Sisk, J.E.; Wang, J.J.; Tuzzio, L.; Casabianca, J.M.; Chassin, M.R.; Horowitz, C.; McLaughlin, M.A. Cost-Effectiveness of Nurse-Led Disease Management for Heart Failure in an Ethnically Diverse Urban Community. *Ann. Intern. Med.* **2008**, *149*, 540–548. [\[CrossRef\]](#)
103. Heisler, M.; Halasyamani, L.; Resnicow, K.; Neaton, M.; Shanahan, J.; Brown, S.; Piette, J.D. “I Am Not Alone”: The Feasibility and Acceptability of Interactive Voice Response-Facilitated Telephone Peer Support Among Older Adults with Heart Failure. *Congest. Heart Fail.* **2007**, *13*, 149–157. [\[CrossRef\]](#)
104. Hershberger, R.E.; Ni, H.; Nauman, D.J.; Burgess, D.; Toy, W.; Wise, K.; Dutton, D.; Crispell, K.; Vossler, M.; Everett, J. Prospective Evaluation of an Outpatient Heart Failure Management Program. *J. Card. Fail.* **2001**, *7*, 64–74. [\[CrossRef\]](#) [\[PubMed\]](#)
105. Holland, R.; Brooksby, I.; Lenaghan, E.; Ashton, K.; Hay, L.; Smith, R.; Shepstone, L.; Lipp, A.; Daly, C.; Howe, A.; et al. Effectiveness of Visits from Community Pharmacists for Patients with Heart Failure: HeartMed Randomised Controlled Trial. *BMJ* **2007**, *334*, 1098. [\[CrossRef\]](#) [\[PubMed\]](#)
106. Hui, E.; Yang, H.; Chan, L.S.; Or, K.; Lee, D.T.F.; Yu, C.M.; Woo, J. A Community Model of Group Rehabilitation for Older Patients with Chronic Heart Failure: A Pilot Study. *Disabil. Rehabil.* **2006**, *28*, 1491–1497. [\[CrossRef\]](#)
107. Inglis, S.C.; Pearson, S.; Treen, S.; Gallasch, T.; Horowitz, J.D.; Stewart, S. Extending the Horizon in Chronic Heart Failure: Effects of Multidisciplinary, Home-Based Intervention Relative to Usual Care. *Circulation* **2006**, *114*, 2466–2473. [\[CrossRef\]](#)
108. Jaarsma, T.; Halfens, R.; Huijter Abu-Saad, H.; Dracup, K.; Gorgels, T.; van Ree, J.; Stappers, J. Effects of Education and Support on Self-Care and Resource Utilization in Patients with Heart Failure. *Eur. Heart J.* **1999**, *20*, 673–682. [\[CrossRef\]](#) [\[PubMed\]](#)
109. Jaarsma, T.; Halfens, R.; Tan, F.; Abu-Saad, H.H.; Dracup, K.; Diederiks, J. Self-Care and Quality of Life in Patients with Advanced Heart Failure: The Effect of a Supportive Educational Intervention. *Heart Lung* **2000**, *29*, 319–330. [\[CrossRef\]](#)
110. Jaarsma, T.; Abu-Saad, H.H.; Dracup, K.; Halfens, R. Self-Care Behaviour of Patients with Heart Failure. *Scand. J. Caring Sci.* **2000**, *14*, 112–119. [\[CrossRef\]](#)
111. Jaarsma, T.; Van Der Wal, M.H.L.; Hogenhuis, J.; Lesman, I.; Luttik, M.-L.A.; Veeger, N.J.G.M.; Van Veldhuisen, D.J. Design and Methodology of the COACH Study: A Multicenter Randomised Coordinating Study Evaluating Outcomes of Advising and Counselling in Heart Failure. *Eur. J. Heart Fail.* **2004**, *6*, 227–233. [\[CrossRef\]](#)
112. Jaarsma, T.; van der Wal, M.H.L.; Lesman-Leegte, I.; Luttik, M.-L.; Hogenhuis, J.; Veeger, N.J.; Sanderma, R.; Hoes, A.W.; van Gilst, W.H.; Lok, D.J.A.; et al. Effect of Moderate or Intensive Disease Management Program on Outcome in Patients with Heart Failure: Coordinating Study Evaluating Outcomes of Advising and Counseling in Heart Failure (COACH). *Arch. Intern. Med.* **2008**, *168*, 316–324. [\[CrossRef\]](#)
113. Jerant, A.F.; Azari, R.; Martinez, C.; Nesbitt, T.S. A Randomized Trial of Telenursing to Reduce Hospitalization for Heart Failure: Patient-Centered Outcomes and Nursing Indicators. *Home Health Care Serv. Q.* **2003**, *22*, 1–20. [\[CrossRef\]](#)
114. Jerant, A.F.; von Friederichs-Fitzwater, M.M.; Moore, M. Patients’ Perceived Barriers to Active Self-Management of Chronic Conditions. *Patient Educ. Couns.* **2005**, *57*, 300–307. [\[CrossRef\]](#)
115. Karlsson, M.R.; Edner, M.; Henriksson, P.; Mejhert, M.; Persson, H.; Grut, M.; Billing, E. A Nurse-Based Management Program in Heart Failure Patients Affects Females and Persons with Cognitive Dysfunction Most. *Patient Educ. Couns.* **2005**, *58*, 146–153. [\[CrossRef\]](#)
116. Kasper, E.K.; Gerstenblith, G.; Hefter, G.; Van Anden, E.; Brinker, J.A.; Thiemann, D.R.; Terrin, M.; Forman, S.; Gottlieb, S.H. A Randomized Trial of the Efficacy of Multidisciplinary Care in Heart Failure Outpatients at High Risk of Hospital Readmission. *J. Am. Coll. Cardiol.* **2002**, *39*, 471–480. [\[CrossRef\]](#)
117. Khunti, K.; Stone, M.; Paul, S.; Baines, J.; Gisborne, L.; Farooqi, A.; Luan, X.; Squire, I. Disease Management Programme for Secondary Prevention of Coronary Heart Disease and Heart Failure in Primary Care: A Cluster Randomised Controlled Trial. *Heart* **2007**, *93*, 1398–1405. [\[CrossRef\]](#) [\[PubMed\]](#)
118. Kimmelstiel, C.; Levine, D.; Perry, K.; Patel, A.R.; Sadaniantz, A.; Gorham, N.; Cunnie, M.; Duggan, L.; Cotter, L.; Shea-Albright, P.; et al. Randomized, Controlled Evaluation of Short- and Long-Term Benefits of Heart Failure Disease Management within a Diverse Provider Network: The SPAN-CHF Trial. *Circulation* **2004**, *110*, 1450–1455. [\[CrossRef\]](#) [\[PubMed\]](#)
119. Kline, K.S.; Scott, L.D.; Britton, A.S. The Use of Supportive-Educative and Mutual Goal-Setting Strategies to Improve Self-Management for Patients with Heart Failure. *Home Healthc. Nurse* **2007**, *25*, 502–510. [\[CrossRef\]](#)

120. Koehler, F.; Winkler, S.; Schieber, M.; Sechtem, U.; Stangl, K.; Böhm, M.; Boll, H.; Baumann, G.; Honold, M.; Koehler, K.; et al. Impact of Remote Telemedical Management on Mortality and Hospitalizations in Ambulatory Patients with Chronic Heart Failure: The Telemedical Interventional Monitoring in Heart Failure Study. *Circulation* **2011**, *123*, 1873–1880. [\[CrossRef\]](#)
121. Koelling, T.M.; Johnson, M.L.; Cody, R.J.; Aaronson, K.D. Discharge Education Improves Clinical Outcomes in Patients with Chronic Heart Failure. *Circulation* **2005**, *111*, 179–185. [\[CrossRef\]](#)
122. Kommuri, N.V.A.; Johnson, M.L.; Koelling, T.M. Relationship between Improvements in Heart Failure Patient Disease Specific Knowledge and Clinical Events as Part of a Randomized Controlled Trial. *Patient Educ. Couns.* **2012**, *86*, 233–238. [\[CrossRef\]](#) [\[PubMed\]](#)
123. Krumholz, H.M.; Amatruda, J.; Smith, G.L.; Mattera, J.A.; Roumanis, S.A.; Radford, M.J.; Crombie, P.; Vaccarino, V. Randomized Trial of an Education and Support Intervention to Prevent Readmission of Patients with Heart Failure. *J. Am. Coll. Cardiol.* **2002**, *39*, 83–89. [\[CrossRef\]](#)
124. Kwok, T.; Lee, J.; Woo, J.; Lee, D.T.; Griffith, S. A Randomized Controlled Trial of a Community Nurse-Supported Hospital Discharge Programme in Older Patients with Chronic Heart Failure. *J. Clin. Nurs.* **2008**, *17*, 109–117. [\[CrossRef\]](#)
125. LaFramboise, L.M.; Woster, J.; Yager, A.; Yates, B.C. A Technological Life Buoy: Patient Perceptions of the Health Buddy. *J. Cardiovasc. Nurs.* **2009**, *24*, 216–224. [\[CrossRef\]](#)
126. Lainscak, M. Implementation of Guidelines for Management of Heart Failure in Heart Failure Clinic: Effects beyond Pharmacological Treatment. *Int. J. Cardiol.* **2004**, *97*, 411–416. [\[CrossRef\]](#) [\[PubMed\]](#)
127. Landolina, M.; Perego, G.B.; Lunati, M.; Curnis, A.; Guenzati, G.; Vicentini, A.; Parati, G.; Borghi, G.; Zanaboni, P.; Valsecchi, S.; et al. Remote Monitoring Reduces Healthcare Use and Improves Quality of Care in Heart Failure Patients with Implantable Defibrillators: The Evolution of Management Strategies of Heart Failure Patients with Implantable Defibrillators (EVOLVO) Study. *Circulation* **2012**, *125*, 2985–2992. [\[CrossRef\]](#)
128. Lang, C.C.; Smith, K.; Wingham, J.; Eyre, V.; Greaves, C.J.; Warren, F.C.; Green, C.; Jolly, K.; Davis, R.C.; Doherty, P.J.; et al. A Randomised Controlled Trial of a Facilitated Home-Based Rehabilitation Intervention in Patients with Heart Failure with Preserved Ejection Fraction and Their Caregivers: The REACH-HFpEF Pilot Study. *BMJ Open* **2018**, *8*, e019649. [\[CrossRef\]](#)
129. Laramee, A.S.; Levinsky, S.K.; Sargent, J.; Ross, R.; Callas, P. Case Management in a Heterogeneous Congestive Heart Failure Population: A Randomized Controlled Trial. *Arch. Intern. Med.* **2003**, *163*, 809–817. [\[CrossRef\]](#)
130. Ledwidge, M.; Barry, M.; Cahill, J.; Ryan, E.; Maurer, B.; Ryder, M.; Travers, B.; Timmons, L.; McDonald, K. Is Multidisciplinary Care of Heart Failure Cost-Beneficial When Combined with Optimal Medical Care? *Eur. J. Heart Fail.* **2003**, *5*, 381–389. [\[CrossRef\]](#) [\[PubMed\]](#)
131. Leventhal, M.E.; Denhaerynck, K.; Brunner-La Rocca, H.-P.; Burnand, B.; Conca-Zeller, A.; Bernasconi, A.T.; Mahrer-Imhof, R.; Froelicher, E.S.; De Geest, S. Swiss Interdisciplinary Management Programme for Heart Failure (SWIM-HF): A Randomised Controlled Trial Study of an Outpatient Inter-Professional Management Programme for Heart Failure Patients in Switzerland. *Swiss Med. Wkly.* **2011**, *141*, w13171. [\[CrossRef\]](#)
132. Liljeroos, M.; Ågren, S.; Jaarsma, T.; Årestedt, K.; Strömberg, A. Long Term Follow-Up after a Randomized Integrated Educational and Psychosocial Intervention in Patient-Partner Dyads Affected by Heart Failure. *PLoS ONE* **2015**, *10*, e0138058. [\[CrossRef\]](#) [\[PubMed\]](#)
133. Linné, A.B.; Liedholm, H. Effects of an Interactive CD-Program on 6 Months Readmission Rate in Patients with Heart Failure—A Randomised, Controlled Trial [NCT00311194]. *BMC Cardiovasc. Disord.* **2006**, *6*, 30. [\[CrossRef\]](#)
134. Liu, M.-H.; Wang, C.-H.; Huang, Y.-Y.; Tung, T.-H.; Lee, C.-M.; Yang, N.-I.; Wang, J.-S.; Kuo, L.-T.; Cherng, W.-J. Edema Index-Guided Disease Management Improves 6-Month Outcomes of Patients with Acute Heart Failure. *Int. Heart J.* **2012**, *53*, 11–17. [\[CrossRef\]](#) [\[PubMed\]](#)
135. López Cabezas, C.; Falces Salvador, C.; Cubí Quadrada, D.; Arnau Bartés, A.; Ylla Boré, M.; Muro Perea, N.; Homs Peipoch, E. Randomized Clinical Trial of a Postdischarge Pharmaceutical Care Program vs Regular Follow-up in Patients with Heart Failure. *Farm. Hosp.* **2006**, *30*, 328–342. [\[CrossRef\]](#) [\[PubMed\]](#)
136. Lowery, J.; Hopp, F.; Subramanian, U.; Wiitala, W.; Welsh, D.E.; Larkin, A.; Stemmer, K.; Zak, C.; Vaitkevicius, P. Evaluation of a Nurse Practitioner Disease Management Model for Chronic Heart Failure: A Multi-Site Implementation Study. *Congest. Heart Fail.* **2012**, *18*, 64–71. [\[CrossRef\]](#) [\[PubMed\]](#)
137. Lupón, J.; González, B.; Mas, D.; Urrutia, A.; Arenas, M.; Domingo, M.; Altimir, S.; Valle, V. Patients' Self-Care Improvement with Nurse Education Intervention in Spain Assessed by the European Heart Failure Self-Care Behaviour Scale. *Eur. J. Cardiovasc. Nurs.* **2008**, *7*, 16–20. [\[CrossRef\]](#)
138. Mao, C.-T.; Liu, M.-H.; Hsu, K.-H.; Fu, T.-C.; Wang, J.-S.; Huang, Y.-Y.; Yang, N.-I.; Wang, C.-H. Effect of Multidisciplinary Disease Management for Hospitalized Heart Failure under a National Health Insurance Programme. *J. Cardiovasc. Med.* **2015**, *16*, 616–624. [\[CrossRef\]](#) [\[PubMed\]](#)
139. McCauley, K.M.; Bixby, M.B.; Naylor, M.D. Advanced Practice Nurse Strategies to Improve Outcomes and Reduce Cost in Elders with Heart Failure. *Dis. Manag.* **2006**, *9*, 302–310. [\[CrossRef\]](#)
140. McDonald, K.; Ledwidge, M.; Cahill, J.; Quigley, P.; Maurer, B.; Travers, B.; Ryder, M.; Kieran, E.; Timmons, L.; Ryan, E. Heart Failure Management: Multidisciplinary Care Has Intrinsic Benefit above the Optimization of Medical Care. *J. Card. Fail.* **2002**, *8*, 142–148. [\[CrossRef\]](#)

141. Mehralian, H.; Salehi, S.; Moghaddasi, J.; Amiri, M.; Rafiei, H. The Comparison of the Effects of Education Provided by Nurses on the Quality of Life in Patients with Congestive Heart Failure (CHF) in Usual and Home-Visit Cares in Iran. *Glob. J. Health Sci.* **2014**, *6*, 256–260. [\[CrossRef\]](#)
142. Mejhert, M.; Kahan, T.; Persson, H.; Edner, M. Limited Long Term Effects of a Management Programme for Heart Failure. *Heart* **2004**, *90*, 1010–1015. [\[CrossRef\]](#)
143. Miche, E.; Roelleke, E.; Zoller, B.; Wirtz, U.; Schneider, M.; Huerst, M.; Amelang, M.; Radzewitz, A. A Longitudinal Study of Quality of Life in Patients with Chronic Heart Failure Following an Exercise Training Program. *Eur. J. Cardiovasc. Nurs.* **2009**, *8*, 281–287. [\[CrossRef\]](#)
144. Moertl, D.; Steiner, S.; Coyle, D.; Berger, R. Cost-Utility Analysis of Nt-Probnp-Guided Multidisciplinary Care in Chronic Heart Failure. *Int. J. Technol. Assess. Health Care* **2013**, *29*, 3–11. [\[CrossRef\]](#)
145. Mortara, A.; Pinna, G.D.; Johnson, P.; Maestri, R.; Capomolla, S.; La Rovere, M.T.; Ponikowski, P.; Tavazzi, L.; Sleight, P. HHH Investigators Home Telemonitoring in Heart Failure Patients: The HHH Study (Home or Hospital in Heart Failure). *Eur. J. Heart Fail.* **2009**, *11*, 312–318. [\[CrossRef\]](#) [\[PubMed\]](#)
146. Mussi, C.M.; Ruschel, K.; de Souza, E.N.; Lopes, A.N.M.; Trojahn, M.M.; Paraboni, C.C.; Rabelo, E.R. Home Visit Improves Knowledge, Self-Care and Adhesion in Heart Failure: Randomized Clinical Trial HELEN-I. *Rev. Lat. Am. Enferm.* **2013**, *21*, 20–28. [\[CrossRef\]](#) [\[PubMed\]](#)
147. Naylor, M.D.; Brooten, D.A.; Campbell, R.L.; Maislin, G.; McCauley, K.M.; Schwartz, J.S. Transitional Care of Older Adults Hospitalized with Heart Failure: A Randomized, Controlled Trial. *J. Am. Geriatr. Soc.* **2004**, *52*, 675–684. [\[CrossRef\]](#) [\[PubMed\]](#)
148. Nucifora, G.; Albanese, M.C.; De Biaggio, P.; Caliendo, D.; Gregori, D.; Goss, P.; Miani, D.; Fresco, C.; Rossi, P.; Bulfoni, A.; et al. Lack of Improvement of Clinical Outcomes by a Low-Cost, Hospital-Based Heart Failure Management Programme. *J. Cardiovasc. Med.* **2006**, *7*, 614–622. [\[CrossRef\]](#)
149. Oddone, E.Z.; Weinberger, M.; Giobbie-Hurder, A.; Landsman, P.; Henderson, W. Enhanced Access to Primary Care for Patients with Congestive Heart Failure. Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission. *Eff. Clin. Pract.* **1999**, *2*, 201–209.
150. Ong, M.K.; Romano, P.S.; Edgington, S.; Aronow, H.U.; Auerbach, A.D.; Black, J.T.; De Marco, T.; Escarce, J.J.; Evangelista, L.S.; Hanna, B.; et al. Effectiveness of Remote Patient Monitoring after Discharge of Hospitalized Patients with Heart Failure: The Better Effectiveness after Transition – Heart Failure (BEAT-HF) Randomized Clinical Trial. *JAMA Intern. Med.* **2016**, *176*, 310–318. [\[CrossRef\]](#)
151. Paradis, V.; Cossette, S.; Frasure-Smith, N.; Heppell, S.; Guertin, M.-C. The Efficacy of a Motivational Nursing Intervention Based on the Stages of Change on Self-Care in Heart Failure Patients. *J. Cardiovasc. Nurs.* **2010**, *25*, 130–141. [\[CrossRef\]](#)
152. Pekmezaris, R.; Mitzner, I.; Pecinka, K.R.; Nouryan, C.N.; Lesser, M.L.; Siegel, M.; Swiderski, J.W.; Moise, G.; Younker, R.; Smolich, K. The Impact of Remote Patient Monitoring (Telehealth) upon Medicare Beneficiaries with Heart Failure. *Telemed. J. E-Health* **2012**, *18*, 101–108. [\[CrossRef\]](#)
153. Phillips, C.O.; Singa, R.M.; Rubin, H.R.; Jaarsma, T. Complexity of Program and Clinical Outcomes of Heart Failure Disease Management Incorporating Specialist Nurse-Led Heart Failure Clinics. A Meta-Regression Analysis. *Eur. J. Heart Fail.* **2005**, *7*, 333–341. [\[CrossRef\]](#)
154. Postmus, D.; Pari, A.A.A.; Jaarsma, T.; Luttik, M.L.; van Veldhuisen, D.J.; Hillege, H.L.; Buskens, E. A Trial-Based Economic Evaluation of 2 Nurse-Led Disease Management Programs in Heart Failure. *Am. Heart J.* **2011**, *162*, 1096–1104. [\[CrossRef\]](#) [\[PubMed\]](#)
155. Powell, L.H.; Calvin, J.E.; Richardson, D.; Janssen, I.; Mendes de Leon, C.F.; Flynn, K.J.; Grady, K.L.; Rucker-Whitaker, C.S.; Eaton, C.; Avery, E.; et al. Self-Management Counseling in Patients with Heart Failure: The Heart Failure Adherence and Retention Randomized Behavioral Trial. *JAMA* **2010**, *304*, 1331–1338. [\[CrossRef\]](#) [\[PubMed\]](#)
156. Rainville, E.C. Impact of Pharmacist Interventions on Hospital Readmissions for Heart Failure. *Am. J. Health Syst. Pharm.* **1999**, *56*, 1339–1342. [\[CrossRef\]](#) [\[PubMed\]](#)
157. Reilly, C.M.; Butler, J.; Culler, S.D.; Gary, R.A.; Higgins, M.; Schindler, P.; Butts, B.; Dunbar, S.B. An Economic Evaluation of a Self-Care Intervention in Persons with Heart Failure and Diabetes. *J. Card. Fail.* **2015**, *21*, 730–737. [\[CrossRef\]](#) [\[PubMed\]](#)
158. Rich, M.W.; Beckham, V.; Wittenberg, C.; Leven, C.L.; Freedland, K.E.; Carney, R.M. A Multidisciplinary Intervention to Prevent the Readmission of Elderly Patients with Congestive Heart Failure. *N. Engl. J. Med.* **1995**, *333*, 1190–1195. [\[CrossRef\]](#)
159. Rich, M.W.; Vinson, J.M.; Sperry, J.C.; Shah, A.S.; Spinner, L.R.; Chung, M.K.; Davila-Roman, V. Prevention of Readmission in Elderly Patients with Congestive Heart Failure: Results of a Prospective, Randomized Pilot Study. *J. Gen. Intern. Med.* **1993**, *8*, 585–590. [\[CrossRef\]](#)
160. Riegel, B.; Carlson, B.; Glaser, D.; Romero, T. Randomized Controlled Trial of Telephone Case Management in Hispanics of Mexican Origin with Heart Failure. *J. Card. Fail.* **2006**, *12*, 211–219. [\[CrossRef\]](#)
161. Riegel, B.; Carlson, B.; Kopp, Z.; LePetri, B.; Glaser, D.; Unger, A. Effect of a Standardized Nurse Case-Management Telephone Intervention on Resource Use in Patients with Chronic Heart Failure. *Arch. Intern. Med.* **2002**, *162*, 705–712. [\[CrossRef\]](#)
162. Riegel, B.; Dickson, V.V.; Hoke, L.; McMahon, J.P.; Reis, B.F.; Sayers, S. A Motivational Counseling Approach to Improving Heart Failure Self-Care: Mechanisms of Effectiveness. *J. Cardiovasc. Nurs.* **2006**, *21*, 232–241. [\[CrossRef\]](#)

163. Ruschel, K.B.; Rabelo-Silva, E.R.; Rohde, L.E.; de Souza, E.N.; Mussi, C.M.; Polanczyk, C.A. Cost-Effectiveness of a Home Visit Program for Patients with Heart Failure in Brazil: Evidence from a Randomized Clinical Trial. *Value Health Reg. Issues* **2018**, *17*, 81–87. [\[CrossRef\]](#)
164. Sales, V.L.; Ashraf, M.S.; Lella, L.K.; Huang, J.; Bhumireddy, G.; Lefkowitz, L.; Feinstein, M.; Kamal, M.; Caesar, R.; Cusick, E.; et al. Utilization of Trained Volunteers Decreases 30-Day Readmissions for Heart Failure. *J. Card. Fail.* **2013**, *19*, 842–850. [\[CrossRef\]](#) [\[PubMed\]](#)
165. Schofield, R.S.; Kline, S.E.; Schmalfuss, C.M.; Carver, H.M.; Aranda, J.M.; Pauly, D.F.; Hill, J.A.; Neugaard, B.I.; Chumbler, N.R. Early Outcomes of a Care Coordination-Enhanced Telehome Care Program for Elderly Veterans with Chronic Heart Failure. *Telemed. E-Health* **2005**, *11*, 20–27. [\[CrossRef\]](#)
166. Schwarz, K.A.; Mion, L.C.; Hudock, D.; Litman, G. Telemonitoring of Heart Failure Patients and Their Caregivers: A Pilot Randomized Controlled Trial. *Prog. Cardiovasc. Nurs.* **2008**, *23*, 18–26. [\[CrossRef\]](#) [\[PubMed\]](#)
167. Seto, E.; Leonard, K.J.; Cafazzo, J.A.; Barnsley, J.; Masino, C.; Ross, H.J. Perceptions and Experiences of Heart Failure Patients and Clinicians on the Use of Mobile Phone-Based Telemonitoring. *J. Med. Internet Res.* **2012**, *14*, e25. [\[CrossRef\]](#)
168. Seto, E.; Leonard, K.J.; Cafazzo, J.A.; Barnsley, J.; Masino, C.; Ross, H.J. Mobile Phone-Based Telemonitoring for Heart Failure Management: A Randomized Controlled Trial. *J. Med. Internet Res.* **2012**, *14*, e31. [\[CrossRef\]](#) [\[PubMed\]](#)
169. Shearer, N.B.C.; Cisar, N.; Greenberg, E.A. A Telephone-Delivered Empowerment Intervention with Patients Diagnosed with Heart Failure. *Heart Lung* **2007**, *36*, 159–169. [\[CrossRef\]](#)
170. Shively, M.J.; Gardetto, N.J.; Kodiath, M.F.; Kelly, A.; Smith, T.L.; Stepnowsky, C.; Maynard, C.; Larson, C.B. Effect of Patient Activation on Self-Management in Patients with Heart Failure. *J. Cardiovasc. Nurs.* **2013**, *28*, 20–34. [\[CrossRef\]](#)
171. Sisk, J.E.; Hebert, P.L.; Horowitz, C.R.; McLaughlin, M.A.; Wang, J.J.; Chassin, M.R. Effects of Nurse Management on the Quality of Heart Failure Care in Minority Communities: A Randomized Trial. *Ann. Intern. Med.* **2006**, *145*, 273–283. [\[CrossRef\]](#)
172. Smeulders, E.S.T.F.; van Haastregt, J.C.M.; Ambergen, T.; Stoffers, H.E.J.H.; Janssen-Boyne, J.J.J.; Uszko-Lencer, N.H.K.M.; Gorgels, A.P.M.; Lodewijks-van der Bolt, C.L.B.; van Eijk, J.T.M.; Kempen, G.I.J.M. Heart Failure Patients with a Lower Educational Level and Better Cognitive Status Benefit Most from a Self-Management Group Programme. *Patient Educ. Couns.* **2010**, *81*, 214–221. [\[CrossRef\]](#)
173. Smeulders, E.S.T.F.; Van Haastregt, J.C.M.; Ambergen, T.; Uszko-Lencer, N.H.K.M.; Janssen-Boyne, J.J.J.; Gorgels, A.P.M.; Stoffers, H.E.J.H.; Lodewijks-van der Bolt, C.L.B.; Van Eijk, J.T.M.; Kempen, G.I.J.M. Nurse-Led Self-Management Group Programme for Patients with Congestive Heart Failure: Randomized Controlled Trial. *J. Adv. Nurs.* **2010**, *66*, 1487–1499. [\[CrossRef\]](#)
174. Soran, O.Z.; Piña, I.L.; Lamas, G.A.; Kelsey, S.F.; Selzer, F.; Pilotte, J.; Lave, J.R.; Feldman, A.M. A Randomized Clinical Trial of the Clinical Effects of Enhanced Heart Failure Monitoring Using a Computer-Based Telephonic Monitoring System in Older Minorities and Women. *J. Card. Fail.* **2008**, *14*, 711–717. [\[CrossRef\]](#) [\[PubMed\]](#)
175. Stewart, S.; Pearson, S.; Horowitz, J.D. Effects of a Home-Based Intervention among Patients with Congestive Heart Failure Discharged from Acute Hospital Care. *Arch. Intern. Med.* **1998**, *158*, 1067–1072. [\[CrossRef\]](#) [\[PubMed\]](#)
176. Stewart, S.; Horowitz, J.D. Home-Based Intervention in Congestive Heart Failure: Long-Term Implications on Readmission and Survival. *Circulation* **2002**, *105*, 2861–2866. [\[CrossRef\]](#) [\[PubMed\]](#)
177. Stewart, S.; Jenkins, A.; Buchan, S.; McGuire, A.; Capewell, S.; McMurray, J.J.J.V. The Current Cost of Heart Failure to the National Health Service in the UK. *Eur. J. Heart Fail.* **2002**, *4*, 361–371. [\[CrossRef\]](#)
178. Stewart, S.; Marley, J.E.; Horowitz, J.D. Effects of a Multidisciplinary, Home-Based Intervention on Planned Readmissions and Survival among Patients with Chronic Congestive Heart Failure: A Randomised Controlled Study. *Lancet* **1999**, *354*, 1077–1083. [\[CrossRef\]](#)
179. Stromberg, A. Nurse-Led Heart Failure Clinics Improve Survival and Self-Care Behaviour in Patients with Heart Failure Results from a Prospective, Randomised Trial. *Eur. Heart J.* **2003**, *24*, 1014–1023. [\[CrossRef\]](#)
180. Thompson, D.R.; Roebuck, A.; Stewart, S. Effects of a Nurse-Led, Clinic and Home-Based Intervention on Recurrent Hospital Use in Chronic Heart Failure. *Eur. J. Heart Fail.* **2005**, *7*, 377–384. [\[CrossRef\]](#)
181. Triller, D.M.; Hamilton, R.A. Effect of Pharmaceutical Care Services on Outcomes for Home Care Patients with Heart Failure. *Am. J. Health Syst. Pharm.* **2007**, *64*, 2244–2249. [\[CrossRef\]](#)
182. Tsuchihashi-Makaya, M.; Matsuo, H.; Kakinoki, S.; Takechi, S.; Tsutsui, H. J-HOMECARE Investigators Rationale and Design of the Japanese Heart Failure Outpatients Disease Management and Cardiac Evaluation (J-HOMECARE). *J. Cardiol.* **2011**, *58*, 165–172. [\[CrossRef\]](#)
183. Tsuchihashi-Makaya, M.; Matsuo, H.; Kakinoki, S.; Takechi, S.; Kinugawa, S.; Tsutsui, H. J-HOMECARE Investigators Home-Based Disease Management Program to Improve Psychological Status in Patients with Heart Failure in Japan. *Circ. J.* **2013**, *77*, 926–933. [\[CrossRef\]](#)
184. Tsuyuki, R.T.; Fradette, M.; Johnson, J.A.; Bungard, T.J.; Eurich, D.T.; Ashton, T.; Gordon, W.; Ikuta, R.; Kornder, J.; Mackay, E.; et al. A Multicenter Disease Management Program for Hospitalized Patients with Heart Failure. *J. Card. Fail.* **2004**, *10*, 473–480. [\[CrossRef\]](#)
185. van der Wal, M.H.L.; Jaarsma, T.; Moser, D.K.; van Gilst, W.H.; van Veldhuisen, D.J. Qualitative Examination of Compliance in Heart Failure Patients in The Netherlands. *Heart Lung* **2010**, *39*, 121–130. [\[CrossRef\]](#) [\[PubMed\]](#)

186. van Veldhuisen, D.J.; Braunschweig, F.; Conraads, V.; Ford, I.; Cowie, M.R.; Jondeau, G.; Kautzner, J.; Aguilera, R.M.; Lunati, M.; Yu, C.M.; et al. Intrathoracic Impedance Monitoring, Audible Patient Alerts, and Outcome in Patients with Heart Failure. *Circulation* **2011**, *124*, 1719–1726. [[CrossRef](#)]
187. Wakefield, B.J.; Ward, M.M.; Holman, J.E.; Ray, A.; Scherubel, M.; Burns, T.L.; Kienzle, M.G.; Rosenthal, G.E. Evaluation of Home Telehealth Following Hospitalization for Heart Failure: A Randomized Trial. *Telemed. J. E-Health* **2008**, *14*, 753–761. [[CrossRef](#)] [[PubMed](#)]
188. Walsh, M.N.; Albert, N.M.; Curtis, A.B.; Gheorghiade, M.; Heywood, J.T.; Liu, Y.; Mehra, M.R.; O'Connor, C.M.; Reynolds, D.; Yancy, C.W.; et al. Lack of Association between Electronic Health Record Systems and Improvement in Use of Evidence-Based Heart Failure Therapies in Outpatient Cardiology Practices. *Clin. Cardiol.* **2012**, *35*, 187–196. [[CrossRef](#)]
189. Weintraub, A.; Gregory, D.; Patel, A.R.; Levine, D.; Venesy, D.; Perry, K.; Delano, C.; Konstam, M.A. A Multicenter Randomized Controlled Evaluation of Automated Home Monitoring and Telephonic Disease Management in Patients Recently Hospitalized for Congestive Heart Failure: The SPAN-CHF II Trial. *J. Card. Fail.* **2010**, *16*, 285–292. [[CrossRef](#)] [[PubMed](#)]
190. Wierchowicki, M.; Poprawski, K.; Nowicka, A.; Kandziora, M.; Piatkowska, A.; Jankowiak, M.; Michałowicz, B.; Stawski, W.; Dziamka, M.; Kaszuba, D.; et al. A New Programme of Multidisciplinary Care for Patients with Heart Failure in Poznań: One-Year Follow-Up. *Kardiologia Pol.* **2006**, *64*, 1063–1070, discussion 1071–1072.
191. Wongpiriyayothar, A.; Piamjariyakul, U.; Williams, P.D. Effects of Patient Teaching, Educational Materials, and Coaching Using Telephone on Dyspnea and Physical Functioning among Persons with Heart Failure. *Appl. Nurs. Res.* **2011**, *24*, e59–e66. [[CrossRef](#)]
192. Woodend, A.K.; Sherrard, H.; Fraser, M.; Stuewe, L.; Cheung, T.; Struthers, C. Telehome Monitoring in Patients with Cardiac Disease Who Are at High Risk of Readmission. *Heart Lung* **2008**, *37*, 36–45. [[CrossRef](#)]
193. Wright, S.P.; Walsh, H.; Ingle, K.M.; Muncaster, S.A.; Gamble, G.D.; Pearl, A.; Whalley, G.A.; Sharpe, N.; Doughty, R.N. Uptake of Self-Management Strategies in a Heart Failure Management Programme. *Eur. J. Heart Fail.* **2003**, *5*, 371–380. [[CrossRef](#)]
194. Yu, C.-M.; Wang, L.; Chau, E.; Chan, R.H.-W.; Kong, S.-L.; Tang, M.-O.; Christensen, J.; Stadler, R.W.; Lau, C.-P. Intrathoracic Impedance Monitoring in Patients with Heart Failure: Correlation with Fluid Status and Feasibility of Early Warning Preceding Hospitalization. *Circulation* **2005**, *112*, 841–848. [[CrossRef](#)] [[PubMed](#)]
195. Yu, D.S.F.; Lee, D.T.F.; Stewart, S.; Thompson, D.R.; Choi, K.-C.; Yu, C.-M. Effect of Nurse-Implemented Transitional Care for Chinese Individuals with Chronic Heart Failure in Hong Kong: A Randomized Controlled Trial. *J. Am. Geriatr. Soc.* **2015**, *63*, 1583–1593. [[CrossRef](#)] [[PubMed](#)]
196. Reynolds, R.; Dennis, S.; Hasan, I.; Siewa, J.; Chen, W.; Tian, D.; Bobba, S.; Zwar, N. A Systematic Review of Chronic Disease Management Interventions in Primary Care. *BMC Fam. Pract.* **2018**, *19*, 11. [[CrossRef](#)] [[PubMed](#)]
197. Chaffin, M.; Papangelis, I.; Simonson, B.; Akkad, A.D.; Hill, M.C.; Arduini, A.; Fleming, S.J.; Melanson, M.; Hayat, S.; Kost-Alimova, M.; et al. Single-nucleus profiling of human dilated and hypertrophic cardiomyopathy. *Nature* **2022**, *608*, 174–180. [[CrossRef](#)] [[PubMed](#)]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.