Review Article

Components of hospital-to-home care interventions for patients with heart failure in Japan: An integrative review

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Abstract

Hospital-to-home care is important for improving the quality of life (QOL) of patients with heart failure (HF). However, there is little evidence of outcomes regarding hospital-to-home care interventions in Japan. Thus, this integrative review aimed to identify the components and outcomes of hospital-to-home care interventions for patients with HF in Japan. Electronic databases, such as MEDLINE, CINAHL, and Ichushi-Web, were systematically searched, and all forms of hospital-to-home care interventions in Japan were examined. Studies regarding transitional care, discharge planning, home care, and disease management were included. The characteristics and results of the intervention studies were summarized. Furthermore, we analyzed the components of hospital-to-home care interventions and considered the effective interventions for patients with HF, based on statistically significant results. Ten articles including nine interventions were reviewed. The average age of intervention participants ranged from 64 to 77.5 years old, and the sample sizes in the intervention groups ranged from 11 to 192 participants. The intervention components were categorized as follows: “hospital-based components,” “home- and outpatient-based components,” and “both hospital- and home-based components.” The main intervention components comprised structured education, lifetime counseling, and follow-ups via telephone and video calls. The clinical outcomes included readmission, mortality, and QOL, measured up to 24 months after the interventions. There was limited evidence of interventions being continued from the hospital to home, follow-up immediately after discharge, and nurse home visits in Japan. Further studies are necessary to evaluate the outcomes of patients’ experiences immediately after discharge and the quality of care transition.

Keywords

heart failure, patient discharge, quality of health care, transitional care

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Introduction

Heart failure (HF) is a life-threatening cardiac condition that is becoming increasingly prevalent. It is caused by defects in the cardiac structure, function, or both, which can ultimately lead to impaired peripheral circulation and organ oxygenation (Rosa et al., 2019). The number of individuals with HF in Japan is estimated to increase to 1.3 million by 2030

(Okura et al., 2008) and at least 26 million people worldwide (Savarese & Lund, 2017). The incidence of HF-related hospitalization is the highest in the first 30 days after patients’ discharge, and the majority of HF-related rehospitalization cases in Japan occur within 90 days of discharge (Ishihara et al., 2020); the rate of readmission for HF is 40% within 1 year after discharge (Tsutsui et al., 2006). Re-hospitalization burdens patients and affects their quality of

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life (QOL). Hence, proper care transitions for patients, who are discharged from the hospital, are crucial to improve their QOL and reduce preventable hospital readmissions.

Despite substantial advancements in treatments and multi-disciplinary care, HF management remains a global health challenge for healthcare providers. In HF management, hospital-to-home transitional care has become an important intervention to improve the clinical outcomes of chronic older patients as well as the rates of rehospitalization for HF (Murtaugh et al., 2017). Transitional care is defined as a set of actions designed to ensure the coordination and continuity of healthcare while patients are transferred between different locations or different levels of care within the same location (Coleman & Boult, 2003). Older patients, who are discharged to their homes, undergo a period of vulnerability in which they must learn to adjust and adapt to their new self-care regimen (Werner et al., 2019). In a study regarding the discharge experiences of patients with HF, it was found that these patients were struggling with daily self-care, symptom monitoring, severity judgment, medication management, inadequate discharge preparation, and poor care coordination (Nordfonn et al., 2019). Therefore, hospital-to-home transitional care is vital to the improvement in QOL of patients with HF and to ensure a smooth transfer from the hospital to their homes.

There have been several systematic reviews on transitional care interventions for patients with HF (Feltner et al., 2014; Fergenbaum et al., 2015; Mai Ba et al., 2020; Van Spall et al., 2017). However, none have included Japanese intervention studies. The Japanese healthcare system is extremely different from those in the United States, the United Kingdom, Sweden, Germany, Australia, and China, where many transitional care intervention studies have been conducted, and it is likely that patients and their families face different challenges. In Japan, older adults (primary insured adults aged ≥ 65 years and secondary insured persons aged 40-64 years) can use public long-term care insurance services, such as home-visit nursing. When the Japanese government promotes home care for older adults, it differentiates hospital care and home care in the acute, convalescent, and chronic phases. Therefore, to enhance transitional care, discharge support departments have been established in acute care hospitals. Nurses who specialize in discharge planning play an important role in smooth and timely care transitions for patients with high care needs (Tomura et al., 2011). Moreover, ward nurses play a key role in coordinating multidisciplinary tasks in transitional care in Japan. In contrast, transitional care in the United States and the United Kingdom is coordinated by transitional care nurses, who are known as nurse practitioners and advanced practice nurses. Transitional care nurses provide comprehensive discharge planning and home follow-ups through care transitions from hospital to home. Therefore, it is necessary to identify the

characteristics of the components of hospital-to-home care interventions in Japan. Moreover, medical staff needs to identify the outcomes of these transitions to determine which clinical interventions can be implemented in practice (Son & You, 2015). Thus, this review aimed to analyze the characteristics of the components and outcomes of hospital-to-home care interventions for patients with HF in Japan and to consider recommended interventions in the Japanese healthcare system through comparison to transitional care in other countries.

Methods

Study Design

An integrative review approach was adopted to capture the effective components of hospital-to-home care interventions for patients with HF in Japan. The methodology described by Whittemore and Knafl (2005) was adopted, which involves identifying the problem, searching the literature, evaluating the data, and presenting the findings. Integrative reviews summarize previous literature to provide a more comprehensive understanding of a particular topic and allow for the inclusion of the broadest type of research. Various perspectives on components related to the effectiveness of existing transitional care interventions for patients with HF in Japan were collected, and the resulting synthesized information provides insights for nursing practice.

Problem Identification

The three research questions that we aimed to answer in this integrative review were as follows: “What are the characteristics of the components of hospital-to-home care interventions for patients with HF in Japan?” “What are the outcome measures and endpoints of hospital-to-home interventions for patients with HF in Japan?” and “What are the recommended hospital-to-home interventions for patients with HF in the Japanese healthcare system?” The evaluated characteristics included the nature of the interventions, composition of the target population, and outcome measures and endpoints.

Literature Search

Relevant English and Japanese articles were searched from the electronic databases MEDLINE, CINAHL, and Ichushi-Web. The following key words were used: “heart failure” AND “(home care OR discharge planning OR transitional care OR disease management)” AND “Japan.” Articles published until June 2020 were searched. Studies regarding (1) transitional care and discharge planning interventions in hospitals and (2) home care and disease management for patients discharged from acute care hospitals were included. Meanwhile, studies that involved no interventions, interventions that did not include hospital-to-home care, interven-

Figure 1. Flowchart of the study retrieval and selection process.

tions without nursing support, and study protocols were excluded. After duplicates were removed, 257 articles were initially identified in the three databases. A total of 242 articles were excluded because they were not intervention studies. The remaining 15 articles were retrieved mainly due to their contents of the intervention and results. Five articles were excluded because three articles did not include hospital-to-home care interventions and nursing support, and two articles were study protocols. Finally, 10 papers, 7 in English and 3 in Japanese, were reviewed. A flowchart of the article selection process is shown in Figure 1. Two authors independently screened and discussed the results of the literature search.

Data Evaluation

All included studies were critically assessed according to the Mixed Methods Appraisal Tool (MMAT, version 2018), which was developed to critically appraise different study designs (Hong et al., 2019). The MMAT allows for a critical appraisal process in reviews of systematic mixed studies, by providing methodological quality criteria for different study designs, within a single tool. First, two optional screening questions were evaluated. Secondly, the appropriate categories of study designs were applied to the five categories, with different methodological quality criteria used depending on the study design and methods: qualitative, quantitative randomized controlled trials (RCTs), quantitative non-

randomized, quantitative descriptive, and mixed methods (Hong et al., 2018). Excluding studies with low methodological quality is usually discouraged (Hong et al., 2018).

In our study, two screening questions obtained from the MMAT manual were applied to all the 10 reviewed articles, i.e., “Are there clear research questions?” and “Do the collected data address the research questions?” All 10 studies satisfied the two screening questions. The appropriate categories of studies to be appraised were then evaluated. The MMAT scores are presented in Table 1. Of the six RCT studies, two were unclear as to whether randomization was appropriately performed, and three were unclear as to whether outcome assessors were blinded to the intervention provided. Other quality appraisal criteria were satisfied in RCT studies. One non-RCT study showed that potential confounders could not be accounted for in the design and analysis. All three quantitative descriptive studies satisfied all quality appraisal criteria.

Data Analysis

The characteristics and results of the intervention studies are summarized in Table 1. It summarizes the following: (a) study information (i.e., authors’ names, year of publication, sample size, and average age of patients); (b) information regarding hospital-to-home care interventions (i.e., intervention contents, intervention provider, and intervention duration); and (c) major findings regarding the outcomes. The intervention components were analyzed according to the categories included in the studies. These included pre-discharge and postdischarge interventions. The outcome measures/endpoints, evaluation times, and frequency of use are summarized. Finally, the components of the recommended practices were considered from interventions that were statistically effective.

Results

Characteristics of the Included Studies and Their Participants

This review included 10 articles regarding 9 hospital-to-home care interventions for patients with HF. We have summarized all the studies in Table 1. In total, 3 of the 10 studies were conducted in Japanese (Ishibashi et al., 2018; Ito & Tanaka, 2018; Yamazaki et al., 2016). Regarding the research designs employed, there were six RCT studies (Kato et al., 2016; Kotooka et al., 2018; Mizukawa et al., 2019; Otsu & Moriyama, 2011, 2012; Tsuchihashi-Makaya et al., 2013), three retrospective studies (Ito & Tanaka, 2018; Kinugasa et al., 2014; Yamazaki et al., 2016), and one pre- and post-test study (Ishibashi et al., 2018). The participants in these studies were patients with HF, not including their families. The sample sizes in the intervention groups ranged from 11 to 192, and the age of the participants averaged be-

tween 64 and 77.5 years old. All RCT studies excluded patients with cognitive impairment, severe comorbidities, and end-of-life diseases. In seven of the nine interventions, nurses served as the primary providers. In four studies, multidisciplinary teams provided the interventions. Members of multidisciplinary teams consisted of nurses, cardiologists, physiotherapists, pharmacists, dietitians, and social workers. Interventions lasted from approximately 1 hour to 15 months. Four of the interventions took place at hospitals, another four occurred at patients’ homes or as outpatients, and one transpired at both a hospital and the patient’s home.

Components of Hospital-to-home Care Interventions

We categorized nine components of hospital-to-home care transitions for patients with HF, as shown in Table 2. These were categorized into “hospital-based components,” “home- and outpatient-based components,” and “both hospital- and home-based components,” respectively. Hospital-based components included discharge planning, including discharge screening, discharge conferences, and care coordination. Home- and outpatient-based components included lifetime counseling by nurses, follow-up telephone and video calls, self-monitoring support, telemonitoring, and nurse home visits. As for both hospital- and home-based components, these included nurse-led education, disease management, and multidisciplinary care. The component with the highest frequency was nurse-led education. All education interventions were predominantly delivered by nurses. Participants and intervention providers used printed materials, booklets, checklists, and calendars for lifestyle modification and self-monitoring. Face-to-face individual structured programs were delivered. There were no educational interventions for the patient population. The second most frequent form of intervention was lifetime counseling by nurses, particularly regarding lifestyle, self-care, and problems. Counseling was provided via individual educational programs, phone calls, home visits, and video calls.

Outcome Measures and Endpoints of Hospital-to-home Care Interventions

We summarized the outcomes and endpoints of hospital-to-home care transitions for HF in Table 3. Outcomes included all-cause death and rehospitalization due to worsening HF, HF status, health-related QOL, HF-specific QOL, anxiety and depression, self-care, self-efficacy, compliance, and HF knowledge. The highest frequency of measured outcomes was readmission or hospital admission, and all studies included readmission or hospital admission as outcomes. The second highest frequency of outcomes was death, or mortality, which was noted in six studies. The highest frequency of patient-reported outcomes was QOL in five studies. Outcomes were assessed at 1-24 months after the intervention.

Table 1. Summary table of included studies.

Author (year)	Study design (MMAT score)	Participant and setting (number (male %), age, HF severity)		Contents of intervention			Outcomes (significance)		
		Intervention group	Control group	Intervention	Provider	Setting	Duration	Primary outcomes	Secondary outcomes
Otsu and Moriyama (2011)	RCT (Yes 4/5, No 1/5)	n = 49 (63.3%) 71.6 years NYHA II 79.6%	n = 47 (63.8%) 74.6 years NYHA II 80.9%	Educational self-management program and routine counseling	Researching nurse	Outpatient	6 months	BNP, systolic blood pressure, weight, and shortness of breath (+/++) Paroxysmal dyspnea, ankle edema, and coughing at night (–) Death and hospital admission (not SA)	QOL (+++) Compliance (+++)
Otsu and Moriyama (2012)									
Tsuchihashi-Makaya et al. (2013)	RCT (Yes 3/5, Cannot tell 2/5)	n = 79 (53.2%) 76.9 years NYHA II 84.8% LVEF (mean) 47.4%	n = 82 (59.8%) 75.8 years NYHA II 76.8% LVEF (mean) 47.4%	Discharge education and home education, home-based disease management program, home visits by nurse, counseling, telephone follow-ups, and symptom monitoring	Mainly nurses Multidisciplinary team (cardiologists, dietitians, and pharmacists)	Hospital and home	6 months	Depression and anxiety (+)	Physical health QOL (–) Mental health QOL (+) All-cause death (–) HF-cause rehospitalization (+)
Kinugasa et al. (2014)	Retrospective study, intervention vs. control (Yes 5/5)	n = 144 (60.4%) 75 years NYHA III and IV 11.8% LVEF (mean) 45.9%	n = 133 (58.6%) 74 years NYHA III and IV 9.0% LVEF (mean) 44.9%	Multidisciplinary HF-management program, cardiac rehabilitation, education, team conferences, and discharge planning	Multidisciplinary team (cardiologists, physiotherapists, nurses, pharmacists, dietitians, and social workers)	Rural hospital	N/A	All-cause mortality and HF-cause rehospitalization (++)	N/A
Kato et al. (2016)	RCT (Yes 4/5, Cannot tell 1/5)	n = 15 (80%) 64 years NYHA II 27%	n = 17 (59%) 65 years NYHA II 29%	HF self-care program and counseling	Mainly nurses Multidisciplinary team (dieticians and pharmacists)	Hospital	Total time of education Mean = 68 min	Self-care (+)	HF-cause rehospitalization and cardiac death (+) HF-knowledge (+)
Kotooka et al. (2018)	RCT (Yes 4/5, Cannot tell 1/5)	n = 90 (56.7%) 67.1 years NYHA II 77.8% and III 22.2%	n = 91 (61.5%) 65.4 years NYHA II 79.1% and III 20.9%	Telemonitoring and contact by telephone follow-ups when monitoring was stratified and data were exceeded	Monitoring nurses	Home and monitoring center	Mean = 15 months	All-cause death and HF-cause rehospitalization (–)	Depression (–) Self-efficacy (–) QOL (–) HF-status (–)

Table 1. Continued.

Author (year)	Study design (MMAT score)	Participant and setting (number (male %), age, HF severity)		Contents of intervention			Outcomes (significance)		
		Intervention group	Control group	Intervention	Provider	Setting	Duration	Primary outcomes	Secondary outcomes
Mizukawa et al. (2019)	RCT (Yes 4/5, Cannot tell 1/5)	Telemonitoring + self-management group 70.5 years <i>n</i> = 20 (50.0%) NYHA III or IV 55%	<i>n</i> = 19 (52.6%) 74.5 years NYHA III or IV 31.6%	Self-monitoring, disease management program, telemonitoring, education, and counseling	Mainly nurses and physicians	Home	12 months	QOL (++++)	Self-efficacy (–) Self-care (–) HF-cause rehospitalization (+) All-cause mortality (–)
		Self-management group <i>n</i> = 18 (83.3%) 69.4 years NYHA III or IV 38.9%							
Yamazaki et al. (2016) in Japanese	Retrospective study, intervention vs. control (Yes 5/5)	<i>n</i> = 192 (58.3%) 77.5 years NYHA II 86.5%	<i>n</i> = 194 (63.9%) 75.6 years NYHA II 85.6%	Discharge planning	Multidisciplinary team (doctors, physical therapists, nurses, pharmacists, dietitians, and social workers)	Hospital	N/A	Rehospitalization (++)	N/A
Ito and Tanaka (2018) in Japanese	Retrospective study, intervention vs. control (Yes 5/5)	<i>n</i> = 87 (67%) 72 years BNP median 523 pg/ml	<i>n</i> = 183 (55%) 81 years BNP median 695 pg/ml	Education and counseling	Nurses	Hospital	N/A	All-cause death (+) HF-cause rehospitalization (++)	N/A
Ishibashi et al. (2018) in Japanese	Prospective study Pre vs. post (Yes 5/5)	<i>n</i> = 11 (63.6%) 72.7 years NYHA III (36.4%) BNP 75–1866 pg/ml	N/A	Telenursing intervention model, self-monitoring support, routine video call follow-ups, and counseling	Nurses	Home	12 months	QOL (–) Hospital admission (not SA) Blood pressure, weight, BNP, and symptom of HF (not SA)	N/A

Statistical significance: +, $p < .05$, ++, $p < .01$, +++, $p < .001$, -, $p > .05$. Not SA: not statistically analyzed. BNP: B-type natriuretic peptide. HF: heart failure. LVEF: left ventricle ejection fraction. MMAT: mixed methods appraisal tool. NYHA: New York Heart Failure Association's heart function level. RCT: randomized controlled trial. QOL: quality of life. N/A: not available.

Table 2. Components of hospital-to-home care interventions.

Components		Contents	No. of interventions
Hospital-Based	Home- and Outpatient-Based		
Discharge planning	N/A	<ul style="list-style-type: none"> •Screening of discharge planning, discharge support conferences, and care coordination with multiple multidisciplinary care provided inside and outside the hospital 	2
N/A	Lifetime counseling by nurses	<ul style="list-style-type: none"> •Counseling support regarding lifestyle, self-care, and problems encountered during home visits, interviews during outpatient visits, telephone calls, and video calls 	5
	Follow-ups via telephone and video call by nurses	<ul style="list-style-type: none"> •Two types of follow-ups: regular follow-ups and follow-ups only in the event of an abnormality •Regular follow-up assessments and care regarding HF symptoms, general health status, lifestyle, and self-care at home by nurses •When necessary, nurses consult a multidisciplinary team and coordinate social support and hospital visits. 	3
	Self-monitoring support	<ul style="list-style-type: none"> •Self-monitoring support through face-to-face interventions at outpatient visits •The implementation of self-monitoring regarding patients' HF status and the interpretation of measured values using video calls are supported. 	2
	Telemonitoring	<ul style="list-style-type: none"> •Participants measure their body weight, blood pressure, pulse, and body composition at home using a monitoring device. •The nurses at the monitoring centers check the measured data every day. •In case of abnormal data, the patient is called, and the causes of the abnormalities are assessed; then, either the patient is provided with advice, a visit by the physician is arranged, or home care is coordinated. •Families can also access the remote monitoring system. 	2
	Nurse home visits	<ul style="list-style-type: none"> •Home-visit nursing care once every 2 weeks until 2 months after discharge for symptom monitoring, general health status assessments, education, and consultations •First visit is conducted within 2 weeks after discharge. 	1
	Nurse-led education	<ul style="list-style-type: none"> •Self-care and self-management education through a face-to-face individual program •Structured educational program and discharge education based on models (e.g., behavior change model, cognitive behavior, and health belief model) •Educational program using tools such as booklets and checklists by nurses, pharmacists, and nutritionists •The participants record information regarding their lifestyles, and the intervention nurses provide individual feedback. •Advice and consultation support regarding self-management methods at home are provided. •Long- and short-term goals with the participants are developed and evaluated. •Education is provided regarding items that a target participant is interested in. •Educational contents include "heart failure," "examination and treatment," "self-monitoring," "lifestyle," and "symptoms and urgency when consultation is required," as well as internal medication management, weight management, salt restriction, etc. 	7
	Disease management	<ul style="list-style-type: none"> •Includes symptom monitoring, education, consultations, and the adjustment of social support via home visits and telephone follow-ups by nurses in addition to follow-ups by cardiologists 	2
	Multidisciplinary care	<ul style="list-style-type: none"> •Patient education and conferences are conducted by a multidisciplinary team. •Cardiac rehabilitation •Progress sharing regarding the intervention with the team 	4

HF: heart failure. N/A: not available.

No. of interventions: Number of interventions in which the applicable component was performed out of all nine interventions.

Table 3. Summary table of outcome measures/endpoints.

Outcome measures/Endpoints	Scale/Measure contents	Time of data collection (follow-up period)	No. of interventions
Rehospitalization	All-cause rehospitalization, rehospitalization due to worsening HF, hospital admission (patients with a history of hospitalizations), number of readmissions, period until readmission after discharge, and hospitalization period at the time of readmission	At 3, 6, 9, 12, and 24 months after discharge (31 months)	9
Death	All-cause death, cardiac death, and period until death	At 3, 6, 9, 12, and 24 months after discharge (31 months)	6
QOL	(HF-specific scales) MacNew Heart Disease Health-Related Quality of Life Questionnaire and Minnesota Living with Heart Failure Questionnaire (generic scales) SF-8 Health Survey and the MOS 36-Item Short-Form Health Survey	At 3, 6, 9, 12, and 24 months after discharge	5
Anxiety and depression	Hospital Anxiety and Depression Scale, Patient Health Questionnaire-9	At 2, 6, and 12 months after discharge	2
Self-care	European Heart Failure Self-Care Behaviour Scale	At 6, 12, 18, and 24 months after discharge	2
HF status	BNP, NYHA, blood pressure, weight, and deterioration in the symptoms related to HF	At 3, 6, 9, 12, and 24 months after discharge	2
Self-efficacy	Chronic Disease Self-Efficacy Scale and General Self-Efficacy Scale	At 6, 12, 18, and 24 months after discharge	2
Compliance	Four-point scale: sodium-restricted diet, medicine administration, activities or exercise, smoking and drinking cessation, self-monitoring of weight, and symptoms of HF	At 3, 6, 9, 12, and 24 months after discharge	1
Knowledge about HF	15-item Japanese HF-knowledge scale	At 1 and 6 months after discharge	1

BNP: B-type natriuretic peptide. HF: heart failure. QOL: Quality of life. NYHA: New York Heart Association's heart function level.

No. of interventions: Number of interventions that measured the applicable outcome/endpoints out of all nine interventions.

Effects of Hospital-to-home Care Interventions

The results of the outcome studies are shown in Table 1. Six out of the nine interventions led to a statistically significant reduction in the rate of readmission, compared to the control groups (Ito & Tanaka, 2018; Kato et al., 2016; Kinugasa et al., 2014; Mizukawa et al., 2019; Tsuchihashi-Makaya et al., 2013; Yamazaki et al., 2016). The studies that showed statistically significant readmissions included components of nurse-led education, lifetime counseling by nurses, regular follow-ups via telephone, nurse home visits, self-monitoring support, disease management, and multidisciplinary care. Three out of the six interventions led to a statistically significant reduction in the rate of death (Ito & Tanaka, 2018; Kato et al., 2016; Kinugasa et al., 2014). Of the five interventions (Ishibashi et al., 2018; Kotooka et al., 2018; Mizukawa et al., 2019; Otsu & Moriyama, 2011; Tsuchihashi-Makaya et al., 2013), three led to a significantly improved QOL in the intervention group, compared to the control group (Mizukawa et al., 2019; Otsu & Moriyama, 2011; Tsuchihashi-Makaya et al., 2013). The studies that showed

statistically significant improvement in QOL included the components of education, counseling, follow-ups via telephone, nurse home visits, self-monitoring support, and disease management. One of two studies indicated a statistically significant improvement in anxiety and depression (Tsuchihashi-Makaya et al., 2013). Statistically, self-efficacy did not improve significantly. Telemonitoring and the assessment of acquired data, such as weight and blood pressure, and follow-up only at the time of abnormality, did not significantly change the clinical outcomes (Kotooka et al., 2018).

Discussion

In this integrative review, we revealed the components and outcomes of hospital-to-home care interventions for patients with HF in Japan. We analyzed components that were categorized into “hospital-based components,” “home- and outpatient-based components,” and “both hospital- and home-based components.” We identified only one study in Japan that included both hospital- and home-based interven-

tions (Tsuchihashi-Makaya et al., 2013), in contrast to the numerous intervention studies overseas. In Japan, there is still a lack of evidence regarding the effectiveness of intervention methods for the transitional care of patients with HF; thus, further studies evaluating both pre- and postdischarge interventions are needed. The studies we investigated show that nurse-led patient education, counseling, and discharge planning are important components in interventions. These findings are similar to those of previous studies (Bryant-Lukosius et al., 2015; Rice et al., 2018). Studies on transitional care for patients with HF have been predominantly conducted in the United States, the United Kingdom, Spain, Sweden, Canada, and Australia. Early follow-ups and contact, such as medication and symptom management within 3 days after discharge, were the main forms of intervention in transitional care for patients with HF (Coleman et al., 2006; Mai Ba et al., 2020). However, a few early postdischarge interventions in the investigated studies involved home visits within 14 days after discharge and follow-up assessments 2 months after discharge (Tsuchihashi-Makaya et al., 2013). Therefore, early postdischarge interventions and medication management at home may require further verification of their effectiveness. The evidence regarding home-visit nursing outcomes further promotes the need and effectiveness of home-visit nursing, immediately after discharge in Japan.

The participants of all the investigated intervention studies were patients, and the interventions did not involve the families of the patients. Older patients with HF often require long-term care, livelihood support, and social support. The transitional care model and the care transition interventions lead to the establishment of a trustworthy relationship with family caregivers and consider family needs involved in patient care (Coleman et al., 2015; Naylor et al., 2018). A patient's family also influences HF self-care and outcomes (Dunbar et al., 2008); hence, research on support and interventions that includes family members may be necessary, with investigation on caregiver education and engagement needed.

We uncovered the outcome measures, endpoints, and measurement times involved in the interventions. The most frequent outcome was rehospitalization. The most common patient-reported outcome was QOL, similar to that reported in a previous study (Mai Ba et al., 2020). Both the HF-specific QOL scale and generic QOL scale were significantly improved (Mizukawa et al., 2019; Otsu & Moriyama, 2012; Tsuchihashi-Makaya et al., 2013), and the recommended HF-specific scale, namely, the Minnesota Living with Heart Failure Questionnaire, was used (Kelkar et al., 2016; Kotooka et al., 2018; Mizukawa et al., 2019). However, emergency department visits and costs were not measured in the Japanese intervention studies investigated. For this reason, it can be said that there are few emergency vis-

its in Japan due to outpatient visits being planned 2-4 weeks after discharge as well as the difficulty in collecting cost data. Little is known about the hospitalization costs associated with HF in Japan (Kanaoka et al., 2019; Kotooka et al., 2018). Cost evaluations may need to be assessed in the future to strengthen the evidence regarding the effectiveness of hospital-to-home care in patients with HF. Canadian and Chinese RCT studies on heart disease included patient-reported outcomes and patient-experience measures of discharge preparedness and care transition quality measure (Cao et al., 2017; Van Spall et al., 2018; Van Spall et al., 2019). The patient and caregiver's desired outcomes of care transitions can be identified from participant experience (Mitchell et al., 2018). The use of patient-experience measures that capture the quality of care transitions or patient concerns and anxiety should be implemented in Japan, and for this purpose, the use of a validated quality of care transition scale, such as the Care Transitions Measure (Coleman et al., 2005; Yoshimura et al., 2018), PREPARED (Graumlich et al., 2008), or the Readiness for Hospital Discharge Scale (Weiss & Piacentine, 2006), should be adopted. It is necessary to develop a validated tool for capturing patient experiences, such as those related to their concerns, lifestyle, and self-care, when counseling and assessing outcomes. Older patients immediately after discharge are also vulnerable to a higher risk of adverse health outcomes and experience feelings of uncertainty (Blakey et al., 2017; van Seben et al., 2019). Although the measurement times for the interventions were between 1 and 24 months after discharge or intervention in this review, it may be necessary to evaluate immediately after or 1 week after discharge.

Finally, recommended intervention components for patients with HF were considered, including regular and structured counseling and education, follow-ups via telephone by nurses, nurse home visits, multidisciplinary care, and disease management. Studies that combine multiple intervention components are shown to be effective. In previous meta-analyses on transitional care for patients with HF, nurse home visits were the most recommended care practice that care providers can apply (Feltner et al., 2014; Van Spall et al., 2017). However, only one intervention included nurse home visits in this review. In addition, most of the elderly patients are registered for long-term care insurance, but only a small proportion of these patients receive home-visit services in Japan (Takabayashi et al., 2016). Home-visit nursing care should be actively provided as well as visits immediately after discharge for older patients with HF. Research on the effectiveness of home-visit nursing for patients with HF in Japan is urgently needed.

A limitation of our study is that we did not search all gray literature, such as dissertations and non-peer-reviewed articles, and the limited number of intervention studies regarding HF in connection to hospital-to-home care transi-

tions is also a limitation.

Conclusions

This integrative review uncovered the components of hospital-to-home care interventions for patients with HF, their related outcome measures, and their measurement times. Hospital-to-home care interventions should include both hospital- and home-based care and combine multiple intervention components by nurses and multidisciplinary teams. With respect to outcome evaluation, it is necessary to assess outcomes immediately after discharge, as well as the quality of care transitions. The findings from this literature review highlight the need for further research on the effectiveness of nurse home visits and interventions that involve the families of patients with HF.

Author Contributions

M. Y. and N. S. contributed to the conception and design of this study, carried out the analysis, drafted the manuscript, and approved the final manuscript.

Declaration of Conflicting Interests

The authors declare no conflict of interests.

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