



Palliative Care for Patients With Heart Failure

An Integrative Review

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Palliative care should be integrated into routine disease management for all patients with serious illness, regardless of settings or prognosis. The purposes of this integrative review were to identify the features of randomized controlled trials for adult patients with heart failure and to provide basic references for the development of future trials. Using Whittemore and Knaff's integrative literature review method, comprehensive searches of the PubMed, Cochrane Library, CINAHL, EMBASE, and Korean databases were conducted, integrating keywords about heart failure and palliative care interventions. Quality appraisal was assessed using Cochrane risk-of-bias tools. In total, there were 6 trials providing palliative care interventions integrating team-based approaches between palliative care specialists and nonpalliative clinicians, such as a cardiologist, cardiac nurse, and advanced practice nurse across inpatient and outpatient settings. The different types of interventions included home visits, symptom management via phone calls or referral to a specialist team, and the establishment of treatment planning. Patient-reported outcome measures included positive effects of palliative interventions on symptom burden and quality of life. Given that most of the selected studies were conducted in Western countries, palliative

care should be culturally tailored to assist heart failure patients worldwide.

KEY WORDS

advance care planning, chronic disease, heart failure, palliative care, review

The prevalence of heart failure (HF) continues to increase with an increase in the aging population.¹ The American Heart Association has reported that 50% of patients diagnosed as having HF die within 5 years, and 5% are at the end of life with a condition refractory to medical treatment.¹ Patients with HF have a significant burden of symptom clusters, including pain, fatigue, dyspnea, depression, anxiety, insomnia, and loss of appetite, causing deterioration in overall quality of life.² This imposes an economic and structural burden on patients and their families, as well as the social health care delivery system caring for them.³

The treatment and management of patients with HF require the consideration of combined physical, psychosocial, and environmental factors.⁴ For instance, medical devices such as pacemakers and implantable defibrillators may be effective in the early stages of HF, but their benefits may gradually wane as the disease progresses. In addition to the unpredictable prognosis, patients vary in their illness experience and perception toward overall disease management.⁵ As HF progresses, responsibility for end-of-life treatment decisions may change according to the patients' or their family's cultural norms and social context.⁶

The National Consensus Project Clinical Practice Guidelines for Quality Palliative Care (NCP guidelines) defines palliative care (PC) as an interdisciplinary care delivery system designed to anticipate, prevent, and manage severe illness to optimize the quality of life for patients, their families, and caregivers.⁷ Considering the complex context of chronic HF management and the important person-centered philosophy of the PC approach, integrating comprehensive PC (eg, pain and symptom management, navigating treatment options, advance care planning [ACPI]) into routine HF management has become the focus of care.

Although relevant academic societies such as the American College of Cardiology and the European Society of Cardiology

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The authors have no conflicts of interest to disclose.

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DOI: 10.1097/NJH.0000000000000869



continue to report the adequacy and potential benefits of PC for patients with HF,^{8,9} referral to PC is not sufficient or occurs too late compared with that for patients with cancer or other chronic diseases.¹⁰ The causes include a lack of education and training for health care workers and the general public, a lack of a concept of shared responsibility, inefficient communication, a lack of community support, and difficulty in predicting the prognosis.⁴ The NCP guidelines emphasize that PC should be included for all patients with serious illness regardless of settings or prognosis and that consideration of PC provision is the responsibility of all clinicians and disciplines.⁷ Thus, it is necessary to establish guidelines for the delivery of PC for patients with HF. This study aimed to contribute to the basic design of future intervention programs by identifying and reviewing the specific aspects of PC interventions reported in trials for patients with HF.

METHODS

According to the integrative literature review methodology proposed by Whittemore and Knafl,¹¹ this study conducted a literature review in 5 stages, including problem identification, literature search, data evaluation, data analysis, and presentation. Through a research meeting, the authors clearly identified the scope and purpose of the research. This raised 2 research questions: (1) “What are the

characteristics of the studies related to PC interventions for patients with HF?” and (2) “What are the specific contents, characteristics, and effects of PC interventions for patients with HF?” The Population, Intervention, Comparison, and Outcome framework was used to select the studies for analysis. The population of this study included patients with HF undergoing PC as the intervention method. The control group was the group that did not receive PC intervention, and the outcome was the result measured by each scale for each outcome variable. The following databases were used: RISS, KoreaMed, and Korean Medical Database (Kmbase), CINAHL, PubMed, MEDLINE, and Cochrane Library CENTRAL. The main search keywords included all related MeSH words (“heart failure,” “congestive heart failure,” “palliative care,” “hospice and palliative care nursing,” “hospice care,” and “terminal care”), and a comprehensive search of studies was conducted by constructing a search formula linking the main keywords with AND/OR. The data search was supplemented by reviewing the reference list of the searched studies. The selection criteria were (1) studies published in peer-reviewed journals after 1995, (2) randomized controlled trials (RCTs) that exclusively enrolled adults with HF, and (3) studies published in Korean and English. The exclusion criterion was research whose original full text could not be found. A detailed flow chart of the literature selection is provided in Figure.

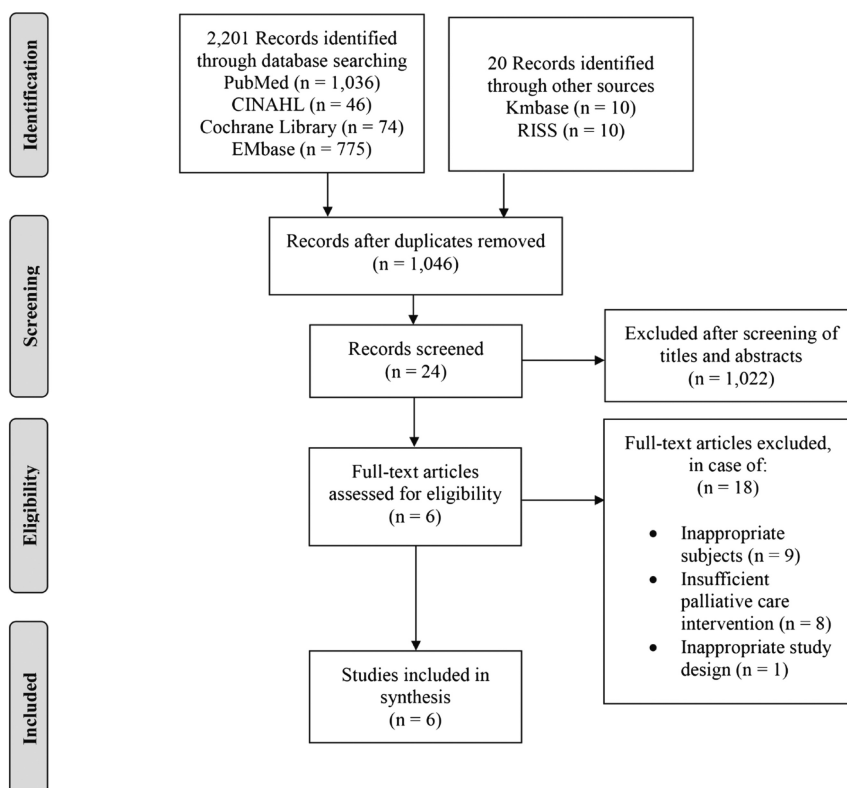


FIGURE. Flow diagram of study selection.



The number of studies initially searched was 2221. After excluding 1046 duplicate documents, the authors reviewed the titles and abstracts; 24 studies of 1175 remained. Through the full-text review, 17 studies were excluded because of inappropriate subjects (eg, anticipated or postmechanical supportive care, transplantation), insufficient PC interventions (eg, intervention only to enhance ACP and goals of care or to reduce physical symptom burden) and inappropriate study design. In total, 6 studies were included in the qualitative synthesis. Two authors independently evaluated the quality of the studies using Cochrane risk-of-bias tool, assessing the quality of each item as low, high, and unclear (see Table 1). Concerning the inconsistencies among the evaluators, the third author was consulted to resolve disagreements during the methodological quality assessment. Two authors analyzed each of the 6 selected studies. In addition to the general characteristics of the literature, they analyzed the characteristics of patient selection for the intervention, the intervention location and provider, the intervention content, outcome measurement, and the main effects. Table 2 shows a summary of the studies.

RESULTS

Study Characteristics

Among all selected RCTs, except for 1 study conducted in Hong Kong,¹² most of the studies were conducted in Western

countries, including the United States¹³⁻¹⁶ and Sweden.¹⁷ The number of enrolled participants ranged from 72 to 384.

Patient Selection Criteria

In 4 of the 6 selected studies, the prognosis of the disease was reported as life expectancy^{12,17} and mortality risk^{13,16} at the time of subject selection. The reference point for selecting subjects for PC intervention was typically 6 months to 1 year. The severity of HF was classified by the New York Heart Association (NYHA) classification or ejection fraction (EF), being 4 studies^{12,13,16,17} and 3 studies,^{12,13,16} respectively. In addition, Bekelman et al¹⁵ assessed the severity of the disease using the Kansas City Cardiomyopathy Questionnaire (KCCQ), commonly used as an HF disease-specific scale for selecting subjects for PC intervention. Multiple hospitalizations within 6 months or 1 year was one of the repeated patient selection criteria. Meanwhile, exclusion criteria repeatedly mentioned in the selected studies were (1) cognitive impairment such as dementia or psychiatric disorder, (2) an anticipated heart transplant or left ventricular assist device (LVAD), (3) posttransplant or LVAD, and (4) noncardiac medical conditions as their primary diagnosis such as metastatic cancer.

Intervention Characteristics

In all the selected studies,¹²⁻¹⁷ multidisciplinary team-based PC interventions were devised within inpatient or outpatient settings. In inpatient settings,^{13,14} PC specialists (physician board-certified in palliative medicine, certified PC nurse

TABLE 1 Methodological Quality Assessment of Selected Studies

Author, (Year)	Risk of Bias						
	Random Sequence Generation	Allocation Concealment	Blinding of Participants and Personnel	Blinding of Outcome Assessment	Incomplete Outcome Data	Selective Reporting	Other Bias
Brännström et al, (2014) ¹⁷	Unclear	Low	High	High	Low	Low	Low
Bekelman et al, (2015) ¹⁵	Low	Low	High	High	Low	Low	Low
Hopp et al, (2016) ¹³	Unclear	Unclear	High	Low	Low	Low	Low
Rogers et al, (2017) ¹⁶	Low	Unclear	High	High	Low	Low	Low
Sidebottom et al, (2015) ¹⁴	Unclear	Unclear	High	High	Low	Low	High
Wong et al, (2016) ¹²	Low	Low	High	Low	Low	Low	High



TABLE 2 Summary of Studies Regarding Palliative Intervention and Key Outcomes for Patients With CHF

Author, (Year), Country	Study Participants Eligible Disease Characteristics	Contents of Intervention	Provider of Intervention	Key Outcomes (Measurement Tools)
Inpatient				
Hopp et al, (2016), ¹³ United States	Prognosis 1-year mortality risk of ≥33% (EFFECT score) HF severity NYHA class III or IV EF: 38.8% ± 16.7	Specialty PC consultation Symptom assessment Advance care planning Assessment of goals of care, code status, desired posttreatment residential setting	Physician Advanced NP As needed: Chaplain, social worker	Not significant differences between groups in hospice use, creation of DNR order, survival
Sidebottom et al, (2015), ¹⁴ United States	Prognosis Not determined to be actively dying HF severity Not reported	Specialty PC consultation Symptom assessment (emotional, spiritual, psychosocial) Coordination of care orders Recommendation for treatment change Referral Future care planning assessment	PC physicians Certified PC CNS Social worker Chaplain	Significant improvement in QOL (MLHFQ), symptom burden (ESAS), depression (PHQ-9), advance care planning completion Not significant improvement in hospice use, 30-day hospital readmission
Outpatient				
Bekelman et al, (2015), ¹⁵ United States	Prognosis Not reported HF severity KCCQ score < 60	HF disease management Collaborative depression care intervention Behavioral activation and antidepressant management Depression educational video Self-management education Home telemonitoring and self-care support Medication reminders to promote adherence Education about HF and depression Medication monitoring, dietary advice	Nurse coordinator Primary care physician Cardiologist Psychiatrist	Significant improvement in depression (PHQ-9) Significant decrease in 1-year mortality Not significant improvement in QOL (KCCQ), 1-year hospital readmission
Brännström et al, (2014), ¹⁷ Sweden	Prognosis <1-year life expectancy HF severity NYHA class III or IV	Home visits, phone calls Assessment of patients' needs (physiological, social, spiritual) Identification of comorbidities Support for caregiver	PC physician PC nurse Cardiologist HF nurse Physiotherapist Occupational therapist	Significant improvement in QOL (EQ5D), proportion of patients with improved NYHA class Significant decrease in hospitalizations, mean days of hospital stay, cost Not significant improvement in QOL (KCCQ), symptom burden (ESAS)
Wong et al, (2016), ¹² Hong Kong	Prognosis ≤1 year life expectancy HF severity NYHA class III or IV EF: 39% ± 14	Specialty PC consultation (inpatient) Advance care planning Symptom assessment Support for caregiver Home visits, phone calls (home) Set mutually agreed care plan (physical, social, psychological, spiritual) Assessment of need for referral	PC nurse care managers with HF caring experience Trained nursing student volunteers Supported by: PC physician Social worker	Significant improvement in QOL (MQOL, CHFQ), symptom burden (ESAS) Significant decrease in hospital readmission Significant higher satisfaction with care

(continues)


TABLE 2 Summary of Studies Regarding Palliative Intervention and Key Outcomes for Patients With CHF, Continued

Author, (Year), Country	Study Participants Eligible Disease Characteristics	Contents of Intervention	Provider of Intervention	Key Outcomes (Measurement Tools)
Rogers et al, (2017), ¹⁶ United States	Prognosis 6-month mortality risk of >50% (ESCAPE score \geq 4) HF severity NYHA class EF mentioned but not reported	Usual HF care (inpatient) Symptom relief treatment of comorbidities Patient education (self-management) Specialty PC intervention (outpatient) Symptom assessment and management (physical, psychosocial, spiritual) Assessment of goals of care Address end-of-life preparation Advance care planning	Certified PC NP PC physician Trained counselor Cardiology team (cardiologist, NP) As needed: Mental health provider	Significant improvement in QOL (KCCQ, FACIT-Pal), depression (HADS), anxiety (HADS), spiritual well-being (FACIT-Sp) Not significant improvement in HF-related rehospitalization, mortality

Abbreviations: CHF, congestive heart failure; CHFQ, Chronic Heart Failure Questionnaire; CNS, clinical nurse specialist; DNR, do-not-resuscitate; EF, ejection fraction; EFFECT, Enhanced Feedback for Effective Cardiac Treatment; EQ5D, EuroQol 5 Dimensions Questionnaire; ESAS, Edmonton Symptom Assessment Scale; ESCAPE, Evaluation Study of Congestive Heart Failure and Pulmonary Artery Catheterization Effectiveness risk; FACIT-Pal, Functional Assessment of Chronic Illness Therapy-Palliative Care; FACIT-Sp, Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being; HADS, Hospital Anxiety and Depression Scale; HF, heart failure; KCCQ, Kansas City Cardiomyopathy Questionnaire; MLHFQ, Minnesota Living With Heart Failure Questionnaire; MQOL, McGill Quality of Life Questionnaire; NP, nurse practitioner; NYHA, New York Heart Association; PC, palliative care; PHQ-9, Patient Health Questionnaire-9; QOL, quality of life.

practitioner, and PC clinical nurse specialist) employed at the institution provided PC consultation, mainly assessing various aspects of the symptoms—physical, emotional, psychosocial, and spiritual aspects—and establishing goals of care or future care planning. In 1 study conducted by Sidebottom et al,¹⁴ the PC team made recommendations for change in treatment or referrals and provided coordination of care orders. Hopp et al¹³ assessed the preference for discharge location after inpatient treatment. A chaplain and a social worker were included in the PC team as needed.

In the case of outpatient settings, including home and outpatient clinics,^{12,15-17} most studies emphasized the comprehensive approach between the cardiology team (cardiologist, HF nurse) and PC specialists (PC physician and nurse). In addition, psychiatrists, social workers, chaplains, occupational therapists, and physiotherapists participated in team-based interventions if necessary. In 1 trial based on the transitional PC model,¹² a PC-certified nurse case manager, with experience of caring for HF patients, supported by a PC physician, performed a predischarge assessment for patients and their families in inpatient settings and conducted setting care plans and assessments of needs for referral by visiting the patients' home or conducting phone calls with trained nursing student volunteers after discharge. The common roles of the nursing profession within the team included performing case management and coordination and comprehensively assessing and managing patient symptoms and palliative needs. Among selected trials conducted in outpatient settings, three of the studies^{12,16,17} considered spiritual needs. Rogers et al¹⁶ evaluated spiritual well-being, and the details were shared with

the intervention team. In addition, two of the studies provided an intervention for depressive symptoms supported by a psychiatrist. Bekelman et al¹⁵ provided home-based self-care support services for patients through remote monitoring, including medication reminders and monitoring, and education about the disease. Rogers et al¹⁶ conducted patient education about self-management in inpatient settings. Two of the studies described support for caregivers.^{12,17} Most of the studies conducted a discussion about goals of care or ACP.^{12-14,16}

Outcome Measurements and the Main Effects

The items measuring the effects of PC interventions applied to patients with HF included quality of life, symptom burden, hospital readmission rate, the degree of ACP documentation, and mortality. A study measured the advancements in NYHA class to identify changes in HF-related functional levels before and after the intervention.¹⁷

Quality of life was measured in all selected studies using the generally used scales such as EuroQol 5 Dimensions Questionnaire,¹⁷ McGill Quality of Life Questionnaire,¹² and Functional Assessment of Chronic Illness Therapy-Palliative Care,¹⁶ as well as the HF disease-specific scales such as Minnesota Living With Heart Failure Questionnaire,¹⁴ Chronic Heart Failure Questionnaire,¹² or KCCQ.¹⁵⁻¹⁷ Among the disease-specific scales, KCCQ was used most frequently. Most of the studies reported that the quality of life improved statistically significantly following PC intervention.^{12,14,16,17}

As for symptom burden, the Edmonton Symptom Assessment Scale was used in 3 studies,^{12,14,17} and two of the



studies reported that symptom burden was significantly decreased after the intervention.^{12,14} Three studies evaluated depression or anxiety using the Patient Health Questionnaire-9^{14,15} or Hospital Anxiety and Depression Scale¹⁶ to verify the effect on emotional symptoms, reporting improvement after intervention. In addition, 1 study that measured spiritual well-being reported a significant improvement 6 months after the intervention using the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being.¹⁶ In one of the studies, changes in the functional level related to HF were measured using NYHA, and improved results were reported after PC intervention.¹⁷

Hospital readmission rates were measured in 5 selected studies,^{12,14-17} and a significant decrease was reported in two of them.^{12,17} The mortality rate was measured in 3 studies,^{13,15,16} of which only one¹⁵ reported a significant decrease in the 1-year mortality rate. One study evaluated whether an ACP was prepared, and a significant increase was reported within 6 months of the intervention.¹⁴ The use of PC services was measured in 2 studies,^{13,14} and a “do not resuscitate” order was assessed in 1 study,¹³ with no significant change observed in any of the studies.

DISCUSSION

This review reveals that the number of studies of the strongest methodological designs (ie, RCTs) has been increasing, showing the effectiveness of the PC approach for patients with HF across the settings. However, recent studies consistently reported slow PC referral for patients with HF, lower physical function, and higher hospital admission rates at the time of referral.⁸ This establishes the importance of making decisions regarding the palliative approach in an appropriate and timely manner. In this review, most of the selected studies considered life expectancy when deciding on referral to PC services, mainly for patients with a life expectancy of 6 months to 1 year. In addition, the NYHA classification and lowering of EF were used in most of the selected studies as the criteria for subject selection. The NYHA, as a severity classification based on the subjective symptoms of patients with heart disease, and the EF value—one of the markers of mortality, objectively indicating deterioration of cardiac function on the basis of ultrasound examination—can be used as useful reference points in deciding about a referral to PC in clinical environments.

In principle, PC should be provided on the basis of the needs of patients and their families, regardless of prognosis or disease stage.^{10,18} In particular, nonhospice PC interventions are not provided only to terminally ill or end-of-life patients.⁷ Above all, HF is a progressive condition, and it is difficult to accurately predict life expectancy due to the disease itself or associated complications.⁴ Objective risk models, such as the Seattle Heart Failure Model or

Meta-Analysis Global Group in Chronic Heart Failure risk calculator, are commonly used, but they do not reliably predict 1-year mortality at the population and individual level.¹⁹ Amid the difficulty of predicting the prognosis, there is a large difference in perception between providers and patients or between providers regarding the optimal timing of providing PC for patients with HF.²⁰ Therefore, the focus should be on the patients' experience and individualized needs for PC, rather than making decisions based solely on the objective criteria.

Routine screening of patient-reported outcome measures (PROMs) can be helpful. The RCTs included in this review revealed the effectiveness of quality of life and symptom burden by reporting the change in diverse PROMs including the Edmonton Symptom Assessment Scale, KCCQ, or Functional Assessment of Chronic Illness Therapy-Palliative Care. However, they did not use PROMs as participant selection criteria for PC intervention, except for 1 study. In clinical practice, validated PROMs or Needs Assessment Tool: Progressive Disease-Heart Failure, designed to be measured by the health care provider, can be useful.²¹ In addition, 4 selected studies presented shared decision-making interventions, of which only 1 study reported a significant improvement in the degree of ACP documenting after the intervention. Recent systematic reviews reported that the application of ACP was effective in the communication satisfaction and advance directives documentation of patients with serious noncancer illnesses including HF.^{22,23} It is necessary to use PC-shared decision-making tools, to take a tailored approach to the needs of the patients.

In the selected studies, the location in which PC intervention was provided varied from inpatient to outpatient settings (eg, home, clinic). In particular, the relatively recent RCTs analyzed in this review provided PC intervention in a mixed setting (inpatient to outpatient clinic or inpatient to home), emphasizing the importance of transitional PC care for patients with HF. According to the latest large cohort study, the rate of hospital discharge referral to community-based PC is on the rise in the United States.²⁴ The RCT conducted by Bekelman et al,²⁵ which was analyzed in this review, reported the effectiveness of home telemonitoring intervention for HF symptom assessment. In the latest RCT,²⁵ the authors further developed a nurse- and social worker-led PC telehealth intervention, which was published after the literature search and analysis of this review. In another recently published RCT²⁶ conducted by Bakitas et al, the authors developed nurse-led, early PC telehealth interventions. Although both RCTs reported no significant effects of PC intervention on quality of life and mood, developing and evaluating community-based tele-PC interventions using innovative technologies are necessary to ensure the continuity and accessibility of universal PC services.

Team-based specialized PC interventions are reported in all the selected studies. In addition, in all outpatient



setting studies—except the studies on which hospital-based specialized PC consultation interventions were devised—integrated approaches between the primary PC providers (nonpalliative clinicians including a cardiologist, HF nurse, advanced practice nurse) and the specialist PC providers were presented. A recent review reported that nurses can play a vital role in facilitating and supporting the goals-of-care communication for seriously ill patients.²⁷ However, several studies reveal that most primary PC providers, including nurses, have misconceptions of PC or have lower PC knowledge level.^{20,28} There is a need for strategic and ongoing education of practicing nurses such as The End-of-Life Nursing Education Consortium.²⁹ In addition, it is necessary to develop interprofessional education curricula for primary PC providers, who need to provide adequate PC intervention for patients with HF, even without professional qualifications.^{7,30}

The NCP guidelines emphasize comprehensive assessments of PC aspects.¹⁰ However, in this review, although efforts to alleviate the burden of physical symptoms and to assess psychosocial needs are reported in most of the selected studies, the cultural, social, and spiritual aspects are seldom mentioned. In addition, there are few cases where the family's or caregivers' needs are assessed. Most of the selected studies were conducted in Western countries, which has significant implications, considering the cultural and social characteristics of Asian countries, where families are the main caregivers for patients with chronic HF and sometimes hold higher decision-making power than patients.^{6,31} The emphasis worldwide is on diverse and inclusive environments, so PC interventions should be culturally tailored to meet the needs of patients and families/caregivers, should consider multiple determinants of health, and should be implemented to realize universal PC access.

The limitation of this study is that the sample sizes of the selected RCTs were small, hindering the generalizability of the study findings. In addition, this study reviewed overall aspects of PC delivery, including the common eligibility criteria for PC intervention. However, the characteristics of PC intervention contents and intervention measures and intervention dose comparisons were not presented. Secondary analysis of a recently published RCT²⁶ revealed that the dose of the PC intervention may affect the quality of life of patients with HF.³² The recently published RCTs, as well as future reviews, should include intervention dose-effect to ensure the repeatability of interventions.

CONCLUSION

This integrative review has confirmed the feasibility and effectiveness of PC intervention for patients with HF. The patients' needs-based PC intervention is fundamental, but the fact that the assessment of PROMs was not activated as the facilitator of PC intervention initiation in the selected

studies may have important implications for the development of future trials. Moreover, the selected studies insisted on a multidisciplinary approach between PC specialists and primary PC providers, including cardiac nurses and advanced practice nurses. Thus, the results of this study can be used to advocate for the development of educational programs for various providers to implement team-based PC interventions more sustainably and effectively. Finally, considering the trend of increasing community-based PC service, trials that pursue innovative approaches such as tele-PC must be further developed to verify the feasibility and effectiveness of high-quality PC delivery.

Acknowledgments

The authors thank the support from the Basic Science Research Program through the National Research Foundation of Korea, funded by the Ministry of Education (2016R1D1A1B03934948).

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