

DETERMINANTS OF HEART FAILURE SELF-CARE BEHAVIORS

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## **Abstract**

**RESEARCH SUBJECT:** Determinants of Heart Failure Self-Care Behaviors  
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Individuals with heart failure (HF) must perform self-care behaviors to prevent hospitalization. Self-care practices and the factors that influence performance of self-care are essential to maintaining health and preventing hospitalization (Schnell-Hoehn, Naimark, & Tate, 2009). The purpose of this cross sectional study is to examine self-care behaviors and the determinants of engaging in these behaviors in community-dwelling HF patients. This is a replication of a study conducted by Schnell-Hoehn et al. The framework is Connelly's model of self-care in chronic illness (Connelly, 1987). A convenience sample of 50 HF patients will be recruited from two small northwestern Indiana hospital HF clinics. The Self-Care Heart Failure Index will be utilized to measure self-care behaviors and self-efficacy. Enabling variables will be measured utilizing the Kansas City Cardiomyopathy Questionnaire, the General Well-Being Schedule, Sociodemographic and Clinical Variable Questionnaire, and the Charlson Co-Morbidity Index. The findings will provide information on variables that influence engagement in self-care behaviors allowing for individualized interventions and education to improve HF patient outcomes.

## Chapter I

### *Introduction*

Heart failure (HF) is a major public health concern for both developed and developing countries and is reaching epidemic proportions in the industrialized world (Riegel, Dickson, Kuhn, Page, & Worrall-Carter, 2010; Schnell-Hoehn, Naimark, & Tate, 2009). In the United States (US), approximately 5.8 million Americans have a diagnosis of HF, and each year, about 670,000 new cases of HF are identified (American Heart Association, 2010). The prevalence and incidence of HF in the US is expected to increase in the coming years due to an aging population and improved treatment of underlying conditions that cause HF (Annema, Luttik, & Jaarsma, 2009; Kutzleb & Reiner, 2006). Although advances in treatment, medication, and education have led to increased survival after HF diagnosis, the death rate for HF patients remains high with 20% mortality within 1 year and 50% mortality within 5 years (American Heart Association, 2010; Sayers, Riegel, Pawlowski, Coyne, & Samaha, 2008).

Economically, HF is one of the most expensive health care problems faced by the US health care system, costing an estimated 39.2 billion dollars in 2010 (American Heart Association, 2010; Kutzleb & Reiner, 2006). This is a 5% increase from the 2009 estimated HF cost. These costs include not only the cost of health care services and medication, but also the lost productivity of individuals with HF

(American Heart Association, 2010). However, approximately 70% of the total cost attributed to HF is associated with hospital readmission (Annema et al., 2009).

Heart failure is characterized by high mortality and, as the result of recurrent hospital admissions, high cost. Among hospitalized adults 65 years of age and older, heart failure is the most frequent admission diagnosis (Artinian, Magnan, Sloan, & Lang, 2002). Despite advances in HF disease management, HF readmission rates have doubled over the past 30 years and remain relatively high (Annema et al., 2009; Riegel et al., 2010). Approximately 25% to 50% of HF patients are readmitted to the hospital within 3 to 6 months after discharge (Annema et al., 2009; Sayers et al., 2008). Even patients in heart failure-management programs have been noted to have a 14% to 29% readmission rate (Annema et al., 2009). It is estimated that 50% of these readmissions are potentially preventable through engagement in effective self-care behaviors (Cameron, Worrall-Carter, Riegel, Lo, & Stewart, 2009; Riegel et al., 2010).

The majority of HF hospital readmissions can be attributed to failed self-care behaviors (Moser & Watkins, 2008; Riegel, Dickson, Goldberg, & Deatrck, 2007). In spite of improvements in HF knowledge, HF self-care is remarkably poor (Dickson & Riegel, 2009; Evangelista & Shinnick, 2008; Riegel et al., 2007). Successful HF self-care requires not only knowledge of HF, but also the skills to perform self-care maintenance and self-care management (Schnell-Hoehn, et al., 2009). Unfortunately, HF patients continue to struggle with the decisions required to effectively engage in the self-care skills that prevent and treat HF complications. The reasons for this struggle and the factors that lead to poor HF self-care have not been clearly identified in the nursing literature (Moser & Watkins, 2008). There is a need to determine the therapeutic self-care

behaviors of HF patients and the determinants of engagement in self-care to improve the content of HF education (Dickson & Riegel, 2009). Heart failure education which facilitates self-care decision making results in positive self-care behaviors. Improved engagement in HF self-care through education is needed to reduce hospital readmissions and the cost of HF care (Gary, 2006; Moser & Watkins, 2008).

### *Background and Significance*

Heart failure is a chronic, progressive condition in which the heart muscle is unable to pump enough blood through the heart to meet the body's needs (American Heart Association, 2010). There are several causes of HF, but the most common causes are coronary artery disease and high blood pressure (Oguz & Enç, 2008). In addition, other diseases such as myocardial infarction and diabetes can increase a person's risk for HF (Crowder, 2006). Common HF symptoms include shortness of breath, fatigue, and swelling (Paradis, Cossette, Frasure-Smith, Heppell, & Guertin, 2010). Heart failure contributes to limited daily functioning, hospital readmission, and higher mortality of those afflicted (Schnell-Hoehn et al., 2009). There is no cure for HF and the goal of treatment is to maintain a patient's optimal level of health, prevent illness, and control symptoms. As the disease progresses, patients living in communities must control exacerbation of symptoms to improve well-being and prevent hospitalization through self-care (Schnell-Hoehn, et al., 2009).

The concept of self-care has been studied by health care professionals for over 30 years (Riegel & Dickson, 2008). The World Health Organization (1983) defines self-care as:

activities individuals, families, and communities undertake with the intention of enhancing health, preventing disease, limiting illness, and restoring health. These activities are derived from knowledge and skills from the pool of both professional and lay experience. They are undertaken by lay people on their own behalf, either separately or in participative collaboration with professionals. (p. 181)

Although the literature uses varied terminology to describe the process of self-care, the concept of self care as an essential ingredient in chronic disease management is consistent (Riegel & Dickson, 2008). In addition, several studies support the hypothesis that appropriate self-care improves quality of life, improves clinical outcomes, and reduces the cost of care (Moser & Watkins, 2008). Self-care is an extremely complex decision making process that requires education and support from health care professionals. Even though self-care is a patient activity, it is most effective when performed with support and coaching from a nurse (Riegel & Dickson, 2008).

Self-care is considered to be an essential component to the effective management of HF. Heart failure self-care is composed of several behaviors that promote healthy lifestyle choices and adherence to treatment (Moser & Watkins, 2008; Schnell-Hoehn et al., 2009). Self-care behaviors include following recommended diet and fluid restrictions, managing weight, adhering to medication regimens, exercising, obtaining annual immunizations, managing symptoms, and seeking medical attention when necessary. Engagement in these behaviors reduces exacerbation of symptoms, improves functional ability, and reduces hospital readmission and mortality (Macabasco-O'Connell, Crawford, Stotts, Stewart, & Froelicher, 2008). Increased understanding of why some

patients with HF engage in self-care when others do not may improve the effectiveness of HF self-care.

Schnell-Hoehn et al. (2009) examined which HF self-care behaviors are therapeutic, what variables influence engagement in self-care, and the effects of self-efficacy on readmission. Psychological status, self-efficacy, comorbidities, and race influenced engagement in self-care. Higher psychological status, greater self-efficacy, or more co-morbidities indicated a greater ability to assume self-care behaviors among individuals with heart failure who lived in the community. Greater self-efficacy was also connected with fewer readmissions in this population. Europeans had significantly greater ability to assume self-care behaviors compared to people of Aboriginal descent. Replication of the Schnell-Hoehn et al. (2009) study will provide further understanding of what influences engagement in self-care and of specific therapeutic self-care behaviors in individuals with HF. Increased understanding may lead to individualized interventions and education that have the potential to reduce hospital readmissions and improve HF outcomes.

### *Problem Statement*

Individuals with HF must perform self-care behaviors to prevent hospitalization. Self-care practices and the factors that influence performance of self-care are essential to maintaining health and preventing hospitalization. Knowledge and understanding of self-care behaviors of HF patients in communities is limited (Schnell-Hoehn et al., 2009).

### *Purpose of the Study*

The purpose of this cross-sectional study is to examine self-care behaviors and the determinants of engaging in these behaviors in community-dwelling individuals with HF

recruited from two small northwestern Indiana HF clinics. This is a replication of a study conducted by Schnell-Hoehn et al. (2009).

### *Research Questions*

1. What are the most common therapeutic self-care behaviors engaged in by community-dwelling adults with HF?
2. Is there a relationship between the enabling variables of clinical and sociodemographic characteristics, functional ability, and psychological status with self-care decision making and engagement in self-care behaviors in community-dwelling adults with HF?
3. Is there a relationship between the predisposing variable of self efficacy with self-care decision making and engagement in self-care behaviors in community-dwelling adults with HF?
4. Is there a correlation between self-care efficacy and the number of hospitalizations for community-dwelling adults with HF?

### *Conceptual Theoretical Framework*

The conceptual framework for this study is Connelly's model of self-care in chronic illness (Connelly, 1987). The foundation of Connelly's model of self-care in chronic illness (MSCCI) is that self-care behaviors are performed in relation to a person's beliefs, values, and motives to achieve desired outcomes. The framework asserts that performance of self-care behaviors are influenced by predisposing and enabling variables. MSCCI allows the researcher to describe and relate factors that influence the performance of effective self-care behaviors (Schnell-Hoehn et al., 2009). Connelly's

model is appropriate for this study because it guides the nurse in the assessment of key variables that influence a patient's engagement in self-care behaviors.

### *Definition of Terms*

*Self-Care: Conceptual Definition.* Schnell-Hoehn et al. (2009) define self-care as the behaviors patients engage in to promote health and manage illness. Self-care in this study refers to the routine behaviors and activities that individuals with heart failure who live in the community engage in to care for themselves, maintain health, and manage HF symptoms. Self-care behaviors and activities will be defined according to the four categories of behaviors described in Connelly's MSCCI model. The four categories of behaviors include: (a) implementing and following general health behaviors and health promoting practices, (b) recognizing signs of health issues, (c) obtaining consultation and advice to address health issues when required, and (d) engaging in recommended individualized therapeutic self-care behaviors (Connelly, 1987).

*Self-Care: Operational Definition.* The concept of self care will be measured using two subscales of the Self-Care of Heart Failure Index (SCHFI): self-care maintenance and self-care management. The self-care maintenance subscale measures a participant's ability to assume 7 routine HF self-care behaviors using a 4-point Likert scale. The self-care management subscale measures a participant's ability to recognize the symptom of shortness of breath using a 4-point Likert scale. Higher subscale scores indicate better self-care (Schnell-Hoehn et al., 2009).

*Predisposing Variables: Conceptual Definition.* According to Connelly (1987), predisposing variables are the patient's motivations, beliefs, and experiences about health and illness that influence self-care. In this study, self-efficacy will represent predisposing

variables. Self-efficacy is the confidence a patient has in his or her ability to take control of a situation and engage in self-care (Schnell-Hoehn et al., 2009).

*Predisposing Variables: Operational Definition.* The predisposing variable of self-efficacy will be measured using the Self-Care of Heart Failure Index (SCHFI) subscale of self-confidence which is measured with a 4-point Likert scale. Higher scores indicate more confidence in one's ability to perform self-care. Higher confidence equates to higher self-efficacy (Schnell-Hoehn et al., 2009).

*Enabling Variables: Conceptual Definition.* Enabling variables are life circumstances and patient characteristics which affect a patient's decision to engage in HF self-care (Schnell-Hoehn et al., 2009). According to Connelly (1987) enabling variables include: (a) demographic characteristics, (b) psychological status, (c) regimen characteristics, (d) psychological and financial costs, (e) competency, (f) cues to action, (g) social support, and (h) the characteristic of the health care system. For this study, the concept of enabling variables will include functional ability, psychological status, sociodemographic variables, and clinical variables.

*Enabling Variables: Operational Definition.* The concept of enabling variables will be measured using the Kansas City Cardiomyopathy Questionnaire (KCCQ), the General Well-Being Schedule, and a sociodemographic and clinical characteristics questionnaire. The KCCQ subscales of physical and social limitations are designed to measure functional ability of HF patients on a 5-point Likert scale. Higher scores indicate fewer limitations and better functional ability. The General Well-Being Schedule is designed to measure psychological status of community-dwelling patients. A total of six dimensions of well-being including anxiety, depression, self-control, positive well-being,

vitality, and general health, are measured using this scale. A higher score indicates better well-being. Sociodemographic and clinical characteristics will be collected using a self-reported questionnaire (Schnell-Hoehn et al., 2009).

*Hospital Readmission: Conceptual Definition.* Hospital readmission is the return for admission to the hospital for exacerbation of HF symptoms during the time period for the study.

*Hospital Readmission: Operational Definition.* Hospital readmission is measured by the number of return hospital admissions for exacerbation of HF symptoms during the time period for the study. For this study readmission data will be obtained by review of the study participant's HF clinic medical record. Heart failure clinic staff maintains records of hospital admissions for their patients.

#### *Limitations*

This study is limited by methodology. The sample size is small and a convenience sample will be used. This will restrict the population to which findings can be generalized. Utilizing two locations for the study will reduce this limitation. Self-reporting of self-care behaviors by participants is also a limitation and can affect reliability of the data collected. To reduce this limitation, standardized education on the methods of measurement used in this study will be provided to a single data collector.

#### *Assumptions*

The following assumptions are identified:

1. Self-care promotes health while managing illness.
2. Engagement in self-care behaviors is influenced by a person's beliefs, values, experiences, and motives to obtain positive outcomes.

3. Community members with HF must perform self-care behaviors to improve health and reduce hospitalization.
4. Heart failure education is essential to effective self-management.

### *Summary*

Heart failure is major health concern in the United States. Poor control of HF symptoms is associated with hospital readmission, increased cost, and increased mortality. Self-care is required to effectively manage HF. An understanding of which HF self-care behaviors are therapeutic and what influences patients' engagement in self-care is needed for individualized interventions and education to improve HF patient outcomes. The purpose of this study is to examine self-care behaviors and the determinants of engaging in these behaviors in community-dwelling patients with HF. Connelly's model of self-care in chronic illness which allows the researcher to describe and relate factors that influence the performance of effective self-care behaviors will provide the framework for this study. This is a replication of a study conducted by Schnell-Hoehn et al. (2009).

## Chapter II

### *Literature Review*

#### *Introduction*

Heart failure (HF) is a chronic, progressive illness that affects an estimated 5 million Americans (Kutzleb & Reiner, 2006). Common symptoms include shortness of breath and fatigue. As the disease progresses, patients living in the community must control exacerbation of symptoms to improve well-being and prevent hospitalization. Poor self-management results in reduced quality of life and increased financial burden. There is no cure for HF, and successful treatment must include mastery of self-care behaviors (Schnell-Hoehn et al., 2009). An understanding of which HF self-care behaviors are therapeutic and what influences engagement in self-care will allow for individualized interventions and education and improved HF patient outcomes.

#### *Purpose*

The purpose of this cross-sectional study is to examine self-care behaviors and the determinants of engaging in these behaviors in community-dwelling HF patients. This is a replication of a study conducted by Schnell-Hoehn et al. (2009). Review of the literature for this study included research articles on (a) HF self-care education and skills development and (b) determinants of HF self-care.

### *Conceptual Framework*

The conceptual framework for this study is Connelly's model of self-care in chronic illness (Connelly, 1987). Heart failure is a chronic illness that requires adherence to a complex set of self-care behaviors. Self-care is the ability to perform behaviors that support health and well-being while managing illness. Life circumstances, past experience, and health beliefs are hypothesized to affect a person's ability to successfully adopt therapeutic self-care behaviors (Schnell-Hoehn et al., 2009).

The foundation of Connelly's model of self-care in chronic illness (MSCCI) is that self-care behaviors are performed in relation to a person's beliefs, values, and motives to achieve desired outcomes. The framework asserts that performance of self-care behaviors are influenced by predisposing and enabling variables. Predisposing variables include health beliefs and past experiences; an example is self-efficacy. Enabling variables are life circumstances which affect the decision making for self-care. Functional ability is an example of an enabling variable (Connelly, 1987). MSCCI allows the researcher to describe and relate factors that influence the performance of effective self-care behaviors (Schnell-Hoehn et al., 2009). Connelly's model of self-care in chronic illness is an appropriate model for this study.

### *Heart Failure Self-Care Education and Skills Development*

Education that improves comprehension and engagement in beneficial health behaviors is required to optimize HF patient outcomes. Educational programs are often evaluated based on the overall program and do not address the effects of individual topics on outcomes. Little is understood about the link between specific HF educational topics and HF outcomes. Boren, Wakefield, Gunlock, and Wakefield (2009) conducted a

systematic review to (a) identify HF related educational topics, (b) identify outcomes used to evaluate educational topics, and (c) identify which educational topics are associated with improved HF outcomes.

A sample of 35 HF studies published between 1995 and 2006 was selected from a search conducted using three databases: MEDLINE, CINAHL, and the Cochrane Register of Controlled Trials. Studies were conducted in nine countries and included a total of 7,413 subjects. Inclusion criteria were restricted to HF randomized control studies and studies evaluating HF self-management education programs with patient specific HF outcomes. The quality of studies meeting inclusion criteria were evaluated using the Jadad scale. Studies were excluded if they were not conducted in English, were not randomized, and did not contain a control group. Studies that did not identify the educational content or educational techniques in their programs or provided similar education in all sections of the study were also excluded. In addition, studies that measured only knowledge in study outcomes were excluded (Boren et al., 2009).

Data were extracted from selected studies by two of the researchers working independently from each other. Differences between their results were discussed and resolved through reference to the original studies. Abstracted data included HF subjects' characteristics, HF intervention characteristics, HF educational content, and HF outcome measures. Heart failure educational content topics were then categorized into one of four groups: (a) knowledge and management, (b) social interaction and support, (c) fluids management, and (d) diet and activity. Heart failure outcomes were also categorized into one of nine categories: (a) satisfaction, (b) learning, (c) behavior, (d) medications, (e)

clinical status, (f) social functioning, (g) mortality, (h) medical resource utilization, and (i) cost (Boren et al., 2009).

Findings from the systematic review of the 35 research studies identified that the majority of HF education was provided to subjects by nurses (26 studies). The main teaching technique utilized by providers was verbal with supplemental printed educational materials (34 studies) and the majority of education was provided after an episode of acute hospitalization (21 studies). From the studies, 20 educational topics were identified. The two most common educational topics identified were review of medications and side effects (27 studies) and symptom recognition and self-management (28 studies). The least frequently studied topics included one study of subject communication with physician and two studies each on stress, depression, and measurement of ankle circumference (Boren et al., 2009).

Boren et al. (2009) evaluated HF outcomes across the 35 studies. A total of 113 unique outcomes were identified. Of the 113 outcomes, 53% showed significant improvement in at least one of the studies. A significant improvement was noted in the outcome categories of learning, behaviors, and medication in the majority of studies. In contrast, mixed results were identified in the outcomes of satisfaction, clinical status, social functioning, mortality, medical resource utilization, and cost throughout the studies. Evaluation of the relationship between educational content topics and HF outcomes was also evaluated by Boren et al. (2009). Findings were not significant, but several relationships trended toward significance. Boren et al. (2009) also identified that education with content on a sodium restricted diet was associated with a decrease in

mortality ( $p = .07$ ) and education with content on appropriate follow-up with a health care provider was associated with decreased cost ( $p = .10$ ).

Boren et al. (2009) concluded that HF educational interventions should be based on established research evidence. The review supports the belief that education improves HF outcomes. In addition, several content topics may have a relationship to certain HF outcomes. From these conclusions Boren et al. (2009) assert that further research is needed to understand how the design and approach of HF education affects HF outcomes.

Heart failure patient education is essential to the effective self-management of the disease. Education on HF is primarily provided by nurses. Further investigation on the impact of a nurse-directed education approach with complementary medical management is needed. Kutzleb and Reiner (2006) evaluated the effects of a nurse-directed self-care management education program on the quality of life and functional capacity of patients with HF. Nurse-directed patient education concentrated on lifestyle modification, weight management, medication and diet compliance. Kutzleb and Reiner (2006) used two concepts to frame this study: quality of life and functional capacity. The concept of quality of life (QOL) was developed from the literature review. The concept of functional capacity was defined as the ability to perform routine activities of daily living.

A convenience sample of 23 HF patients, 13 from a community-based hospital medical clinic and 10 from an inner city medical center cardiology clinic, were recruited. Participants ranged in age from 18 to 75 years, were literate in English, and had a diagnosis of HF with evidence of systolic or diastolic dysfunction confirmed by echocardiogram. Only participants with HF as a primary diagnosis were included. Those

with mental illness, cognitive impairment, or a terminal illness were excluded (Kutzleb & Reiner, 2006).

Using a quantitative, quasi-experimental design, Kutzleb and Reiner (2006) divided participants into an experimental or control group. Community-based participants in the experimental group received nurse-directed education in addition to regular care from a physician. The inner city based participants received regular care from a cardiologist and served as the control group. Demographic and clinical data of participants was collected using an interview process. The New York Heart Association (NYHA) functional classification was used to categorize patients according to the severity of their symptoms. Reliability and validity of the tool were not disclosed. Participants' quality of life was assessed using the QOL Index-Cardiac IV developed by Ferrans and Powers. The tool measures participant's satisfaction with different facets of life and their importance. Components assessed include total QOL, health and functioning, psychological/spiritual, social and economic, and family satisfaction. A total score of 30 was possible. A higher score was associated with higher QOL. The tool is considered to be reliable with a Cronbach's alpha of .84 to .98 across 26 studies. Validity was not disclosed. A six-minute walk test was used to measure functional capacity at baseline, three months, and nine months. Patients walked as fast and far as they could in the allotted six minutes. Kutzleb and Reiner (2006) attempted to control variation in the walk test by standardizing the administration of the test.

Kutzleb and Reiner (2006) identified that participants who received nurse-directed education had a significant improvement in total QOL ( $F = 13.569, p = .000$ ), health and function ( $F = 3.995, p = .003$ ), social and economic ( $F = 14.109, p = .000$ ),

psychological and spiritual ( $F = 13.212, p = .000$ ), and family satisfaction ( $F = 2.384, p = .048$ ) when compared to participants with physician-directed education. In addition, at nine months, significant improvements in baseline QOL were demonstrated for the nurse-directed education group. This was especially evident in the area of health and function satisfaction, which improved 62% with nurse-directed education compared to only 25% with physician-directed education. No significant difference in functional capacity was noted between the experimental and control group ( $F = 0.228, p = .949$ ). Both groups were found to have improved functional capacity at nine months; however, the nurse-directed education group had significantly greater improvement, with an increase of 73%, while the physician-directed group only had a 9% improvement.

Kutzleb and Reiner (2006) concluded that nurse-directed patient education for HF symptom management has a significant positive effect on QOL and functional capacity. In addition, a positive correlation between QOL and functional capacity was identified. Participants in the nurse-directed education group were able to successfully engage in lifestyle modification, weight management, and medication and diet compliance. Kutzleb and Reiner (2006) also concluded that further research is needed to study the effects of interventions that address depression and lower QOL to determine how facets of QOL such as health and functioning affect mortality or hospital readmission of individuals with HF.

Current HF education focuses on improving patient knowledge. To improve HF outcomes, patients with HF require not only knowledge, but also skills to perform both self-care maintenance and self-care management. Little is understood about how to improve the self-care skills of HF patients. Dickson and Riegel (2009) assessed (a) the

skills patients with HF perceived they need to successfully engage in self-care and (b) how patients developed self-care skills. The researchers utilized two conceptual models to frame this study: (a) the model of naturalistic decision making and (b) the model of chronic illness self-management behavior proposed by Hill-Briggs.

A sample of 85 participants was obtained from three previous studies conducted on HF self-care. Eligible participants were diagnosed with symptomatic HF for at least 3 years, spoke English, and were literate. Those with neurological deficits or those unable to perform tests were excluded. Participants were considered unable to perform tests if they were diagnosed with dementia, unable to speak or read English, had a reading level of less than 5<sup>th</sup> grade, or were visually or hearing impaired. Participants ranged in age from 25 to 85 years. The majority of participants were white (63.5%), male (58.9%), had systolic HF (78.6%), had HF for an average of 6 years, and had a class III on the NYHA functional scale (52.9%). The most common cause of HF was idiopathic and ischemic cardiomyopathy. The mean ejection fraction of participants was  $32.55\% \pm 18.07\%$  (Dickson & Riegel, 2009).

Qualitative descriptive meta-analysis techniques were used to reanalyze themes from three previous HF studies. Within-study and across-study analyses were completed and results were translated to allow for a more extensive understanding of HF self-care skill development. The benefit to using a qualitative descriptive meta-analysis is that it synthesizes data and allows the researcher to draw from a more comprehensive data set to answer new questions (Dickson & Riegel, 2009).

Results of the meta-analysis identified that participants perceived needing both tactical and situational skills to perform effective HF self-care. Tactical skills, or self-care

maintenance skills, are the “how to” in completing self-care. Several tactical skills were identified including, but not limited to, (a) obtaining a reliable body weight, (b) how to assess edema, and (c) how to assess fatigue and shortness of breath. Results showed that the most challenging skills for participants were planning skills related to dietary restrictions, diuretic titration, and exercise. The most common skill possessed by the majority of the participants was taking medications (Dickson & Riegel, 2009).

Situational skills or self-care management skills are the “what to do when” for completing self-care. Several situational skills were identified including, but not limited to, (a) how to differentiate HF symptoms from other conditions, (b) how to determine when to take additional diuretics, and (c) how to determine if treatment was effective. Participants with poor situational skills were at high risk for failure in self-care. Those with good situational skills were able to link symptoms to the cause and then develop a well thought out plan to address self-care needs. Participants with both good tactical skills and good situational skills had higher levels of confidence and were able to handle difficult HF situations (Dickson & Riegel, 2009).

Researchers found that participants developed the skills needed to perform self-care through trusted resources, support, and experience. Resources for skill development included family, friends, and neighbors. The majority of participants did not see health care providers as a resource to help them build their self-care skills. Tangible and emotional support of family and friends was considered the most important component to successful self-care skill development. Building on resources and support, participants were, over time, able to use their experience and develop the skills required for self-care (Dickson & Riegel, 2009).

Dickson and Riegel (2009) concluded that effective self-care requires specialized skills in both self-care maintenance behaviors and self-care management of symptoms. While traditional education provides knowledge of HF, education on skill development is lacking. Dickson and Riegel (2009) believe that further research should focus on developing coaching interventions that address tactical and situational skills.

To control symptoms and prevent hospitalization, patients with HF must perform self-care. However, only a small number of patients with HF master the behaviors required for effective self-care. Riegel et al. (2007) investigated how expertise in HF self-care develops. The purpose of this mixed-method study was to describe and understand why some patients perform self-care effectively while others do not. A conceptual self-care decision making model developed by Riegel and colleagues was used as the framework for this study.

A purposeful sample of 29 participants diagnosed with chronic, symptomatic HF was recruited from an urban HF clinic in the northeastern United States. Clinic staff selected only individuals who were identified as outliers as participants; those with extremely good or extremely poor self-care. All participants were required to have a diagnosis of HF confirmed by echocardiogram and their physician. They were also required to speak English. Exclusion criteria included cognitive impairment, uncorrected hearing deficits, and complicating serious comorbidities. The majority of participants were Caucasian, male, married, elderly, retired, had a high school education or higher, and had HF for an average of six years (Riegel et al., 2007).

Several tools were utilized by Riegel et al. (2007) to collect data on factors that influence effective HF self-care. A sociodemographic survey was completed by each

participant. Comorbidities were categorized using the Charlson Comorbidity Index. Validity was demonstrated by the instrument's authors. Physical limitations and symptoms were assessed using the NYHA functional class. The tool is widely used in National Institute of Health studies and has demonstrated reliability. The Self-Care Heart Failure Index (SCHFI) was used to quantify HF self-care by means of three subscales: self-care maintenance, self-care management, and confidence. Each subscale was measured using a 4-point Likert scale with higher scores indicating better self-care. The self-care maintenance subscale assessed participant's compliance with HF treatment and self-care behaviors. The self-care management subscale assessed participant's ability to identify symptoms, initiate treatment, and evaluate treatment effectiveness. The confidence subscale assessed participant's belief that they could effectively engage in self-care. The tool was reliable with a coefficient alpha of .77. Validity was supported through factor analysis (Riegel et al., 2007).

Riegel et al. (2007) used two instruments to assess the cognitive status of participants. The two brief neurobehavioral tests included the Probed Memory Recall Test and the Digit Symbol Substitution Test. The Probed Memory Recall Test measured short-term memory and the ability to learn. Participants were shown four word pairs and after a period of time asked to recall them. A reduction in recall correlates to a reduction in anterograde memory. Reliability of the tool was not disclosed. Prior testing has shown the tool to have good construct and discriminant validity. The Digit Symbol Substitution Test was used to measure attention and cognitive processing. Participants were required to recall and draw symbols corresponding to numbers. Reliability was not disclosed. The tool has been shown to have discriminant reliability (Riegel et al., 2007).

Riegel et al. (2007) used scales to measure the affects of excessive day-time sleepiness, social support, and depression on HF self-care. The Epworth Sleepiness Scale was used to measure extreme day-time sleepiness on a 4-point Likert scale. A score of greater than 11 correlated with excessive sleepiness. The test was reliable with a test-retest reliability of .82 and inter-rater reliability alpha coefficient of .88. The McMaster Family Assessment Device was used to measure family functioning related to problem solving, communication, roles, affective responsiveness, affective involvement, behavior control, and general functioning. Each item of the 60-item scale was measured on a 4-point Likert scale. Families were categorized into high or low functioning groups based on total scores. Reliability was good with a test-retest reliability of .71 and an internal consistency of .96. The Patient Health Questionnaire (PHQ-9) was used to assess depression of participants using a 4-point Likert Scale. The tool was reliable and valid with 88% sensitivity and 88% specificity for detecting major depression (Riegel et al., 2007).

Of the 29 participants, Riegel et al. (2007) found that ten were poor in self-care, 16 were good in self-care, and only three were experts in self-care. Results identified that the experts in self-care were women, home makers, and lived alone. They had been diagnosed with HF within the last 3 to 6 years and had a NYHA class of III or IV. Experts had a higher degree of knowledge and skill in HF self-care maintenance and management. Compared to participants with good or poor self-care, experts were older, had less formal education, and a higher Charlson Comorbidity Index. In addition, experts had a lower body mass index and lower day sleepiness in comparison to participants with good or poor self-care. Researchers also found that self-care maintenance and self-care

management on the SCHFI increased as expertise increased. However, no correlations were identified between SCHFI confidence and expertise. SCHFI confidence was found to be higher in those participants who were judged to be good in self-care. Participants with poor self-care were found to have misconceptions and limited knowledge of HF self-care. They also had had higher levels of impaired memory, attention, and cognitive processing. In addition, participants with poor self-care had higher levels of excessive day sleepiness, depression and impaired family functioning.

Riegel et al. (2007) concluded that effective decision making is critical to developing expertise in HF self-care behaviors. Key components of decision making include knowledge, experience, skill, and values which are used to link HF clinical information to self-care decisions. Experts in self-care behaviors sought knowledge of self-care, had prior experience in self-care, had a well developed HF action plan, and strong family support which improved the effectiveness of self-care behaviors. Riegel et al. (2007) believe that further research needs to focus on the factors that develop expertise in HF self-care. Research should include testing interventions that identify and treat excessive sleepiness, depression, and cognitive impairment and interventions that engage families in HF self-care.

#### *Determinants of Heart Failure Self-Care*

Over the past decade, the number of women with HF has steadily increased. Little is known about the self-care practices of women with diastolic heart failure (DHF). Gary (2006) conducted a study to describe HF self-care behaviors and the demographic and clinical characteristics that influence self-care in elderly women with DHF. The theoretical framework utilized for this study was Riegel's self-care model. The theory

proposes that self-care occurs through a naturalistic decision making process to maintain wellness through behaviors of self-care maintenance and self-care management of symptoms.

Gary (2006) obtained a convenience sample of 32 women, age 50 or greater, with a diagnosis of DHF or diastolic dysfunction from a large academic center in central North Carolina. Inclusion criteria required a left ventricular ejection fraction of 45% or greater documented within the last year by echocardiogram, catheterization, ventriculography, or radionuclide ventriculography. Participants were also required to be following the pharmacological therapy recommended by the American College of Cardiology and American Heart Association Guidelines for HF. Only women with a Mini-Mental Status Examination score of 25 were considered for the study. Participants who had a myocardial infarction in the last six months, had chronic chest pain, had uncontrolled hypertension, or had renal insufficiency were excluded from the study. In addition, HF patients who were hospitalized were also excluded.

Participants selected for the study had an average age of 68 years, an average education level of 11.9 years, and had been diagnosed with HF for on average seven years, had an LVEF of 55.5 %, and had an average body mass index of 33.5. The majority of participants was Caucasian (59%), widowed (41%), lived alone (41%), had an income below poverty (59%), and had a NYHA functional class of Class III (59%). The majority of participants also had three or more comorbidities. The top three comorbidities identified included hypertension (88%), arthritis (69%), and depression (47%). Frequent medications taken by participants included diuretics (81%), angiotensin-converting enzyme inhibitors (53%), and beta-blockers (47%) (Gary, 2006).

Clinical and demographic data were collected from the participant's medical record using a structured data sheet. A semi-structured interview guide was created from a detailed literature review on HF self-care. Two experts in HF management then reviewed the guide and revisions were made so that there was a 90% agreement on each item (Gary, 2006).

From the results of the interviews common themes of the self-care practices of women with DHF emerged. Gary (2006) identified that 19% of participants weighed themselves daily, even though 44% recognized the importance of this self-care maintenance behavior. Only 33% of the participants reduced their sodium intake. Participants were not able to interpret sodium food labels (87%) and 44% did not comprehend that sodium and salt were synonymous. In addition, a participant's cultural dietary practices and limited financial resources strongly influenced dietary decisions. It was also identified that most participants took their medication as prescribed (72%); however, those who did not cited interference with plans as a barrier to compliance. The most common medication taken by participants was Lasix. The majority of participants had difficulty understanding their medications side effects or how to evaluate the effectiveness of medication based on HF symptoms. The most recognized symptoms that limited physical activity included shortness of breath and fatigue. In order to reduce exhaustion, participants stated that they had to plan in advance for outside activities. Most sought medical attention only for acute HF episodes. Few were able to identify the significance of symptoms, such as edema, which gradually increase over time. In addition, most participants confused other comorbid conditions with HF symptoms and did not seek care. Several thought that they would improve without any interventions.

Participants identified the ability to afford care and the ability to access transportation as barriers to seeking care. Quality of life was negatively affected by progressive dyspnea and fatigue. Quality of life also decreased due to HF symptoms because participants were unable to spend as much time with family or friends. Of the total study participants, 87% indicated that they had a support system (Gary, 2006).

From the findings, Gary (2006) concluded that women with DHF had difficulty in complying with HF self-care behaviors. A lower socioeconomic status was found to increase the risk for poor self-care and poor clinical outcomes. Decisions to engage in self-care were greatly influenced by the need to maintain role responsibilities, family obligations, and social outings. Quality of life was negatively affected by exertional intolerance; the researchers asserted that exercise is essential to successful control of HF symptoms. Women were found to delay seeking medical treatment due to errors in decision making and lack of experience. For this population, education is needed on physical activity and social support. Depression screenings are also needed for this population. Gary (2006) concluded that further research is needed to determine the effects of socioeconomic status on engagement in HF self-care behaviors.

Little is known about the self-care behaviors of patients with HF who are of low socioeconomic status, indigent, or underinsured. Macabasco-O'Connell et al. (2008) conducted a study to understand the effects of socioeconomic status on HF self-care behaviors. The purposes of this descriptive, cross-sectional study were to (a) identify demographic and clinical characteristics of indigent patients with HF, (b) identify the HF self-care behaviors they perform, and (c) investigate barriers to performing self-care

behaviors. The concept of self-care as defined by Riegel, Carlson, and Glaser was utilized to frame this study.

Macabasco-O'Connell et al. (2008) obtained a convenience sample of 65 participants from 3 cardiology clinics and 1 community hospital. All were located in central California and primarily served patients who were indigent. Only participants with a primary or secondary diagnosis of HF or a diagnosis of cardiomyopathy within the last two years were included in the study. Those discharged to a long-term care facility and those with survival expectancy of less than three months were excluded.

Data were collected during a 6-month period using a semi-structured interview process. Demographic and clinical data including the Charlson Comorbidity Index and the NYHA Functional Classification were obtained. During the interview, a modified SCHFI containing 18 items was administered to evaluate self-care maintenance and self-care management of HF symptoms. Adequate discriminant and concurrent validity have been reported for previous revisions. The self-care maintenance subscale measures seven routine self-care behaviors of HF patients using a 4-point Likert scale. Higher scores indicate better self-care. Behaviors included monitoring daily weight, following a low-sodium diet, engaging in exercise, weight management, medication compliance, obtaining routine immunizations, and physician follow-up. Reliability for this subscale was questionable with an alpha coefficient of .60. To measure self-care management, the symptom of shortness of breath (SOB) was assessed using 12 questions which were evaluated on a 4-point Likert scale. Higher scores indicated better self-care. Questions assessed the participant's ability to evaluate the symptom of SOB, recognize the significance of SOB, implement a strategy to treat SOB, and evaluate the effectiveness of

that treatment. The subscale was reliable with an alpha coefficient of .80. A total score of 14 or more on the modified SCHFI was considered “good self-care”. The interview process also contained open-ended questions to obtain qualitative data on barriers to self-care (Macabasco-O’Connell et al., 2008).

Results of the modified SCHFI demonstrated that participants had total self-care behavior score ranging from 5.29 to 19 (mean score 12.8). Fifty-four percent of participants had a score below 14 indicating poor self-care behavior. When each of the seven routine HF self-care behaviors were examined, Macabasco-O’Connell et al. (2008) found that 43% of the participants weighed themselves daily, 75% followed a low sodium diet, 51% exercised daily, 99% took their medication as prescribed, 48% maintained an ideal weight, 85% followed up with their doctor, and 57% were vaccinated. Of the 12 self-care management questions answered by participants, 71% of participants reported difficulty breathing in the last three months; however, only 28% recognized the significance of SOB. In addition, just 28% of participants implemented strategies to control SOB. Strategies implemented to control SOB included reduction in salt intake (22%), reduction in fluid intake (24%), and taking additional diuretics (20%). Of strategies implemented, only 20% of participants felt the strategies were effective (Macabasco-O’Connell et al., 2008).

Several challenges and barriers to self-care were reported by participants. Concerns reported by Macabasco-O’Connell et al. (2008) included lack of HF education (23%) and lack of understanding about breathing symptoms (23%). Barriers reported included symptoms of HF (23%), financial concerns (12%), and inability to care for self (9%). Participants also reported behaviors that improved outcomes. Positive behaviors

included taking medications (18%), talking to their physician (15%), and obtaining information on HF (15%).

Macabasco-O'Connell et al. (2008) concluded that HF patients who are of lower socioeconomic status, indigent, or uninsured have difficulty engaging in self-care behaviors. They identified that this population faced additional challenges including extreme life and financial stressors, limited knowledge and insufficient support, as well as having multiple comorbid conditions. In addition, symptom recognition and knowledge of treatment options were major barriers to HF self-care in this population. Macabasco-O'Connell et al. (2008) also concluded that nurses provide the majority of HF education on self-care behaviors. As a result Macabasco-O'Connell et al. (2008) believe that further research is needed to understand the effects of ethnicity and socioeconomic status on engagement in self-care behaviors to develop nursing interventions that improve compliance and outcomes.

Heart failure patients in communities must perform self-care behaviors to promote health and manage their illness. Schnell-Hoehn et al. (2009) examined why some community members with HF performed self-care behaviors while others did not. The purpose of this cross-sectional study was to identify self-care behaviors and the determinants of engaging in these behaviors in community-dwelling HF patients. The conceptual framework for this study was Connelly's model of self-care in chronic illness.

A convenience sample of 65 HF patients, treated in an outpatient clinic with an undisclosed location, was obtained. Inclusion criteria for this study were established which required participants to be at least 18 years old, speak English, and have an established HF diagnosis for at least 6 months. The majority of subjects were men (77%),

married (71%), and unemployed/retired (45%). In addition, the majority of subjects had completed less than a high school education (43%), had an ejection fraction of 21%-40% (55%), and had a Class III functional status (44%) (Schnell-Hoehn et al., 2009).

Data were collected over a 5-month period using several measurement tools. The SCHFI was used to measure self-care behaviors and self-efficacy by means of three subscales; self-care maintenance, self-confidence, and self-care management. Validity was supported by factor analysis and subscale to subscale correlation; however, the statistics involved were not disclosed so validity is questionable. Reliability of this tool is acceptable with a coefficient alpha of .76 (Schnell-Hoehn et al., 2009). Functional ability was measured using the Kansas City Cardiomyopathy Questionnaire- physical and social limitations subscales. Validity was supported by evaluation against the New York Heart Association Functional Class Tool ( $p < .0001$ ). The tool was reliable with a coefficient alpha of .90 (Schnell-Hoehn et al., 2009). The General Well-Being Schedule was used to measure psychological status. The tool was moderately valid with a Spearman correlation coefficient ranging from 0.66 to 0.70 and reliable with a coefficient alpha of  $> .90$  (Schnell-Hoehn et al., 2009). Sociodemographic and clinical variables were measured with a questionnaire. The Charlson Co-Morbidity Index (chart version) was used to measure comorbidity. Validity and reliability were not disclosed.

From the results Schnell-Hoehn et al. (2009) found that the most frequently identified self-care behaviors were taking medication as prescribed (95%), seeking physician guidance (80%), and following sodium restriction (70%). There were no significant relationships between HF symptom status and self-care strategies except that symptomatic participants were more likely to obtain flu shots ( $p = .018$ ). Participants

with higher psychological status and self-efficacy had greater ability to assume self-care behaviors. In addition, Europeans had significantly greater ability to assume self-care behaviors compared to individuals of Aboriginal descent ( $p = .0481$ ). Heart failure participants without hospitalization were significantly more confident in their self-care abilities than hospitalized participants ( $p = .019$ ). A significant positive relationship exists between self-efficacy and self-maintenance ( $p = .002$ ) and self-efficacy and summative SCHFI ( $p = .19$ ).

Over half of the participants, had mild physical limitations (57%) or social limitations (55%). In addition, 48% experienced positive well being, and 35% experienced severe psychological distress with significant anxiety and distress. A significant positive relationship between psychological status and the self-care maintenance item of adopting self care behaviors was identified ( $p = .03$ ). The majority of participants had two or more comorbidities (61%). The most common were myocardial infarction and diabetes. Participants with three to four comorbidities had the greatest ability to assume self-care behaviors. In addition, Schnell-Hoehn et al. (2009) identified a significant relationship between comorbidity and self-care maintenance ( $p = .0231$ ).

Schnell-Hoehn et al. (2009) concluded that psychological distress negatively affects self-care behaviors of HF patients. Psychological screening and interventions that encourage and support positive self-efficacy are required to improve the success of engagement in HF self-care behaviors. Schnell-Hoehn et al. (2009) also concluded that education consistent with cultural beliefs is necessary for HF patients to make appropriate self-care decisions. To successfully address the effects of cultural beliefs and practices on

HF self-care behaviors, nurse education on culture is essential. Additional research is also needed on the effects of aboriginal culture on HF self-care behaviors.

Self-care behaviors have a positive effect on HF outcomes. Heart failure outcomes are known to be better in women than men, yet little is known about the effect self-care has on this phenomenon. Riegel et al. (2010) studied the HF self-care behaviors of men and women. The purpose of this cross-sectional, comparative, mixed method study was to identify gender specific HF self-care behaviors and to identify gender specific barriers and facilitators to self-care.

A sample of 27 participants was recruited from four outpatient sites in Melbourne, Australia. A purposeful sample was used to attempt to obtain equal number of men and women; however, of the 40 participants enrolled, only 27 completed the entire study. The remaining participants included 8 women and 19 men. Criteria for inclusion were a diagnosis of chronic HF for at least 6 months, a NYHA functional class of II or III, and a Mini Mental State Exam score of greater than 24. Criteria for exclusion were a recent diagnosis of HF, inability to speak English, and living in an extended care facility (Riegel et al., 2010).

Riegel et al. (2010) collected both qualitative and quantitative data on gender specific self-care for comparison. Qualitative data were collected using a semi-structured interview process. Interview questions included topics of preventing and managing symptoms, barriers and facilitators to self-care, advantages and disadvantages to self-care, and motivation to complete self-care. Quantitative data were collected to measure self-care maintenance, management, confidence, support, and mood. The SCHFI was employed to measure self-care of HF on three subscales of self-care management, self-

care maintenance, and self-care confidence. Construct validity has previously been demonstrated. Although the SCHFI is widely used, reported internal consistency reliability ranging between .55 and .70 for two of the three subscales raises questions about the reliability of the instrument. The Multidimensional Scale of Perceived Social Support (MSPSS) was used to measure participants' perceived support from their family, friends, or significant other on a 7-point Likert scale. The tool was reliable with a Cronbach's alpha coefficient of .88. Validity was not disclosed. Mood was assessed using the 9-item PHQ-9 to measure depression, and the 6-item Brief Symptom Inventory (BSI) anxiety subscale was used to measure anxiety. The PHQ-9 was had a sensitivity of 88% and a specificity of 88%. The BSI is reported to be reliable and valid (Riegel et al., 2010).

Qualitative themes of self-care from the interview were compared to quantitative results of self-care behaviors on the SCHFI to assess concordance. From the narrative, no specific differences in self-care maintenance between genders were noted. However, differences in self-care management were recognized. Men were found to have better decision making abilities related to HF symptom recognition and treatment initiation. The disparity appeared to be related to differences in self-care confidence, social support, and mood. From the quantitative data, women reported higher self-care management; however, no significant difference in self-care management was noted between genders. When comparing qualitative and quantitative data on self-care maintenance, 75% agreement was noted. When comparing qualitative and quantitative data on self-care management, 73% agreement was noted. Results of self-care confidence from the narrative identified that men were more confident in their ability to interpret and respond to HF symptoms. Quantitative data supported the narrative as men reported statistically

significant higher self-care confidence compared to women. Seventy-nine percent agreement was noted between qualitative and quantitative data on self-care confidence (Riegel et al., 2010).

Qualitative themes of support from the interview were compared to quantitative results of social support as reported on the MSPSS to assess concordance. From the narrative, women reported better emotional support than men. In contrast, men reported more tangible support than women. Men stated that strong tangible support from their spouse or family facilitated their engagement in self-care. However, men often did not respond to their symptoms in a timely manner to avoid upsetting or creating conflict with their spouse or family members. Quantitative data supported the narrative as men reported significantly higher levels of social support from significant others and family members on the MSPSS. No significant difference in support was noted from friends based on gender. Ninety-three percent agreement was noted between qualitative and quantitative data on social support (Riegel et al., 2010).

Qualitative themes of mood from the interview were compared to quantitative results of mood as reported on the PHQ-9 and the BSI to assess concordance. Riegel et al. (2010) identified differences in mood between men and women which affected self-care behaviors. From the narrative, women reported periods of sadness that interfered with activities of daily living. Increased sadness experienced by women was also found to impede their HF symptom recognition. In comparison, men reported feeling anxious and fearful. Anxiety and fear had a positive effect on HF self-care in men. Men who reported being fearful or anxious interpreted and addressed HF symptoms more vigilantly. Only young men in the sample reported feelings of anger. Anger was found to have a negative

effect on HF self-care. Young men who reported being angry had poor self-care management and did not respond timely to HF symptoms. They also had poor self-care maintenance and did not comply with self-care behaviors in spite of understanding the importance of following self-care behaviors. Quantitative data from the BSI supported the narrative theme of male anxiety. Although men were noted to have higher anxiety than women on the BSI, this difference was not significant. Quantitative data from the PHQ-9 did not support the narrative theme of depression. Men tended to be more depressed than women however the difference was not significant. Only 53% concordance was noted between qualitative and quantitative data on mood (Riegel et al., 2010).

Riegel et al. (2010) concluded that there are insignificant differences in the HF self-care behaviors of men and women. Gender differences in self-care did not contribute to the gender differences in HF outcomes. Conversely, Riegel et al. (2010) concluded that there are significant differences in HF decision making related to gender. Decisions to interpret and respond to symptoms were affected by gender differences in self-care confidence, social support, and mood. From these conclusions, Riegel et al. (2010) believe that further research needs to evaluate the effects of interventions that strengthen self-confidence and enhance support to improve the effectiveness of self-care behaviors.

An important self-care behavior for the successful management of HF is following a low sodium diet. Lack of education regarding sodium dietary restrictions and personal health beliefs prevent diet adherence. Sheahan and Fields (2008) conducted a study to examine how knowledge, experience, and decision-making by elderly women with HF or hypertension influenced their engagement in a sodium-restricted diet (SRD).

A second purpose was to examine how contextual factors and the healthcare system aid or impede diet adherence.

A purposive sample of 33 women from three different congregate living facilities (CLF) in a mid-sized city, located in the “coronary valley”, was recruited. Facilities included two government-subsidized and one private CLF. Those living in the government-subsidized facilities had an income of \$31,650 or less; residents of the private facility came from middle or high socioeconomic backgrounds. The majority of residents in the private CLF were Caucasian (98%). The two government-subsidized CLF were composed of 60% and 35% African Americans, respectively. Eligible participants had self-reported hypertension (HTN) or HF, were female, a resident of a CLF, age 65 or greater, fluent in English, self-sufficient, and had no marked cognitive impairment as measured by the Folstein Mini-Mental Status Examination. All participants had voluntarily adopted a low sodium diet or were told by their health care provider they should follow a low sodium diet (Sheahan & Fields, 2008).

Sheahan and Fields (2008) developed a semi-structured group interview process to understand participants’ daily life related to the management of a sodium restricted diet. Qualitative information was collected from focus groups at each one of the CLF using an interview guide composed of 11 questions. The group interview was an open interpersonal exchange of the personal thoughts and experiences of the participants.

Demographic and clinical findings from Sheahan and Fields (2008) were that all 33 participants were single, 60% were widowed, and 33% were African American. The mean age of women participating was 77 years. Women living in subsidized CLF had a mean education level of 11.8 years and non-professional employment before retirement.

Women living in the private CLF had a mean education level of 14 years and professional or managerial work history. Most participants reported having HTN for an average of 16 years. Participants with HF had been diagnosed for an average of 6.5 years. Those with HTN took an average of 1.6 medications for their illness; those with HF took an average of one medication for their illness. A sodium-restricted diet was advised by a healthcare provider to 58% of women. However, only 24% of the women received formal education on SRD. Hospitalization increased the probability of receiving nutritional counseling.

Through the group interview process, Sheahan and Fields (2008) identified several themes. Lack of socialization at meal times was noted to reduce adherence to an SRD. Participants acknowledged that “eating alone” reduced their motivation to prepare nutritious meals. Another theme noted was participants’ lack of general and nutritional knowledge for adherence to an SRD. Participants did not understand how to interpret dietary sodium information or available sodium alternatives. In addition, all groups reported limited health care provider education and counseling on the self-care behaviors needed to follow an SRD. Sheahan and Fields (2008) identified that the greatest motivator to engaging in an SRD was a participant’s concern for their family. Culture, ethnicity, and education also had an effect on engagement in an SRD; however, it did not have an effect on family or friends encouragement of adherence to an SRD.

From their findings, Sheahan and Fields (2008) concluded that for HTN and HF to be successfully managed by patients, health care providers need to provide patient education not only in the hospital, but also at every primary health care visit. Such consistent education would promote adherence to an SRD. In addition, health care

providers must support policy change to encourage government or commercial reimbursement of SRD patient education. The authors believe reimbursement will increase patient access to education on SRD which will improve adherence and reduce hospital admission. Sheahan and Fields (2008) recommend that further research examine other ethnic groups' dietary behaviors in order to develop culturally-specific SRD education.

Heart failure (HF) patients who are educated on symptom and self-care management have improved health outcomes and quality of life. More information is needed to better understand the symptoms experienced by HF patients and how symptoms are managed to improve interventions. Oguz and Enç (2008) conducted a cross sectional descriptive study to identify the symptoms experienced by HF patients and the self-care management strategies used to control them. A conceptual or theoretical framework was not discussed by the researchers (Oguz & Enç, 2008).

A convenience sample of 64 chronic HF patients from a cardiology polyclinic associated with the Istanbul University Faculty of Medicine was recruited. Only patients who were age 20 to 79, conscious, and literate were included in the sample. In addition, subjects were required to have a NYHA functional capacity of II or III for at least 6 months prior to the study. Subjects ranged in age from 37 to 79 years with a mean body mass index (BMI) of  $25.93 \pm 4.07$ . The majority of subjects were men (57.8%), married (78/1%), lived with their family (84.4%), had a middle school education (34.4%), were retired, were economically stable (62.5%) and had been diagnosed with HF for more than 2 years (68.8%). Of the 64 subjects, 50% were class II and 50% were class III on the NYHA functional classification system (Oguz & Enç, 2008).

A questionnaire was developed by the researchers to collect socio-demographic and clinical information. Heart failure symptoms and self-care management strategies were also obtained using open-ended questions on the questionnaire. Data on the questionnaire were collected during a face-to-face interview (Oguz & Enç, 2008).

Results of the study recognized fatigue (67.2%), dyspnea (60.9%), palpitations (59.4%), edema (43.8%), nocturia (35.9%), nausea (26.6%), and cough (25%) as the most common symptoms experienced by the subjects. Self-care behaviors engaged in by subjects included resting, taking medication, using diuretics, consulting a physician, and drinking herbal tea (Oguz & Enç, 2008).

Significant differences in experienced changes and self-care management of symptoms between men and women were noted. Men were significantly more restricted in their daily activities by experienced changes in fatigue than women ( $X^2 = 4.240, p = .039$ ). No significant difference was noted between men and women in experienced changes because of symptoms of palpitations, edema, nausea and cough. A significant difference in men and women in the self-care management of dyspnea was noted ( $X^2 = 8.198, p = .004$ ). Men managed dyspnea by resting while women managed dyspnea with medications and oxygen. A significant difference in men and women in self-care management of palpitations was also demonstrated ( $X^2 = 8.622, p = .003$ ). Men managed palpitations by resting while women managed palpitations by taking medications. In addition, a significant difference in men and women in self-care management of edema was identified ( $X^2 = 7.370, p = .025$ ). Men managed edema by taking diuretics while women managed edema by resting. There was no significant difference in the self-care management of nausea, fatigue, or cough between the sexes. However, women took more

medications to treat fatigue and nausea than men. The majority of both sexes performed the self-care strategy of body weight management and weighed themselves once a week (57.8%) (Oguz & Enç, 2008).

Oguz and Enç (2008) concluded that HF patients need the support of health care professionals to engage in the life-style changes associated with self-care management. In order to develop effective self-care management strategies clinicians must understand the symptoms and self-care practices of HF patients while taking into account differences among individuals and the sexes. Oguz and Enç (2008) believe additional research is needed to determine life-style factors that contribute to heart disease so that interventions that focus on prevention can be developed.

A delay in identification of HF symptoms decreases the effectiveness of self-care and increases the need for hospital readmission. Little is understood about the effects of contextual factors on symptom identification. Jurgens, Hoke, Byrnes, and Riegel (2009) examined how contextual factors, such as social situations, physical or emotional factors, and functional performance affect one's ability to recognize the quality and meaning of HF symptoms and then engage in self-care or seek medical attention. The purpose of this mixed-methods study was to identify contextual factors and their relationship to symptom recognition and response in older adults hospitalized with HF. Jurgens et al. (2009) used the self-regulation model of illness as a guide for this study.

Participants (N = 77) were recruited over 19 months by means of a convenience sample obtained from older adults admitted to emergency rooms or tertiary care hospitals in New York and Philadelphia. All participants were recruited within three days of admission to ensure accurate recall of their illness experience. Inclusion criteria required

a diagnosis of HF that was confirmed by Framingham criteria. In addition, eligible participants were 65 years of age or older, medically stable, fluent in English, cognitively intact, living independently, and able to engage in self-care behaviors. The majority of participants were non-Hispanic White (85.7%), married (48.1%), with a high school diploma (44.2%), an annual income of \$10,000-\$24,000 (31.2%), low functional ability (50.6%), and low to moderate comorbidities (89.6%). Comorbid conditions experienced by participants included coronary artery disease, hypertension, and diabetes (Jurgens et al., 2009).

Jurgens et al. (2009) measured different contextual factors that were hypothesized by the self-regulation model of illness to be related to the recognition of and response to HF symptoms. The Heart Failure Somatic Perception Scale was used to assess participants' perceived physical symptom distress related to their current hospitalization for HF. Content validity was reported for the original tool. The tool, as modified for this study, was reliable with a Cronbach's alpha of .80. The effects of cognitive, emotional, and social contextual factors on participants' response to HF symptoms were evaluated using the Modified Response to Symptoms Questionnaire. Validity was evaluated by the original developers of the tool. Reliability for this study was acceptable with a theta of .72. The NYHA Functional Class and the Specific Activity Scale were used to measure functional status of HF patients at hospital admission and prior to exacerbation of symptoms. The NYHA Functional Class Scale is widely used to describe the functional ability of individuals with HF. Reliability and validity was not reported for the Specific Activity Scale. The Charlson Comorbidity Index was used to measure symptom distress related to comorbid illness. Validity of this index has been previously documented.

Researchers also utilized an interview to collect sociodemographic and clinical data. Further information about contextual factors was obtained from open-ended questions.

Jurgens et al. (2009) found that physical symptoms did not have an effect on response to symptoms. Participants reported dyspnea (88%), dyspnea on exertion (77%), fatigue (68%), and edema (43%) as the most frequently experienced symptoms prior to hospitalization. The majority of participants reported dyspnea for at least three days prior and dyspnea on exertion five days prior to seeking medical assistance. The duration of dyspnea was significantly correlated with mean perceived symptom ( $r = .20, p = .013$ ). Age, gender, and Charlson Comorbidity did not significantly impact symptom distress (Jurgens et al., 2009).

Analysis of items measuring cognitive factors revealed that cognitive factors did not have an effect on response to symptoms. Jurgens et al. (2009) found that 56% of participants did not know the signs of HF or their importance, and 54% believed they could not control their symptoms. The seriousness of some symptoms was understood; however 80% waited to seek treatment and 50.6% were reluctant to ask for help. Correlation between dyspnea duration and perceived seriousness was not significant ( $r = -.23, p = .06$ ). Interview findings supported cognitive quantitative data (Jurgens et al., 2009).

Emotional factors also did not appear to have an effect on response to symptoms until symptoms were omni-present. The duration of early HF symptoms was not significantly related to anxiety or fear. However, dyspnea was significantly related to anxiety once dyspnea became more pervasive. An inverse relationship was found between dyspnea duration and anxiety ( $r = -.31, p = .012$ ), as well as the relationship

between duration of weight gain and fear produced ( $r = -.63, p = .001$ ). Symptoms did not produce fear in 76.7% of participants. Interview findings supported emotional quantitative data (Jurgens et al., 2009).

A quantitative analysis of items measuring social response to symptoms revealed that social factors did not have an effect on response to symptoms. Participants denied feeling embarrassed to seek medical attention (84%) and denied allowing social plans to affect their decision. However, qualitative data identified that participants delayed care because they did not want to inconvenience or upset family and friends. In addition, social factors, such as financial concerns, were cited as the reason for care delay (Jurgens et al., 2009).

From the findings, Jurgens et al. (2009) determined that participants did not recognize early symptoms of decompensating HF, thereby reducing response time to engage in self-care or seek treatment. Participants also did not experience an emotional response to early HF symptoms. Because symptoms were not considered serious, available time to respond was reduced. Jurgens et al. (2009) concluded that, to improve HF self-care, programs are needed to educate patients on how to evaluate HF symptoms. Further research needs to focus on the strategies that can be used by HF patients to improve recognition of symptoms.

Heart failure self-care is a complex, time consuming process that requires commitment from individuals to consistently engage in self-care behaviors to be compliant. Social support has been associated with improved treatment compliance in the chronically ill. More information is needed on the influences of social support on HF

self-care. Sayers et al. (2008) examined the effects of social and functional support on adherence to self-care behaviors of HF patients.

Sayers et al. (2008) recruited 74 subjects with confirmed HF from 2 cardiology clinics. Of the 74 subjects, 68 were enrolled from a Philadelphia Veterans Affairs Medical Center and 6 were enrolled from a university-based cardiology practice. Criteria for inclusion were documented structural heart disease and historical or active HF symptoms identified by any of the following: impaired left ventricle ejection fraction by echocardiogram, diastolic dysfunction substantiated by diminished compliance of the left ventricle by echocardiogram, or documentation of heart disease responsible for chronic HF. Criteria for exclusion were cognitive impairment and vision or hearing impairment. Subjects were considered to be cognitively impaired if they scored a 16 or greater on the Blessed Test of Orientation, Memory, and Concentration (Sayers et al., 2008).

Several instruments were utilized by Sayers et al. (2008) to collect data about social support and self-care of subjects. Social support was measured by means of the Medical Care Questionnaire (MCQ) and the Multidimensional Scale of Perceived Social Support (MSPSS). The MCQ was used to determine the extent that family and friends were involved in the subject's medical and self-care decisions. Involvement in care was defined by whether family or friends scheduled appointments, attended appointments, obtained prescriptions, prompted medication administration, or participated in medical decisions. Subjects received a score of 0 to 5, with higher scores indicating more involvement of family and friends in care. In addition, percentages of involvement of spouses/partners, children, and other family or friends was determined for each of the five areas. Test-retest reliability was acceptable for this study ( $r = .63, p = .0001$ ). The

MSPSS was used to separate the sources of social support into subscales of family, friends, and significant other. The tool also measured emotional and instrumental support through two subscales created from items in the MSPSS. Test-retest reliability and internal consistency reliability were both reported to be adequate in this study (Sayers et al., 2008).

Sayers et al. (2008) used three instruments to measure self-care behaviors of subjects. The instruments included the SCHFI, the Morisky Medication Nonadherence measure, and the Eating Behavior Questionnaire (EBQ). The SCHFI was used to capture five components of self-care on three subscales of self-care maintenance, self-care management, and confidence. The self-care maintenance subscale assessed subjects' adherence to HF self-care behaviors. The self-care management subscale assessed subjects' ability to recognize HF symptoms, initiate treatment, and evaluate the effectiveness of treatment. The self-care confidence subscale measured subjects' confidence to engage in self-care. Scores for each subscale ranged from 0 to 100 with higher scores indicating better self-care. The SCHFI has been shown in the literature to have good reliability and validity. The Medication Nonadherence instrument was used to measure the self-care behavior of taking HF medication. The four item self-reported measure evaluates medication adherence, and includes forgetfulness, carelessness, improved subjective health, and worsened subjective health. The tool has been found in the literature to be reliable and valid. For this study, test-retest reliability was measured ( $r = .53, p < .00001$ ). The HF self-care behavior of adherence to a sodium restricted diet was measured using the EBQ. The brief self-reported questionnaire measures 22 items on a 5-point scale. A higher score indicated greater adherence to a low sodium diet. Internal

consistency reliability was considered acceptable by the authors ( $\alpha = .69$ ) (Sayers et al., 2008).

Sayers et al. (2008) tested five hypotheses regarding support and HF self-care. The researchers hypothesized that the structural support (availability of support) of subjects who were married and subjects who lived with others would be greater than all other groups. Findings from the study partially supported this hypothesis. Results demonstrated systematic differences in total MCQ scores and marital status and living situation ( $F = 7.15, p < .01$ ). Married subjects had significantly greater involvement by others in their medical care when compared to subjects who were single but not living alone and subjects who were living alone ( $p < .05$ ). No significant difference was noted in total involvement by others in medical care related to the demographic variables of age, gender, race, income, and education ( $p > .05$ ) (Sayers et al., 2008).

Sayers et al. (2008) second hypothesis that spouses would be more involved in the care of subjects was also partially supported by the MCQ results. Spouses/partners were noted to be significantly more supportive than other relatives or friends in their involvement to remind HF subjects about taking medications ( $X^2 = 14.2, p < .001$ ), to give input about medical decisions ( $X^2 = 14.5, p < .001$ ), and to attend appointments with subjects ( $X^2 = 13.2, p < .001$ ). No significant difference in support was noted between spouses/partners, other relatives, and friends in their involvement to schedule appointments ( $X^2 = 3.8, p > .05$ ) and obtain prescriptions for subjects ( $X^2 = 2.0, p > .05$ ) (Sayers et al., 2008).

The third hypothesis proposed by Sayers et al. (2008) was partially supported using results from the MSSPS. The researchers theorized that married subjects and

subjects living with others would perceive higher levels of functional support (degree of perceived support) than subjects who lived alone. Sayers et al. (2008) found that significant others ( $F = 4.28, p < .0001$ ), and interaction between living situation and race ( $F = 5.96, p < .01$ ) had a significant effect on functional support of subjects. Subjects who were white, single, and living with others had significantly lower levels of perceived support from significant others when compared to all other groups ( $p < .05$ ). Only the covariant of age correlated to perceived significant other support ( $r = 0.31, p < .01$ ). In addition, subjects who were white, single, and living with others had significantly lower levels of perceived emotional support from significant others when compared to all other groups ( $p < .05$ ). Only the covariant of age was noted to correlate with perceived emotional support from others ( $r = 0.33, p < .001$ ). Instrumental support was also significant on the MSPPS ( $F = 2.17, p < .05$ ). Only the covariant of age was noted to correlate with perceived significant other support, perceived emotional support from others, and with instrumental support from others (Sayers et al., 2008).

To test the fourth hypothesis that higher levels of support would correlate with higher levels of self-care, Sayers et al. (2008) evaluated support with dependent variables of SCHFI subscales, EBQ, and the Morisky Measure of Medication Nonadherence. Findings from the study partially supported the hypothesis. A significant association between social support and self-care confidence was found using the MSPSS. Social support from friends was positively correlated to the self-care confidence of subjects ( $p < .05$ ). In addition, social support from significant others was negatively correlated to the self-confidence of subjects ( $p < .05$ ). Furthermore, Sayers et al. (2008) did not find a

correlation between involvement by others in medical and self-care decisions and any of the indicators of self-care using the MCQ ( $p > .05$ ).

Sayers et al. (2008) also evaluated support from the MSPPS subscales of emotional and instrumental support with dependent variables of SCHFI subscales, EBQ, and the Morisky measure of Medication Nonadherence to test the fifth and final hypothesis that emotional and instrumental support were significantly correlated to self-care. As with the other four hypotheses, this hypothesis was partially supported in the findings. Emotional support had a significant effect on the self-care measures of medication ( $p < .05$ ) and dietary adherence ( $p < .05$ ). However, instrumental support did not significantly affect adherence of any self-care measures ( $p > .05$ ) (Sayers et al., 2008).

Sayers et al. (2008) made several conclusions from the findings. The researchers determined that social support correlated to better HF self-care. Social support had an impact on self-care through practical assistance. HF patients who are married have greater availability and involvement by others in their care. In addition, HF patients who are older have greater perceived support by others. Social support also has an impact on self-care through the influence of family members. Support of significant others is inversely related to self-care confidence of HF patients (Sayers et al., 2008).

Sayers et al. (2008) made several recommendations for further research. The researchers believe that further studies need to examine whether findings from the current study will emerge in new studies with larger samples. They also believe that larger sample sizes are needed to explore differences in social support and self-care among men and women. In addition, further research needs to examine how families can effectively

support HF self-care and examine the role emotional support plays in promoting engagement in HF self-care (Sayers et al., 2008).

### *Summary*

The literature review represents several published research studies on HF self-care behaviors and the determinants of engagement in HF self-care. The review presents study results on the need for consistent research-based HF education and interventions to improve HF outcomes, the importance of self-care skills education and decision making in HF expertise, the benefits of social and health care provider support on engagement in self-care, the significance of early HF symptom recognition on the self-care decisions of HF patients, and the affects of the variables of gender and socioeconomic status on determinants of self-care. The following is a summary of the literature review.

From the review of the literature, several studies identified the need for consistent research-based HF education and interventions to improve HF outcomes. Boren et al. (2009) evaluated which HF educational topics are associated with improved HF outcomes. Topics included education on the self-care behaviors of knowledge and self-management, fluid management, and diet and activity. Several relationships between self-care behaviors and HF outcomes trended toward significance and the researchers concluded that HF education improves HF outcomes. In addition, they concluded that HF educational interventions should be based on proven research evidence. Sheahan and Fields (2008) found that consistent HF education provided to HF patients not only during hospitalization, but during primary health care visits as well, also improves HF outcomes. Consistent education increased adherence to the self-care behavior of a sodium restricted diet.

The literature review also identified several studies that recognized the importance of self-care skills education and decision making in the development of HF expertise. Dickson and Riegel (2009) found that traditional HF education provided by health care professionals does not support HF self-care skills development. Dickson and Riegel (2009) concluded that, for HF patients to gain expertise in HF, self-care education related to tactical and situational skills is required to improve effectiveness and adherence to HF self-care. Riegel et al. (2007) concluded that effective decision making is also critical to developing expertise in HF self-care skills. Riegel et al. (2007) found that experts in HF self-care behaviors sought knowledge of self-care, had prior experience in self-care, had well developed HF action plans, and had strong family support.

The positive benefits of social support on engagement in self-care behaviors were identified by researchers in many of the studies reviewed. Gary (2006) concluded that the decision to engage in HF self-care behaviors was greatly influenced by the need to maintain role responsibilities, family obligations, and social outings. Gary (2006) also concluded that this may be why the only self-care behavior that HF patients consistently performed was taking medication, which does not require complex decisions and strong support. Sayers et al. (2008) concluded that social support correlated to better HF self-care. HF patients who were married had greater availability and involvement by others in their care. The researchers also found that the support of significant others is inversely related to HF self-confidence. Schnell-Hoehn et al. (2009) found that HF patients with higher psychological status and self-efficacy had greater ability to assume self-care behaviors. Schnell-Hoehn et al. (2009) concluded that psychological distress negatively affects self-care behaviors in HF.

Many studies also recognized the positive benefits of health care provider support on engagement in self-care behaviors. Oguz and Enç (2008) concluded that support is needed from health care professionals for HF patients to successfully engage in the life style changes required for HF self-care management. Oguz and Enç (2008) found that in order to develop effective self-care management strategies, clinicians must understand HF self-care practices and the individual needs of HF patients. Macabasco-O'Connell et al. (2008) concluded that nurses provide the majority of HF education on self-care behaviors. Kutzleb and Reiner (2006) concluded that nurse-directed patient education for HF symptoms management had a positive effect on QOL and functional capacity. Heart failure patients in nurse-directed education groups were able to successfully engage in lifestyle modification, weight management, and medication and diet compliance.

The significance of early HF symptoms recognition on self-care decisions of HF patients to engage in self-care were identified in a few studies reviewed. Jurgens et al. (2009) concluded that, to improve HF self-care, programs are needed to educate HF patients on how to evaluate HF symptoms. Jurgens et al. (2009) found that HF patients who did not recognize or have emotional responses to HF symptoms early their available response time to engage in self-care behaviors or seek treatment. Macabasco-O'Connell et al. (2008) found that women with HF had difficulty understanding the significance of HF symptoms and what strategies to implement to improve HF outcomes. Macabasco-O'Connell et al. (2008) concluded that symptom recognition and knowledge of treatment options were major barriers experienced by female HF patients to engage in HF self-care.

The effect of gender on engagement in self-care behaviors was evaluated in several studies in the literature review. Riegel et al. (2010) found that there are

insignificant differences in HF self-care behaviors between men and women. However, Riegel et al. (2010) concluded that gender had a significant effect on HF decision making. Riegel et al. (2010) found decisions to interpret and respond to HF symptoms were affected by gender differences in self-care confidence, social support, and mood. Gary (2006) also concluded that women with HF delayed seeking medical care due to errors in decision making and lack of experience.

Research addressing the affects of the variable of socioeconomic status on engagement in self-care was also evaluated in several studies in the literature review. Macabasco-O'Connell et al. (2008) concluded that HF patients of lower socioeconomic status, indigent, or uninsured, have difficulty engaging in self-care behaviors. Macabasco-O'Connell et al. (2008) found that HF patients with financial issues faced additional challenges to engage in self-care including extreme life and financial stressors, limited knowledge and insufficient support, as well as having multiple comorbid conditions. Gary (2006) also concluded that lower socioeconomic status increased the risk for poor self-care and poor clinical outcomes in women with HF.

The specific self-care behaviors that improve HF outcomes and the factors that contribute to better engagement in HF self-care have not been clearly identified through nursing research. Little is known about which HF self-care behaviors patients engage in and which self-care behaviors are therapeutic. There is also limited evidence about how factors such as social support, gender, and socioeconomic status affect engagement in self-care. To improve the content and approach to HF patient education, the therapeutic self-care behaviors of HF patients and the determinants of engagement in HF self-care need to be identified. Evidence-based HF patient education can support the development

of patient HF expertise, patient engagement in self-care, and improved outcomes.

Replication of the Schnell-Hoehn et al. (2009) study will add further evidence to support the impact of individualized interventions and education on HF outcomes and hospital readmissions. The methods and procedures for the proposed study will be discussed in Chapter III.

## Chapter III

### *Methods and Procedures*

Individuals with heart failure (HF) must perform self-care behaviors to prevent hospitalization. Increased understanding of the self-care practices performed by patients with HF and the factors that influence these practices is essential to maintaining patients' health and preventing hospital readmissions. This chapter contains a description of the methods and procedures for the proposed study.

#### *Purpose*

The purpose of this study is to examine self-care behaviors and the determinants of engaging in these behaviors in community-dwelling patients with HF. This is a replication of a study conducted by Schnell-Hoehn et al. (2009).

#### *Research Questions*

1. What are the most common therapeutic self-care behaviors engaged in by community-dwelling adults with HF?
2. Is there a relationship between the enabling variables of clinical and sociodemographic characteristics, functional ability, and psychological status with self-care decision making and engagement in self-care behaviors in community-dwelling adults with HF?

3. Is there a relationship between the predisposing variable of self efficacy with self-care decision making and engagement in self-care behaviors in community-dwelling adults with HF?
4. Is there a correlation between self-care efficacy and the number of hospitalizations for community-dwelling adults with HF?

#### *Population, Sample, and Setting*

The population for this study will include patients diagnosed with HF. The target population will include participants who meet the sampling criteria of being at least 18 years of age, fluent in English, and diagnosed with HF for at least last six months. A diagnosis of HF will be confirmed by echocardiogram and the participant's physician. Exclusion criteria include lack of fluency in English, mental incompetence, or physical inability to engage in self-care behaviors. The sample will be drawn from patients who are treated at two northwestern Indiana HF clinics. Site one is affiliated with a 53-bed critical access hospital located in a rural farming community. Site two, located in a small city, is part of a mid-sized hospital with 220 beds. From the accessible population a convenience sample of 50 HF patients who meet the sampling criteria will be recruited for this study.

#### *Protection of Human Rights*

Before participant recruitment, the study proposal will be submitted to the appropriate review boards for approval. Review boards will include the Ball State University Institutional Review Board, the hospitals' nursing research committees, and the hospitals' institutional review board ethics committees. After approval from the

institutional review boards, the proposal will be reviewed by the hospitals' cardiology committees. All participants will be informed that participation is voluntary and refusal to participate will not affect the treatment they receive. All participants will sign a formal written informed consent form which includes: (a) the purpose, (b) expected duration, (c) risks and benefits, (d) alternatives, (e) assurance of anonymity and confidentiality, and (f) option for withdrawal for the study.

### *Procedures*

To implement the study, the following procedure will be followed:

1. Both hospitals' chief nursing officer will be contacted by the nurse researcher to discuss the study and data collection process.
2. The director of cardiovascular services who is responsible for both cardiac clinics will be contacted by the nurse researcher to discuss the study and data collection process.
3. A meeting will be scheduled with the clinics' HF nurses by the nurse researcher to discuss the study, the data collection process, and how to obtain consent while maintaining the patient's rights for self-determination.

To collect data the following procedure will be followed:

1. Over a 6-month period, clinic HF nurses will recruit and obtain voluntary, informed consent from clinic patients to participate in the study.
2. Upon consent, the HF nurse will contact the independent data collector and the data collector will meet with the participant at the next mutually convenient visit.

3. At the assigned visit, the data collector will provide the participant a 20-minute questionnaire package to be completed onsite. The package includes: (a) a sociodemographic and clinical characteristic questionnaire, (b) the Self-Care of Heart Failure Index (SCHFI) research version 3-22-01, (c) the Kansas City Cardiomyopathy Questionnaire (KCCQ) physical and social limitations subscales, (d) and the General Well-Being Schedule.
4. Data obtained from the instruments will be prepared for computer entry by the research nurse and analysis will be conducted with the assistance of a statistician.

#### *Methods of Measurement*

The SCHFI is a tool used to measure self-care. For this study, the SCHFI research version 3-22-01 will be used to measure self-care behaviors and self-efficacy. This scale contains 22 items measured on a 4-point self-reported Likert scale. The 22 items are divided into 3 subscales: self-care maintenance, self-confidence, and self-care management. The self-care maintenance subscale measures participants' ability to assume seven self-care behaviors. The self-confidence subscale measures participants' self-efficacy. The self-care management subscale measures participants' ability to identify and respond to symptoms. Participants receive a score up to 100 for each subscale. The three subscale scores are summed to determine the participant's self-care ability score. The tool requires the researcher to divide the subjects into "symptomatic" and "asymptomatic" groups. A coefficient alpha of .76 has been previously reported for the SCHFI (Schnell-Hoehn et al., 2009) indicating acceptable reliability (Burns & Grove,

2009); Validity has been supported by factor analysis and subscale to subscale correlation (Schnell-Hoehn et al., 2009).

The Kansas City Cardiomyopathy Questionnaire subscales of physical and social limitation will be used to examine functional ability of participants. The subscales indirectly measure daily limitations. Each item is self-reported using a 5-point Likert scale. Participants receive a subscale score for each subscale of up to 100. An increased score indicates fewer daily limitations. The subscale tools were reliable with a coefficient alpha of .90 for the physical limitation subscale and .86 for the social limitations subscale, both greater than the required .80 (Burns & Grove, 2009). To support validity, the subscale tools have been evaluated against the NYHA functional class tool which resulted in a significant correlation of  $p < .0001$  (Schnell-Hoehn et al., 2009).

The General Well-Being Schedule will be used to examine the psychological status of participants. The tool indirectly measures six dimensions of well-being including anxiety, depression, self-control, positive well-being, vitality, and general health using an 18-item index. Each item is self-reported using either a 6- or 10-point Likert scale. Participants receive an overall well-being score between 0 and 110. An increased score indicates a higher degree of well-being. The tool is reliable with a coefficient alpha of  $> .90$  for each tool dimension. The tool has been shown to be moderately valid when compared to Zung's Self-Rating Depression scale and the Personal Feeling Inventory (Schnell-Hoehn et al., 2009).

Sociodemographic data and clinical variables will be collected using a researcher-developed questionnaire. The questionnaire will request demographic data such as age, sex, ethnic background, marital status, living situation, education level, family income,

left ventricular function, and the New York Heart Association Functional Class. These are all direct measurements.

The Charlson Co-Morbidity Index will be used to measure comorbidities. The index identifies and scores specified health conditions. Scores range from 0 to 34 and participants are categorized into low, moderate, or high comorbidity categories based on their score. Reliability and validity have been previously reported (Schnell-Hoehn et al., 2009).

### *Research Design*

The research design for this study will be a cross-sectional design. A cross-sectional design examines a selected phenomenon at various stages of development in a process with the objective to describe changes in the phenomenon over the stages. Subjects are selected at various points in the process to provide information about the entire process. Subjects are not examined through the entire process (Burns & Grove, 2005).

### *Intended Method for Data Analysis*

Descriptive statistics, chi-square, Pearson's  $r$  correlation coefficient, analysis of variance, and independent t-tests will be used for data analysis in this study. Descriptive statistics will be used to describe and synthesize sample demographics, enabling and predisposing variables, and self-care behaviors by percentage, mean, and standard deviation. Descriptive statistics describe, synthesize, and organize data in a more meaningful way in order to provide insight into the phenomenon studied (Burns & Grove, 2009). In addition, other statistical analysis such as a t-test, require descriptive statistics such as mean and standard deviation in order to perform them.

Chi-square will be used to analyze the difference between HF self-care behaviors of two independent groups, those participants who are “asymptomatic” and those who are “symptomatic”. Self-care behaviors will include taking medication prescribed, seeking physician guidance, following a low salt diet, getting an annual flu shot, weighing self, keeping weight within 10% of desired weight, and exercising at least three times a week. Chi-square allows the researcher to determine if a significant difference exists between observed and expected frequencies (Burns & Grove, 2009).

Pearson r correlation coefficient will be used to determine the relationship between a descriptive enabling variable and self-care behaviors of self-care maintenance, self-confidence, self-management, and SCHFI total scores. The descriptive enabling variables include current age, age at diagnosis, NYHA classification, physical limitations, social limitations, psychological status, and ejection fraction. Pearson’s r correlation coefficient will also be used to determine the relationship between self-efficacy and self-care. Pearson’s r correlation coefficient was selected because it examines the relationship between two variables. It also reveals if a linear relationship between two variables exists and identifies the strength and direction of the relationship between the variables (Burns & Grove, 2009).

Analysis of variance (ANOVA) will be used to test for significant differences between groups of categorized variables and self-care. Categorized variables include ethnic background, marital status, residency, living situation, education, occupational status, family income, physical and social limitations, social support and comorbidity. Analysis of variance determines whether or not the means of several groups are different. It tests of the variance within-groups and the variance between-groups. Analysis of

variance reduces the Type I error when three or more means are compared. It can be used to compare two or more groups, however analysis of variance does not tell you where the difference is within the groups when two or more groups are used (Burns & Grove, 2009). To determine the location of the difference, a Tukey post-hoc test will be used.

Independent sample t-test will be used to test for significant differences between participants with a recent hospitalization and participants without a recent hospitalization for HF in regards to a dependent variable. The dependent variables will include self-care maintenance, self-care confidence, self-care management, and the overall self-care ability score (SCHFI score). An independent sample t-test identifies if there is a significant difference between two samples and a dependent variable. It can be easily calculated and is useful when working with small samples (Burns & Grove, 2009).

### *Summary*

The purpose of this proposed cross-sectional study will be to examine self-care behaviors and the determinants of engaging in these behaviors in community-dwelling HF patients. This will be a replication of a study conducted by Schnell-Hoehn et al. (2009). Connelly's model of self-care in chronic illness (Connelly, 1987) will be used as a framework for this study. A convenience sample of 50 HF patients will be recruited from two small northwestern Indiana hospital HF clinics. The Self-Care Heart Failure Index will be utilized to measure self-care behaviors and self-efficacy. Enabling variables will be measured utilizing the Kansas City Cardiomyopathy Questionnaire, the General Well-Being Schedule, and sociodemographic and clinical variable questionnaire, and the Charlson Co-Morbidity Index. Descriptive statistics, chi-square, Pearson's r correlation coefficient, analysis of variance, and independent t-tests will be used for data analysis in

this study. The findings will provide information on variables that influence engagement in self-care behaviors allowing for individualized interventions and education to improve HF patient outcomes.

## References

- American Heart Association. (2010). *Heart Disease and Stroke Statistics – 2010 Update*. Dallas, Texas: American Heart Association.
- Annema, C., Luttik, M., & Jaarsma, T. (2009). Reasons for readmission in heart failure: Perspectives of patients, caregivers, cardiologists, and heart failure nurses. *Heart & Lung, 38*(5), 427-434.
- Artinian, N. T., Magnan, M., Sloan, M., & Lang, M. P. (2002). Self-care behaviors among patients with heart failure. *Heart & Lung, 31*(3), 161-172.
- Boren, S. A., Wakefield, B. J., Gunlock, T. L., & Wakefield, D. S. (2009). Heart failure self-management education: A systematic review of evidence. *International Journal of Evidenced-Based Healthcare, 7*(3), 159-168.
- Burns, N., & Grove, S. K. (2009). *The practice of nursing research* (6<sup>th</sup> ed.). St. Louis: Saunders.
- Cameron, J., Worrall-Carter, L., Riegel, B., Lo, S., & Stewart, S. (2009). Testing a model of patient characteristics, psychologic status, and cognitive function as predictors of self-care in persons with chronic heart failure. *Heart & Lung, 38*(5), 410-418.
- Connelly, C. (1987). Self-care and the chronically ill patient. *The Nursing Clinics of North America, 22*(3), 621-629.
- Crowder, B. F. (2006). Improved symptom management through enrollment in an outpatient congestive heart failure clinic. *MEDSURG Nursing, 15*(1), 27-35.
- Dickson, V., & Riegel, B. (2009). Are we teaching what patients need to know? Building skills in heart failure self-care. *Heart & Lung, 38*(3), 253-261.

- Evangelista, L. S., & Shinnick, M. A. (2008). What do we know about adherence and self-care? *Journal of Cardiovascular Nursing*, 23(3), 250-257.
- Gary, R. (2006). Self-care practices in women with diastolic heart failure. *Heart & Lung*, 35(1), 9-19.
- Jurgens, C. Y., Hoke, L., Byrnes, J., & Riegel, B. (2009). Why do elders delay responding to heart failure symptoms? *Nursing Research*, 58(4), 274-282.
- Kutzleb, J., & Reiner, D. (2006). The impact of nurse-directed education on quality of life and functional capacity in people with heart failure. *Journal of the American Academy of Nurse Practitioners*, 18(3), 116-123.
- Macabasco-O'Connell, A., Crawford, M. H., Stotts, N., Stewart, N., & Froelicher, E. S. (2008). Self-care behaviors in indigent patients with heart failure. *Journal of Cardiovascular Nursing*, 23(3), 223-230.
- Moser, D. K., & Watkins, J. F. (2008). Conceptualizing self-care in heart failure a life course model of patient characteristics. *Journal of Cardiovascular Nursing*, 23(3), 205-218.
- Oguz, S., & Enç, N. (2008) Symptoms and strategies in heart failure in Turkey. *International Nursing Review*, 55(4), 462-467.
- Paradis, V., Cossette, S., Frasure-Smith, N., Heppell, S., & Guertin, M. (2010). The efficacy of a motivational nursing intervention based on the stages of change on self-care in heart failure patients. *Journal of Cardiovascular Nursing*, 25(2), 130-141.
- Riegel, B., & Dickson, V. (2008). A situation-specific theory of heart failure self-care. *Journal of Cardiovascular Nursing*, 23(3), 190-196.

- Riegel, B., Dickson, V., Goldberg, L. R., & Deatrlick, J. A. (2007). Factors associated with the development of expertise in heart failure self-care. *Nursing Research, 56*(4), 235-243.
- Riegel, B., Dickson, V., Kuhn, L., Page, K., & Worrall-Carter, L. (2010). Gender-specific barriers and facilitators to heart failure self-care: A mixed methods study. *International Journal of Nursing Studies, 47*(7), 888-895.
- Sayers, S. L., Riegel, B., Pawlowski, S., Coyne, J. C., & Samaha, F. F. (2008). Social support and self-care of patients with heart failure. *Annals of Behavioral Medicine, 35*(1), 70-79.
- Schnell-Hoehn, K. N., Naimark, B. J., & Tate, R. B. (2009). Determinants of self-care behaviors in community-dwelling patients with heart failure. *Journal of Cardiovascular Nursing, 24*(1), 40-47.
- Sheahan, S. L., & Fields, B. (2008). Sodium dietary restriction, knowledge, beliefs, and decision-making behavior of older females. *Journal of the American Academy of Nurse Practitioners, 20*, 217-224.
- World Health Organization. (1983). *Health Education in Self-Care. Possibilities and Limitations*. Geneva, Switzerland: World Health Organization.