SYMPTOM RECOGNITION AND RESPONSE OF ELDERLY HEART FAILURE PATIENTS

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ABSTRACT

RESEARCH PAPER: Symptom Recognition and Response of Elderly Heart Failure Patients

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Recognition of early symptoms of heart failure (HF) can go unnoticed by patients due to the subtlety of symptoms and lack of knowledge. The purpose of this study is to examine contextual factors that may influence symptom recognition and response in HF patients. This is a replication of Jurgens, Hoke, Byrnes, and Riegle's (2009) study. The conceptual framework is the Self-Regulation Model of Illness (Cameron, Leventhal, & Leventhal, 1993). Patients with decompensated HF (n=100) will be invited to participate. Patients will be recruited from a large hospital in Indianapolis over a 2 month period. Perceived symptom distress will be assessed with the Heart Failure Somatic Perception Scale. The Response to Symptoms Questionnaire will be used to assess contextual factors in the emotional, cognitive, and social environment that might have an influence with symptom response. Findings may provide information about areas of needed improvement in education and care coordination management to improve self-care decisions in elderly HF patients.

Chapter I

Introduction

Heart failure (HF) is a prevalent disease that impacts the lives of millions of people. The Centers for Disease Control and Prevention reported that 5.8 million people currently have HF, and 670,000 are newly diagnosed each year. The incidence of HF after the age of 65 is 10 per 1000 people (Roger, Go, Lloyd-Jones, Adams, Berry, Brown, et al., 2011). For individuals over the age of 65, HF is one of the primary causes for hospital admissions (American Heart Association, 2012a). Because the elderly population is growing and living longer, the incidence of HF will continue to increase, and hospitalization costs will continue to rise (Kiernan, 2012).

There is a 20% lifetime risk of developing HF after 40 years of age. Seventy-five percent of all HF patients have antecedent hypertension. The second most common risk factor is having a history of heart attack, followed closely by diabetes (Roger et al., 2011). In spite of increasing advances in HF treatment, the mortality in HF remains high. About half of HF patients will die within 5 years of diagnosis (Kiernan, 2012). Risk factors contribute significantly to mortality rates and health care costs.

The 30 day readmission rate for HF is 22.3% nationally, with readmission costs estimated at $9,923 per patient. The readmission rate at 180 days is 51.4%, with a median readmission cost of $13,463 per patient (Eapen, Reed, & Curtis, 2012). There have been multiple studies conducted in an effort to identify the reason behind unmanaged symptoms, which are related to the majority of readmissions (Annema, Luttik, & Jaarsma, 2009; Cameron, Worrall-Carter, Riegel, Lo, & Stewart, 2009a; Jurgens et al., 2009; Sayers, Riegel, Pawlowski, & Samaha , 2008). Education to help patients develop self-care behaviors, and to recognize worsening symptoms, seek treatment for symptoms, and have adequate support, is the primary focus for HF self-care management.

Healthcare providers are looking for solutions to improve outcomes, particularly with the high cost of HF and increasing prevalence. The Centers for Medicare and Medicaid Services will penalize hospitals for high readmission rates related to HF, heart attack, and patients admitted with pneumonia beginning next year (American Heart Association, 2012b). Nationally, 30 day readmission rates for HF are between 10-32%. Research results presented at the American Heart Association's Quality of Care & Outcomes Research Scientific Sessions 2012, recommended approaching the management of HF as a community, and concluded that it is not the hospital's responsibility alone to keep readmission rates down. Primary care providers should provide ongoing supervision of HF patients.

The success of HF self-care management depends largely on the patient's ability to recognize and manage the symptoms of HF. Behavior modifications such as weight loss, smoking cessation, tracking fluid intake, keeping weight logs, limiting alcohol and caffeine intake, managing stress, keeping physically active, monitoring blood pressure, and developing a support system, are all factors in self-care management of HF (American Heart Association, 2012a). Tracking and reporting symptoms to the health care provider is also a key behavior for HF patients to understand. Educating patients on the disease process and self-care behaviors has been the traditional method used to help patients manage HF. Studies have indicated that involving patients' caregivers using a multidisciplinary approach to patient care, and new educational strategies to encourage compliance are needed (Annema et al., 2009).

HF self-management programs that focus on educating the patient and family about symptom significance may be more effective than traditional education (Jurgens et al., 2009). Other studies support improved self-care behaviors when positive social support for the patient was in place (Sayers et al., 2008). For example, Sheahan and Fields (2008) found that assessing the patient's social environment is important for adherence to a low sodium diet. Other studies have found that cognitive status impacts the ability for self-care, indicating assessing for impairment may be a first step in developing a patient education strategy (Cameron et al., 2009a; Riegel, Dickson, Goldberg, & Deatrick, 2007; Schnell-Hoehn, Naimark, & Tate, 2008). Continued encouragement and support are necessary to increase the confidence of self-care in patients to manage HF symptoms (Cameron et al., 2009a; Dickson & Riegel, 2009; Schnell-Hoehn et al., 2008).

Background and Significance

Heart failure is a chronic, progressive condition resulting in ineffective pumping of the heart. The heart compensates by enlarging and pumping faster. The ineffective emptying of the heart chambers results in symptoms such as fatigue and shortness of breath. Factors that increase the risk of developing HF are: hypertension, history of myocardial infarction, abnormal heart valves, lung disease, sleep apnea, smoking, being overweight, elevated cholesterol, sedentary lifestyle, and diabetes (American Heart

Association, 2012a). Educating people about healthy behaviors and disease prevention can help reduce the risk of developing HF (Agency for Healthcare Research and Quality, n.d.).

The history of HF dates back to ancient civilizations in Egypt, Greece and India (Davis, Hobbs, & Lip, 2000). However, the disease was not clearly understood until William Harvey described circulation in 1628. In the 1890's, the discovery of x-rays by Rontgen, and the development of echocardiography by Einthoven, added to the knowledge and understanding of HF.

Treatment of HF historically included blood-letting and using leeches to reduce swelling that was symptomatic of HF (Davis et al., 2000). Southey's tubes, small hollow tubes with a sharp end, were used during the 19th to early 20th centuries to drain fluid from the edematous peripheral areas. Diuretics were formulated in the 20th century to reduce fluid, but early agents were mercurial based and associated with toxicity. Thiazide diuretics were introduced in the 1950s and had an improved fluid reduction response. Reducing excess fluid is still an important part of treatment today.

Drug therapy has been, and is currently a major part of HF treatment. The benefits of digitalis were published by William Withering in 1785. Foxglove, a purple flower now known as digitalis, was used to treat HF in ancient Rome. The 1970s brought the development of angiotensin converting enzyme (ACE) inhibitors. A study published in 1987 called the CONSENSUS-I, showed the benefits of Enalapril, an ACE inhibitor, for HF patient survival (Davis et al., 2000). Angiotensin-receptor blockers (ARB's) are an alternative medication choice for patients who develop a dry cough from ACE inhibitors. Beta blockers interfere with adrenaline caused high blood pressure, irregular heart rhythms, and reduces the work of the heart. ACE inhibitors used in combination with beta blockers, and healthy lifestyle behaviors, have been found to extend the life of a HF patient (Harvard, 2005). For most HF patients, diuretics and other medications are part of the treatment regimen.

Surgery is another intervention for HF. Surgical interventions include repair of faulty heart valves, and coronary by-pass surgery to improve blood supply to an area of the heart not pumping effectively (Harvard, 2005). Many HF patients receive implantable cardioverter defibrillators (ICD's) to shock the heart that is beating irregularly or too slowly. Recent advances in HF treatment have introduced the ventricular assist device (VAD). VAD's are small pumps that are surgically placed in the abdomen, connecting the inflow tube to the left ventricle, and the outflow tube to the beginning of the aorta. The VAD pumps oxygen rich blood from the left ventricle into the aorta, which sends it to the rest of the body (Harvard, 2011). There are four conditions in which the VAD is used: temporary recovery following a heart attack; infection, or shock; waiting for a heart donor; and final destination for patients who don't qualify for a heart transplant due to other medical conditions, to extend life (Harvard, 2011). Heart transplant is the final step when other therapies have been exhausted. Open heart surgery is necessary, incurring high costs.

Patient education has been, and continues to be, the cornerstone to HF self-care management. The Heart Failure Society of America promotes HF education in the HF practice guidelines to include comprehensive counseling and education for the patient, family, and caregivers. The goals of education are to assist patients and families in acquiring knowledge, skills, problem solving ability, strategies, motivation, and resources to participate in self-care and adhere to the treatment plan (Lindenfeld et al., 2010). The guidelines, as well as other studies (Dickson & Riegel, 2009; Riegel et al., 2007; Riegel, Dickson, Kuhn, Page, & Worrall-Carter, 2009; Sayers et al., 2008), emphasize the importance of including family and caregivers in the education process due to cognitive impairment, and other comorbidities that may limit comprehension and enactment of learned skills.

HF education, without assessing and addressing contextual factors, may not improve self-care behaviors. Jurgens et al.'s (2009) study explored symptom recognition and response in HF patients, and found that sensing and attributing meaning to early symptoms were influenced by multiple factors. Cognition, social factors, emotional responses, self-care behaviors, and resource support, were explored in relationship to symptom recognition and management. Most participants in the study delayed recognizing symptom related to HF, and delayed getting help until there was a high level of symptom distress. Educating patients to recognize early symptoms, and providing treatment strategies, may be an area of improvement for HF programs. More research is needed to evaluate factors that influence decision-making for HF patients to improve self-care behaviors. This study will validate the findings of Jurgens et al.'s (2009) study.

Problem Statement

Patients with HF often fail to recognize worsening symptoms, and lack the self-care ability to manage the symptom effectively (Jurgens et al., 2009). Mismanagement of worsening symptoms often results in costly readmissions to the hospital. Assessing for contextual factors that may impact self-care management is important to include in the education strategy for the patient and family. Programs that offer continued support and education may improve symptom recognition and self-care management skills in the HF patient.

Purpose of the Study

The purpose of this study is to examine contextual factors that may influence symptom recognition and response in HF patients. This is a replication of Jurgens et al.'s (2009) study.

Research Questions

1. What contextual factors influence symptom recognition and response in HF patients?
2. What contextual factors have a positive influence on self-care management of HF symptoms?

Conceptual Model

The Self-Regulation Model of Illness (Cameron, Leventhal, & Leventhal, 1993) will guide this study. This model incorporates the multi-dimensional aspect of symptom recognition which includes physical, emotional, and cognitive components. The patient's response to symptoms is a reflection of present and past experiences, and is considered within the social situation that is occurring. The Self-Regulation Model of Illness has been used in studies that examine health promotion behaviors, illness behaviors, adherence to medical regimens, the elicitation of worry and the preparation for stress during a medical treatment (Cameron et al., 1993). The model demonstrates the dynamic process of illness, care seeking, and the influence of social and contextual factors on symptom recognition and response. This conceptual model will guide this study in examining the contextual factors that influence HF symptom recognition and self-care behavior responses to symptoms. The model is appropriate for this study because it addresses the complexity of symptom recognition and response.

Definition of Terms

Contextual factors: Conceptual.

Cameron et al. (1993) identified the contextual factors as social communications that occur when the patient identifies a HF symptom, examines the emotional processing, and reason for seeking care from interviews. Contextual factors are factors not directly related to the symptoms, but may influence the recognition and response to the symptom. For the purpose of this study, contextual factors will include past experience with a symptom, social situation, cognitive, emotional, and clinical factors. Clinical factors will include the presence of comorbidities such as depression, hypertension, and chronic lung disease (Jurgens et al., 2009).

Contextual factors: Operational.

Contextual factors will be measured by the revised Response to Symptoms Questionnaire (Dracup & Moser, 1997) which has a 5-point Likert scale, ranging from 1= “not at all anxious” to 5= “extremely anxious.” The scale measures how patients responded cognitively, emotionally, or behaviorally to symptoms. Clinical data will be collected from the medical chart review. Experience with symptoms and social factors will be collected from patient interviews.

Self-care management: Conceptual.

Self-care management is the behavior chosen in response to symptoms (Riegel et al., 2004). Symptom recognition is essential to effective self-care.

Self-care management: Operational.

Self-care management behaviors will be identified from the qualitative data obtained by individual interviews (Jurgens et al., 2009). Successful HF management include behaviors which are taught in HF education programs such as decreasing sodium or fluid intake, or taking an extra diuretic, to address fluid retention.

Limitations

Limitations to the generalization of this study are due to the relatively small size of the sample, the setting in a single Midwest hospital, and the type of support for HF patients are offered by this hospital.

Assumptions

1. Symptom recognition is key to effective self-care.
2. HF patients often delay seeking care due to the difficulty in discerning the meaning of the symptom being experienced.
3. HF self-care is improved by education and support from health care providers.
4. HF readmissions are preventable with improved self-care.
5. Questions will be answered honestly by patients.

Summary

HF is a health concern of considerable proportion in this nation. Managing the costs as the incidence rises is a priority for many health care providers. Gaining understanding of how to improve HF self-management will add depth to current patient education programs and may improve outcomes. Symptom identification and improving self-care behavior is a first step toward managing symptoms and decreasing hospital readmissions. The purpose of this study is to examine factors that may influence symptom recognition and response in HF patients. This study is a replication of Jurgens et al.'s (2009) study. The Self-Regulation Model of Illness will provide the conceptual framework which examines the physical, emotional, and cognitive factors that influence symptom recognition and response of HF patients.

Chapter II

Literature Review

Recurrent symptoms and mismanagement of heart failure (HF) symptoms lead to readmissions to the hospital, and a poor quality of life for patients. Educating patients on the management of HF symptoms has been the traditional approach to develop self-care behaviors. This approach alone has not been successful, according to hospital readmission data. Evaluating variables in the HF population, as well as evaluating different programs to develop self-care, may have greater success in HF self-management (Jurgens et al., 2009). The purpose of this study is to examine contextual factors that may influence symptom recognition and response in HF patients.

Organization of Literature

The literature review consists of studies that examined self-care behaviors in various HF patient populations. Both quantitative and qualitative studies were reviewed. Literature selection was determined based on recent research, and the studies are divided into the following sections:

1. Conceptual Framework: The Self-Regulation Model of Illness
2. Factors that influence self-care
    a. Demographic factors
    b. Personal characteristics
    c. Developing self-care skills

3. Factors influencing hospitalization

Conceptual Model

The Self-Regulation Model of Illness was developed to examine health behaviors in health promotion, illness behaviors, adhering to medical regimens, and stress reactions during and after medical treatment (Cameron et al., 1993). According to the authors, symptoms initiate a self-regulatory reaction to search memories of similar symptoms to determine the perceived health threat. Five levels of illness representations are appraised:

1. identifying the symptom and labeling it
2. determining how long the symptom has lasted
3. the consequence of the symptom (has it interfered with normal activity?)
4. the cause of the symptom
5. controllability

An example of the five levels of illness representation appraisal could be the symptom of dyspnea. The patient feels short of breath and identifies the symptom (level 1). Thinking back on when the symptom began, the duration can be estimated (level 2). The consequence of the shortness of breath is evaluated (level 3). The cause of the symptom would be examined (level 4). The question of whether or not the symptom can be controlled, or managed, is evaluated (level 5). If taking an extra diuretic in the past has helped this symptom improve, the decision may be made to try that intervention again. If the consequences are limiting with possible long term implications, a judgment is made on the severity of the symptom. Coping behaviors are initiated and effectiveness is evaluated. Continued failed coping mechanisms will help determine if the symptom is serious and medical help should be sought.

Emotions are part of the cognitive process of symptom evaluation, according to the model. Fear and anger can be caused by symptoms such as pain, presumed consequences of the symptom, failed coping behaviors, and a new interpretation of the symptom (Cameron et al., 1993). Other stressors in the patient's environment may exacerbate the symptom response emotionally. Medical care may be initiated more quickly if the emotional level is high.

Social influences of family or friends may encourage earlier intervention. If permission is granted or the patient is encouraged to seek help, the patient is more likely to comply. Communication with others in advice seeking may be important symptom recognition and response (Cameron et al., 1993).

The Self-Regulatory Model of Illness will guide this study in examining factors that influence a patient's early recognition and response to symptoms. This framework is appropriate for this study because the five levels of appraisal are applicable to the HF patient's symptom recognition and self-management. Early symptom recognition and effective self-care are integral to symptom management. Education, positive reinforcement, and positive social support may be able to alter any barriers the factors have on effective self-care and early medical intervention.

Factors that influence self-care

Demographic factors.

Positive social support for the patient with heart failure (HF) may improve self-care behaviors such as medication compliance and adherence to a low sodium diet. Sayers et al., (2008) examined the potential effects social support had on HF patient outcomes. The authors hypothesized patients who were married, or living with others, would perceive greater support. Race was also examined since previous studies have indicated black individuals benefit from closer kinship ties when compared to white individuals.

HF patients from a cardiology clinic of the Philadelphia Veterans Affairs Medical Center, and a university-affiliated cardiology practice, were referred. A screening process took place to rule out patients who were cognitively impaired, or had a hearing or vision impairment (Sayers et al., 2008). All patients had a structural heart disease diagnosis and past or current symptoms of HF.

The questionnaires and an interview were completed by 74 patients. Six of the patients were from the university based clinic, and the remaining 68 were from the VA medical center (Sayers et al., 2008). The majority of the participants were black males, age 60 years or older. All participants had a high cardiac comorbidity, medical comorbidity, and reported a low level of education and income. Low self-care was demonstrated by medication non-adherence, reported by 65% of the participants, and most reported consuming a high sodium food in the past week.

To assess the degree of family/ friend involvement in the participant's medical decisions and self-care, the Medical Care Questionnaire was given. A value index from

0-5 was assigned to the questions that explore the living status and availability of structural support in five ways: scheduling doctor's appointments, accompanying the participant on doctor visits, picking up prescriptions, helping to remember to take medications, and participating in decisions about medical care (Sayers et al., 2008). The Spearman rank-order correlation for test-retest coefficient for reliability of patient responses for overall family involvement was r=.63, p<.001 for the Medical Care Questionnaire (n=63) (Sayers, White, Zubritsky, & Oslin, 2006).

The Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988) determined the emotional level, whether the support comes from a marital partner or a friend/provider. The internal coefficients for the subscale for emotional support had reliability of Cronbach's alpha=0.87, and for structural support was alpha=0.73 (Sayers et al., 2008).

The Self-care of Heart Failure Index (Riegel, Carlson, & Glaser, 2000) measured various components of self-care in real world settings. Fifteen items are measured on a four point scale, with three subscales: self-care maintenance, self-care management, and self-care confidence (Sayers et al., 2008). The higher the score on a 1-100 scale, the higher the level of self-care. Reliability for this measure r= 0.77.

Measuring medication nonadherence was done using a four item self-reported scale with reasons for nonadherence. Reasons included forgetting to take medication, being careless, improved subjective health, and worsening subjective health. The test-retest reliability was r=0.53, p <0.0001, (n=64) for this study (Sayers et al., 2008).

Adherence to a low sodium diet was measured by the Eating Behavior Questionnaire (Chamak, Sayers, & Pawlowski, 2005). This consisted of 11 items, with a yes/no checklist of high sodium foods consumed by the participant in the past week (Sayers et al., 2008). Scoring was done for each item yes=1 and no=0. A hierarchical regression model of prediction dietary adherence was used. The measure had an internal consistency of alpha=.69.

Results showed none of the demographic variables were associated with involvement of family in the participant's medical care (Sayers et al., 2008). There were no racial differences between white and black participants based on the Medical Care Questionnaire. Spouse/partners were involved the most with medical care and decisions. The lowest perceived level of support was identified by white participants who were not married, and not living alone. Self-care confidence was ranked highest along with supportive friends, and lowest was support from significant others. Emotional support in general was related to higher medication and diet adherence.

Sayers et al. (2008) concluded that perceived positive social support improves compliance in HF patients. Patients may forget medications and other self-care behaviors, but social support can assist with compliance. Further study is needed to determine how the emotional aspect of relationships influences self care and may influence outcomes and mortality.

The incidence of heart failure (HF) affects both men and women. Gender may be a factor when addressing barriers to self-care. Riegel et al. (2009) conducted this study to identify gender specific barriers and facilitators to HF self-care behaviors.

The sample consisted of 8 women and 19 men from four outpatient facilities in Melbourne, Australia. Inclusion criteria were a diagnosis of HF for at least 6 months, a New York Heart Association functional class of II or III, mentally alert, and fluent in English. Exclusion criteria were living in a long term care facility. The majority of participants were married, had a high school education, were retired, had few comorbid illnesses, and experienced mild HF symptoms (Riegel et al., 2009). The mean age of the sample was 68.7 years old, with an average of 5.3 years with HF. The majority were financially stable and perceived health was good (44.4%).

Surveys were completed by participants regarding self-care maintenance, self-care management, self-care confidence, social support, and mood (Riegel et al., 2009). After the survey was completed, interviews took place in the clinic, participant's home, or by telephone. Open-ended questions were asked about treatment plans, factors that helped or hindered success in self-care, and personal motivation for self-care.

The Self-Care of Heart Failure Index (SCHFI) was used to measure self-care maintenance, self-care management, and self-confidence on a 17 item, 4-point Likert scale. Higher scores indicated better self-care. Reliability for sub-scales of self-maintenance ranged from: Cronbach's co-efficient *a*=.55-.63; self-management *a*=.65-.70; and self-confidence *a*= >.80 (Riegel et al., 2009).

The Multidimensional Scale of Perceived Social Support (MSPSS) was used to measure how participants perceived social support from a significant other, family, and friends. A 7-point Likert scale (1="very strongly disagree" to 7= "very strongly agree") was used (Riegel et al., 2009). Reliability for sub-scales was: Significant Other, Cronbach co-efficient *a*=.91; Family, .87; and Friends, .85 (Riegel et al., 2009).

The Patient Health Questionnaire (PHQ-9) was used to measure depression. Nine response choices ranged from 0="not at all," to 3="nearly every day." Sensitivity for this tool is 88%, with specificity for depression detection 88% (Riegel et al., 2009).

The Brief Symptom Inventory (BSI) was used to measure anxiety. The tool contains 53 items, with the anxiety sub-scale consisting of six items. Responses from 0="no anxiety" to 4="extreme anxiety" were calculated. Internal reliability and validity have been demonstrated in various patient populations. A score of >.35 indicates anxiety (Riegel et al., 2009).

Results from the SCHFI indicated no gender differences in self-care maintenance. There were differences in self-care management in interpreting and responding to symptoms (Riegel et al., 2009). Men were better at recognizing symptoms related to HF and initiating treatment. There was a relationship between this finding and differences found in self-care confidence, social support and mood. Men reported having higher self-confidence than women (76.1 vs 61.5, p=.02) in ability to relate symptoms to HF. The men's responses included descriptions of initiating treatment in response to symptom recognition. Women were uncertain about symptom recognition, and would not initiate treatment without consulting a provider for confirmation.

Results from the MSPSS indicated that men had more active social support from significant others (25.3 vs 17.7 p=.04), and family (23.8 vs 17.7, p=.04), than women. Men reported help for day to day activities from spouses, children and parents in medication management and symptom recognition. More women lived alone and reported less social support than men. No difference was found between men and women with friend support (Riegel et al., 2009).

Results from the PHQ-9 indicated women had more depression than men that impacted self-care. Fatigue was one symptom of HF women occasionally attributed to being depressed, instead of relating this symptom to HF. Consequently, the decision was made to ‘wait and watch’ to determine if the patient felt better. Results from the BSI indicated more men suffer from anxiety than women. Anxiety served as a motivator to treat symptoms more quickly in men (Riegel et al., 2009).

The authors concluded that gender specific barriers and facilitators of self-care may influence compliance. Assessing whether the barriers are present in patients may help towards developing solutions to strengthen self-care behaviors (Riegel et al., 2009).

Adhering to a sodium restricted diet (SRD) can improve the quality of life for patients with heart failure (HF) and hypertension (HTN). HF and HTN are linked with high sodium, cholesterol, and fat diets. Sheahan and Fields (2008) conducted a qualitative study to examine the decision-making behaviors of older females with HF or HTN adopting a sodium restricted diet. The authors examined contextual and health care system factors that may influence the participants’ decisions to adhere to a SRD.

Participants were purposefully selected from three congregate living facilities (CLF) located in the southeastern part of the United States. This area is known for a population at high risk for heart disease, smoking, and obesity (Sheahan & Fields, 2008). The sample consisted of 33 women who volunteered for the study, age 65 or older, with no cognitive impairment, could hear adequately, and could speak English. The CLF's were categorized according to socioeconomic status, ethnicity, and if it was privately or government owned.

To measure cognitive function, the Mini-mental state examination was used to screen participants (Sheahan & Fields, 2008). The 11 item questionnaire has a possible score of 30 points; the higher the score, the better the mental status. Scores <24 indicated impairment. This tool has a Cronbach alpha coefficient test-retest reliability of .82.

A health form was administered to obtain demographic data such as age, marital status, education, race, as well as self-reported health conditions. Number of years with HF or HTN, number of medications for each condition, and if a family member advised the participant on SRD choices were evaluated. A semi-structured interview was conducted with three focus groups to obtain qualitative data. Questions were focused on understanding the daily decisions made regarding diet choices. Credibility was assured by qualified researchers trained in qualitative methods. Facilitators recorded focus group dynamics, including non-verbal aspects of interactions (Sheahan & Fields, 2008).

The demographic findings were that the majority of women who were widowed, with a mean age of 77 years. Economic status varied with the CLF. The subsidized CLF women retired from work such as nursing assistants, cooks, and housekeepers. The mean education level was 10.4-11.8 years. The privately owned CLF consisted of women retired from more professional work such as teachers, and administrative secretaries. Years of dealing with HF was reported by 15 women, with an average of 6.5 years. HTN average was 16 years for 32 of the women. The average number of medications taken for

HF was one, with the average number for HTN was one point six (Sheahan & Fields, 2008). The reported percent of participants receiving education on SRD was 58%, with only 24% given written instructions. Education on nutrition was more likely if the participant had been hospitalized with HF or HTN.

Findings from the interviews revealed that a predominant contextual barrier for motivation to prepare meals was “eating alone.” Cooking for only one person is “too much trouble.” Another consistent theme found a “lack of knowledge” regarding dietary sodium, how to interpret nutritional labels, and if sea salt was better than iodized salt (Sheahan & Fields, 2008). The woman did recognize the CLF food was salty, and didn’t need any table salt added to the food. Participants from all three CLFs expressed interest in learning to use herbs to season food.

Most women reported knowing the signs and symptoms of a diet high in salt, however, lack of education from the HCP was a consistent theme. Concern for family members was a strong motivator for individuals who did report adhering to a SRD. Wanting to see grandchildren grow up, and not wanting to end up with health consequences like parents or grandparents, was a strong motivator to stay on a SRD. Only one person reported being influenced by family or a friend to adopt a SRD. Sheahan and Fields (2008) found that the southeastern culture of eating highly salted foods, such as bacon and gravy with biscuits, was evident in choices of foods.

Sheahan and Fields (2008) concluded that there is opportunity for HCP to improve education regarding the specifics on SRD with HF and HTN patients to improve outcomes. Education and discussion on SRD should occur with each HCP interaction.

The emphasis of education would be on prevention and on how sodium affects the cardiovascular system. Patients with heart failure (HF) are frequently readmitted to the hospital due to ineffective recognition and management of symptoms.

Personal characteristics.

Self-care behaviors are important to understand in managing heart failure (HF). Schnell-Hoehn et al. (2008) examined self-care behaviors among HF patients who lived in a community setting. The purpose of this study was to examine factors that determine self-care behaviors. The authors used Connelly's Model of Self-care in Chronic Illness (MSCCI) to examine the interactive factors that influenced behaviors. The framework's premise is that people practice self-care behaviors consistent with beliefs, values and motives to achieve the best perceived outcome of any given circumstance.

A convenience sample of 65 ambulatory patients from an outreach clinic was recruited. Inclusion criteria were: an established HF diagnosis for at least 6 months, English as the spoken language, and the patients were at least 18 years of age (Schnell-Hoehn et al., 2008). The sample included 50 men and 15 women between the ages of 21 and 88 years, with a mean age of 59.

The Self-care of Heart Failure Index (SCHFI) was used to measure self-care behaviors and self-efficacy with 22 items. The 4 point response set ranged from 1= low self-care and self-efficacy to 4= high self-care and self-efficacy. The items were divided into three subscales: self-care maintenance, self-confidence, and self-care management (Schnell-Hoehn et al., 2008). The self-care maintenance subscale included items for weighing daily, keeping a dietary sodium diary, exercising 3 times a week, taking medications, keeping within 10% of ideal weight, seeking physician help when needed, and getting regular immunizations. The self-efficacy subscale included questions regarding self-confidence in managing self-care. The self-care management subscale measured the ability to recognize signs and symptoms of worsening HF and implement applicable therapy. Scores ranged from 0-100 in each subscale, the higher the score indicating better the self-care ability. The SCHFI had a co-efficient *a* of .76, and validity was supported by confirmatory factor analysis.

Functional ability was measured by the Kansas City Cardiomyopathy Questionnaire (KCCQ). A 5 point Likert scale was used to rate the 10 items. The higher the score, out of 100 points, the fewer the limitations. The coefficient for physical limitations was r =.90, and for social limitations was r =.86 (Schnell-Hoehn et al., 2008). Concurrent validity ($p < 0.001$) indicated a significant correlation between the KCCQ and the New York Heart Association (NYHA) functional class.

The General Well-being Schedule examined psychological dimensions of well-being. This was an 18 item index measuring anxiety, depression, self-control, positive well-being, vitality, and general health. The scores ranged from 0-110, with the higher score indicating better well-being. Coefficient *a* for the tool was r =.90. Spearman correlation coefficient ranged from 0.66-0.70 when correlated with Zung's Self-Rating Depression Scale, and the Person Feeling Inventory (Schnell-Hoehn et al., 2008).

Sociodemographic and clinical data were collected with a questionnaire. Comorbidity was measured with the Charlson Co-Morbidity Index scoring and identifying health conditions. Low, moderate, and high comorbidity's were categorized by a scoring range between 0-34 (Schnell-Hoehn et al., 2008). Most participants were married, had a high school education or less, resided in the city, and had an income of $40,000 or more. Most were retired or were on disability, with only one third still working.

Schnell-Hoehn et al. (2008) found that the self-care behaviors reported most were taking medications, seeking physician guidance, and following a low sodium diet, according the SCHFI results. Regular exercise was the least reported self care behavior. Self-care management measured the ability to control symptoms. The SCHFI scores showed 65% were in the lower third of symptom recognition and self-treatment questions, indicating less ability to manage symptoms.

The KCCQ results indicated both social limitations (55%) and physical limitations (57%) were experienced by more than half of participants. Even with the reported percentages, 48% experienced positive well-being, according to the General Well-being schedule. Psychological distress was shown by 35% of participants having anxiety and depression. Diabetes and myocardial infarction were the most common comorbidities, with 61% of participants having two or more comorbidities, according to the results from the Charlson Co-Morbidity Index (Schnell-Hoehn et al., 2008).

Significant correlations were found between psychological status and self-care ability (Schnell-Hoehn et al., 2008). Participants experiencing psychological distress had less ability for self-care maintenance (p =.057). Other factors influencing self-care were ethnic backgrounds (p =.0481) and comorbidity (p =0231). Interestingly, three to four comorbidities had the higher self-care score, followed by lower numbers of comorbidities. The European participants had a higher level of self-care than the aboriginal descent. Married couples living together also had a higher level of self-care, as did participants with mild social limitations. Self-efficacy was lower in patients who were recently hospitalized. This finding could reflect the ability to manage symptoms in participants not recently hospitalized.

The findings validated Connelly’s MSCCI framework (Schnell-Hoehn et al., 2008), that self-care behaviors are influenced by beliefs, values, and motives. In educating HF patients to adhere to healthy choices for best outcomes, consideration for cultural background and addressing mental health are critical. The role of the nurse in promoting self-confidence and self-efficacy is crucial, as support and encouragement are part of the educational plan for patient’s success in managing HF.

Patients with low social and economic status have difficulty performing self-care due to lack of resources. Macabasco-O'Connell, Crawford, Stotts, Stewart, and Froelicher (2008) explored the characteristics, barriers, and challenges the indigent population has with heart failure (HF) and self-care. The authors asked the following research questions (p. 224):

1. What are the demographic and clinical characteristics of indigent HF patients?
2. What HF self-care behaviors do indigent patients perform most frequently?
3. What are the challenges and barriers in performing HF self-care behaviors in an indigent population?

Eligible participants were recruited from a community hospital, and three cardiology clinics in California. Inclusion criteria were having a diagnosis of HF within the last 2 years. Participants were excluded if transferring to a long term care facility or if life expectancy was less than 3 months. The sample included 29 males (45%) and 36 females (55%). The majority were under 65 years of age, had less than a high school degree (56%), were unemployed (86%), lived alone (56%), were Caucasian (65%), earned less than $10,000 (56%), had Medicaid for insurance (26%) or were uninsured (26%), and had 1-4 comorbidities (97%) (Macabasco-O'Connell et al., 2008).

The Self-care of Heart Failure Index was utilized to measure self-care maintenance and self-care management. The tool consisted of 18 items that were evaluated on a 4-point Likert scale (1=never or rarely to 4=always), higher scores indicated better self-care. Self-care maintenance was measured by seven behaviors experts agree are necessary for HF maintenance success: daily weighing, low-sodium diet, exercise routine, medication compliance, weight management, immunizations, and medical follow-up (Macabasco-O'Connell et al., 2008). Alpha coefficient for this subscale was .60. Self-care management was evaluated using shortness of breath as the most commonly reported symptom. Questions were asked to evaluate the ability to recognize the symptom, determine the importance of the symptom, implement a treatment, and evaluate the effectiveness of the treatment. This subscale had an alpha coefficient of .80.

Results from the Self-care of Heart Failure Index were that most participants (54%) performed self-care poorly. Participants with more education (32%) performed fewer self-care behaviors than individuals with less education (57%). Self-care maintenance behaviors that scored highest were taking medications, talking to doctors, and limiting salt intake. Weighing and exercising behaviors scored lower. Symptoms that would cause worry in participants are trouble breathing (68%), and dizziness (65%). Self-care management results indicated that most participants (71%) reported shortness of breath in the last 3 months. Participants recognizing shortness of breath as a symptom of HF was low (28%), and most (72%) did nothing to treat it (Macabasco-O'Connell et al., 2008).

Three open-ended questions were asked in a one-time interview with participants regarding the challenges, difficulties and/ or barriers that hindered self-care behaviors. Results demonstrated the major concerns about HF were lack of knowledge (15 of 65), recognizing symptoms (15 of 65), having more heart problems (10 of 65), getting better and wanting to live longer (7 of 65), and death (6 of 65) (Macabasco-O'Connell et al., 2008). Participants believed barriers to self-care were due to symptoms, such as fatigue and shortness of breath (15 of 65), and living alone (6 of 65). A few participants (8 of 65) reported financial status was a barrier to obtaining health care needed. Some participants (6 out of 65) reported no barriers hindering self-care.

Findings supported other studies that indicated the indigent population has greater challenges to managing HF than the general population (Macabasco-O'Connell et al., 2008). Conclusions were that self-care is often poorly managed by the majority with HF. Many experience symptoms and do not seek treatment. Therefore, more support and information from health care providers are needed to help this population deal successfully with HF. Ease of access would be one improvement that would facilitate information distribution and disease management.

There is a strong emphasis on educating heart failure (HF) patients about care and symptoms. Cameron et al. (2009a) hypothesized that depression and cognitive function would predict poor self-care behaviors in HF patients. The purpose of the study was to test a seven-item conceptual model that determines self-care. The model included seven predictor variables: age, male gender, significant comorbidity, cognitive function, depression, social situation, and self-care confidence.

A convenience sample of 50 patients hospitalized in Victoria, Australia with HF was included in the study. Patients who were referred to the Chronic Heart Failure Management Program (CHF-MP) during hospitalization were invited to participate. Inclusion criteria were a diagnosis of HF and being 45 years or older. Exclusion criteria were neurological problems, residence in a nursing home, or language barriers (Cameron et al., 2009a).

The Self-Care of Failure Heart Index (SCHFI) was used to measure adherence to self-care regimens (Cameron et al., 2009a). The tool scores three areas: self-care maintenance, self-care management, and confidence with self-care. Internal consistency was demonstrated in 760 patients using the SCHFI, with Cronbach's a =.70 for self-care management, and Cronbach's a =.82 for self-confidence. A low reliability was shown for self-care maintenance, Cronbach's a =.55. All areas are scored 100 points each, with the higher number indicating better self-care ability.

The Cardiac Depression Scale measured depressed moods in specific cardiac disease populations. The scale contains 26 items with seven subscales including sleep, anhedonia, uncertainty, mood, cognition, hopelessness, and inactivity (Cameron et al., 2009a). A 7-point response scale indicated level of agreement, the higher the score indicating worse depressive symptoms. The authors chose = or > 84 to indicate severe depression, based on previous testing samples. Internal consistency and validity were confirmed against other general depression measures.

The Mini Mental State Examination (MMSE) is a widely utilized measure for dementia and determines levels of cognitive impairment. The 30 question exam screens for visual spatial skills, orientation, concentration, and short-term memory (Cameron et al., 2009a). The MMSE has satisfactory test-retest reliability, internal consistency, and ability to determine moderate-to-severe impairment. Scores above 26 were used to determine reduced cognition in this study.

The Charlson Comorbidity Index was used to determine severity of comorbid disease in participants. The index classifies comorbid illness based on the number and severity, the greater the score, the higher risk of death (Cameron et al., 2009a). Three classifications of mild, moderate, or severe comorbidity are used.

The sociodemographic and clinical data included age, marital status, and HF diagnosis. The participants had a mean age of 73 years. A little over half of the participants were married (60%), with 28% living alone. Women were under represented (28%). Half of the group was newly diagnosed with HF, and 50% had a NYHA classification of moderate to severe (Cameron et al., 2009a).

Results from the SCHFI showed 52% of the participants performed self-care maintenance adequately, 12% performed self-care management, and 36% were confident in self-care. When comparing predictor variables to measures, older age contributed most to self-care maintenance scores (Cameron et al., 2009a). Self-confidence influenced self-care management scores the most, with males, moderate to severe comorbidity, and depressive symptoms also contributing. Cognitive function impacted both self-care maintenance and management scores.

Findings from the Cardiac Depression Scale resulted in 27 (53%) participants reporting depression. Potential cognitive impairment was shown by 18 (36%) participants, based on MMSE results. The Charlson comorbidity index indicated that 18 (36%) participants had four or more comorbidities (Cameron et al., 2009a).

The theory proposed by Cameron et al. (2009a), that depression and cognitive function contribute to poor self-care in HF patients was confirmed. However, other variables contribute to predicting self-care behaviors. Recognizing modifiable and non-modifiable variables may help in the treatment and support of HF patient's self-care abilities.

There are many factors that influence development of self-care in heart failure (HF) patients. Experience with symptoms is one factor that Cameron et al. (2009b) examined in this study. The authors proposed three null hypotheses: (a) newly diagnosed HF patients with experience with HF symptoms would have no difference in self-care maintenance behaviors, (b) newly diagnosed HF patients, and (c) patients with experience with HF symptoms would have no difference in self-management actions than newly diagnosed HF patients (pp. 93-94). Patients with experience with HF symptoms would have no difference in self-confidence with decision-making or actions.

Data were collected between June-December 2005 and April 2007-September 2008 in Victoria, Australia. Patients from two health networks were referred from case managers. Inclusion criteria was a diagnosis of HF with symptoms at rest or with exertion, and 45 years or older. Exclusion criteria were neurological problems, inability to answer questionnaires independently, and living in a residential care facility (Cameron et al., 2009b). A total of 143 patients were enrolled in the study. Most interviews were conducted while in the hospital, eight interviews were conducted at the participant's home. Participants were divided into two groups, novice or experienced. Participants were categorized as novice with a diagnosis of HF under or equal to 2 months and had minimal HF education. Participants categorized as experienced had HF over 2 months and had more exposure to HF education. Based on the criteria, out of 143 participants, 53 (37%) were novices, and 90 (63%) were experienced. The mean age of the whole group was 72 years, and most lived with support (63%). The minority was female (27%). Slightly less than half were symptomatic with minimal exertion or at rest (49%), and the minority had four or more co-morbidities (18%). Almost all participants were on medication for HF.

The Self-Care of Failure Heart Index (SCHFI) was used to measure the process of self-care with three sub-scales: self-care maintenance, self-care management, and self-confidence. This is a questionnaire with 15 items rated on a 4 point response scale with 1=low self-care behavior, and 4=high self-care behavior. A total of 100 points were possible, the higher score reflecting better self-care (Cameron et al., 2009b). In a previous study, internal consistency for this tool was adequate for self-care management

(Cronbach's *a* .70), and self-care confidence (Cronbach's a .82). Internal reliability was low for self-care maintenance (Cronbach's *a* .59), and self-care management (Cronbach's *a* .52), but was high for self-confidence (Cronbach's a .80).

The Mini Mental State Exam measured cognitive impairment, with a score above 27 indicating impairment. The Cardiac Depression Scale was significant for depression if the score was over 84 (Cameron et al., 2009b). The Charlson co-morbidity index measured the number of different diagnosis. The New York Heart Failure functional class was used to measure the severity of HF in participants. The measurements were included with the socio-demographic profile of participants.

Results from SCHFI indicated self-care score results for the whole group were low, self-maintenance scores reflected adequate care (53%), self management scores less than adequate (23%), and less than half (43%) participants had adequate self-confidence scores. Comparison of novice participants to experienced participants in self-care was based on univariate analysis (Cameron et al., 2009b). Novices scored 9% lower than experienced HF participants in self-maintenance, and 6% lower in self-management scores. Self-confidence scores were not statistically different between the novice and experienced groups.

Results from the Mini Mental State Exam indicated that novice HF participants were less likely to be cognitively impaired (29%) than experienced HF participants (71%) (Cameron et al., 2009b). The Cardiac Depression Scale results showed novice HF participants were less depressed (30%) than experienced HF participants (79%). Results from the Charlson co-morbidity index were novice HF participants had lower comorbidities (42%) than experienced HF participants (58%). Novice HF participants also had less severe HF (48%), as shown by results from the New York Heart Failure functional class of I-II, than experienced HF participants (52%).

The findings led the authors to reject the first two null hypotheses (Cameron et al., 2009b). The authors concluded that experience does play a role in predicting self-maintenance and self-management behaviors. The self-confidence hypothesis was accepted since there was no difference between the novice and experienced HF participants in self-confidence. All scores were low, however, indicating a need for improvement in HF education and support.

Self-care is an important skill to develop in the management of heart failure (HF). Paradis, Cossette, Frasure-Smith, Heppell, and Guertin (2010) used the Theory of Heart Failure Self-care to investigate whether conviction and confidence are necessary to improve self-care. The purpose of this study was to utilize motivational interviewing based on the stages of change with HF participants to evaluate the impact on self-care behavior. The theory maintains that patients are the main decision makers of care, and should have the skills to manage health problems. The concepts of self-care maintenance, self-care management, and self-care confidence are the concepts of the theory. To encourage conviction and confidence, motivational interviewing (MI) has been effective to improve self-care. MI promotes collaboration with the patient and is based on the nurse showing empathy, introducing doubt about behavior consequences, going along with a patient’s resistance, and reinforcing self-efficacy.

The Transtheoretical Model (TTM) assesses a patient's readiness to change. Five stages of change are recognized in the model: pre-contemplation stage, a state of resistance; contemplation stage, the patient begins to recognize a need for change; preparation stage, the patient is convinced of the dangerous behavior; action stage, where change has occurred within the last 6 months; and the maintenance phase, or the time after 6 months of change. A combination of MI and the stages of change (MISC) were used by the authors to evaluate the preliminary effect of MISC on self-care behaviors in HF patients. The goal of intervention is to promote the conviction to change while developing confidence. Specific aims of Paradis et al.'s study were to evaluate an experimental group (EG) and control group (CG) of patients to determine if the hypothesis that the EG would demonstrate:

1. H1: higher self-care maintenance specific to HF
2. H2: higher self-care management specific to HF
3. H3: higher general self-care management
4. H4: higher confidence in performing self-care specific to HF
5. H5: higher confidence in performing general self-care
6. H6: higher conviction in performing general self-care (Paradis et al., 2010, p. 132)

Participants were recruited from a cardiac care hospital clinic specializing in care for HF patients at home. Inclusion criteria were: a diagnosis of HF, over 18 years of age, struggling with at least one self-care behavior, cognitive and physically able to participate, ability to speak and read French, not followed by professionals who might influence behavior, and not transferred to the hospital after the screening visit (Paradis et al., 2010). Exclusion criteria were not reporting any difficulties in self-care, having regular follow-up care that could change behavior, and cognitive or physical impairment. Participants were randomly assigned to the experimental group and control group, with 15 participants in each. The experimental group mean age was 74 years, most were married, and two-thirds were class II in the NYHA classification. The control group mean age was 67 years, less than half were married, and half were class III in the NYHA classification. Other differences in sociodemographic and clinical characteristics were not significant. MI took place the day of recruitment and at 5 and 10 days by telephone. Outcome data were collected 1 month after randomization occurred. All data were collected over a period of 4 months.

The Self-care of HF Index (SCHFI) was used to assess self-care maintenance and management. For self-care maintenance, subscale A was used to assess 10 behaviors on a 4-point Likert scale, the higher score indicating better self-care. A score above 70 on a 100 point scale indicated adequate self-care (r =.56 and r =.54 in this study) (Paradis et al., 2010). Self-care management was also assessed with the SCHFI, using subscale B with three sets of questions (r =.70). The first and third set of questions utilized a 5-point Likert scale, and the second set of questions using a 4-point Likert scale. Higher scores indicated better self-care (Paradis et al., 2010).

The Therapeutic Self-care Scale was used to assess general self-care management. This tool contained 12 items on a 6-point Likert scale, a higher scale indicating higher independence (*a*=.88 in this study). Actions taken by the patient to promote, maintain, or improve health were measured (Paradis et al., 2010).

Confidence in HF self-care was measured using subscale C of the SCHFI on a 4-point Likert scale. A higher score indicated a higher self-confidence level (*a* =.82) (Paradis et al., 2010). The Confidence and Conviction (C&C) subscale 1 was used to measure confidence with general self-care. This scale uses a 5-point Likert scale to assess eight barriers to self-care. A higher score indicating higher self-confidence (*r* =.85 and .83 in this study).

The C&C subscale 2 was used to assess conviction in performing general self-care. Four items regarding perceived benefit of treatment adherence were measured on a 5-point Likert scale. Higher conviction to perform general self-care was demonstrated by a higher score (r=.82 and .88 in this study) (Paradis et al., 2010).

Results from the SCHFI subscale A for self-care maintenance showed an insignificant difference between the EG and CG from baseline to 1 month. Neither group scored an adequate self-care ranking above 70. Results from the SCHFI subscale B for self-care management specific to HF was not analyzed since only 14 patients complained of HF symptoms during the study. Independence with self-care results from the Therapeutic Self-care Scale, were not significant between the two groups. SCHFI subscale C, measuring confidence with self-care specific to HF behaviors, was significant since the EG scored above 70, and the CG did not. CC subscale 1, measuring general confidence in self-care, was significantly higher for the EC (P=.005). Results from the CC subscale 2, measuring conviction in general self-care confidence, was not significant between the groups. Although significance was not found in some results, the general trend was improved scoring for the EG with the MISC (Paradis et al., 2010).

Hypothesis 4 and 5 were confirmed by Paradis et al. (2010) regarding increased confidence in self-care behaviors using MISC technique. The authors' conclusion was that improved confidence may predict improved self-care behaviors in HF patients. More research is needed to confirm MISC may be helpful with a larger HF population to improve self-care behaviors.

Developing self-care skills.

Self-care is a key component of management in heart failure (HF). Research has shown a number of factors that can predict self-care behaviors, such as comorbidity, functional ability, cognition, depression, sleep and support. Self-care requires daily choices. Riegel et al.'s (2007) purpose for this study was to examine how self-care expertise develops in patients with HF.

A sample of 29 HF patients was selected from a large urban medical center HF clinic (Riegel et al., 2007). Inclusion criteria were: documented HF diagnosis, English speaking, and were judged as either very good or very poor in HF self-care by healthcare providers. There were 3 (10.3%) female participants, and 26 males who were judged to be experts in self-care. Exclusion criteria were impaired cognition, hearing loss, or a complicated comorbidity. The majority were over 60 years of age, Caucasian, had a high school degree or above, retired, and had HF for an average of 6 years. Most testing and interviews occurred in patients home, with loved ones contributing.

The Charlson Index was used to measure comorbidity on a scale of low, moderate, or high. Validity was confirmed when comorbidity aligned with mortality, use of healthcare resource, hospital stay duration, cost, discharge disposition, or complications (Riegel et al., 2007).

The New York Heart Association (NYHA) functional class contains seven structured questions pertaining to symptoms and physical limitations. Class designation range is II-IV, with the higher number indicating the worse HF stage. This scale is widely used, and has 90% reproducibility (Riegel et al., 2007).

The Self-Care HF Index (SCHFI) was used to determine self-care by a 17 item questionnaire with a 4-point Likert scale. The higher the score, the better self-care is demonstrated (Riegel et al., 2007). Three subscales included in the SCHFI are: self-care maintenance, self-care management, and self confidence. Validity was confirmed by factor analysis.

Cognitive status was determined using the Probed Memory Recall Test for short term memory and learning ability, and the Digit Symbol Substitution Test which measured attention and cognitive processing. Both tests have demonstrated construct validity (Riegel et al., 2007).

Riegel et al. (2007) measured daytime sleepiness, since HF patients frequently experience this symptom. The tool used for this measure was the Epworth Sleepiness Scale that asks participants to rate the likelihood of falling asleep in eight scenarios. A 4-point Likert scale ranges from 0= never dozing, to 3= high chance of dozing. A score equal to, or above 11 indicates sleepiness, while a score below 11 indicates not sleepy.

Established reliability with this scale is r=.82 for test-retest, and internal consistency of a=.88.

Social support was measured with the McMaster Family Assessment Device (FAD). This 60 item questionnaire includes seven subscales: problem solving, communication, roles, affective responses, behavior control, affective involvement, and general functioning (Riegel et al., 2007). A scale that rates family description ranges from 1=strongly agree, to 4=strongly disagree, was used. Standardized cut points indicate level of functioning in the family from low to high. Internal consistency for this study for the FAD was r =.96.

The Patient Health Questionnaire PHQ-9 is a 4-point measure used for determining depression in participants. The questionnaire is designed to differentiate between minor and major depression. Compared to professional interviews, the PHQ-9 has a sensitivity of 88% (Riegel et al., 2007).

Results were reported under three categories: poor self-care (n=10), good self-care (n=16), and expert self-care (n=3). The results from the Charlson Comorbidity Index showed a mean of 2.9 comorbidities under the poor self-care, 3.2 comorbidities under the good self-care, and 4.7 comorbidities under the expert self care category. The NYAH functional class of HF showed a majority of Class III and IV in all categories. Eighty percent of the poor self-care had this designation, as well as 62.5% in the good self care category, and 100% in the excellent self-care category (Riegel et al., 2007).

The results from the SCHFI showed the “experts in self-care” scored higher in two of the subscales: self-care maintenance, and self-care management. The “good at self-care" category scored highest in self-confidence (Riegel et al., 2007). Cognitive status was highest in the "expert in self-care" category, with "good in self-care" scoring next, and "poor in self-care" scoring the lowest. Daytime sleepiness results showed the highest percent (60%) in the "poor self-care" category, the lowest percent in the "good self-care" category (31.3%), with "expert in self care" (33.3%) in close comparison.

Social support found in family functioning was overall best in "expert in self-care," and the lowest scores were "poor in self-care" category. Depression scored the highest PHQ-9 in the "poor self-care" (n=8.2 plus or minus 6.9), followed closely by the "expert in self-care" category (n=8.0 plus or minus 1.0). The "good in self-care" category scored the lowest (n=2.4 plus or minus 2.4) for depression (Riegel et al., 2007).

Riegel et al. (2007) concluded that certain factors can help or hinder becoming an expert in HF self-care. Screening for excessive daytime sleepiness, impaired cognition, depression, and poor family function can be a start in planning education and support. Decision making ability, including knowledge, experience, skill and values, help develop self-care behaviors. Engaged social support was also found to be helpful.

One assumption regarding patient education for heart failure (HF) patients is that knowledge can be translated to behavior. Studies have shown that patients have misconceptions about self-care. Dickson and Riegel (2009) described what self-care skills HF patients perceived were needed, and how the skills were developed. This study was based on the authors' previous work.

The authors identified key concepts and themes from three qualitative studies related to self-care and skill acquisition for HF. A total of 85 patients were included in the data set of 3,000 pages of transcripts. Inclusion criteria were documented symptomatic HF for 3 months. Exclusion criteria were a history of neurologic event causing dementia, and inability to perform tests. The majority of patients were Caucasian (63.5%), had a New York functional class III, and had HF for a mean of 6 years (52.9%). The majority were male (58.9%), with a mean age of 55.69 years (Dickson & Riegel, 2009).

Open ended questions were reviewed on exemplar cases, such as “What do you do on a daily basis to manage your HF?” and “What did you eat yesterday?” (Dickson & Riegel, 2009, pp. 255-256). Comments regarding self-care for HF maintenance (diet, exercise and weighing), and management (decision making in response to symptoms), were reexamined and re-coded. Themes for self-care and skill development were identified to look for commonality. An audit trail, de-briefing with a co-investigator, and advice from experts determined methodological rigor. Consistency in interpretation and coding determined reliability in the study.

Self-care maintenance results included evaluation of tactical skills and situational skills. Tactical skills were lacking when it came to the day to day planning of HF diets, exercise and diuretic titration. Diabetic HF participants in particular struggled with food choices. Interpretation of weight gain and the decision whether to take an additional diuretic were a struggle for HF patients who had yet developed self-care maintenance skills (Dickson & Riegel, 2009).

The participants with adequate self-care maintenance skills developed skills with reading food labels, minimizing sodium when preparing foods, and symptom monitoring with daily weighing. An exercise routine was difficult to develop for HF participants who had not exercised before. A plan to fit ones environment, budget, and daily life was lacking in most participants. Medication routines were not lacking. Most participants had good medication adherence, and could recite or had a list of the name, dose, and frequency when interviewed (Dickson & Riegel, 2009).

Self-care management results indicated that situational skill was based on prior experience. Participants who planned to skip a medication, or cheat on a diet choice, would know how to manage the consequences by taking an extra diuretic dose. Participants without experience would not know how to plan or manage this situation, and were at risk for a lack of symptom management (Dickson & Riegel, 2009).

Development of self-care skills included relying on trusted resources. Most participants cited family, friends, and neighbors with personal experience in HF as resources to learn behaviors (Dickson & Riegel, 2009). Cardiac rehabilitation programs were also named as trusted resources. Very few participants named traditional health care providers as a trusted resource for HF self-care development.

Emotional support from family and friends was important to the development of self-care skills. This type of support included practical help, such as shopping with the participant to choose foods, preparing foods low in sodium, or monitoring symptoms, to support in overcoming cultural or social barriers. To participants with cognitive impairment, support from others is critical for successful management of HF (Dickson & Riegel, 2009).

Dickson and Riegel (2009) assessed what participants perceived as needed self-care skills, and how self-care skills were developed in participants successful in HF self-care maintenance and management. The themes were: "trusted resources," "support," and "experience." The authors concluded that to develop self-care skills, traditional education needs to be paired with practical, hands on training in reading labels, meal preparation, and symptom management. Exploring situations the HF patient may encounter and assisting in planning would be beneficial, as well as identifying trusted resources.

Factors influencing hospitalization

Jurgens et al. (2009) conducted a study to examine the contextual factors that influenced elderly hospitalized patients obtaining early intervention for symptoms. The Self-Regulation Model of Illness was the conceptual framework. This model describes symptoms that include physical, cognitive and emotional components that help determine responses to symptoms.

A convenience sample of 40 men and 37 women from tertiary hospitals in Philadelphia and New York was recruited. Patients 65 years or older, cognitively intact, medically stable, could speak and understand English were selected for the study. The Framingham criteria were used to confirm the diagnosis of HF. Jurgens et al. (2009) invited patients within 3 days of admission to the hospital to obtain the best recall from the patient's illness perceptions. To assess perceived symptoms of distress, the Heart Failure Somatic Perception Scale was used. This is a 17 item questionnaire regarding symptom occurrence and perceived severity. Items are rated on a 4 point Likert scale ranging from 0= “not at all” to 3= “extremely, could not have been worse.” Cronbach *a* was r=.80 (Jurgens et al., 2009). The Response to Symptoms Questionnaire was used to address the context in which the symptoms began, the emotional and cognitive response to the symptoms, the responses of others to the symptoms, and the perceived severity of the symptoms. A 5 point Likert scale was utilized to evaluate how patients responded to symptoms, 1= “not at all anxious, to 5= “extremely anxious.” Theta reliability was 0.72 for 15 items.

Functional ability was measured on the day of admission by the NYHA Functional Class, ranging from 1 to 4; the higher class indicating poorer ability. To measure a patient’s baseline functioning when not ill, the Specific Activity Scale was used. This scale uses a measure ranging from 1-4, with the higher number indicating worse functional ability. To measure a patient’s baseline functioning when not ill, the Specific Activity Scale was used. This scale uses a measure ranging from 1-4, the higher number indicating worse functional ability. Charlson Comorbidity Index was used to examine comorbidity and symptom distress. Responses were weighted and placed in a low, moderate, or high category (Jurgens et al., 2009). Qualitative data were collected using interviews to determine sociodemographic and clinical information, as well as data from the Medical record. Questions concerning a patient’s history with HF, symptoms, and open ended questions regarding factors affecting the decision to seek care were asked.

The most frequent findings from symptom distress were dyspnea, dyspnea with exertion, and fatigue, with almost half of the 77 participants reported dyspnea for greater than 3 days before admission (Jurgens et al., 2009). Most participants (n=79%) made the decision to seek medical care for symptoms, instead of being influenced by others. A little over half (n=56%) did not know the symptoms of HF, according to the Response to Symptoms Questionnaire, or realized the significance. Most participants were aware symptoms may be serious, but 80% waited to see if the symptoms would resolve. Half of the participants didn't want to trouble anyone for help, and 54% did not have any control over symptoms, or idea of the cause. One third attributed the symptoms to another cause.

Findings in regard to emotional response to symptoms were measured by the Response to Symptoms Questionnaire. Most (76.6%) of participants reported little, if any, fear or anxiety in regards to symptoms (Jurgens et al., 2009). Social factors were also measured by this tool. The majority did not feel embarrassed to seek care or let a social activity interfere. Rather, the reason stated most was the participant did not want to alarm or bother family members to assist in seeking care. Altering activity, praying, deep breathing, and taking medication not used for treatment of HF (i.e. cold medication) were some self-care methods used to adapt to symptoms. None of the participants knew to decrease sodium or fluid intake to treat symptoms.

HF symptom recognition was generally poor in this aged population (Jurgens et al., 2009). Contextual factors that prevented HF patients from obtaining early intervention included lack of symptom recognition and perceived severity, as well as the emotional response to symptoms. Patients did not recognize symptoms related to HF, thus did not respond with any effective self-care responses or have any urgency to seek medical care. Dismissing symptoms of HF leads to decompensation and re-admission to the hospital. Educating patients about the symptoms, and resulting outcomes of HF, may help to increase the likelihood of early medical intervention. Strategies to evaluate symptoms are needed.

Heart failure (HF) management programs may not be focusing on identifying key signs that lead to hospital readmissions. Annema et al. (2009) explored reasons for readmissions from the perspectives of patients, caregivers, cardiologists, and nurses. The authors compared similarities, differences, and possible preventive measure from different perspectives.

Information about HF readmissions was obtained from a substudy of the Coordinating study evaluating Outcomes of Advising and Counseling in Heart failure (COACH) (Jaarsma, Van Der Wal, & Hogenhuis, 2004, as cited in Annema et al., 2009). Patients admitted to 17 Dutch hospitals over a 27 month period of time were included in the COACH study. Inclusion criteria were patients hospitalized with symptomatic HF, caused by underlying heart disease. Patients in the study (n=1,023) were randomly assigned into one of three treatment groups (Annema et al., 2009). HF readmissions (n=260) were studied and categorized into three groups. During that period, 1,161 readmissions occurred.

Patients (n=375) who had a HF diagnosis were interviewed (Annema et al., 2009). Interviews were conducted to determine reasons for readmission after discharge. Data were gathered on 173 readmissions from patients (28%, n=108), caregivers (20%, n=76), cardiologists (25%, n=94), and HF nurses (27%, n=103). Patients (n=135) included in the substudy were mostly male, living with a partner, with a mean age of 71 years (Annema et al., 2009). The majority of caregivers interviewed were spouses (86%). Other family interviewed included parents, children, siblings or nieces (14%).

Results from the interviews indicated readmissions were due to worsening HF from the perspective of all respondents. Other medical conditions, such as pulmonary disorders, arrhythmia, and renal insufficiency, were factors for readmission (37%-48%). Reasons for worsening HF symptoms included nonadherence to diet, fluid restriction, or medication (13%-26%), and insufficient professional help (2%-7%). Miscellaneous factors, such as pain, anxiety, insecurity, depression, and substance abuse, were reported by 16%-26%. The cardiologists and nurses also reported knowledge deficit (12%-14%), delays in seeking help (8%-18%), and problems at home (2%-18%) as reasons for readmission (Annema et al., 2009).

When comparing agreement for readmission causes among caregivers and patients (n=72), agreement was found in 40% of the cases. HF nurses and cardiologists (n=85) agreed on readmission causes 59% of the time (Annema et al., 2009). Comparing patients/caregivers with health care providers, the agreement was 34%.

Readmission could have been avoided according to most respondents: cardiologists 23%, patients 24%, caregivers 29%, and HF nurses 31%. Annema et al.

(2009) discovered agreement percentage was high between patients and caregivers, 72%, and healthcare providers, 78% on preventable readmission. Most patients reported that improved adherence was the most important factor in preventing readmission (33%). Caregivers agreed this was an important strategy (18%). Requesting professional help earlier, adequate discharge planning, more follow up visits, and medication optimization were also identified by various respondents as important prevention strategies.

Annema et al. (2009) concluded that agreement was high between patients/caregivers and healthcare providers in the preventability of readmissions. There were differences between the two groups in the causes of readmissions. Thus, preventable measures can be merged to meet the needs of the patients and address the perspectives of the healthcare providers to determine a plan of care to decrease readmission rates.

Summary

Successful management of HF is a goal yet to be attained by many patients. The findings from the literature review indicate there are multiple factors to consider when building confidence in symptom recognition and self-care. The Self-Regulation Model of Illness (Cameron et al., 1993) has proven an applicable model that reflects the complexity of HF patient management.

Demographic factors have an impact on HF management. Sayers et al. (2008) concluded that a patient's perceived positive social support improves compliance with HF treatment. Emotional support particularly was shown to have improved medication and diet adherence. Gender variances regarding self-care barriers and facilitators were studied in the Riegel et al.'s (2009) study. While no difference was found in self-care maintenance between men and women, men were better self-care management, particularly recognizing HF symptoms and seeking treatment. Men were found to have higher self-confidence in recognizing symptoms, and had a better social support system than women. Women reported more symptoms of depression that may impact ability for self-care behaviors. Factors influencing older females in adhering to a low sodium diet were examined in the Sheahan and Fields' (2008) study. Results from interviews revealed that eating alone, and a lack of knowledge on interpreting food labels, were two barriers for diet adherence.

Several personal characteristics were examined in the literature that may impact the success of HF management. Beliefs, values, motives, and perceived outcome were explored by Schnell-Hoehn et al. (2008). Self-care behaviors such as taking medications, seeking medical care, and following a low sodium diet, were frequently reported, with exercise being least reported by participants. Symptom recognition and self-treatment behaviors scored low in the administered Self-care of Heart Failure Index. Social limitations were experienced by over half of the participants which contributed to a lower self-care. Psychological distress, such as anxiety and depression, also contributed to lower self-care ability. Findings from this study also revealed cultural background had an impact on self-care and should be addressed in the overall assessment. HF patients with low social and economic status were found to have more difficulty performing self-care according to the study by Macabaso-O'Connell et al. (2008). Failure to obtain medical intervention for treatment for symptoms is common. Due to a lack of resources, support and education are needed to improve the management of HF in this population.

Cognitive status, and the presence of depression can affect the performance of self-care behaviors, according to the study by Cameron et al. (2009a). Confidence in self-care maintenance and management were often affected by both depression and poor cognition. Cameron et al. (2009b) compared participants who had experience with symptoms to participants diagnosed with HF within the last 2 months. No difference was found in self-confidence, but the experienced HF participants scored higher in self-care maintenance and management behaviors. Motivational interviewing (MI) was utilized in the study by Paradis et al. (2010) to examine the impact on self-care HF behaviors. Self-care management and self-care confidence were improved at the conclusion of the study.

How self-care expertise is developed was explored by Riegel et al. (2007). Participants with four or more comorbidities, high self-confidence, intact cognitive status, and with the least daytime sleepiness scored as experts in self care behaviors. Social support was strong in the expert category of self-care. Dickson and Riegel (2009) examined self-care development from the patient's perspective as to what skills are needed. Participants who excelled in self-care knew how to read labels, prepare food with minimal sodium, weighed daily, and had a medication routine. Participants who managed symptoms well based self-care reactions on experience, as other studies have confirmed as helpful. Trust in providers influenced self-care development, as did the presence of emotional support from others.

Factors that influence hospitalization were examined by Jurgens et al. (2009). Perceived symptom distress and functional ability were explored with questionnaires. Most participants waited to see if symptoms would improve before seeking medical assistance. Ineffective coping responses were frequently utilized with little or no emotional response to the symptom, such as fear or anxiety. Annema et al. (2009) explored hospitalization from the provider, caregiver, and patient perspectives. All agreed that worsening HF symptoms were the main cause of hospitalization. Providers noted that a lack of knowledge, delays seeking help, and problems at home were contributing factors.

The literature used a variety of tools, questionnaires, surveys, to explore HF self-care influences from different perspectives. The Self-Regulation Model of Illness and Connelly's Model of Self-care in Chronic Illness were two frameworks utilized. Over 15 tools were used to assess factors that may influence symptom recognition and self-care in HF patients. Common themes and conclusions were found in the literature that emphasizes the importance of self-care development to manage HF. Factors that influence the recognition of symptoms and self-care development are important to examine when assessing, planning, supporting and educating the patient and family.

Chapter III

Methods and Procedures

Heart failure (HF) is a prominent disease with implications regarding quality of life, including the financial impact of readmissions to the patient and healthcare facilities. Research evidence has shown that early symptom recognition and appropriate self-care behaviors are essential in managing HF. The purpose of this study is to examine contextual factors that may influence symptom recognition and response in HF patients. This is a replication of Jurgens et al.'s (2009) study. Included in this chapter is information about the population, sample, setting, procedures, methods of measurement, design, and analysis methods used for this study.

Research Questions

1. What contextual factors influence symptom recognition and response in HF patients?
2. What contextual factors have a positive influence on self-care management of HF symptoms?

Population, Sample and Setting

The study will be conducted in a large Indianapolis hospital. The HF readmission rates for the 2 months average about 150 patients. Patients admitted within 30 days of a previous hospital stay with HF, are over the age of 18 years, cognitively intact, able to read and understand English, are medically stable, and able to manage care will be asked to participate. Living in a long-term care facility would exclude patients from qualifying for the study. Participants will be screened for applicability within 24 hours of admission. The study will be conducted over a 2 month period of time, or when there are 100 qualified participants.

The hospital was chosen for the study due to the supportive HF resources available, and the large cardiology service that draws patients to the facility. Patient support groups, education, and the efforts of the staff to provide support for the patient are standard care. The findings will be limited due to this type of HF support, and may not represent the whole HF population. The population will have diverse socioeconomic patients due to location and the well known cardiology services.

Protection of Human Subjects

The institutional review board (IRB) at Ball State University and at St. Vincent Hospital will review the study protocol for approval. Ethical principles for research will be followed. Participation will be voluntary and informed written consent of agreement will be obtained. Detailed explanation of the study process and the right to refuse participation in any part of the study will be explained. A full disclosure of the study will be given to participants. Data collected will be anonymous. There are no identified risks to the participants. Benefits include insight to the participant's personal situation and identification of barriers to symptom recognition. Early self-care behaviors and identification of factors that could facilitate symptom identification may provide insight for an improved plan of care. Overall benefits of the study may be discovering additional information to benefit HF patient outcomes.

Procedures

After approval for this study from Ball State University and the IRB at St. Vincent Hospital, approval will be requested from the chief nursing officer, and the HF unit director. After meeting with the certified nurse specialist (CNS) for the unit and obtaining support, the researcher will daily screen for patients who qualify from the census list in consultation with the CNS. The staff on the HF unit will be informed of the study in the monthly staff meeting, and with the researcher and CNS speaking to the staff. Screening for participants will occur within 24 hours of admission by the researcher. Inclusion and exclusion criteria will be applied. The researcher will select participants who may qualify for the study, and visit each potential participant to invite patients to join the study. Full discloser of the study will be given to the potential participant and any questions answered. If the participant is willing to proceed, informed consent will be obtained. A medical record review, with demographic information collection, will be conducted by the researcher on the day of consent. The participant interview will occur within 3 days of admission by the researcher for more accurate recall from the participant. The anticipated length of time for the interview is 60 minutes.

Methods of Measurement

The Heart Failure Somatic Perception Scale (Jurgens, 2006) will be used to measure perceived symptom severity. A 4-point Likert scale with 0= ‘not at all’ to 4= ‘could not have been worse’ is the response set. The higher the score, the more severe the symptom (Jurgens et al., 2009). Cronbach’s *a* will be used to assess reliability. The tool will be used as revised by Jurgens (2006) with five additional items addressing nocturia, abdominal girth, and activity adjustments to symptoms.

The Response to Symptoms Questionnaire (RSQ) (revised by Dracup & Moser, 1997) will be used to assess the emotional, cognitive, and social environment that might have an influence with symptom response. The modified version used by Jurgens et al. (2009) adapted to HF symptoms will be utilized. A 5-point Likert scale ranging from 1= ‘not at all anxious’ to 5= ‘extremely anxious’ is the response set. The tool measures how patients cognitively, emotionally, and with behavior changes, responded to symptoms. The 15 items will be tested for Theta reliability.

Interviews will include sociodemographic data. The medical record will be reviewed for medical history and current admission information. Open ended questions will be asked regarding the environment in which the symptom first was perceived, if family/significant others, or health care providers were notified and the response, and self-care response to the symptom. Interviews will be conducted privately in the patient’s room, with the target of an hour in length. Interviews may go over the allotted time depending on patient’s responses, and will be audio taped for accurate data retrieval. The researcher’s notes will also be tabulated.

Research Design

A descriptive correlational design will be used for this study. The length of time symptoms were experienced before seeking help will be correlated with patient responses to symptoms, and the self-care behaviors attempted. A correlational design identifies relationships between variables (Burns & Grove, 2009).

Qualitative data will also be gathered. Quantitative and qualitative data collection methods complement each other by gathering different types of data that, when combined, add additional insight to the problem examined.

Responses of the participants will be analyzed as qualitative data that examines the process of symptom perception, and contextual factors that influenced the process. Included in the contextual factors are the social, emotional, and cognitive influences of the participant while experiencing the HF symptom, and the impact on symptom recognition and self-care response.

Data Analysis

Descriptive statistical analysis will be used to examine demographic data. Pearson correlations will be used to examine the relationships among duration of symptoms, perceived distress, cognitive and emotional factors, with $r > 0.5$ indicating a significant relationship (Burns & Grove, 2009).

Qualitative data will be clustered into common themes. The most frequent experienced HF symptom will be examined in relation to the cognitive and emotional response. Common themes will be explored in the social context in which the symptom occurred. Self-care behaviors will be categorized for length of time the symptom was experienced before obtaining medical help. Items will be ranked from most frequent to least frequent.

Summary

This chapter provides information on the methods and procedures to be utilized for this study. Variables examined will be factors that influence symptom recognition and response, and self-care behaviors attempted before contacting medical intervention. A mixed method research design using quantitative and qualitative data will be utilized to gather data from 100 participants who qualify for the study. Tools used to gather data include the Heart Failure Somatic Perception Scale, The Response to Symptoms Questionnaire, and interviews. Descriptive data analysis and Pearson's correlation will determine the significance and correlation of data. This study will replicate Jurgens et al.'s (2009) study to validate findings and explore any new data that may impact the development of HF symptom recognition and self-care in HF patients for improved management and outcomes.

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