

QUALITY OF LIFE IN WOMEN WITH HEART FAILURE

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## ABSTRACT

RESEARCH SUBJECT: Quality of Life in Women with Heart Failure  
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Women may develop heart failure (HF) after experiencing a myocardial infarction (MI), and after age 75 at a higher rate than men. Impaired quality of life (QOL), frequent hospitalizations, and high mortality rates are associated with HF (Bennett, Baker & Huster, 1998). The purpose of this study is to describe the impact of symptoms of HF on QOL for women. The sample will include 50 women with New York Heart Association Class 2 or Class 3 HF recently discharged from a Midwest urban hospital. The women will have been newly diagnosed with HF. The Minnesota Living with Heart Failure Questionnaire (MLHF) will be used to measure the impact of symptoms of HF on quality of life. Findings will provide information about quality of life of women with HF that may help nurses to design interventions to improve QOL for women diagnosed with HF.

## Chapter I

### *Introduction*

Heart failure (HF) continues to be a major public health problem in the 21<sup>st</sup> century. The World Health Organization (WHO) estimates indicate that 396,406 people die annually from HF worldwide (WHO, 2004). However, by 2009, the American Heart Association (AHA) estimated that 5.7 million Americans are living with HF and an additional 670,000 will be diagnosed annually (American Heart Association, 2009). In the United States (U.S.), the prevalence of HF is increasing exponentially in an aging population. Rates are estimated at less than 1% of the population under age 50 to 10% in individuals over the age of 80 (Rich, 2001). In 1992, close to 450,000 women were discharged from U.S. hospitals after treatment for HF (American Heart Association, 2007).

The U.S. Census Bureau estimated that there are currently 34.8 million Americans over age 65 (58.5% female) and 9.2 million Americans over age 80 (65.7% female). It is projected that there will be 70.3 million Americans over age 65 and 18.6 million over age 80 by the year 2030. With the projections, it is anticipated that there will be nearly 2 million new cases of HF among persons over 65 and that half of the cases will occur in persons over 80 years of age (U.S. Census Bureau, 2009).

HF is the leading indication for hospitalization in older adults, with 79% of HF admissions occurring in persons over age 65 (Rich, 2001). This represents a substantial increase in hospitalizations for HF from 402,000 in 1979 to 1,101,000 in 2004 (National Hospital Discharge Survey, 2004). HF is the most common reason for hospitalizations for people on Medicare (Rich, 2001). Because of the frequent hospitalizations HF is the most costly illness in the U.S. with annual expenditures in excess of \$40 billion. Currently this represents 5.4% of the total healthcare budget. The fiscal impact of the epidemic of HF over the next 30 years will be significant (Rich, 2001).

HF has a high mortality rate causing more than 287,000 deaths each year. Deaths from HF increased 20.5% from 1993-2003. During the same time period, the death rate declined 2%. Despite the therapeutic advances in the pharmacological management of HF, the 1 year mortality rate for HF patients approaches 40% (MacMahon, 2003). Currently, the overall death rate for HF is approximately 19.7 per 100,000 deaths (CDC, 2009).

HF is the end stage of many diseases of the heart and a major cause of morbidity and mortality (Davis, Hobbs, & Lip, 2000). Coronary heart disease was thought to be the most common etiology of HF, however, recent evidence points to hypertension as the most common cause (Rich, 2001). Furthermore, 7 of 10 people diagnosed with HF were afflicted with high blood pressure before being diagnosed (CDC, 2009).

Gender-related differences exist in diagnosis and management of HF (Paton, Backlund, Barnes & Thirsk, 2007). Women with HF have more co-morbidities, more

significant consequences on social alterations, and higher family responsibilities than men. Studies report QOL issues in individuals with HF including social isolation, depression, sleep deprivation, fatigue and anxiety. The percentage of women participating in the studies is small and the gender-specific knowledge that nurses need to support and educate women is inadequate (Paton et al., 2007). The etiology, management, and QOL of women with HF need further evidence-based research to prepare women to remain independent (Schall & Flannery, 2005).

### *Background and Significance*

HF is a serious condition that prohibits the heart from pumping enough blood and oxygen to meet the needs of the other body organs. HF is a devastating disease that affects quality of life (QOL) due to changes in the lungs, circulation and skeletal muscle resulting in symptoms of fatigue, dyspnea and limitations in exercise capacity. Older adults are predisposed to develop HF due to age-related changes throughout the cardiovascular system combined with the prevalence of cardiovascular disease. The 1 year mortality rate for patients with advanced HF still approaches 40% and even with less serious HF patients often experience considerably impaired QOL (MacMahon, 2002).

The progressive nature of HF causes many patients to encounter troublesome symptoms that challenge QOL and increase the potential for numerous hospitalizations. Symptoms that may be related to HF can be neurological, cardiovascular, or pulmonary. Neurological symptoms include depression, syncope, difficulty with concentration, confusion, and panic attacks. Cardiovascular symptoms include fatigue, angina, syncope, palpitations, orthostatic hypotension, edema, and

discoloration of extremities. Pulmonary symptoms include dyspnea at rest or with exertion, cough, orthopnea, paroxysmal nocturnal dyspnea, hemoptysis, wheezing, frequent upper respiratory infections and sleep apnea (Chojnowski, 2006). The most commonly reported symptoms of HF include dyspnea, fatigue, anorexia, cachexia, edema, sleeplessness, attention deficit, and memory impairment (Friedman & King, 1995).

QOL is a multidimensional concept and includes physical symptoms, perceptions and functional ability (Bosworth et al., 2004; De Jong et al., 2005; Gott et al., 2006; Wilson & Cleary, 1995). Perceptions depict one's judgment of one's health status. Functional ability includes self-care activities, interpersonal areas, social support, sleep and intellectual functioning which include coping and emotions (Wenger, 1989). QOL and outcomes for patients living with HF can be improved by taking medications as prescribe, reducing daily salt intake, increasing physical activity as recommended by health providers, taking steps to correct increased symptoms, monitoring weight daily, and developing coping strategies to deal with depression and stress.

Rhodes and Bowles' (2002) findings indicated that no aspect of women's lives escape the impact of HF. Women diagnosed with HF are generally older than are men and have more comorbidity. Women patients also suffer more significant consequences on social alterations and have higher family responsibility than do men diagnosed with HF (Richardson, 2001). Little research reflects women's perceptions of lives with HF (Rhodes & Bowles, 2002).

The differences in cardiac anatomy and physiology of women when compared to men are numerous. In women, heart size, muscle fiber, and coronary arteries are smaller. Women have increased vasospasm, higher resting ejection fraction and heart rate, lower left ventricular end-diastolic pressure and volume, higher estrogen levels, longer QT intervals, and potential difference in metabolism and clearance of drugs (Richardson, 2001). The incidence of developing HF after suffering a myocardial infarction is higher in women than in men (American Heart Association, 2007).

The progressive nature of HF has a significant impact on the lives of all individuals. There are gender-related differences in diagnosing, managing and supporting patients living with HF. Historically, women's needs have been managed less aggressively or overlooked (Paton et al., 2007). Women with HF report the inability to perform household chores, support others, and the feeling of being a burden to others. The majority of research regarding QOL and HF had been conducted on men. The experience of women with HF and the gender-specific knowledge needed by nurses to care for and educate patients when discharged may be based on research done primarily on men and may therefore be inadequate in the treatment of women with HF (Paton et al., 2007).

#### *Statement of Problem*

Women develop HF after myocardial infarction and after age 75 at a higher rate than men. Impaired QOL, frequent hospitalizations, and high mortality rates are associated with HF. Perceived health status is highly related to life satisfaction and overall QOL. HF may impact QOL differently in women than in men.

### *Purpose of the Study*

The purpose of this study is to describe the impact of symptoms of HF on QOL in women. This is a partial replication of Bennett, Baker, and Huster's (1998) study.

### *Research Questions*

1. What are the symptoms most frequently reported as having the greatest impact by women with HF?
2. What are the relationships among symptom impact, perceived social support, perceived health status, and overall QOL in women with HF?

### *Conceptual Framework:*

Health-related QOL is the conceptual framework for this study. Health-related QOL (Wilson & Cleary, 1995) addresses how different types of patient outcome measures interrelate. The health-related QOL model integrates two different paradigms: one held by clinicians and the other held by social scientists. Wilson and Cleary identified the clinical paradigm as the biomedical model which deals with causation, diagnosis, and treatment. The social science paradigm is focused on functioning and overall well-being and measures complex behaviors and feelings (Wilson & Cleary, 1995).

Wilson and Cleary's model serves as an organizing scheme for different measures of health outcomes, linking traditional clinical variables to measures of health-related QOL. As one moves from left to right on the continuum, the levels are increasingly integrated and increasingly difficult to define and measure. This model

has diagnostic and therapeutic implications with regard to improving QOL in HF patients. By having a clear understanding of the determinants of health-related QOL, healthcare workers can develop rational and cost effective ways to remedy health-related QOL problems (Wilson & Cleary, 1995).

#### *Definition of Terms*

##### *Quality of Life: Conceptual.*

QOL is described as a multidimensional concept and includes physical symptoms, perceptions and functional ability (Wilson & Cleary, 1995).

##### *Quality of Life: Operational*

Symptom impact of HF was operationalized by the Minnesota Living with Heart Failure Questionnaire (MLHF). The MLHF measures impact of symptoms of HF on patients over a month long period. The MLHF is a battery of 21 questions with a 6-point Likert response scale (0=*no impact* to 5=*very much*). The total MLHF score is the sum of all responses. A higher score indicates more symptomatic impact on patients' lives (Rector, 2005).

#### *Limitations*

Generalization is limited as the sample selection will be women discharged from a hospital in a Midwestern urban setting. Discharged women who are doing well or have social support may be more compelled to complete a questionnaire within the month allocated than women whose treatment was not as effective. Study results could also be limited due to inaccurate reporting by HF patients who are illiterate or educationally challenged.

### *Assumptions*

The following assumptions underlie this study: (a) increased QOL in women with HF is desirable, (b) women with HF experience changes in QOL status; (c) identifying symptoms that affect QOL in women may help patients with HF cope with these changes; and (d) identifying symptoms that affect QOL in women may help direct nursing care of women with HF.

### *Summary*

HF is a major public health problem worldwide and is growing in epidemic proportions. HF threatens to consume astronomical resources in the years to come as our population ages and the number of older adults at risk for developing HF continues to increase. HF management demands a multidisciplinary approach that will effectively address all aspects of patient care. HF symptoms impact QOL in both men and women. Little research has been done regarding QOL in women with HF. There is a need to develop more effective treatment of HF in women. The purpose of this study is to determine what symptoms are most frequently reported as having the greatest impact on women with HF and to determine the relationships among symptom impact, perceived social support, perceived health status and overall QOL in women with HF. Improved nursing intervention and patient education for women with HF may help to improve QOL.

## Chapter II

### *Review of Literature*

#### *Introduction*

The purpose of this study is to describe the impact of symptoms of HF on QOL in women. The literature review covers selected studies associated with QOL in women with HF. Quantitative studies were reviewed to identify previous research findings. Qualitative studies were included to help describe the HF experience of patients and families. Much has been learned about the pharmacological treatment of HF. The review of the following studies can help to address symptoms of HF and symptom impact of HF. The supportive literature review is divided into five sections:

1. Conceptual Framework
2. Patients' perception of living with HF
3. Spouses' perceptions of living with HF
4. Factors influencing QOL
5. Predictors of QOL
6. Intervention Programs

#### *Conceptual Framework*

Health-related QOL is the conceptual framework for this study. The health-related QOL (Wilson & Cleary, 1995) addresses how different types of patient

outcome measures interrelate. The health-related QOL model integrates two different paradigms: one held by clinicians and the other held by social scientists. Wilson and Cleary identify the clinical paradigm as the biomedical model which deals with causation, diagnosis, and treatment. The social science paradigm is focused on functioning and overall well-being and measures complex behaviors and feelings (Wilson & Cleary, 1995).

The health-related QOL model consists of five levels: biological and physiological factors, symptoms, functioning, general health perceptions, and overall quality of life. This model uses a continuum moving from left to right and begins with the simplest forms of cells, organs, systems. This represents physiological function. The continuum moves to the right when the focus shifts from cells to organisms as a whole. This level reflects more complex matters such as perceptions, feelings or beliefs about the state of one's body. This level is called symptoms, and also includes symptoms previously associated with mental health. By the time a patient has sought medical attention about a symptom, several processes have already occurred. The patient has perceived some sensation, and relying on demographic or cultural factors, has made a judgment about the meaning of the sensation (Wilson & Cleary, 1995).

The next level, or the center of the continuum, is functioning, or the ability to perform defined tasks. The four domains of function that are usually measured are: physical function, social function, role function, and psychological function. The fourth level on the continuum is general health perceptions which includes all items previously mentioned and mental health. This level is rated subjectively. The

importance of general health perceptions stems from the observation that they are the best indicators of the use of general medical and mental health services (Wilson & Cleary, 1995).

The fifth level, to the far right of the continuum, is overall QOL. This level includes QOL and contentedness with life circumstances. Personality, motivation, and characteristics of the environment affect the levels of symptoms, functioning and general health. Patients' values affect the general health perception level and the overall quality of life level (Wilson & Cleary, 1995).

Wilson and Cleary's model serves as an organizing scheme for different measures of health outcomes, linking traditional clinical variables to measures of health-related QOL. This model has diagnostic and therapeutic implications with regard to improving QOL in HF patients. By having a clear understanding of the determinants of health-related QOL, healthcare workers can develop rational and cost effective ways to remedy health-related QOL problems (Wilson & Cleary, 1995).

#### *Patient's Perceptions of Living with Heart Failure*

Little is known about how women experience HF. Rhodes and Bowles (2002) used a phenomenological approach to examine and describe the experiences of living with HF from the perspective of women with Stage II HF. The research question addressed was "How do older women with Stage II HF perceive their own lives?" (Rhodes & Bowles, 2002, p. 441).

Participants (N=5) in the study were women ranging in age from 60-90 years old who self-reported diagnosis of New York Heart Association (NYHA) Stage II HF. If a participant was uncertain of HF stage, the researcher determined the stage

with a limited physical examination and questions regarding activities of daily living (ADL). Participants with Stage II HF were chosen to tolerate the required time for the interviews, be aware of HF's effect, were able to live at home, and to perform ADLs (Rhodes & Bowles, 2002).

The five women were between 60 and 90 years of age. All participants were Caucasian, had been diagnosed with HF from 2-10 years earlier, and were recruited from individuals identified by health professionals or through presentations at retirement centers. The study protocol was approved by the Office for the Protection of Human Subjects at the University of Nevada, Las Vegas. Participants were asked to sign an informed consent prior to the interviews (Rhodes & Bowles, 2002).

Participants were asked to participate in four semi-structured interviews in the setting of choice. Choosing the setting allowed greater relaxation and more informative interviews. Four participants chose to be interviewed in the homes, the fifth in a quiet corner of a senior center. A broad question was asked to start each interview: "In what ways has having HF affected your life?" After that, the interviewer spoke as little as possible, asking additional questions only to keep the interview focused or to clarify information given. Interviews lasted not more than 1 hour, depending upon the endurance and willingness of participants. Interviews were audiotaped with the participants consent (Rhodes & Bowles, 2002).

The audiotapes were transcribed verbatim. Colaizzi's seven steps were used to analyze the transcripts. These steps are: (a) reading and re-reading the data to gain a sense of the whole, (b) extraction of significant statements and phrases related to HF, (c) drawing meanings from the phrases and statements, (d) clustering these

meanings into themes, (e) using themes to develop as complete a description as possible of the experience of living with HF, (f) forming a statement of identification from this description, and (g) verifying this description with the participants in the study. The researcher bracketed beliefs and assumptions derived from experience and the literature, recording in a log before interviewing participants. The researcher returned each participant's copy of the results. An experienced, doctorally-prepared, phenomenological researcher was given copies of the interviews and the audit trail and was able to arrive at the same themes found by the researcher (Rhodes & Bowles, 2002).

Four themes emerged from the data: (a) acknowledging loss, (b) accepting losses, (c) changing lives, and (d) deepening relationships. Accepting losses included physical and social losses, perceived loss or threat of loss of control of life, greater difficulty achieving happiness and a decline in finances. All five women spoke freely of losses, complained of decreased energy, shortness of breath and fatigue, found satisfaction in making choices about major changes. All five fought to maintain independence. In accepting the losses, the women learned to accept physical limitations, change mental outlook, and shift emotions. All five believed that a major shift was allowing tasks to go unfinished. Two women made a choice to be happy. Accepting loss was not enough for the five women. Women changed lifestyles, including changing diets to low salt and exercising within abilities. The women learned to let others perform tasks when not able. The women focused on what tasks could be done, rather than on what could not be done. All five women discussed forming deeper and more meaningful relationships and curtailing relationships with

more casual acquaintances. Two of the women described the importance of pets (Rhodes & Bowles, 2002).

The authors believed that if nurses and other health care professionals can foster a positive focus in patients with HF, and encourage them to take charge of life and illness, both physical and mental health will benefit, and patients will enjoy a better QOL. The authors concluded that no aspect of women's lives escaped the impact of HF. Despite the tremendous changes and losses, women learned to find contentment in life (Rhodes & Bowles, 2002).

#### *Spouses' Perceptions of Living with Heart Failure*

Sleep related breathing disorders, such as obstructive sleep apnea (OSA), Cheyne-Stokes respiration (CSR), and central sleep apnea (CSA), are commonly found in patients with HF. Sleep disorders have a poor prognosis and are associated with higher incidences of mortality in the HF population. Polysomnographic studies found shorter duration of sleep and disturbed sleep structure with frequent arousals and sleep stage changes in patients with HF. Sleep disturbances decreased QOL due to increased fatigue, listlessness, loss of concentration and loss of temper. Coping with HF is often a task involving couples and families. The purpose of this qualitative study was to describe decisive situations that influence spouses' support to patients with HF in relation to the couple's sleep situation (Broström, Strömberg, Dahlström, & Fridlund, 2003).

The study was conducted at two HF clinics in Sweden. Spouses (N=25) of people with HF were included in this study. Demographic characteristics included: gender, age, education, diagnosed diseases of the spouse, NYHA classification,

duration of HF, and sleep related breathing disorders of the patients, including OSA and CSR. Male patients (N=15) and female patients (N=10) and spouses participated in the study (Broström et al., 2003).

A qualitative descriptive design using the critical incident technique (CIT) was used. The CIT is a systematic, inductive and highly flexible research method. Specific descriptions of human behavior in defined situations are collected using semi-structured interviews. A critical incident is the most central concept in CIT and represents a major event in the life of the person involved. One hundred such incidents are sufficient for a qualitative analysis (Broström et al., 2003).

For this study, an interview guide consisting of eight questions was used to focus the conversation on relevant areas. Interview questions were as follows:

Describe a situation in which:

1. you were affected by your spouse's sleep situation
2. you personally could affect your spouse's sleep situation
3. it was easy to handle your spouse's sleep situation
4. it was difficult to handle your spouse's sleep situation
5. you felt support from your family in relation to your spouse's sleep situation
6. you felt a lack of support from your family in relation to your spouse's sleep situation
7. you felt support from health care personnel in relation to your spouse's sleep situation
8. you felt a lack of support from health care personnel in relation to your spouse's sleep situation (Broström et al., 2003, p. 226).

Each question was complemented by follow-up questions in order to clarify the critical incident. Interviews lasting 30-90 minutes were conducted in a place

chosen by the informant and were taped and transcribed verbatim by the interviewer. The transcribed interviews were read several times to get a sense of repetitive themes. Then, incidents were marked and identified as critical if related to the material (Broström et al., 2003).

Four hundred-seventy critical incidents were identified, with each informant providing between 18 and 45 incidents for each question. Support inhibiting situations and support stimulating situations were the two main areas that emerged from the analysis. Support inhibiting situations included sleep disturbances as a result of the patient's symptoms. Disturbed sleep led to tiredness for spouses that negatively affected the possibility of support for the patient. Spouses' sleep was disturbed by patient's dyspnea, snoring, coughing, nocturia, and nightmares. Another support inhibiting situation includes anxiety in relation to patients' disease causing the spouse problems in falling to sleep and staying asleep. Spouses tried to watch as patients slept, listening to patient's breathing for example, which left spouses sleep deprived and impatient the following day. Limitations as a result of the sleeping habits, dissatisfaction with care in relation to the sleep situation and being left to cope alone were examples of other support inhibiting situations (Broström et al., 2003).

Support stimulating situations were identified as psychosocial adaptations which included strategies by spouses to calm and comfort patients before going to bed. The strategies included foot massages, reading poetry together, and giving up drinking coffee in the evening. Examples of practical adaptations made by spouses included allowing patients to sleep longer in the morning, encouraging patients to

take naps in the afternoon, and purchasing beds where the head of the bed could be elevated for the patient's comfort (Broström et al., 2003).

The authors concluded that there were decisive situations to stimulate or inhibit spouses' support to patients with HF in relation to the couple's sleep situation. Identifying situations can help health care personnel decide if an intervention is needed in order to improve the sleep situation for HF patients and spouses (Broström et al., 2003).

Having the support of a partner is essential for outcomes in HF patients. The purpose of a study conducted by Luttik, Jaarsma, Veeger and van Veldhuisen (2005) was to determine psychosocial adjustment and functional capabilities in HF patients and spouses. The study was conducted at the Netherlands Heart Foundation. Patients (N=179) met criteria if admitted to a University Hospital in the Netherlands with symptoms of chronic HF for at least 3 months, had been classified by the attending physician as NYHA Class III or IV, were over 50 years of age and were literate in Dutch. Partners of married patients (N=96) completed a short questionnaire. A total of 40 partners completed the questionnaire, but two partners were excluded because of missing data of the patient. Of the 38 HF patients and spouses who both completed the QOL ladder, 32 (82%) were males and 6 (16%) were females (Luttick, Jaarsma, Veeger, & van Veldhuisen, 2005).

The Cantril Ladder of Life was used in this study. It is an instrument used in various cardiovascular studies and is considered to be a valid measure of global well-being. Participants rate sense of well being on a scale 0-10 with 10 indicating the best and 0 indicating the worst possible life. Once medically stabilized, participants

were asked to rate well-being during hospital admission, with regard to the time of interview, with regard to the month prior to the hospital admission and with regard to expectation of well-being for 3 years in the future (Luttick et al., 2005).

The QOL scores of partners varied from 6.1 in the month prior to hospital admission, 5.9 during hospital admission and 6.4 for future expectations. The QOL score of HF patients were more variable over time with a low QOL score of 4.9 in the month prior to admission, and a higher score of 6.8 during hospital admission and 6.7 for future expectations (Luttick et al., 2005).

A multivariate analysis was performed in order to correct for the differences in age and gender between the HF patients and partners. In the month prior to admission, HF patients rated QOL significantly lower than did partners (4.9 vs. 6.8  $p=0.035$ ). During hospitalization, the QOL of HF patients increased above the QOL reported by partners with partners having a significantly lower QOL score than HF patients (5.9 vs. 6.8,  $p=0.025$ ). Differences in QOL scores between partners and patients remained statistically significant. Scores of patients and partners on QOL in 3 years did not differ significantly. QOL of HF patients was low compared to QOL scores of patients in cardiac rehabilitation and in patients after cardiac surgery. QOL scores of partners stayed stable in time, whereas scores of HF patients fluctuated in time (Luttick et al., 2005).

The authors concluded that the variance in QOL scores of HF patients may be as a consequence of a worse clinical status before hospital admission and the feeling of relief after treatment for the physical crisis. It was furthered concluded that QOL scores for partners were low (4.9-6.4) when compared to members of a healthy,

elderly population who previously scored 7.9 on the Cantril Ladder of Life (Luttick et al., 2005).

### *Factors Influencing Quality of Life*

Fatigue is an incapacitating symptom that interferes with normal functioning and can be related to physiological, behavioral, psychological and situational factors. The factors all contribute to decreased QOL in women with HF. Friedman and King (1995) sought to determine the relative contribution of mood and other physical symptoms of fatigue in older women with heart failure. The purpose of this study was to describe psychological factors and physical symptoms as factors relate to fatigue in older women with heart failure (Friedman & King, 1995).

The study took place in Canada. Women (n=145) met the criteria, and 80 (45%) agreed to participate in the study. Fifty-seven (71%) of the original 80 women completed a second interview 18 months after the initial interview. Eligible participants were English-speaking, female gender, 55 years old or older, hospitalized for HF in the last 12 months, and discharged to home. Of the original 80 women, the following demographic information was provided: age range was from 55-92 years (mean 76); 80% were white and 20% were black; 51% were widowed, 14% were divorced or separated and 6% were never married. Women (48%) lived alone, 27% lived with spouses and 25% lived with children or siblings (Friedman & King, 1995).

The Hollingshead Four Factor Index was used to calculate the social status of the married and widowed women and the Hollingshead Two Factor Index was used to calculate the social status of the divorced, separated and never married women. Using the indexes, 70% of the women were found to be in the lower three of the five

social classes. Subjects knew about heart disease for an average of 10 years (SD 10.9). Left ventricular ejection fractions (LVEF) were recorded on 58 (73%) of the original 80 subjects with the mean LVEF measuring 39%. Subjects had, on average, three other chronic health problems with arthritis (39%), Diabetes mellitus (35%), and anemia (29%) being the most common. Written informed consent was obtained and informal interviews were held at subjects' homes. Information obtained from subjects' medical charts prior to the interviews was reviewed and confirmed by subjects (Friedman & King, 1995).

Instrumentation included the Cohen-Hoberman Inventory of Physical Symptoms with a Cronbach  $\alpha$  of .88. The Cohen-Hoberman Inventory lists 34 symptoms which subjects rated on a 0-4 scale (0=not at all) to 4 (extremely). The Perceived Stress Related to Heart Disease, an 11 item instrument adapted from the Sickness Impact Profile (SIP) and developed for this study, was used to measure the participants' appraisal of stress attributed to heart disease. The 11 items addressed seven domains: five items for functional disability, one item for financial concerns, one item for concerns about the future, two items for symptoms and treatment difficulties, one item for need for information, and one item for interpersonal difficulty (Friedman & King, 1995).

The Life Orientation Test was used to measure Optimism/Pessimism in participants. This test consists of eight items rated on a 5 point scale where 0=strongly disagree to 4= strongly agree). A Cronbach  $\alpha$  of .76 was given for this test. Psychological well-being was measured using a 20 item Positive and Negative Affect Schedule. This test uses 10 positive and 10 negative mood adjectives. Items

are rated by participants on a 5 point scale (1= not at all to 5= extremely). A Cronbach  $\alpha$  of .85 was given for the negative affect scale and a .88 was given for the positive affect scale. The Satisfaction with Life Scale was also used an indicator of psychological well-being. This five item measurement used a seven point scale (1= strongly disagree and 7= strongly agree) and had a Cronbach  $\alpha$  of .78 (Friedman & King, 1995).

Results indicated that fatigue was experienced more than any of the other physical symptoms at both points in time when participants were interviewed. Seventy-six percent experienced “a little bit” to “severe” fatigue when first interviewed compared to 91% at the second interview. Paired sample *t*-tests showed that fatigue was the symptom with the greatest increase over time. Fatigue was related to psychological variables at the time of both interviews. Fatigue was moderately correlated ( $r=.35$ ) with eight other symptoms during the time of the first interview. The symptoms are difficulty sleeping, chest pain, weakness, poor appetite, severe aches and pains, dizziness, headaches, and palpitations (Friedman & King, 1995).

At the time of the second interview, there was a moderate correlation between only two of the physical symptoms, severe aches and pains and shortness of breath. Subjects who reported high stress levels related to illness and were less satisfied with life also scored high on fatigue. The correlation between fatigue and potential covariates was examined before regression analysis. The correlation between age, number of chronic conditions, number of hospital admissions in the previous year and length of time since hospital discharge and left ventricular ejection fraction (LVEF)

and fatigue was less than 0.12, so none of the variables were included as covariates in further analysis (Friedman & King, 1995).

Multiple hierarchical regression analyses were performed to determine the relative contribution of the psychological variables and the physical symptoms. Three of the eight symptoms, chest pain (*B* 0.30), sleep difficulties (*B* 0.25) and weakness (*B* 0.20) shared unique variance with fatigue in both time 1 and time 2 testing. The three physical symptoms of sleep difficulties, chest pain, and weakness accounted for 40% of the variance in fatigue (Friedman & King, 1995).

The authors concluded that fatigue was the primary physical symptom reported by older women with heart failure and that it increased over time. Concurrent physical symptoms appear to contribute significantly to fatigue whereas psychological variables do not. Women may be eliminating activities that aggravate fatigue resulting in the low level of reported distress caused by fatigue. Friedman and King believed that women with chronic illness such as HF may benefit from continued efforts to test and refine strategies to reduce and control symptoms of HF rather than change psychological variables (Friedman & King, 1995).

Bennett, Baker, and Huster (1998) identified that the majority of research conducted on QOL with persons with HF has been done with men. The purpose of this pilot study was to describe the impact of symptoms of HF and to examine the relationships among symptom impact, perceived health status, perceived social support, and overall QOL in women recently hospitalized with HF (Bennett et al., 1998).

Participants included women admitted to a Midwestern tertiary-care university medical center with the primary diagnosis of HF. Institutional Review Board (IRB) approval was obtained. Eligible participants included women who were hospitalized with primary diagnosis of HF and were alert and oriented. Exclusion criteria included: pregnancy, medical instability, invasive hemodynamic monitoring in place, or admission to a critical care unit (Bennett et al., 1998).

Thirty (60%) of the 50 women initially recruited completed the questionnaire packets. The mean age of the participants was 60 years old. Fourteen women (47%) lived with a family member or a friend and 16 women (53%) lived alone. One participant was African American and 29 participants were Caucasian (Bennett et al., 1998).

The Minnesota Living with Heart Failure Questionnaire (LHFQ) was used. It is a 21 item tool with a 6 point response scale. The LHFQ measures patients' perceptions of the way HF symptoms have affected QOL. The 21 items were reduced into 8 items which measure physical symptoms and 5 items which measure emotional issues. The remaining 8 items are questions about cost of care, being hospitalized and swelling. According to Cronbach  $\alpha$  reliabilities the total LHFQ, the Physical LHFQ and the Emotional LHFQ are .87, .81, and .84 respectively (Bennett et al., 1998).

The Alertness Behavior Scale (ABS) of the Sickness Impact Profile (SIP) was used to measure the impact of symptoms on cognitive thought processes. The ABS is a 10 item scale given to patients to measure problems they have experienced with memory, attention, and concentration with a high score indicating a greater

disturbance in cognitive thought processes. A reliability coefficient was not computed for the sample in this study (Bennett et al., 1998).

The Medical Outcomes Study Short-Form Health Survey (SF-36) is a 36 item scale used to measure physical and emotional health. Two scores were obtained by participants. The Physical Component Scale (PCS) was used for perceived physical health and the Mental Component Scale (MCS) was used to measure the perceived mental health status (Bennett et al., 1998).

Perceived social support was measured by the MOS Social Support Survey which is a 20 item survey. One item asks patients to report the number of close friends and relatives and the other 19 items are on a 5 point scale that relate to emotional, tangible, and informational support. For this study, the reliability of the total scale was .97. To examine the relationships among symptoms impact, perceived health status, perceived social support and overall QOL, Pearson product-moment correlation coefficients were computed (Bennett et al., 1998).

Findings revealed that the total LHFQ and the LHFQ Physical subscale were significantly negatively correlated, which indicated that greater symptom impact was associated with poorer physical health status. There were no significant correlations among emotional symptom impact, cognitive impairment impact, social support, and mental health status with QOL. The LHFQ results showed 10 items most frequently reported as having the greatest impact by the women. The items included: tiredness (mean score 4.57), walking (4.47), shortness of breath (4.23), difficulty doing recreational activities (4.15), having to rest frequently (4.10), difficulty working around the house (4.07), working to earn a living (3.74), going away from home

(3.69), relating to others (3.69), and difficulty sleeping (3.63). The Emotional LHFQ subscale was significantly correlated with the MCS of the SSF-36. Higher impact of emotional symptoms was associated with poorer mental health status (Bennett et al., 1998).

Findings from the ABS revealed that the three most frequently reported cognitive impairments were: having minor accidents (12 women reported this), having difficulty in problem solving (reported by 11 women), and having difficulty doing activities that require concentration or thinking (reported by 11 women) (Bennett et al., 1998).

The authors concluded that physical symptoms impact and physical health status negatively affect QOL in women with HF. Greater physical symptom impact was highly correlated with poorer physical health status. High levels of physical symptom impact, especially dyspnea and fatigue, correlated with poorer physical status. The authors identified several limitations to the study including the small sample of women and the fact that 99% of the women were White. Women with cognitive impairment may have been less likely to participate as the respondent burden in completing the questionnaires was listed as a problem (Bennett et al., 1998).

Bennett, Perkins, Lane, Deer, Brater and Murray (2001) identified that social support may be a predictor of well-being and mortality among HF patients. The purposes of this study were to: (a) describe perceived social support during initial hospitalization for HF and 12 months later; (b) examine functions of social support as it relates to gender and age; and (c) examine social support as a predictor of overall

health related QOL. Social support was defined in this study as functional support that involves the degree to which one's interpersonal relationships serve specific functions. The specific functions included: emotional support, appraisal support, social companionship, tangible or instrumental support and informational support. The authors proposed that women aged 65 years of older perceive lower social support than women younger than 65 or than men in either age group; and baseline social support significantly predicts 12 month health related QOL (Bennett et al., 2001).

Patients (N=182, 80%) were recruited from a county hospital, and the remaining 20% (45) were recruited from a Veteran's Affairs Medical Center. Patients (N=227, 97%) of the 234 eligible patients hospitalized with HF were enrolled in a study to assess the effectiveness of diuretic therapy. Women comprised 52% (117) of the sample and men 48% (110). The mean age was 64 (SD 12), 27% of the patients were married (Bennett et al., 2001).

All patients had clinical evidence of decreased systolic function by echocardiogram. Comorbidities of participants included: hypertension (59%), diabetes mellitus (50%), coronary artery disease (39%), previous coronary artery bypass graft (9%), myocardial infarction (8%), and angina, (8%). None of the participants were on a heart transplant list. Participants (N=147, 65%) completed the 12 month interviews. Forty (18%) of the patients died before the second interview and 40 (18%) did not complete the interview due to illness, refusal or unknown reason. There were no significant baseline differences in sex, age, race, perceived social support, or health-related QOL in patients who completed the 12 month

interview and those who did not. The study was approved by the university institutional review board prior to its implementation (Bennett et al., 2001).

The instrument used was the 20-item Sherbourne and Stewart Social Support Survey. The first question is an open-ended question that asks participants to rate the number of close friends and relatives. The other 19 items utilize 5 point response scales to rate the amount of support available. In this sample, the Cronbach  $\alpha$  reliabilities of the total and subscale scores were satisfactory and ranged from 0.80 to .95 at baseline and from 0.84 to 0.97 at 12 months. The Chronic Heart Failure Questionnaire (Guyatt et al., 1989) was used to measure disease-specific health-related QOL. This questionnaire consists of 16 items with a 7 point response scale. Reliability revealed the Cronbach  $\alpha$  ranged from 0.78-0.88 at baseline and 0.79-0.92 after 12 months (Bennett et al., 2001).

Findings did not support the premise that women ages 65 and older would have lower social support. On question 1 of the social support survey, "How many close friends or relatives do you have?" patients reported a mean of 7 (SD 10, range 0-99 at baseline and also a mean of 7 (SD+7; range 0-50) at 12 months following baseline. Mean total support scores were 56 at baseline and 53 at 12 months, with the highest score possible being 76 (Bennett et al., 2001).

Mean scores from the chronic HF questionnaire were 65 at baseline and 72 at 12 months. The highest possible score is 112. Patients reported low to moderate QOL overall. Significant interactions of gender by age in perceptions of total support, emotional and informational support, and positive social interaction was indicated by the ANOVA. Multiple regression analysis indicated that social support

was not a significant predictor for 12 month QOL based on initial perceived social support. Changes in all social support scales significantly predicted changes in health related QOL (Bennett et al., 2001).

A secondary analysis was done to examine the effects of social support on hospital admissions among participants. In logistic regression analysis, social support total and subscale scores were not useful in predicting all-cause admissions. Tangible support at baseline was marginally predictive of cardiovascular admissions. The odds of having a cardiovascular admission increased multiplicatively by 1.1 for each increase in unit of tangible support ( $p=0.09$ ). Tangible support did predict HF related admission ( $p=0.05$ ). A trend toward significance was noted for total social support ( $p=0.08$ ) and positive social interaction ( $p=0.07$ ). The odds of having a HF related admission increased multiplicatively by 1.1 for each unit increase in tangible support, 1.019 for each increase in unit of total social support, and 1.082 for each unit increase in positive social interaction. Changes in all of the social support scales significantly predicted changes in all of the HRQOL scores with the exception of the affectionate support subscale. An increase in social support over the 12 months increased HRQOL (Bennett et al., 2001).

Findings support Wilson and Cleary's model in which social support was hypothesized to be a factor influencing the health related QOL domains of functional status, general health perceptions and well-being. A secondary analysis supported the notion that higher levels of social support at baseline predicted greater odds of HF related hospital admissions. The authors concluded that many of the patients had moderate to high levels of perceived social support (Bennett et al., 2001).

DeJong, Moser and Chung (2005) believed many factors influence health status of HF patients. The purpose of this study was to determine the relative importance of sociodemographic, clinical, health perception and emotional variables in predicting health status in HF patients (De Jong, Moser, & Chung, 2005).

The study was conducted at three Midwest urban and suburban community hospitals. Patients (N=87) with class II-IV NYHA HF were recruited for the study. Patients were included if hospitalized with an exacerbation of HF, were within 1-2 days of discharge, improved after diuresis, and were at risk for readmission based on history. Patients discharged to hospice or extended care facilities were excluded from the sample, as were patients with dementia, serious cognitive impairment and serious psychiatric illness. Patients' characteristics included: age of  $72 \pm 12$ , education  $12 \pm 2$ , women 42 (48), 77 Caucasian, 10 Black, 41 married, 27 widowed, 10 divorced or separated, and 9 single. Subjects (N=87) had LVEF of  $38 \pm 15$  (De Jong et al., 2005).

Trained nurse research assistants with cardiovascular nursing experience visited patients' homes within 1 week of discharge. Actigraphic monitoring was initiated and questionnaires were read to the patient (De Jong et al., 2005).

Health status was conceptualized as health-related quality of life (QOL), functional status, and symptom burden. The Living with Heart Failure Questionnaire (MLHF) was used to measure the QOL. The reliability of the MLHF in this study using Cronbach  $\alpha$  was 0.91. The Dyspnea-Fatigue Index (DFI) measures the degree to which dyspnea and fatigue impact daily life and was used to measure symptom burden. The DFI contains three domains, each rated on a 0-4 scale. The domains are: (a) magnitude of the task that produces symptoms; (b) magnitude of the pace; (c)

level of functional impairment; and (d) no restrictions on activities or occupation. The scores for each domain are added to obtain an aggregate score ranging from 0-12. Lower score reflect greater symptom burden. Cronbach's  $\alpha$  for the DFI in this sample was 0.83 (De Jong et al., 2005).

Health perceptions were measured using a single-item question from the Medical Outcomes Study-Short Form (MOS-SF). Patients rated current health as excellent, good, fair, or poor. The Brief Symptom Inventory (BSI) was used to measure anxiety, depression and hostility. The subscales of the BSI for anxiety, depression and hostility contain 6, 7, and 5 items respectively. The items of each subscale are averaged with higher scores indicative of greater emotional distress. Cronbach's  $\alpha$  for the anxiety, depression, and hostility subscales of the BSI were 0.74, 0.79, and 0.59 respectively (De Jong et al., 2005).

Results of the HRQL indicated that over half (51.5%) of the patients perceived health as fair or poor. The mean anxiety, depression, and hostility scores from the MOS-SF were  $0.90 \pm 0.70$ ,  $1.03 \pm 0.82$ , and  $0.57 \pm 0.50$ , respectively. Bivariate relationships between HRQL and each of the potential predictor variables revealed that age, current health, anxiety, depression and hostility were associated with HRQL. Gender, living alone, comorbidities and LVEF did not correlate with HRQL. Findings of the study were that health status is strongly and independently predicted by NYHA class ( $R^2= 0.26$ ), anxiety ( $R^2= 0.45$ ) and depression ( $R^2= 0.45$ ). The subjective variables of health perception and emotions explained significantly more variance ( $R^2 = 0.45$ ) in HRQL than sociodemographic or clinical variables. Results also showed that better NYHA class and higher anxiety predicted greater

physical activity ( $R^2 = 0.16$ ). Emotional variables explained more variance in functional status than the other predictor variables (De Jong et al., 2005).

Of the three predictors of health status, NYHA class, anxiety, and depression, only NYHA class is routinely assessed. Findings support the importance of assessing and treating psychosocial parameters, as this should improve health status and survival for patients with HF. Failure of clinicians to assess emotional variables provides an incomplete portrayal of health status (De Jong et al., 2005).

Despite significant scientific advances, HF patients report multiple physical and psychological symptoms that impact QOL. Zambroski, Moser, Bhat and Ziegler (2005) studied: (a) symptom prevalence, severity, distress and symptom burden in patients with HF; (b) the impact of age and gender on symptom prevalence, severity, distress and symptom burden; and (c) the impact of symptom prevalence and symptom burden on health related QOL (Zambroski et al., 2005).

Participants were recruited from a HF clinic in the Midwest. Inclusion criteria were age 40 years or more, NYHA Class II to Class IV HF, the ability to read and speak English, and current or prior symptoms of HF associated with underlying structural heart disease (Zambroski et al., 2005).

Clinical characteristics and demographic information were obtained during patient interviews and from medical record review. Demographic data included were age, gender, ethnicity, marital status, educational level and living situation. Clinical data included NYHA classification, HF etiology, time since diagnosis of HF, most recent hospitalization, EF, and current medications (Zambroski et al., 2005).

Physical and emotional symptoms were assessed using the Memorial Symptom Assessment Scale-Heart Failure (MSAS-HF), a 32-item questionnaire modified from Portenoy's Memorial Symptom Assessment Scale which was originally developed to assess symptoms in patients with cancer. Participants rate 32 possible symptoms experienced during the previous 7 days. If a symptom is present, participants rate the frequency from 1-4 (rarely to almost constantly), severity from 1 to 4 (mild to very severe), and distress rated on a scale from 1 to 4 (not at all to very severe). Higher numbers indicate greater frequency, severity and distress. The MSAS-HF has three subscales: physical symptoms, psychological symptoms, and HF symptoms. The total score is the sum of the symptoms present. Symptom burden scores are determined by the mean of the frequency, severity and distress of each symptom. Internal consistency for the MSAS-HF was previously demonstrated in HF patient for each subscale and overall scale (Zambroski et al., 2005).

The Dyspnea-Fatigue Index (DFI) and the NYHA Functional Classification were used to measure functional status. The DFI assesses three components of functional status, magnitude of task, pace of task and level of functional impairment based a 0-4 scale. Scores can range from 0-12 with lower scores indicating greater functional impairment. The MLHF questionnaire was used to measure QOL. The MLHF consists of 21 questions assessing the impact of HF on selected components of QOL (Zambroski et al., 2005).

Patients (N=53) were primarily male, Caucasian and married. Over 75% were NYHA Class III with a mean EF of 23.7 ( $\pm$ 14.5). Half had admissions to the hospital for HF within the last 6 months (Zambroski et al., 2005).

Of the 32 possible symptoms, the mean number of symptoms was  $15 \pm 8$ . High prevalence symptoms ( $\geq 50\%$  of the sample) included shortness of breath (85.2%), lack of energy (84.9%), dry mouth (74.1%), feeling drowsy (67.9%) and difficulty sleeping (64.2%). Chest pain was reported at 53.7%. Psychological symptoms such as difficulty with concentration, worry, feeling sad, nervous, or irritable were experienced by 50% of HF patients (Zambroski et al., 2005).

Symptoms normally attributed to HF, palpitations, weight gain, swelling in the arms or legs, were reported by less than half of the patients. Symptoms occurring most frequently were difficulty sleeping (94%), other pain ((3.3%), lack of energy (93.3%), difficulty concentrating (92.6%), numbness and tingling in the hands and feet (91.7%), feeling drowsy (91.7%) and shortness of breath (91.1%). Symptoms rated as most severe included difficulty sleeping (96.8%), other pain ((0%), lack of energy (88.6%), shortness of breath (88.6%), numbness in the hands and feet (87%), and feeling drowsy (87%). Symptoms that were most distressing were lack of energy, difficulty sleeping, shortness of breath and waking up breathless at night. The most burdensome symptoms were difficulty sleeping, lack of energy, problems with sexual interest or activity, other pain, numbness and tingling in the hands and feet. There were no significant differences in pharmacological management between men and women. Of the 32 symptoms, women reported feeling nervous and having sweats more often than men (Zambroski et al., 2005).

Psychosocial perceptions of life can be greatly altered in patients with HF. The diagnosis of HF may pose as a threat to the future because of daily physical discomfort and a possible change in expected life span. The severity of HF and the

uncertainty of the future for HF patients magnify the importance of hope in this population. A study by Rustoen, Howie, Eidsmo, and Moum (2005) compared hope in hospitalized HF patients to hope in a group from the general population. The four purposes of this study were: (a) to describe and compare the experience of hope in hospitalized patients and a healthy group from the general population; (b) to identify associations between demographic and disease-specific variables and hope in hospitalized patients with HF; (c) to describe satisfaction with life and future perspectives in hospitalized with HF; and (d) to evaluate the direct and indirect effects of demographic variables (patient's age, sex, living situation), disease-specific variables (severity of disease), self-assessed health, and satisfaction with life on hope in hospitalized patients with HF (Rustoen et al., 2005).

HF patients from two hospitals in Oslo, Norway who could read and write Norwegian and had clear cognition were used in the study. A comparison group of healthy, similarly aged citizens from the Norwegian general population was also recruited using the Norwegian National Register of Statistics. Four thousand citizens ages 19-81 were sent questionnaires. Of the healthy participants who returned the questionnaire (N=1,893, 48.5%) 441 respondents 48 years or older were used as the comparison group (Rustoen et al., 2005).

The age, sex, marital status, living situation and educational level of all subjects was recorded. Patients with HF were also asked by means of a questionnaire if currently or previously had gastrointestinal, musculoskeletal, lung, or skin diseases, cancer, diabetes or psychiatric disorders. The number of comorbid diseases was

collected along with patients' evaluation of health status. Patients were asked to rate health as bad, not good, good, or very good (Rustoen et al., 2005).

Hope was measured using the Norwegian version of the Herth Hope Index (HHI) an instrument widely used in international studies. The HHI uses a 4-point Likert scale ranging from "strongly agree" to "strongly disagree" and measures 12 items. Scoring ranges from 12-48. The Norwegian version of the HHI had satisfactory reliability (Cronbach  $\alpha = .81$ .) Construct validity, divergent validity, internal consistency, and test-retest correlations were previously reported to be satisfactory. Patients with HF had two additional questions. A 7-point Likert scale (from extremely positive to extremely negative) was used for the question "In what way do you view your future?" and a different 7-point Likert scale (from extremely satisfied to extremely dissatisfied) was used for the question "When you think about your life these days, are you mainly satisfied or dissatisfied?" (Rustoen et al., 2005, p. 419).

Both men (N=60, 65%) and women (N=33, 35%) with HF participated in the study. The mean age was 75.1, half (47%) of the sample lived alone, 45% were married, 85% were not paid for work and were either disabled or receiving a pension. Eighteen (21%) were college educated. Of the sample from the general population (N=441), 237 (54%) were male, 104 (46%) were women. The mean age of the subjects was 69.8 (SD 9.0), 76% were married, 33% were college educated, and 85% lived with spouses or children (Rustoen et al., 2005).

The most important predictors for hope were number of comorbid diseases, self-assessed health, and satisfaction with life. The mean global hope score among HF

patients was 37.69 (SD 5.3, range 20-48). The mean global hope score in the sample from the general population was 36.35 (SD 4.0). None of the demographic variables were significantly correlated with hope in the HF patients, nor was there a significant correlation with NYHA class or ejection fraction. Variables that were significantly correlated with hope in HF patients were number of comorbid diseases, comorbid skin disease and comorbid psychiatric disease (Rustoen et al., 2005).

Rustoen et al. concluded that the mean global hope scores in the HF patients reflected adaptation to a life-threatening chronic disease, representing a response shift, which is a change in the meaning of one's self-evaluation of QOL as a result of a change in values or internal standards. Recommendations were made to study newly diagnosed HF patients or those HF patients hospitalized multiple times to determine if hope scores would change in such populations (Rustoen et al., 2005).

#### *Predictors of Quality of Life*

Riedinger, Dracup, Brecht, Padilla, Saran and Ganz (2001) identified that women with HF may be treated differently than men with HF. Samples from HF trials from the last decade produced 17, 370 participants, with approximately 20% being women, despite the fact that the prevalence is about equal between gender groups with women having slightly higher rates of HF than men. The purpose of this study was to evaluate gender differences in QOL in a large sample of people with HF. The study was a secondary analysis of QOL data from the Studies of Left Ventricular Dysfunction (SOLVD) trials (Riedinger et al., 2001).

The SOLVD trials were made up of two sections, a HF registry and two double-blinded, placebo-controlled, randomized trials of an ACE inhibitor in patients

with overt HF (left ventricular hypertrophy, rales, elevated jugular venous pressure, etc.) or covert HF, that is, no clinical signs of HF other than decreased EF. Baseline QOL data was collected in both sets of HF patients. The SOLVD trials studied 735 women and 4,198 men. Women (N=691, 94%) and men (N=4,024, 96%) had complete data for age and EF. Men were able to be matched with women within 3 years of age and four ejection fraction percentage points. Due to the greater number of men to women a random number generator was used to make the matches. Approval was sought for review of this data by the Human Subject Protection Committee (Riedinger et al., 2001).

QOL was defined by the SOLVD investigators as a construct containing global aspects of general life satisfaction, current life situation, and dimensions of physical function, emotional distress, and social and perceived health. One instrument used to assess QOL was the Ladder of Life, which is a single-item scale that measures current life situation. The Ladder of Life scale was originally a nine rung ladder scale but was changed to an 11-item scale for the SOLVD trial. This 0-10 scale was used by patients to rate current situation from “worst possible” life to “best possible” life (Riedinger et al., 2001).

Another instrument used to measure QOL was the Profile of Mood States Inventory (POMS). The POMS instrument is a 65-item tool designed to measure present mood or affect state. The POMS yields one total score or six monopolar dimensions which include tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue-inertia and confusion-bewilderment. Subjects rate the adjectives on a 5 point intensity scale with regard to present feelings. With the

exception of the vigor-activity dimension, the higher the score, the greater the mood disturbance or level of distress felt by subjects (Riedinger et al., 2001).

The POMS anxiety scale measures heightened musculoskeletal tension. Somatic tension that may or may not be observable as well as observable psychomotor manifestations are measured in this dimension. The POMS depression scale measures dejection, depression, and the sense of personal inadequacy. Characteristics measured in the POMS depression scale include emotional isolation, sadness, guilt, futility in adjusting, and personal worthlessness. Lastly, the POMS vigor and activity scale reflects a mood of high energy or positive affect (Riedinger et al., 2001).

A third instrument used was the Functional Status Questionnaire (FSQ) which measures activities of daily living and social function. The FSQ was designed to measure disability and change over time. The three FSQ scales used in this study were basic ADL, intermediate ADL, and social functions. Each of the three scales produces a score that is standardized to the 0-100 range with higher scores indicating better functioning (Riedinger et al., 2001).

The Symptoms Scale (SS) measured frequency of dyspnea, dizziness, and chest pain. One item was used from the RAND Medical Outcomes Study Instrument (MOS) which measures perception of general health. The MOS was a 2 year study which was developed to evaluate health care delivery based on systems of care, physician specialty, and interpersonal style. Scales were considered reliable for group comparisons within the HF population as exceeded the .70 *a* Cronbach coefficients (Riedinger et al., 2001).

Findings from the Ladder of Life indicated that the mean was 6.39, men 6.59 on a 1-10 scale for women. Findings from the POMS revealed that regarding vigor women scored lower than men (14.3 and 15.75 respectively). The POMS anxiety scale revealed a score of 9.13 for women and a score of 9.15 for men. Findings from the POMS depression revealed that women scored 7.05 and men scored. The FSQ scale indicted an ADL basic score of 91.9 for women and 94.36 for men. The ADL-intermediate measurement was 30.77 for women and 37.34 for men. Social function scores were 77.22 for women and 86.16 for men (Riedinger et al., 2001).

The results of MOS indicated that the women's perceived health mean was 3.45 and men's perceived health mean was 3.41. Findings indicated that women with HF had worse vigor, intermediate ADL, anxiety, depression, social activity and general health ratings. Findings also indicated that less than half of women with HF were healthy enough to perform normal activities. Despite adjusting for NYHA classification and finding no differences for many of the QOL dimensions between gender groups, women still had significantly worse QOL ratings for intermediate ADL and social activity than did men. Reidinger et al.'s findings were consistent with physical and social functioning being worse in women than in men with HF. Women continued to perform activities related to housework or as caregiver, but related that HF interfered with these everyday tasks. Despite controlling for NYHA classification differences and age, findings showed that women with HF had high physical symptom impact and poor perceived physical health status. The perceptions persisted even after 1 year. Gender differences were noted in the specific areas of social and physical functioning. Limitations to this study included the fact that the

definition of QOL was determined by the SOLVD investigators (Riedinger et al., 2001).

The authors concluded that HF imposes a great impact on QOL, particularly on functional abilities and that some patients adapt more readily to HF than do others. Women have a poorer QOL than men especially in the areas of social and physical functioning (Riedinger et al., 2001).

The purpose of Riedinger, Dracup and Brecht's (2002) study was to describe QOL in a large sample of women with HF and compare it with QOL of normative groups and of women with other chronic diseases. This was a secondary analysis of data extracted from the Studies of Left Ventricular Dysfunction (SOLVD) (Riedinger et al., 2001). As the SOLVD data were existing data, the study was exempt from the human subject protection committee. The authors attempted to produce generalizable results to offer a reference point from which clinicians can truly understand the impact of HF on QOL in women. Four dimensions were used by SOLVD investigators to define QOL – physical functioning, emotional distress, social health, and perceived health. The purpose of the descriptive study was to describe QOL in a large sample of women with HF and compare it with the QOL of normative groups and of patients with other chronic diseases (Riedinger et al., 2002).

Six hundred and ninety-one women previously enrolled in the (SOLVD) trials participated. The mean age was 60.6 (SD 10) with 144 (21%) African-American participants, one (.14%) Asian, 521 (75%) Caucasian, 21 (3%) Hispanic, two (29%) Native American, and two (.29%) Other were included in the study. Participants had an EF ranging from .60-.35, more than half (58%) had a history of smoking, and 366

(53%) had completed high school. The study was considered exempt from review of the human subject protection committee as information used was existing data and no information on patients' identity was included in the study (Riedinger et al., 2002).

Global measures of QOL included by SOLVD investigators were current life and general life satisfaction. Ninety items were used from a number of instruments in this study including the Profile of Mood States Inventory (POMS), Functional Status Questionnaire (FSQ), the Beta Blocker Heart Attack Trial instrument, Symptoms Scale, Ladder of Life, and one item from the RAND Medical Outcomes Study. The Cronbach  $\alpha$  was used to test the reliability of the SOLVD battery and every scale exceeded the 0.70  $\alpha$  coefficient level. A correlation was used to test the discriminate validity of the SOLVD battery to determine the degree of independence between constructs, and the ability of the construct to differentiate between patients on the basis of the severity of HF was tested. The calculated correlations indicated that most constructs of the SOLVD QOL battery fell below the 0.50 level of discrimination (Riedinger et al., 2002).

Although women with HF rated overall current life situation significantly lower than both men and women in a nationwide study, the majority of women with HF were extremely, very, or generally satisfied with life. With regard to physical functioning, findings for the vigor subscale of the POMS instrument showed the mean vigor score of the normative women to be significantly higher ( $P < .001$ ). The vigor scores from women with various types of cancer did not differ significantly from scores of women with HF (Riedinger et al., 2002).

The FSQ survey revealed that women with HF had significantly lower intermediate ADL scores than did the two normative groups. Basic ADL scores of women with HF were significantly better than the basic scores of frail hospitalized older adults, outpatients with Parkinson disease and outpatients with chronic obstructive pulmonary disease (COPD). The intermediate scores of the women with HF were significantly lower than the intermediate scores of the other three groups (Riedinger et al., 2002).

The POMS instrument revealed scores signifying more mood disturbance. Women with HF had worse anxiety ( $P < .001$ ) and depression ( $P < .001$ ), and women with HF had a worse mean anxiety score than did the geriatric subjects. Comparing women with HF to elderly patients with cancer, women with HF had significantly better mean depression scores. Mean anxiety and depression scores 1 month after myocardial infarction were significantly lower than the mean scores for women with HF. The FSQ expert panel defined a normal range for the social activity scale of 79-100. The mean of the Social Activity Scale for women with HF was below 79; however, women with HF had significantly better social activity scores than did patients with Parkinson disease and COPD (Riedinger et al., 2002).

Regarding general health, the mean score for women with HF was significantly lower than the mean score of a normative population of women ( $P < .001$ ) and the mean scores of groups of men and women with HF ( $P < .001$ ), diabetes ( $P < .001$ ), Parkinson disease ( $P < .001$ ), COPD ( $P < .001$ ), recent myocardial infarction ( $P < .001$ ), and hypertension ( $P < .001$  in all cases) (Riedinger et al., 2002).

The authors concluded that women with HF had poor QOL in most dimensions. HF is burden related to QOL in women, a burden greater than that of most other chronic diseases. Disease management programs should be designed to focus not only on reducing the number of hospital readmissions, but also on increasing physical functioning and the psychosocial aspects of QOL in women with HF (Riedinger et al., 2002).

QOL in patients with HF may be profoundly influenced by depression. Depression in HF patients has been associated with increased medical costs due to more frequent hospital admissions, a decline in activities of daily living and worse NYHA functional classifications. Gottlieb et al. (2004) studied the prevalence of depression in an unselected out-patient HF clinic population with particular emphasis on the importance of race, age and gender on the frequency of depression, and to determine the relationship between depression and QOL measurements (Gottlieb et al., 2004).

Criteria for inclusion were patients with stable NYHA class II, III, and IV HF seen in an out-patient academic HF practice. Patients had ejection fractions (EF) <40%, did not have thyroid disease, a recent MI, or unstable angina. Participants completed a questionnaire to provide demographic information including age, race, gender, living situation, and medications. Patients' charts were reviewed to ascertain comorbid conditions, NYHA class and EFs. Patients (N=155) were 79% (N=122) men and 21% (N=33) women, 57% (N=89) Black, 42% (N= 65) White, and 1% (N=1) Chinese. Age range was 33 years to 85 years. The mean age was 64 (SD of 12) (Gottlieb et al., 2004).

QOL was assessed using both the Medical Outcomes Study Short Form (SF-36) and the Minnesota Living with Heart Failure Questionnaire (MLHF). The SF-36 was used to obtain information about general QOL and the MLHF was used to obtain HF specific information. The SF-36 is an instrument designed for use in clinical practice to assess QOL in persons 14 years and older. There are eight subscales assessed: (a) physical activity limitation; (b) social activity limitations; (c) usual role activity physical limitations; (d) bodily pain; (e) general mental health); (f) usual role activities emotional limitations; (g) vitality, i.e. energy and fatigue; and (h) general health perceptions. The SF-36 has a reliability coefficient  $>0.75$  for all dimensions except social functioning, and has been validated in an elderly population (Gottlieb et al., 2004).

The MLHF questionnaire has 21 questions specifically related to HF and is designed to assess the effect of HF on QOL. Physical and emotional subscales are identified which have high test-retest reliability (0.89 and 0.93, respectively). The Beck Depression Inventory (BDI) was used to assess depression. The BDI, a widely used self-assessment tool for depression, is a 21 item test with four response options each. Internal consistency of the scale ranges from 0.81 in non-psychiatric subjects and 0.88 among psychiatric subjects. Chi-square or *t*-test was used to examine differences in demographic characteristics, illness severity, health history, and QOL between both depressed and non-depressed patients. Pearson correlation coefficients were used to examine the relationships of age and left ventricular EF and degree of depression (Gottlieb et al., 2004).

Depression was prevalent in the patients with HF (N=75, 48%), with 27 (17%) patients being severely depressed. Patients with BDI > 10 tended to be younger than non-depressed patients. Younger patients also scored worse QOL on the MLHF scale, and reported worse bodily pain, mental health, and general functioning than older patients on the SF-36. BDI scores >10 (severely depression) did not differ between blacks (53%) and whites (47%) (Chi-square [N=154] = 1.19,  $p=0.275$ ). Women with HF were more likely to be depressed (64%) than men (44%). The mean BDI was 15 +/-11 for women and 11 +/- for men ( $p=0.020$ ). Black men (34%) tended to score as depressed less frequently than white men (54%), but a non-significant trend with women showed black women (70%) scoring as depressed more than whites (54%) (Gottlieb et al., 2004).

No significant differences in BDI scores existed between patients who lived alone and patients who lived with others, regarding educational status, or depending upon the types of medications used. There were significant differences, however, in depressed patients who were receiving beta-blockers (chi-square [N=155, 1df] = 4.64,  $p=0.031$ ) BDI scores >10 differed significantly according to NYHA functional class with class III and IV patients more likely to score as depressed than class II patients. Severity of depression correlated with severity of impairment in QOL measures on both the SF-36 and the MLHF (Gottlieb et al., 2004).

Hierarchical logistic regression was used to assess the usefulness of demographic, medical characteristic, and QOL factors at predicting which patients scored as depressed. Demographic factors were entered on the first step and in the first analysis, gender, age, but not race were significant predictors of depression

status. The second step added NYHA functional class to the model which revealed a significant contribution to prediction of depression status. The final step was the addition of the QOL measures to the two previous steps. The vitality subscale of the SF-36 made a significant additional contribution to the prediction of the depression status. The five predictor variables were simultaneously entered into a logistic regression model (chi-square [5] = 39.96,  $p < .001$ ). The model predicted depression status correctly in 73% of patients, but only vitality and age made a significant contribution. The final model used only age and vitality and correctly predicted depression status in 74% of patient who were depressed and 73% of patients who were not depressed (Gottlieb et al., 2004).

The authors concluded that depression was extremely common in the HF population consistent with reports of depression in patients with other chronic diseases. Women may be more depressed than men regardless of age and other factors, and may have worse QOL despite age, EF, and NYHA functional classifications. Race was not a factor in this study concerning depression in HF patients overall, but black females had a higher prevalence of depression than black males. Depression may be more prevalent among younger patients than older patients suggesting that there is a larger disparity between the perception of functional status and the expectation. The presence of depression was associated with reduced QOL scores, consistent with the notion that depressed HF patients may perceive QOL to be lower and to underestimate functional status (Gottlieb et al., 2004).

The purpose of the study by Gott et al. (2006) was to fill a gap in HF research by identifying factors predictive of QOL among older people with HF recruited from

community settings. The goal of HF management is to maximize life expectancy and improve QOL. Understanding of QOL in HF patients is predominately derived from clinical trials in which older people, women and people with co-morbidities are under represented. Past research from trials has identified associations between QOL and NYHA functional class and QOL and depression (Gott et al., 2006).

A total of 542 people over 60 years of age were recruited from 16 primary care medical offices in four areas of the United Kingdom (UK). The four areas selected best demonstrated demographic variability on key factors such as rural/urban, presence/absence of heavy industry and socioeconomic status. HF patients were identified by use of a Read Code which is a coded thesaurus of clinical terms used in the UK, and by determining if patients in this group received regular prescriptions for loop diuretics and angiotensin-converting enzyme (ACE) inhibitors, the basis for the pharmacological treatment of patients with HF (Gott et al., 2006).

Participants eligible for the study were over 60 years of age, spoke English, had no significant cognitive impairment and were NYHA class II-IV. Some (N=748, 48%) were solicited by postal service to participate, 130 were excluded due to having NYHA class I, 17 were unable to be contacted by telephone, 3 had died and 11 declined to participate further. The remaining participants (N=587), 92% returned the questionnaire, which resulted in a sample size of 542 participants. Two hundred ninety-three (54%) males and 249 (46%) females participated. Baseline NYHA classifications included class I and II (N=329) class III and IV (N=211). Participants (N=254) had evidence of depression. The median age was 77. Fifty-five percent were married and 69% experienced two or more co-morbidities (Gott et al., 2006).

The Kansas City Cardiomyopathy Questionnaire (KCCQ), the Short Form-36 (SF-36), and the Geriatric Depression Scale (GDS) were used in this study. The questionnaires were distributed by post and were completed every 3 months for 24 months. Factors predictive of QOL were identified using multiple linear regression analysis. QOL outcomes were the KCCQ overall summary score, the KCCQ clinical summary score and the SF-36 physical functioning and mental health scales. Evidence of depression, socioeconomic status, age group, and number of co-morbidities were controlled for in all models (Gott et al., 2006).

Findings revealed that gender showed a significant association with all QOL outcomes with women scoring 6.2 points lower on the Kansas clinical summary score (95% CI 3.4, 9.0). NYHA scores at baseline was significantly associated with outcomes with participants in NYHA class III or IV with an estimated 23.1 points lower on the Kansas overall summary score (95% CI 20.4, 26). People reporting depressions scored an estimated 15.6 points lower on the Kansas overall summary score (95% CI 12.7, 18.5). Participants with a lower socioeconomic score reported 3.6 point lower score on the SF-36 (95% CI 0.6, 6.6). People >85 years of age reported a 12.1 point lower score on the SF-36 physical functioning scale compared to people <65 years (95% CI, 4.3, 19.9). Number of co-morbidities showed a significant association with all outcomes, with participants reporting four or more co-morbidities scoring 11.7 points (95% CI) lower on the Kansas overall summary score than participants with 0-1 (Gott et al., 2006).

The authors concluded that HF impacts QOL for older women more than for older men regardless of marital status, depression was predictive of reduced QOL as

earlier reported, and co-morbidities greatly increase the risk for reduced QOL in older people with HF (Gott et al., 2006).

### *Intervention Programs*

Health-related behavioral change is necessary for patients with chronic diseases when symptom reduction or stabilization and improved QOL are the goals (Kodiath, Kelly & Shively, 2005). The goal for an intervention is to develop a comprehensive approach for disease management that addressed early and advanced functional disturbances, focused on self-management methods, and increased patient motivation. The purpose of this study was to implement and evaluate a behavioral intervention for patients with HF. Motivation was defined as a behavioral sequence which included moving the participant toward recognizing a problem, needing or wanting to change, searching for a what to change and beginning, continuing, and following through with a change. A behavioral management intervention was designed to enhance usual care and to help participants with HF establish healthier behaviors to improve QOL (Kodiath et al., 2005).

The Information-Motivation-Behavioral Skills Model (IMB) was used in this intervention. The intervention took place in the Veterans Affairs (VA) San Diego Healthcare System. Two APNs facilitated the 15 week intervention with patients (N=58). Inclusion criteria included patients from the VA facility diagnosed with HF who were assigned to the study. The study was completed during a 15-week timeline and included three classes and three telephone interventions. Week 1 patients attended a 2 hour group class reviewing symptoms and behaviors related to HF. Week 2 patients attended a 2 hour group class discussing healthy behaviors, selecting

behavioral changes and monitoring. Participants were called during weeks 3 and 5 to discuss progress toward healthy behaviors and to choose an additional healthy behavior on which to focus. Leaders reinforced skills related to these behaviors at that time. Week 7 patients again attended a 2 hour group class to review behavior changes, discuss support systems and set new goals. At week 11, patients received a telephone call to discuss progress toward healthy behaviors and the use of monitoring forms. The final class during week 15 provided closure to the program and addressed how to continue with healthy changes made and to reinforce the need for ongoing support. Records showed that 21 (36%) attended all four classes and 46 (79%) attended at least 2 classes; 37 (64%) participated in three telephone calls and 43 (74%) participated in two telephone calls (Kodiath et al., 2005).

The feedback form completed by 100% (N=33) of participants who attended the fourth class consisted of four questions related to the class. A Likert-type scale where 1 represented “strongly disagree” and 5 represented “strongly agree” was used. Participants rated the usefulness of the material as a 4.5 and the knowledge base and preparedness of the staff as a 4.98. Participants gave a 4.85 rating to recommending the class to others. Class leaders kept anecdotal notes about the intervention, program implementation, and themes that were shared. Major themes revealed satisfaction with the intervention, lack of understanding of HF, influence of age, disbelief regarding the diagnosis, and confusion regarding access to care, lifestyle changes and depression (Kodiath et al., 2005).

The authors concluded that the behavioral intervention used in this study helped participants learn how to use the healthcare system, how to communicate with

providers when addressing symptoms of HF, and how to question treatment modalities used. Further research using the IMB may facilitate behavioral changes and improve HRQL in HF patients (Kodiath et al., 2005).

### *Summary*

Patients with HF can enjoy a better QOL when nurses and other health care professionals foster a positive focus and encourage taking charge of life and illness (Rhodes & Bowles, 2002).

Identifying situations to stimulate or inhibit spouses' support can help health care personnel decide if an intervention is needed in order to improve the sleep situation for HF patients and spouses (Brostöm et al., 2003). Having the support of a partner is essential for outcomes in HF patients, but QOL scores for partners were low when compared to members of a healthy elderly population (Luttick et al., 2005).

Women with HF may benefit from continued efforts to test and refine strategies to reduce and control symptoms such as fatigue, rather than change psychological variables (Friedman & King, 1995). Physical symptoms, especially dyspnea and fatigue, and physical health status negatively affect QOL in women with HF (Bennett et al., 1998). Social support is a factor which influences QOL domains of functional status, general health perceptions and well-being. Higher levels of social support at baseline predict greater odds of HF related hospital admissions (Bennett et al., 2001). Assessing and treating psychosocial parameters improves health status and survival for patients with HF (De Jong et al., 2005). HF patients report multiple physical and psychological symptoms that impact QOL with the most burdensome symptoms reported to be difficulty sleeping, lack of energy, problems

with sexual interest or activity, pain, and numbness and tingling in hands and feet (Zambroski et al., 2005). The severity of HF and the uncertainty of the future for HF patients magnify the importance of hope in this population (Rustoen et al., 2005).

Women with HF have a poorer QOL than men especially in the areas of social and physical functioning (Riedinger et al., 2001). Disease management should be designed to focus on increasing physical functioning and the psychosocial aspects of QOL in women with HF (Riedinger et al., 1002). Depression is extremely common in the HF population and women may be more depressed than men regardless of age (Gottlieb et al., 2004). HF impacts QOL for older women more than older men regardless of marital status (Gott et al., 2006).

The Information-Motivation-Behavioral Skills Model can facilitate behavioral changes and improve health related QOL in HF patients (Kodiath et al., 2005).

## Chapter 3

### *Methodology*

Much research has been done to study the impact of symptom management and QOL in HF patients. The majority of this research has been conducted on men. The purpose of this study is to describe the impact of symptoms of HF on QOL in women. This is a partial replication of Bennett et al.'s (1998) study. This chapter contains a description of the methods and procedures for this study.

#### *Research Questions*

1. What are the symptoms most frequently reported as having the greatest impact by women with HF?
2. What are the relationships among symptom impact, perceived social support, perceived health status, and overall QOL in women with HF?

#### *Population, Sample and Setting*

Participants will be women with NYHA class II and III HF from a Midwest urban community. The sample will consist of women who have had a recent hospitalization with the primary diagnosis of HF. The eligibility criteria for inclusion in the study will be: (a) age 50 or older, (b) diagnosis of NYHA class II and III HF, (c) female gender, (e) English speaking, and (d) can read and write. Exclusion criteria will include (a) medical instability, (b) invasive hemodynamic monitoring in

use, or (c) admission to an Intensive Care Unit. The anticipated sample size will be 50 women who meet the inclusion criteria from a 500 bed teaching hospital in the Midwest with full cardiac diagnostic and treatment capabilities.

#### *Protection of Human Subjects*

The study will be reviewed by the Ball State University Institutional Review Board (IRB). The IRB of the hospital convenes monthly to review and approve all research utilizing human subjects. The protection of human subjects policy of the institution requires that study participants be fully informed of the purpose of the study and that they receive the results of that study. Participants will be informed of the voluntary nature of the study and of the risks and benefits of participation. Each participant will receive a letter identifying the research, the purpose of the study and an explanation of privacy and data collection procedures. The participants can withdraw at any time and all information will be kept confidential and all data unidentified and anonymous.

#### *Procedures*

The Chief Nursing Officer and the Director of the Center for Nursing Excellence at Good Samaritan Hospital will be contacted for approval of the study. The nurse manager overseeing cardiac patients will be contacted to discuss and gain permission for the study. After manager approval, the nurse practitioners and nurse educators working with cardiac patients will be contacted to discuss the study. Cardiologists and Primary Care Physicians who work with this patient population will be notified by letter of the research project. A unit meeting will be scheduled for any staff member or physician who needs more information or has questions.

Nurse practitioners working with the HF population will make referrals for the study to the researcher. Daily hospital census reports will be reviewed by the researcher to identify potential subjects. Women with HF who meet inclusion criteria will be approached while hospitalized and will be invited to participate by the researcher. Demographic data will be collected on HF patients who agree to participate and a written explanation of the study will be given to patients at this time.

The MLHF questionnaire will be mailed via U.S. Postal Services to women who agree to participate in the study 4 weeks following the day of discharge. A cover letter explaining the purpose of the study will accompany the questionnaire. A self-addressed, stamped envelop will be included for the return of the MLHF questionnaire. Participants will be asked to return the questionnaire within 2 weeks of receiving them. Telephone calls will be made at the end of two weeks to subjects whose questionnaires have not yet been returned. Once 50 patients have successfully completed and returned the MLHF questionnaire data collection will stop.

#### *Methods of Measurement*

The Minnesota Living with Heart Failure (MLHF) questionnaire, developed in 1984 by Rector, Kubo, and Cohn (1987) is a disease-specific instrument used to measure health-related QOL. The questionnaire was designed to represent fundamental physical, emotional, social and mental dimensions of QOL (Rector, 2005).

Questions on the MLHF assess the impact of frequent physical symptoms including shortness of breath, fatigue, peripheral edema, and difficulty sleeping; and psychological symptoms including anxiety and depression. In addition, the effects of

HF on physical/social functions including walking, climbing stairs, household work, need to rest, working to earn a living, going places, doing things with family or friends, recreational activities, sexual activities, eating and mental and emotional functions of concentration, memory, loss of self control and being a burden to others were incorporated into the measure. The MLHF also contains questions about side effects of medications, hospital stays and cost of care to measure the overall impact of a treatment on QOL (Rector, 2005).

The MLHF questionnaire is comprised of 21 questions. Each question begins “Did your heart failure prevent you from living as you wanted during the past month (4 weeks) by...” followed by gerunds describing symptoms or emotions evoked. A 6 point Likert scale is used in scoring the responses where 0 represents “No,” 1 is “Very Little” and 5 is “Very Much.” In this manner, participants weigh each item using a common scale. Items affecting patients most have the highest scores. The MLHF questionnaire has a physical subscale which measures eight items concerning fatigue and dyspnea. An emotional subscale, measuring five items has to do with emotional issues such as feeling depressed, worried, or burdened. The remaining eight items are items identified by persons with HF as having an impact on their lives. Items in this category include questions about costs of care, being hospitalized and swelling. MLHF scores are calculated by adding responses to all 21 items for a total possible score ranging from 0 (21 x 0) to 105 (21 x 5). Lower scores reflect better QOL. Cumulative scores should be taken as the best measure of how HF and treatments impact QOL. Items on the MLHF questionnaire are considered to be

causal indicators of QOL because of the ability to affect QOL when symptoms occur, but may not be present when other aspects of HF are occurring (Rector, 2005).

Total MLHF scores can be highly reliable as demonstrated by estimates of the correlation between repeated baseline assessments and even measure of internal consistency such as Cronbach  $\alpha$  as seen in studies by Rector et al. ( $\alpha = 0.94$ ), Gorkin et al. ( $\alpha = 0.95$ ), Bennett et al. ( $\alpha = 0.95$ ), and Reigel et al. ( $\alpha = 0.92$ ). MLHF scores have also been reliable in studies that collected data by telephone with the interclass correlation coefficient between face-to-face and telephone data collection done two days apart equal to 0.87 in a study by Bennett et al. (2001) (Rector, 2005).

#### *Research Design*

A descriptive correlational research design will be used. The descriptive correlational design examines relationships that exist in a situation and facilitates the identification of many interrelationships over a short amount of time. Descriptive correlational studies may examine variables in a situation currently occurring or in situations that occurred in the past. Descriptive correlational studies are appropriate when variables are clearly identified and defined (Burns & Groves, 2005).

#### *Method for Data Analysis:*

Pearson product-moment correlation, the first correlation measure developed and most commonly used, will be computed to examine the relationships among QOL and symptom impact, perceived health status and perceived social support. The outcome of the Pearson product-moment correlation analysis produces an  $r$  value of between -1 and +1 (Burns & Groves, 2005).

*Summary*

The purpose of the study is to describe the impact of symptoms of HF and examine the relationships among symptom impact, perceived health status and perceived social support as they relate to overall QOL in women. It is a replication of a descriptive study by Bennett et al., (1998). Fifty women recently hospitalized with HF will be enrolled in the study. Participants will complete the MLHF questionnaire one month after hospitalization. Data will be analyzed using Pearson product-moment correlation.

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Source	Problem	Purpose Research Questions	Framework or Concepts	Sample	Design	Instruments	Results
Rhodes & Bowles 2002	Little research exists on women with HF	To describe how older women with HF perceive their lives	Perceptions of QOL	5 women with Stage II HF	Phenomenological Approach	Four semi-structured interviews	Four common themes emerged: acknowledging loss, accepting loss, changing lives and deepening relationship; no aspects of women's lives escapes the impact of HF
Broström Strömberg Dahlström & Fridlund 2003	Sleep disturbances decrease QOL	To describe decisive situations that influence spouses' support to patients with HF in relation to the couple's sleep situation	QOL and spouse perceptions	25 spouses of people with HF	Descriptive	Interviews involving 8 questions	There are decisive situations that either stimulate or inhibit spouses' support to HF patients in relation to sleeping situations  Identifying situations helps HCWs decide if an intervention is needed to improve sleep situations for HF patients and spouses
Luttik Jaarsma Veeger von Veldhuisen 2005	Spousal support has not been studied in patients with HF	To determine psychosocial adjustment and functional capabilities in HF patients and their spouses	Spousal support is essential for outcomes in HF	38 patients and spouses 32 males and 6 females	Qualitative	Cantril Ladder of Life which measures global well-being	Variance in QOL scores of HF patients may be as a consequence of worse clinical status before hospital admission and the feeling of relief after treatment  Spouses should be engaged in HF education and treatment modalities

<p><b>Friedman &amp; King 1995</b></p>	<p><b>Fatigue is an incapacitating symptom that interferes with normal functioning</b></p>	<p><b>Describe psychological factors and physical symptoms as they relate to fatigue in women with HF</b></p>	<p><b>Mood as it relates to QOL</b></p>	<p><b>57 women with HF</b></p>	<p><b>Quasi-Experimental</b></p>	<p><b>Cohen-Hoberman Inventory of Physical Symptoms Hollinghead Four Factor Index Life Orientation Test</b></p>	<p><b>Fatigue was experienced more than any other symptom and increased over time</b></p>
<p><b>Bennett, Baker &amp; Huster 1998</b></p>	<p><b>Most HF result has been done on males.</b></p>	<p><b>Describe the impact of symptoms of HF and examine relationships among symptom impact, perceived health status, perceived social support, and overall QOL in women with HF</b></p>	<p><b>Perceptions of QOL</b></p>	<p><b>30 women with HF</b></p>	<p><b>Descriptive</b></p>	<p><b>Minnesota Living with Heart Failure Questionnaire; Sickness Impact Profile and Medical Outcomes Study Short-Form Health Survey</b></p>	<p><b>Physical impact and physical health status negatively affect QOL in women with HF</b></p>

<p><b>Bennett, et al. 2001</b></p>	<p><b>Social support may be a predictor of well-being and mortality among HF patients.</b></p>	<p><b>Describe perceived social support as it relates to gender and age.</b></p>	<p><b>QOL and perceived social support during initial hospitalization for HF</b></p>	<p><b>227 patients with HF 182 from a county hospital 45 from a Veteran's Affair Medical Center</b></p>	<p><b>Correlational</b></p>	<p><b>Sherbourne and Stewart Social Support Survey</b></p>	<p><b>Many patients perceive levels of social support to be high</b></p> <p><b>This supported Wilson and Cleary's model which hypothesized that social support is a factor influencing health related QOL</b></p>
<p><b>DeJong, Moser &amp; Chung 2005</b></p>	<p><b>The relative importance of socio-demographic, clinical, health perception and emotional variables in predicting health status in HF patients</b></p>	<p><b>Predicting health status in HF patients</b></p>	<p><b>Health-related QOL</b></p>	<p><b>87 patients with class II-IV NYHA HF</b></p>	<p><b>Quantitative Correlational</b></p>	<p><b>Minnesota Living with Heart Failure Questionnaire</b></p> <p><b>The Dyspnea-Fatigue Index</b></p>	<p><b>Assessing and treating psychosocial symptoms should improve survival and health status for patients with HF</b></p>

Zambroski Moser Bhat Ziegler 2005	Impact of multiple physical and psychological symptoms of HF on QOL	Predicting health status in HF patients	QOL and impact of symptoms	53 patients recruited from a HF clinic in the Midwest	Descriptive	Dyspnea-Fatigue Index Minnesota Living with Heart Failure Questionnaire	The most burdensome symptoms of HF were difficulty sleeping, lack of energy, problems with sexual interest or activity, pain, and numbness and tingling in hands and feet.  There were no significant differences in pharmacological management between men and women.
Rustoen Howie Eidsmo Moum 2005	Psychosocial perceptions in patients with HF; hope, satisfaction with life and future perspectives on hospitalized HF patients.	To evaluate direct and indirect effects of patient demographic variables on hope in hospitalized HF patients.	QOL and psychosocial perceptions	441 patients from 2 hospitals in Oslo, Norway	Correlational	Herth Hope Index	The most important predictors for hope were number of comorbid diseases, self assessed health, and satisfaction with life.
Riedinger Dracup Brecht Padilla Saran Ganz 2001	Women with HF may be treated differently than men with HF	To evaluate gender differences in QOL	QOL and gender differences	17,370 participants from the Studies of Left Ventricular Dysfunction (SOLVD) HF trial	Secondary Analysis	Ladder of Life Profile of Mood Inventory Functional Status Questionnaire	Some patients adapt more readily to HF than do others  HF imposes a great impact on QOL, particularly on functional abilities

				(20% being women)			
<b>Riedinger Dracup Brecht 2002</b>	<b>Women with HF are an understudied group</b>	<b>To compare QOL in women with HF and QOL in women in normative groups</b>	<b>QOL in women with and without HF</b>	<b>691 women from the SOLVD HF trials</b>	<b>Secondary Analysis</b>	<b>Profile of Mood States Inventory Functional Status Questionnaire Beta Blocker Heart Attack Trial Instrument Ladder of Life</b>	<b>Women with HF had poor QOL in most dimensions  HF places a tremendous burden on QOL in women</b>
<b>Gott Barnes Parker Payne Seamark Gariballa Small 2006</b>	<b>There is a gap in HF research re: factors predictive of QOL among older people with HF from community settings</b>	<b>To identify factors predictive of QOL in older people with HF</b>	<b>QOL in patients from communities</b>	<b>542 people with HF recruited from 16 primary care offices in the UK</b>	<b>Descriptive</b>	<b>Kansas City Cardiomyopath y Questionnaire  Geriatric Depression Scale</b>	<b>HF impacts QOL for older women more than for older men regardless of marital status  Co-morbidities greatly increased QOL in older people with HF</b>

<p><b>Kodiath Kelly Shively 2005</b></p>	<p><b>Health related behavioral changes are necessary for patients with chronic diseases when improved QOL is the goal</b></p>	<p><b>To implement and evaluate a behavioral intervention for patients with HF</b></p>	<p><b>QOL and behavioral changes</b></p>	<p><b>33 HF patients from the Veteran's Affairs San Diego Healthcare System</b></p>	<p><b>Correlational</b></p>	<p><b>Information-Motivation-Behavioral Skills Model Classes and interviews</b></p>	<p><b>Behavioral intervention helped participants learn how to use the healthcare system, how to communicate with providers, and how to question treatment modalities</b></p> <p><b>Encouragement from HCWs can help to improve HF patients' use of the healthcare system.</b></p>
<p><b>Gottlieb Khatta Friedman Einbinder Katzen Baker et al., 2004</b></p>	<p><b>Depression's affect on QOL in patients with HF</b></p>	<p><b>To determine the relationship between depression and QOL with emphasis on race, age and gender</b></p>	<p><b>QOL and depression</b></p>	<p><b>155 patients from an out patient setting 79% men and 21% women</b></p>	<p><b>Descriptive</b></p>	<p><b>Medical Outcomes Study Short Form</b></p> <p><b>Minnesota Living with Heart Failure Questionnaire</b></p> <p><b>Beck Depression Inventory</b></p>	<p><b>Depression is extremely common in the HF population consistent with reports of depression in patients with other chronic diseases</b></p> <p><b>Women with HF may suffer more with depression than men</b></p>