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EVALUATION OF THE EFFECT OF HOME CARE INTERVENTIONS ON THE SELF-CARE AGENCY AND HOSPITAL READMISSION RATE OF PATIENTS WITH CONGESTIVE HEART FAILURE

By

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ABSTRACT

EVALUATION OF THE EFFECT OF HOME CARE INTERVENTIONS ON THE SELF-CARE AGENCY AND HOSPITAL READMISSON RATE OF PATIENTS WITH CONGESTIVE HEART FAILURE

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Congestive heart failure (CHF) is prevalent and patients with CHF incur costly hospital readmissions. It is crucial to reduce rehospitalizations and improve self-care in these patients. This blind experimental study based on Dorothea Orem's self-care deficit theory evaluated two nursing interventions provided to 49 home care patients with CHF from 42 to 94 years of age in western Michigan. The study results were drawn from a larger longitudinal study in progress by researcher Dr. Kay Setter-Kline, RN, PhD. One group received supportive-educative interventions and the other received placebo interventions. The study sought to determine if supportive-educative nursing interventions improved medication self-care and reduced the rehospitalization rates for patients with CHF. The results demonstrated a reduction in hospital readmissions, utilization of the emergency room and improved medication self-care for both groups at three months, but no statistically significant difference between the groups. The data collection tool utilized was the Self-Management Tool which was adapted from the Chronic Disease Self-Management Study Measures tool (Lorig, et al., 1996).

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CHAPTER 1

INTRODUCTION

Congestive heart failure (CHF) is a prevalent disease process in our society that generally affects the elderly. The prevalence is rising due to an increasingly aging population. Findings reported by Kannel and Balanger (1991) from the Framingham Study are that the prevalence of CHF increases progressively with age and approximately doubles with each decade of life. Schocken, Arrieta, Leaventon and Ross (1992) predict that as the United States' population ages, the prevalence and mortality will increase, as will the health impact of CHF. It is estimated that 2.5 million people in the United States are afflicted with this diagnosis, with 400,000 newly diagnosed cases annually (Venner & Seelbinder, 1996). CHF is an insidious disease associated with profound symptoms and a poor long-term prognosis (Feldman, 1992) and is a major cause of morbidity and mortality in the United States (Sullivan & Hawthorne, 1995). The number of deaths due to heart failure continues to rise. From 1980 to 1995 the number of deaths from heart failure increased from 27,415 to 46,484. Ninety-four percent of these deaths in 1995 were in the elderly aged 65 years or older.

Hospitalization of the elderly is often related to CHF (Kegel, 1995). Venner and Seelbinder (1996) report CHF is the number one admitting diagnosis for the nations' Medicare population. In 1993, CHF accounted for six percent of all Medicare hospitalizations (Health Care Financing Administration, 1995). Hospitalization rates, as well as emotional and financial burdens are increasing for the CHF population as reported by Croft et al. (1997). They compared hospitalization rates for patients with CHF from 1986 and 1993 and found a higher incidence of hospitalizations in1993. A hospitalization for patients with CHF increases the risk of mortality and leads to a greater functional decline in the elderly (Wolinsky, Smith, Stump, Overhage & Lubitz, 1997). The hospital readmission rate for the patient with CHF is significant and is reported to be 44% for the three to six month period following a hospitalization (Krumholz et al., 1997). Patients often feel inadequately informed after their discharge from the hospital (Mistiaen, Duijnhouwer, Wijlal, DeBont & Veeger, 1997). Evaluation of needs for the elderly client discharged from the hospital show that the elderly need reinforcement regarding their medications, diet, disease process and management after their discharge from the hospital (Kegel, 1995).

Frankle, Breeling and Goldman (1991) evaluated why hospital readmissions occur. They determined that 9% of the hospital readmissions were potentially preventable. Of these potentially preventable readmissions, 89% occurred within 10 days after discharge. One third of these were felt to be related to medical system failure, one third due to unfulfilled hope that the patient would improve after discharge and one third to suboptimal judgements in evaluation or treatment. Michalsen, Konig and Thimme (1998) report that 54.2% of hospital admissions are preventable. They found causative factors for a hospital admission to be lack of adherence to the medical regime (41.9%) and noncompliance with drugs (23.5%). They found 80% of the subjects in their study had dyspnea and edema for 24 hours before their hospital admission. According to Kegel (1995), occurrence of readmissions to the hospital is generally related to medication noncompliance, inadequate discharge planning, inadequate follow-up, and failure of the patient to seek health care attention. Krumholz et al. (1997) also reports that age is associated with readmission. Jaarsma, Halfens and Saad (1996) also add premature discharge, failing support systems, lack of knowledge regarding symptom management and non-compliance as factors related to readmission. Alterations in the health care regimen after hospitalization may be confusing and can lead to ineffective self-care and rehospitalization.

A hospitalization for patients with CHF potentially impacts several facets of their life. The emotional impact is great. Martensson, Karlsson and Fridlund (1997) found factors influencing the well being of the patient with CHF were: feeling a belief in the future (hope), a lack of energy and resignation. Prescott, Soeken and Griggs (1995) indicate that those patients with unmet post-discharge needs have significantly poorer outcomes in terms of complications and hospital readmission than those whose postdischarge care needs are met. Determining how to meet these needs is essential for effective management of the patient with CHF.

Ineffective self-care management and rehospitalizations often observed in the patient with CHF are of concern due to the costs incurred. Stewart, Pearson and Horowitz (1998) point out that the occurrence of unplanned readmissions provides a basis for the high costs of health care. The cost of chronic diseases is significant and accounts for up to one quarter of all the inpatient Medicare expenditures (Vinson, Rich, Sperry, Shah, & McNamara, 1990). The economic costs related to heart failure consume more than $10 billion in healthcare expenditures. In 1990, more than $7 billion was spent on the hospitalization costs that were incurred due to heart failure. It is therefore imperative to determine what can be done to prevent rehospitalizations. Croft et al. (1997) share this concern and indicate: "The increased numbers of hospitalization for heart failure and the likelihood that these patients will require advanced nursing care after discharge have important implications for future national health care expenditures and resources" (p. 270). Resources are described as medical services, nursing care, home health care and skilled nursing facilities.

Problem

The prevalence of CHF in society creates several issues for consideration and research. Concerns arise about the prevention of costly hospital readmissions for the patient with CHF. Cost containment and prevention of hospital readmission are crucial areas to addresss. Maintaining quality care and encouragement of self-care is also essential. "Persons who effectively engage in self-care are not in need of nursing care and will not need to be hospitalized" (Jaarsma, Halfens, Senten, Saad & Dracup 1998, p. 83). Shorter lengths of stay occur with hospitalized patients today that cause sicker patients to be sent home who may not be able to take care of themselves. Shorter lengths of stay for reducing hospital costs necessitate use of community services (Bull, 1994). Chin and Goldman (1997) support coordinated care in the inpatient, outpatient, and home setting to improve the health status and to decrease costs. One way to provide the reinforcement and coordinated care needed for the patient with CHF is through home care. Kornowski et al. (1995) demonstrated in their research that intensive home care results in a marked decrease in the need for hospitalization for patients with CHF and demonstrated an improved functional status in these patients. Their study compared the patients' status one-year prior to the provision of home care services and concurrently when home care was provided. Hospitalization rates, hospital length of stay, and the ability of the patient to perform activities of daily living were evaluated. It was found that the hospitalization rate and the duration of hospital care ($p < .001$) were reduced for those receiving home care. The admission rate was reduced ($p < .001$) and improvement was found in the patients ability to perform ADL'S ($p < .001$). Anderson, Hanson and DeVilder (1996) further support home care and report that skilled nursing care delivered in the patient's home may prevent, forestall or limit costly readmissions to an inpatient setting.

Nurses need to focus on finding ways to promote self-care and to provide disease management in a cost-effective manner. Disease management is defined by Laing and Behrend (1998) as "coordinated, proactive, disease specific approach to patient care that seeks to produce the best clinical outcomes in the most cost effective manner . . . chronic illnesses such as CHF lend themselves to disease management because coordinated intervention and careful monitoring can help prevent acute care episodes and frequent hospitalizations which therefore may improve the patients health status and decrease costs" (p.27). The nurse can help the patient with CHF focus on disease management through education and by focusing on self-care (Martensson, Karlsson & Fridlund, 1997). Nursing in the home setting can play a significant role in reduction of rehospitalizations in the patient with CHF but more research is needed to demonstrate this. Few studies discuss the patient with CHF and the effect of home care on the hospital readmission rate. One study focused exclusively on patients with CHF (Martens & Mellor, 1997). In their study they found that patients with CHF receiving home care were readmitted to the hospital significantly less often than those who did not receive home care ($p = .0418$) at 90 days. There was no statistically significant difference found at 28 days ($p = .1742$) nor at 35 days ($p = .0584$).

Purpose

The purpose of this study was to compare hospital readmission rates for patients with CHF for groups that receive supportive-educative nursing interventions to those who receive placebo interventions. This study evaluated the effect of supportive-educative home care interventions to see if there was a positive affect on medication self-care and if this intervention helped prevent rehospitalization and thereby reduce healthcare costs for the patient with CHF.

CHAPTER 2

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Florence Nightingale sought to define concepts related to nursing. From those early efforts theoretical nursing frameworks have evolved to guide the nursing process and helped to define the nursing role. A theoretical basis in nursing helps support philosophical and health beliefs. One such theory useful for practice and in research is Dorothea Orem's self-care deficit theory (1971). This theory will serve as the framework for this study.

Dorothea Orem first began to develop her concepts of nursing in the late 1950's. She published her first book in 1971, "Nursing: Concepts of Practice". Subsequent editions of this book were revised and published four more times with the most recent edition published in 1995. She developed the self-care deficit nursing theory (SCDNT) during this time. This general theory is composed of three related theories. The first is the theory of self-care, which describes how and why a person cares for himself or herself. The second theory, the theory of self-care deficit explains why people can be helped through nursing intervention. The theory of nursing system explains relationships that must be established and maintained for nursing to be produced (as cited in Tomey, 1998).

Orem (1995) defines the basic concepts of health, patient, environment, and nurse. Health is defined as "The state of a person that is characterized by soundness or wholeness of developed human structures and of bodily and mental functioning" (Orem, 1995, p. 101). Orem defines patient as a person receiving care by a health care provider. Orem identifies the nurse as the agent who provides care and assists the patient to meet his/her needs and self-care deficits. Orem understands environment in terms of physical, chemical, biologic and social features. Environments are interactive and may positively or negatively effect the lives, health and well being of individuals, families and communities.

Orem's (1995) self-care deficit theory focuses on individuals and how nurses interact with them to promote and assist those who may be unable to meet their needs at any one time. Orem believes that all individuals have the ability and desire to meet their needs but at times are not able to do so. She looks holistically at the patient to include the psychological, environmental and physical dimensions.

The basis of Orem's self-care deficit theory of nursing (1995) is the interrelated concepts of self-care, self-care agency, therapeutic self-care demand, and self-care deficit, nursing agency and nursing system. Basic assumptions made by Orem are related to self-care. She assumes that self-care is a function learned through interaction and communication with others. A person has the right and responsibility to care for himself but occasionally assistance may be needed to accomplish self-care. The self-care theory relates how one cares for oneself.

Self-care as defined by Orem (1995) is "the personal care that individuals require each day to regulate their own functioning and development" (p.8). An inability to meet self-care needs creates a self-care deficit. The ability to know and meet continuing requirements to regulate function and development is the self-care agency (Orem, 1995). In order to have an adequate self-care agency, there needs to be the ability to determine what needs to be done to regulate health and wellbeing. In other words, knowledge, attitude and skill are needed to engage in self-care.

When the self-care agency is inadequate to meet the needs, there exists a therapeutic self-care demand. Three types of capabilities are needed to attain effective self-care: 1) the ability to determine what needs to be done to regulate health and well being, 2) the ability to judge and decide what to do from the information obtained, and 3) the ability to actually perform the self-care actions once the knowledge is obtained and the decision to act has been made (Orem, 1995).

Self-care deficits are identified often in the literature. They were addressed by Clossson, Mattingly, Finne & Larson (1994) in their study that demonstrated that patients discharged from a rehabilitative setting had self-care deficits related to medications, safety, activities of daily living, bowel, bladder, skin and home health management. Jopp, Carroll, and Waters (1993) found in their study that 66% of the clients reported self-care deficits.

Self-care is undertaken for a purpose. The reason or purpose and goals of self-care are called the self-care requisites (as cited in Tomey, 1998). The self-care requisites are categorized as universal, developmental and health deviation. These are met through self-care or dependent care. There are six universal self-care requisites, which are: 1) the maintenance of sufficient intake of air, water and food, 2) the provision of care associated with elimination processes and excrements, 3) maintenance of balance between activity and rest, 4) maintenance of balance between solitude and social interaction, 5) prevention of hazards to human life, human function and human well being, and 6) promotion of human function and development within social groups (Orem, 1995).

Developmental self-care requisites are defined by Orem (1995) as those requisites associated with developmental processes that occur during various stages of the life cycle and events that can adversely affect development. Health deviation self-care requisites include seeking and securing appropriate medical assistance, being aware of and attending to the effects of pathological conditions. One must also effectively carry out medically prescribed measures and be aware of and attend to or regulate the discomforting or deleterious effects of medical care measures. Modification of the self-concept to accept oneself in the current level of health is necessary (Jaarsma, Halfens, Senten & Dracup, 1998).

The nurse functions as the nursing agency by acting or doing for the client and guiding or directing the client. The nurse also provides physical or psychological support and provides and maintains an environment that supports personal development and teaching (Orem, 1995). Factors may influence the relationship between the nurse and patient. These factors are called conditioning factors. These may be factors that affect interchanges between the nurse and patient. They may also be issues that affect the intensity, duration and continuity of the interaction between the nurse and patient and factors that affect the quality of patient participation in the nursing intervention. Conditioning factors as defined by Orem (1991) are age, gender, developmental state, health state, sociocultural orientation, health care system factors, family system factors, pattern of living, environmental factors and resource availability.

A nursing system is defined by Orem (1995) as the actions the nurse performs in coordination with the actions of patients to meet the patients' therapeutic self-care demand and to protect and encourage the development of the patients' self-care agency. The nursing system is designed when a person's self-care capabilities are inadequate to meet the therapeutic self-care demand. The nursing system includes the actions and interaction of the nurse and patient and/or family (as cited in Hartweg, 1991). The nursing system can be wholly compensatory, partially compensatory or supportive/educative. In a wholly compensatory system the nurse meets all the needs for the patient when that patient is dependent on others to meet their care needs. In a partially compensatory or supportive/educative role, the nurse and patient have shared responsibility where the patient works to overcome self-care deficits. The nurse provides the support and education necessary to enable the patient to meet the self-care deficits. The supportive-educative system includes guidance, support, and teaching, acting or doing for the patient. The nurse assists the patient in meeting the self-care requisites which are the ways individuals regulate factors that affect their functioning and development (Orem, 1995).

Nursing care provided in the home involves many of the concepts identified by Orem (1995). The nurse and client make judgements about self-care activities, choose methods to assist and then evaluate that choice. Follow-up includes evaluation of the effect of the plan and identification of other self-care deficits that may develop (Jopp, Carroll & Waters, 1993). The nursing system involvement in the home setting is implemented when the home care nurse, acting as the nursing agency, intervenes in the situation where a client has self-care deficits. The CHF patient serves as an excellent example of a patient with self-care deficits because the disease process often impairs the ability of the patient to manage self-care needs. Such self-care needs are management of the diet, medications, physical mobility, grooming and bathing. These needs may be difficult to meet due to the changes in the treatment plan, limitations in endurance and the physical and mental limitations to manage a complex regime. To care effectively, the nurse must review the therapeutic self-care demand, estimate the self-care agency and determine if there are actual or potential self-care deficits in the heart failure patient (Jaarsma et al, 1998). Often the care for the heart failure patient addresses the physical and medical aspects, but with use of Orem's theory, the social and personal aspects are also addressed (Jaarsma et al, 1998).

Examination of the universal self-care requisites for the CHF patient finds a correlation between those identified by Orem (1995) and deficits often seen in the CHF patient. In the universal self-care requisites of sufficient air, evaluation of cough and dyspnea is important. Evaluation of sufficient water occurs in the assessment of edema, weight, hydration status and the effect of diuretic medications. Occasional changes in the requisite of intake of food occur when patients have a loss of appetite. Elimination processes are often affected in the CHF patient. Constipation is often evident as is increased urine outputs related to diuretic medications. The balance between activity and rest occasionally is upset due to increased fatigue. The balance between solitude and interaction may be altered due to fatigue and anxiety. Prevention of hazards to human life may include avoiding over-exertion and fatigue and avoidance of situations where other illnesses are prevalent. Health deviation self-care requisites include carrying out the medically prescribed measures that include correctly taking the prescribed medications.

The supportive-educative aspect of Orem's (1995) nursing system is easily used with the CHF client. The roles of support, guidance, provision of a developmental environment and teaching are important aspects of care with CHF patients and their caregivers. As indicated by Jaarsma et al. (1998), an example of use of these roles can be observed with the universal requisite of fluid intake and output. In relationship to this requisite, the nurse provides guidance by discussing rationale for fluid restrictions, assistance with planning fluid intake and discussion of time of administration of diuretics. Support is offered encouraging evaluation of fluid intake. The nurse can provide a supportive environment by encouraging the patient and family to ask questions and discuss how the fluid restriction affects daily life. The teaching aspect is important to the CHF client. The nurse provides education regarding the need to obtain daily weights, fluid intake, diuretics and physiological responses. Supportive-educative interventions can also effectively be incorporated with the medicine regime by assisting in development of a system for administration of scheduled medications and education regarding the medications.

The holistic approach to care embraced by Orem (1995) fits the philosophical basis of home care in promotion of independence and encouragement of self-care. The interaction of the nurse and patient in the home setting environment utilizes the views of Orem in evaluating the positive and negative effect of the environment on the health status of that patient.

Dorothea Orems concepts in relationship to this study are shown in Figure 1.

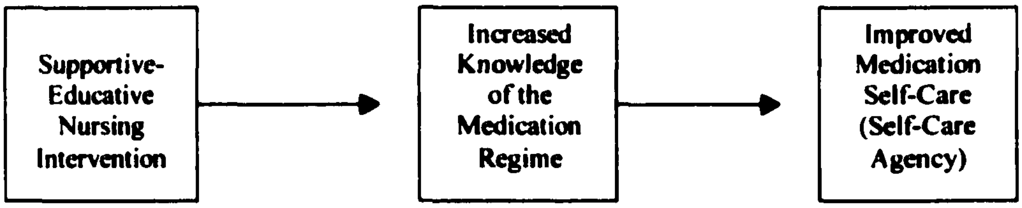

Figure 1. Dorothea Orem's Self-Care Model Applied to Medication Management for the Patient with CHF Receiving Home Care

Literature Review

In a review of the literature, many different types of studies are found about various aspects of CHF and will be discussed below. The studies address the hospital readmission rate and issues contributing to a readmission. Other studies discuss measures to prevent hospital readmission through CHF clinics and the use of home care. Self-care deficits and functional status will be addressed in this literature review. Additional literature supports the premise that patients with CHF are frequently readmitted to the hospital and characteristics of these patients. The medication regime plays a key component in the patient with CHF as identified in the literature. The final portion of this review will address the limited studies done with home care, the patient with CHF and hospital readmissions.

Self-care Deficits and Functional Status

Some studies have been done on the different aspects of self-care deficits, functional status, and age. Self-care deficits are often evident after a hospitalization. Jopp, Carroll and Waters (1993) found in their descriptive, longitudinal post discharge study of patients 60 years and older (n = 47) that self-care deficits were identified by 66% of discharged patients. They identified internal factors including age, sex, belief of health, self-care ability and degree of motivation as issues impacting self-care. External factors such as family interaction, support and resources to meet basic needs also had an impact on self-care. Functional status also has been discussed in the literature and is indicated as a factor influencing hospital readmission. In a study by Reiley and Howard (1995), patients with CHF (n = 231) were evaluated. Their finding was that functional status was a significant predictor of hospital length of stay with a mean length of stay of 6.2 days in those patients 65 years or older. Mor, Wilcox, Rakowski and Hiris (1994) found in their six year longitudinal study (n = 752) that age influenced the functional capacity. Improvement in the functional capacity was noted in some of the 70-year-olds but stability and improvement was rare among 80 year olds. They also found that the elderly patient who was more disabled showed a higher utilization rate and cost during their hospitalization.

Medication Regime

The medication regime is identified as an important aspect and area of concern in the patient with CHF. In a study by Hagenhoff, Feutz, Conn, Sagehorn and Moranville-Hunziker (1994), both patients with CHF and the nurses caring for them agreed that medication information was the most important piece of knowledge to learn during a hospitalization. Patients rated medication knowledge significantly higher than did the nurses ($p = 0.002$). Martens (1994) also pointed out that nurses believe the medication discharge information for the patient is important but they lack the time to address this issue. Nurses also believed that even if informal education was provided during a hospitalization the patient might not remember the information.

Medication related problems and non-compliance have been linked to hospital readmission in the patient with CHF (Jaarsma, Halfens & Saad, 1996). Martens (1994) also indicated that strategies to prevent or delay hospitalizations include accurate medication management. Happ, Naylor and Roe-Prior (1997) report that failure to adhere to the medication regime is a contributing factor to hospital readmission. This includes issues around the medication supply at home and adherence to the regime, particularly with diuretics. They further report that individualized teaching is necessary to develop measures to help the patient remember to take the medications. Vinson, Rich, Sperry, Shah and McNamara (1990) found in their study that up to 50% of the rehospitalizations for patients with CHF might be preventable. Their findings were that those patients with a greater number of medications were readmitted more often than those with a lesser number of medications (p = .01).

Complexity of the medication regime is defined by Conn, Taylor and Kelly (1991) by the number of medications, the decision making process necessary to carry out the regime, additional directions that must be followed, and the mechanical actions to be performed in taking the medications. Knowledge deficits regarding the medications revolve around the complexity of the regime. Fujita and Dungan (1994) in their protocol study reported that knowledge deficits were a major obstacle to maintaining the prescribed medication regime. In this study, education provided through Dorothea Orem's (1995) supportive-educative nursing system was reported to be the most important factor in the promotion and maintenance of the medication regime. Rich et al. (1995) conducted a study of patients CHF (n = 282) to determine if a non-pharmacologic multidisciplinary intervention reduced hospital readmissions. In this study, intensive education about CHF and its treatment, analysis of the medications with recommendations designed to improve compliance and decrease adverse effects were performed. It was found that the multidisciplinary approach, including the interventions with the medications reduced hospital readmissions for those patients in the treatment group as compared to those receiving conventional care (p = 0.04).

Cargill (1992) defined risk factors for medication problems in the elderly in a study of Veterans Administration patients. Subjects were Veteran's Administration patients in an outpatient clinic. In this study, 70 patients with a mean age of 72 years and various diagnosis were studied. Subjects were placed into three separate treatment groups. One group received no interventions and served as the control group. The second received a twenty minute teaching session related to medications, and the third received the twenty minute medication education session plus an additional telephone call one to two weeks after the home visit to review the medication regime with the patient. Those who received the individual instruction and the teaching without a telephone call showed a non-significant change in their medication taking behavior. There was a significant finding for those who received the instruction and the additional phone call ($p = .0097$). Data was collected from the subjects before they were split into the three intervention groups and through analysis it was found that there is a higher risk for complications for subjects with multiple medications, medication regime changes, multiple prescription sources, memory, sensory and cognitive deficits.

Hospital Readmission

The literature in regards to hospital readmissions reveals some interesting information. Anderson, Hanson, DeVilder and Helms (1996) did a retrospective descriptive study with Visiting Nurse Association clients ($n = 68$) to evaluate characteristics of home care patients that are readmitted within the 31 days after a hospital discharge. The mean age in this study was 77.1 years. The primary diagnosis was chronic obstructive pulmonary disease (COPD) or CHF. Females comprised 64.7% of the sample and 35.3% were male. Readmitted patients were married, moderately ill who were recently discharged for cardiovascular or respiratory problems. Concerns with this study are the small sample size, multiple data collectors, seasonal variation in home care and the multiple data collection sites that were used to obtain the data.

Burns and Nichols (1991) evaluated general readmissions within 60 days of a hospital discharge (n = 173) for patients with COPD, CHF, ischemic heart disease and cancer patients and found 30.6% were readmitted within 60 days, 6.5% were readmitted within 7 days and 19% were readmitted within 30 days. Characteristics of the readmitted patients were that they lived alone, had a diagnosis of COPD or CHF and had more hospitalizations in the previous year than those not readmitted to the hospital. The mean age of the readmitted patients was 70.79 and that of the non-readmitted patients was 71.51.

A similar study done by Reed, Pearlman and Buchner (1991) found these risk factors associated with hospital readmission: Two or more hospital admission in the previous year, any medication dosage change in the 48 hours prior to discharge, and a visiting nurse referral for follow-up. The finding of a visiting nurse referral being correlated with a readmission was attributed to those patients because they were referred to homecare with illnesses that were thought to require close observation and that might put them at risk for rehospitalization.

CHF Diagnosis and Hospital Readmission

Patients with CHF specifically have been evaluated in some studies to determine the hospital readmission rate. Vinson, Rich, Sperry, Shah and McNamara (1990) studied patients 70 years or older (n = 140) prospectively to evaluate risk factors associated with hospital readmission. They found 47% of these patients were readmitted within 90 days. Of this group, 57% had a primary diagnosis of CHF. They reviewed the records of those readmitted and felt that 38% of those readmissions potentially could have been preventable. Issues contributing to the hospital readmission were medication and diet non-compliance, inadequate discharge planning, failed social support and failure to seek medical attention. They found that patients with a prior history of CHF, multiple previous admissions and those with heart failure with a myocardial infarction or uncontrolled hypertension were at higher risk for readmission.

A more recent study done retrospectively by Krumholz et al. (1997) reviewed 17,448 charts of age group 65-85, 4.8% of which were those of patients with CHF. CHF was found to be the most prevalent diagnosis for readmission with a rate of 14%. The overall hospital readmission rate was 44%. They found that 50% of those patients with CHF who survived the hospitalization would be readmitted within 6 months.

Bushnell (1992) studied readmission rates for patients with CHF at 3 months after discharge and found 16% had 2 or greater hospitalizations, 26% had one hospitalization and 58% had no hospitalizations. Similarly, Chin and Goldman (1997) studied heart failure patients (n = 257) and reported a 13% readmission rate at 14 days, 22% at 30 days, and 31% at 60 days.

Rich et al. (1993) studied patients with CHF (n = 98), mean age of 70 or greater. In addition to the usual care, the second group received teaching by a geriatric cardiac nurse, detailed medication review by a cardiologist, early consult with social services and dietary teaching by a dietician. The first group received the usual care which included treatments as requested by the patient's attending physician which could include a social services evaluation, dietary and medication teaching, and home care. They generally received less teaching. The outcome of this type of intervention demonstrated a 90-day readmission rate of 33.3% for patients receiving intensive education about CHF and treatment, as compared to the group receiving the usual care which had a readmission rate of 45.7%. The hospital length of stay for those patients with CHF that received the additional care beyond the usual care and were rehospitalized was less by 1.4 days.

A follow-up study to the pilot study by Rich et al. (1993) was done of patients with CHF using the multi-disciplinary approach to care (Rich et al., 1995). The study group consisted of n = 1306 who were 70 years or older with a median age of 79. The study design was an experimental random design. A registered nurse, a dietician, and social services provided education. A cardiologist analyzed the medication regime and the patients received home care follow-up. They found a lesser readmission rate for the group receiving the multi-disciplinary treatment (p = .02) with the cost associated with the care per patient to be $460 less per patient in the treatment group as compared to the group receiving the conventional care ordered by the primary physician. They also found that the overall readmission rate for this CHF population was less than for any other diagnosis (p = .04). Survival rate for the treatment group was significant (p = .09) as compared to the non-treatment group. Quality of life as described by the Chronic Heart Failure Questionnaire demonstrated significant improvement in the treatment group (p = .001). Based on this questionnaire, the treatment group was found to have a better understanding of heart failure at discharge and at the 3-month post-discharge time which demonstrates the benefit of this type of intervention. The difficulty with this study is in determining the individual impact of the disciplines on the overall health status.

CHF Nurse Managed Clinic

The effect of a nurse managed CHF clinic intervention was evaluated in a quasi-experimental study done by Lasater (1996). The findings showed a reduction in the hospital readmission rate at 6 months of 4%, with a decrease in the average length of stay by 1.6 days as compared to the readmission rate for these patients prior to receiving interventions through the CHF clinic. A cost saving of $498.98 per patient was noted. These were reported to be significant findings. The reasons identified for readmission were adverse drug effects, disease progression, lack of home support, non-compliance, failure to follow-up and procedure complications.

Home Care

The literature is limited in studies that evaluate the effects of home care on the hospital readmission rate for the patient with CHF. One study done by Martens and Mellor (1997) studied patients of a mean age of 71 that were discharged from the hospital (n = 924). They retrospectively studied the hospital readmission rate for a group of patients to determine if there was a relationship between home care and the hospital readmission rate. A second portion of this study evaluated home care interventions provided to the clients with CHF. They found that patients receiving home care were readmitted to the hospital significantly less often within 90 days (p = .0418) and at 35 days approached significance (p = .0584). There were not significant findings at 14 days (p = .3699) nor at 28 days (p = .1742). At 90 days after their hospital discharge, patients were 64% less likely to be readmitted than the sample as a whole. In the home care focus group, 28% were readmitted within 3 months, and most of these occurred within 26 days. Analysis of this group found that areas always assessed by the nurse were vital signs, heart and lung sounds, fluid overload, nutrition, appetite and medication regime. In the 9 patients readmitted, vital signs of 44% were outside normal limits as compared to 32% who were not readmitted. This was not a significant finding (p = .5048). Evidence of fluid overload was documented for 56% of those readmitted compared to 55% of those not readmitted, which was not a significant finding (p = .959).

The frequency of home visits for the homecare patient has been evaluated. Dennis, Blue, Stahl, Benge, and Shaw (1996) studied patients with CHF and COPD with 57% of the study group being patients with CHF. They found a significant relationship (p < .01) between those patients that received more home visits and a reduced number of rehospitalizations. The nursing interventions with the strongest relationship in prevention of rehospitalization were assessment of lungs, cough, and respiratory status. During the study period, 64% of the total patients were not readmitted.

An Australian study of two groups of patients with CHF was reported by Stewart, Pearson and Horowitz (1998). Two groups were used in this study. One group received the usual post-hospitalization care (n=48) and the experimental group (n=49) received a home visit by a nurse and a pharmacist one week after discharge. The intervention group was evaluated by the nurse and pharmacist to identify early clinical deterioration and to intensify medical management. Findings by the researchers during the home visits were that 52% were non-compliant with their treatment regimen and 90% had inadequate knowledge of their treatment regime. Early clinical deterioration or adverse effects from their medication was found in 33%. The results of the experimental study were that the experimental group receiving home care had fewer unplanned readmissions or out of hospital death (p = .03) within 6 months of discharge from the hospital. An interesting finding was that the hospital readmission in 40% of those readmitted was associated with conditions other than CHF.

Another Australian study done by Stewart, Marly and Howowitz (1999) evaluated two groups of patients with chronic CHF after discharge from the hospital. One group received the usual post-hospital care (n = 100) and the other group (n = 100) received a visit at home seven to fourteen days after their discharge from a cardiac nurse. The group receiving a home visit was found to have a lower number of hospital readmissions or out of hospital deaths as compared to the usual care group (p = .025).

A similar Australian study by Stewart, Vandenbroid, Peason and Horowitz (1999) evaluated patients with CHF receiving usual care (n = 48) and those receiving a single home based intervention (HBI) (n = 49). Those receiving the HBI were also evaluated in a follow up evaluation at 18 months. They found that those receiving the HBI had fewer unplanned hospital readmissions (p = .02) and out of hospital deaths (p = .02). Hospital costs were lower for those receiving the HBI as compared to the usual care (p = .02). The longer term benefits of home care intervention were validated by this study.

Summary and Implications for Study

The literature provides examples of studies that look at various issues about the patient with CHF including risk factors associated with hospital readmission and methods that have been utilized to enhance the self-care agency of the patient with CHF to prevent rehospitalizations. Self-care deficits of the patient with CHF related to medication self-care has been shown to be a significant issue. The goal of this study will be to evaluate the effectiveness of home care and supportive-educative nursing care for the discharged patient with CHF in prevention of hospital readmission and the impact on medication self-care.

The literature reviewed verifies that the elderly are shown to have self-care deficits and a decreased functional status that impact their health and increase hospitalization costs and length of stay. These limitations impact the recovery and health status of the client.

Many of the studies reviewed support the Agency for Health Care Policy and Research (AHCPR) published guidelines for care of the CHF patient (Kamstad et al., 1994). These guidelines, published in June 1994, recommend patient and family counseling, dietary assessment, nursing and social services intervention, support groups and specific measures to improve compliance.

Due to the prevalence of CHF in our society and the negative effects in patient function and cost to society, it is imperative to work on measures to identify methods that contain cost, improve the quality of life and prevent hospital readmission for the patient with CHF. The research shows that hospitalizations often could be preventable (Vinson et al., 1998, Kegel, 1995, Frankle, 1991). The literature supports post-discharge care such as home care and multi-disciplinary intervention as an effective way to reduce hospital readmission. Limited research has been done to look specifically at the effectiveness of home care and at interventions valuable to prevent hospital readmissions. Identification of those interventions, frequency of home visits, and characteristics of positive outcomes may help provide a basis for care of the patient with CHF along the continuum of care to prevent further escalation of health care costs for this ever increasing population of clients.

A common factor in all but the study by Reed, Pearlman and Buchner (1991) indicates that home care and follow-up after a hospital discharge helps to reduce the hospital readmission rate for the patient with CHF. Little investigation has been done to determine what interventions are most effective in contributing to the reduced hospital rate. A key question is whether or not supportive-educative nursing interventions improves the status of patients with CHF.

Study Research Questions:

The research questions to be addressed by this study are:

1. What is the difference in hospital readmission rates between supportive-educative and placebo groups of patients with CHF receiving home care?
2. What is the difference in medication self-care between patients with CHF receiving home care that receive supportive-educative and placebo nursing interventions?

Study Hypotheses

The hypotheses of this study are:

1. Hospital readmission rates for patients with CHF that receive supportive-educative nursing interventions will be less than those receiving placebo nursing interventions.
2. Those receiving supportive-educative interventions will have increased medication self-care than placebo groups.
3. Subjects with a higher level of self-care medication management will have lower hospital readmission rates

Definition of Terms

Hospital Readmission: Readmission to the hospital with the same primary diagnosis of CHF.

Patients with Congestive Heart Failure: A patient, age 18 years or older admitted to the home care agency with a primary diagnosis of CHF.

Medication self-care: Ability of patients to manage their medications, including acquiring and administering the medications, and understand intended effects and side effects of medications.

Supportive-educative nursing intervention: Nursing intervention addressing the health-deviation of heart failure based on Orem (1995) that guides, supports and teaches the patient in self-management

Placebo interventions: Nursing intervention for health promotion regarding immunizations for adults, risk reduction for falls, general nutrition, normal aging, general health, maintenance and information regarding insomnia

CHAPTER 3

METHODOLOGY

Design

This study was drawn from a larger study being conducted by Dr. Kay Setter-Kline, Professor at Grand Valley State University in Allendale, Michigan. The larger study is a blind, experimental design using home care patients with a primary diagnosis of CHF. There are three nursing techniques used for the experimental aspect of the study that were administered by graduate nursing students. The nursing techniques include supportive-educative, mutual goal setting and placebo interventions. The placebo group received health promotion interventions. A comparison of the three groups was done. All groups received the usual home care protocol interventions and teaching in addition to the experimental nursing interventions. For this study, the placebo and supportive-educative groups were evaluated and drawn from the larger study.

Advantages/Disadvantages of the Study Design

An advantage of this study design is that this type of study is the most powerful type of study design because control is placed on the variables and allows the hypotheses to be tested. Other advantages are that the patient will receive the usual home care interventions plus additional interventions and support. Valuable information can be obtained with minimal risk to the client with this study design.

Disadvantages of this type of study may be the Hawthorne effect that may influence the outcome in that the subject may behave differently just because they are participating in the study. External variables that could potentially influence the outcome findings of this study include personal variables such as the support system, financial status, and cognitive status. There could be some seasonal variations during the data collection period (i.e. increased exacerbation of CHF during the cold and influenza season during the winter months).

Potential other bias would be that the data collector and author of this study is employed at the home care agency. Although the data collector works for the agency, the study intervention protocol utilized for the subjects will not be known to the data collector to protect the validity of the study. Factors that may influence the data and internal validity might be the severity of the illness of the patients.

Sample and Setting

The population of clients with CHF was drawn from home care patients admitted to two large non-profit western Michigan home care agencies located in two separate cities. Care provided by these agencies includes skilled nursing, physical/occupational/speech therapy, social work services, and home health aide services. Both are Medicare certified, non-profit hospital affiliated agencies. Patients with a primary diagnosis of CHF were utilized during the designated study period and visited in their home. Criteria for selection of patients included:

1. Patients over the age of 18 with a primary diagnosis of CHF
2. Subjects will be able to understand English
3. Subjects will agree to participate in the study

The sample of patients with CHF was randomly assigned to the groups with a goal of 31 patients in each of the groups at each home care agency site. The two sites were combined for this study. The portion of the larger study utilized for this study with data available during the summer of 2000 included 23 subjects in the supportive-educative group and 26 in the placebo group. The ages in the supportive-educative group were from 42 to 94 with a mean of 74.74 (SD = 14.56). The placebo group ranged in age from 56 to 92 with a mean age of 74.19 (SD = 9.73) The data was combined for marital status to form a group that was married and a second group that was not married that included those who were widowed, divorced or never married. In the supportive-educative group 13 were not married (56.5%) and 10 (43.5%) were married. In the placebo group, 13 (50%) were not married and 13 (50%) were married. Medicare was the insurance for 82.6% of the supportive-educative group and in 88.5% of the placebo group. Approval for the study was obtained from the Grand Valley State University Human Research Review Committee as well as from the home care agencies.

Instruments

Data for the study was collected using the Self-Management Tool (SMT). The SMT was adapted from the Chronic Disease Self-Management Study Measures (Lorig, et al., 1996). These measures were developed to assess the effectiveness of a chronic disease self-management program. The study by Lorig, et al. addressed behaviors, beliefs about self-efficacy and outcomes. Reliability coefficients were determined as:
a) behaviors, test-retest ranged from .56 to .92 and internal consistency ranged from .70 to .75; b) beliefs about self-efficacy, test-retest ranges from .82 to .89 and internal consistency ranged from .77 to .92; and c) outcomes, test-retest ranged from .82 to .97 with the exception of "outpatient surgeries" which was .45.

The SMT was adapted to measure the general counseling aspects from the AHCPR Patient and Family Guideline for Heart Failure (Konstam et al, 1994) . The general counseling portion was made to determine the level of confidence for items related to heart failure. The section on disability was modified by deleting some items. Based on the AHCPR guidelines for heart failure, a new section was created by the principle investigator of the larger study related to medications using a scale to evaluate the patients understanding and ability to manage their medication regime. (See Appendix A). The sections that remained unchanged were the prognosis, exercise, coping/adapting, health distress, self-related health, use of emergency rooms and hospital stays and self efficacy to manage disease in general. Validity and reliability are not available for this newly developed tool.

Demographic information was obtained at the first data collection visit (See Appendix B). This information includes: agency record number, age, marital status, employment status, educational level, type of health care provider, type of health care payment system, economic status, and length of history with congestive heart failure. Hospital readmission was assessed using the "Health Utilization" section of the SMT (Appendix C).

Procedure

After obtaining the necessary authorizations and permission from Grand Valley State University and the home care agencies, data collection began during the fall of 1999. Charts for review were selected from a list of patients with a primary diagnosis of CHF (ICD-9 code of 428). Patients meeting the criteria for participation in the study were initially screened by the patient's home care nurse care manager from the home care agency. The care manager introduced the client to the study using the script. (see Appendix D). Patients were then asked if a graduate nursing student involved in the study could contact them if they demonstrated an interest in participating. If verbal agreement was given for a research nurse to see the patient, the data collector from the study attempted to make a joint home visit with the care manager for the home care agency. The data collector made a home visit and explained the study and sought consent from the subject to participate in the study using the script to obtain consent (see Appendix E). If the subject agreed to participate, the consent was signed (see Appendix F). The data collector collected demographic data using a demographic data tool (Appendix F). Data was obtained initially, and at 3, 6 , 9 and 12 months using the data assessment tool by the data collector, a graduate nursing student. Data regarding self-care in relationship to medications will be obtained using a portion of the SMT (Appendix A). The subject was randomly assigned to one of the intervention groups by the principle investigator for the larger study. Weekly visits for eight weeks to administer the experimental nursing technique started after the initial data collection visit and done by a graduate nursing student.

Both groups received the regular home care interventions from the home care agencies. In addition to the home care interventions, each received experimental nursing interventions from graduate assistants. The supportive-educative nursing approach (Orem, 1995) was administered and was based on the AHCPR Heart Failure Guidelines. (Appendix G). It addresses the health deviation of heart failure. This nursing approach guides, supports and teaches the patient with CHF in self-management. The placebo group received health promotion education. Topics included information regarding immunization for adults, ways to decrease risk for falls, general nutrition, normal aging, general health maintenance and information regarding insomnia.

Risks and Confidentiality

There were no physical risks to the patient. The only risk with this population was potential fatigue. Precautions were taken by those graduate nursing students working in the study to ensure that the client did not become too fatigued during the data collection or interventions. Confidentiality was maintained by using a numerical coding system to identify the patients. Assurance of compliance with protection of patient's rights was addressed through a review by the Grand Valley State University Human Research Review Committee. Written consent was obtained by the investigator using the consent to participate (Appendix D). Two copies of the consent were signed. One copy was kept by the subject and the second copy was be kept by the principle investigator for the larger study. Subjects were able to drop out of the study at anytime they wish.

CHAPTER 4

RESULTS

Data Preparation and Analysis

This study was drawn from a larger experimental blind study for patients with CHF receiving home care. Using a two group comparison, supportive-educative nursing interventions and placebo interventions were evaluated. The variables evaluated were self-care in medication management and hospital readmissions. The data from each site was coded and entered into the computer by two graduate students. It was analyzed based on the research questions using the Statistical Package for the Social Studies (SPSS) at Grand Valley State University. Descriptive statistics were used to describe the sample. Data from the two sites were compared initially to assess for significant differences in the samples from the two sites using a t-test to assess age, number of insurance providers and number of health care providers. Chi-Square analysis was done to determine if there was significant differences between the two sites in regards to marital status, highest level of education, annual income and length of time the subject had CHF. No significant statistical differences were found between the sites in this analysis, so the data from the two sites were combined.

The data for marital status were collapsed from four separate marital status categories to form two groups. The married group members remained in the married category. The non-married group was formed from the merger of the divorced, widow/widower and single groups.

The various demographic variables evaluated in this study using descriptive statistics were age, marital status, employment status, education, insurance, health provider, income and length of time having heart failure (Appendix A-Demographic tool).

Sample Description

A portion of the subjects of the larger study was utilized for this study during the summer of 2000. The entire larger study sample was not utilized due to the time constraints for this research project and the longitudinal nature of the larger study. At the time of data analysis, 70 subjects were entered into the study. For the initial (pre-treatment) period, data were collected from 26 subjects in the placebo group and 23 subjects from the supportive-educative group (the third treatment group was not part of this analysis). Data for the reevaluation period at 3 months were available for 16 of the placebo group and 12 of the supportive-educative group. The sample consisted of both males and females with a mean age of 74.19 (SD = 9.73) for the placebo group and 74.74 (SD = 14.56) for the supportive-educative group.

Medicare was the primary insurance provider for the majority of the subjects. Most were unemployed. The highest level of education achieved for the majority of the placebo subjects (n = 15, 57.7%) was eleventh to twelve grade. This was the highest level of education for the majority of the supportive-educative group also (n = 11, 47.8%). In the supportive-educative group 30.4% (n = 7) had an associate degree. The length of time with heart failure was fairly evenly distributed from less than one year to more than five years. The demographic data from the two groups are summarized in Table 1.

Table 1

Characteristics of the Sample (n = 49)

Group	Placebo		Supportive-educative	
	#	%	#	%
Marital Status				
Non-married	13	50.0%	13	56.5%
Married	13	50.0%	10	43.5%
Employment Status				
Employed	1	3.8%	0	0%
Unemployed	24	92.3%	22	95.7%
Highest Level of Education				
1st -7th grade	3	11.5%	1	4.3%
8th -10th grade	4	15.4%	3	13.0%
11th-12th grade	15	57.7%	11	47.8%
Associate's Degree	3	11.5%	7	30.4%
Bachelor's Degree	1	3.8%	0	0%
Master's Degree	0	0%	1	4.3%
Doctoral Degree	0	0%	0	0%

(Table continues)

Table 1

Characteristics of the Sample (n = 49) (continued)

Group	Placebo #	 %	Supportive-educative #	 %
Insurance Provider				
Private Insurance	3	11.5%	1	4.3%
HMO	0	0%	1	4.3%
Medicare	23	88.5%	19	82.6%
Medicaid	5	19.2%	3	13.0%
Supplemental Insurance	10	38.5%	8	34.8%
PPO	0	0%	0	0%
Other	3	11.5%	2	8.7%
Health Care Provider				
Family Practice Physician	5	19.2%	2	8.7%
Cardiologist	18	69.2%	20	87.0%
Internist	10	38.5%	6	26.1%
Nurse Practitioner	2	7.7%	1	4.3%
Physician Assistant	0	0%	0	0%
Other	3	11.5%	2	8.7%

Note: Totals indicate greater than 100% because subjects were able to select more than one answer.

(Table continues)

Table 1

Characteristics of the Sample (n = 49) (continued)

Group	Placebo		Supportive-educative	
	#	%	#	%
Annual Income in Dollars				
Less than $10,000	8	30.8%	5	21.7%
$10,000 - 20,000	8	30.8%	9	39.1%
$20,000 - 30,000	8	30.8%	7	30.4%
$30,000 - 40,000	2	7.7%	1	4.3%
$40,000 - 50,000	0	0%	0	0%
Length of Time with Heart Failure				
Less than 1 year	8	30.8%	7	30.4%
1 – 2 years	5	19.2%	4	17.4%
3 – 5 years	4	15.4%	6	26.1%
more than 5 years	9	34.6%	6	26.1%

The mean number of medications the subjects were receiving at baseline for the placebo group was 8.34 (SD =1.74) and for the supportive-educative group was 7.56 (SD =2.31). The number of medications at the reevaluation period at 3 months for the placebo group was 5.26 (SD =4.53) and for the supportive-educative group was 3.87 (SD = 4.15). A t-test comparison of the two groups for age, number of medication at baseline and number of medications at 3 months demonstrated no significant differences between the groups. Chi-square statistical analysis of marital status, education, income, and length of time with heart failure demonstrated that there was no significant difference between the two intervention groups in these areas.

Analysis of the Study Variables

A one tailed paired t-test was used to evaluate and determine if there was a significant difference in hospital readmission rates between those receiving supportive-educative and placebo interventions. A t-test also was used to evaluate the difference in medication self-care between the groups receiving supportive-educative interventions and placebo nursing interventions. The data was considered statistically significant at a p level of < 0.05.

Some related information of interest in addition to the hospitalization data are emergency room utilization. The emergency room visits and hospitalization rate were evaluated for the two groups using a t-test for statistical analysis. Analysis was done using the initial data and the data available for the 3-month re-evaluation. In the initial evaluation, the placebo group was seen in the emergency room a mean number of 1.46 times (SD = 1.10). At three months they were seen a mean number of .88 times (SD = 1.31.). The supportive-educative group had emergency room visits on the initial evaluation of a mean of 1.3 times (SD = .93) and a mean of .67 (SD =.89) at 3 months. (See Table 2). The t-test revealed no significant difference (p= .639). (See Table 3).

In evaluation of the number of times the study subject were hospitalized, the placebo group had a mean of 1.35 (SD = .85) times reported at the time of the initial data collection and at 3 months a mean of .63 (SD = .81). The supportive-educative group was hospitalized a mean of 1.22 times (SD = 1.00) in the initial evaluation and at 3 months a mean number of times of .33 (SD =.89). There was no statistical significance (p= .372). (See Table 3).

The total number of nights stayed in the hospital for the placebo group in the initial evaluation was a mean of 9.15 nights (SD = 6.94) and at 3 months was a mean of 2.69 (SD = 3.46). The number of nights hospitalized for the supportive-educative group in the initial evaluation was 5.30 (SD =5.20). At 3 months, the supportive-educative group had a mean number of nights in the hospital of 1.08 (SD = 2.94). There was no statistical difference between the groups (p= .207). (See Table 3).

Table 2

Results of the Study for Emergency Room (ER)

Visits and Hospitalizations

Group	ER Visits		Hospital Admissions		Hospital Length of Stay	
	M	SD	M	SD	M	SD
Initial Evaluation Placebo Group	1.46	1.10	1.35	.85	9.15	6.94
3 Month Evaluation Placebo Group	.88	1.31	.63	.81	2.69	3.46
Initial Evaluation Supportive-Educative Group	1.30	.93	1.22	1.00	5.30	5.02
3 Month Evaluation Supportive-Educative Group	.67	.89	.33	.89	1.08	2.94

Table 3

ER Visits/Hospitalizations at 3 Months

	t	df	p
Emergency room visits	.474	26	.639
Number of times hospitalized in the previous 3 months	.907	26	.372
Total number of nights in the hospital	1.293	26	.207

The rehospitalization breakdown for the supportive-educative and placebo groups at three months is not complete due to missing data for the three-month evaluation period. This occurred because of the longitudinal nature of the larger study. The initial data was collected on all of the patients but some had not been in the study long enough to reach their 3 month data collection period. The results reportable from the data available for the supportive-educative group were that 43.5% (n =10) were not hospitalized at three months. Two were rehospitalized (8.6%). Data were missing for 47.8% (n =11). For the placebo group at three months, 27.9% (n =7) were readmitted while 34.6% (n =9) were not readmitted. Data were missing for 38.5% (n =10) of the placebo subjects.

Medication self-care was statistically analyzed using a t-test and by evaluating the mean medication scores from the medication management tool for the initial evaluation and for the 3 month period. Medication self-care scores minimally increased for both groups from the initial evaluation to the 3-month evaluation. These were not statistically significant findings (p= .462). (See Table 4).

The results of the medication self-care scores were divided at the median to create a low and high knowledge of medication sub-group. A t-test was then done to test the mean knowledge scores and to compare them to see if those with higher scores had a decreased number of emergency room visits and hospitalizations. The t-test score for the emergency room visits was 1.085 (df = 38) with a p value of .285. For the number of times in the hospital, the t-score was 1.276 (df = 32.54) and p = .211. For the total nights in the hospital, the t-score was 1.148 (df = 38) and p = .258. These were not statistically significant findings. There is no difference in ER visits, times hospitalized or total number of nights hospitalized between patients with lower medication self-care and high medication self-care. (See Table 5).

Table 4

Medication Self-Care Scores

	Supportive-Educative		Placebo				
	M	SD	M	SD	t	df	p
Initial	3.77	.81	3.96	.87			
3 Month	3.8085	.671	4.036	.880			
					.747	26	.462

Table 5

Medication Self-Care and Relationship to Emergency Room Visits and Hospitalizations

	Low Medication Self-Care		High Medication Self-Care		t	df	p
	M	SD	M	SD			
ER Visits	.85	1.23	.50	.76	1.085	38	.285
Times Hospitalized	.60	.88	.30	.57	1.276	32.5	.211
Nights Hospitalized	2.4	3.45	1.30	2.54	1.148	38	.258

Summary of Findings

The findings of this study regarding hospital readmission rates did not support the hypothesis that supportive-educative interventions provided to subjects would decrease hospital readmission rates. The analysis of the data found that there was no statistical difference between the two groups in hospital readmission rates. The findings did show however that there was a decrease in both groups in the emergency room visits, number of times hospitalized and in the total length of stay if the patient was hospitalized.

Medication self-care was not found to be higher in those subjects that received supportive-educative interventions as compared to those that received placebo interventions. In fact, the scores for the placebo group were higher in the initial scores and the scores at the three-month evaluation. It was noted that the three month scores for both groups improved when compared with the initial scores.

The results do not show that those subjects with a higher level of medication self-care had decreased hospitalizations as compared to those with a lower level of medication self-care. The emergency room visits, number of hospitalizations and length of hospital stay were less in the group of patients with a high medication self-care but this was not at a significant level.

CHAPTER 5

DISCUSSION AND IMPLICATIONS FOR NURSING PRACTICE

Discussion

Orem's (1995) self-care deficit theory holistically views the patient and promotes independence and self-care. These are crucial concepts and an excellent philosophical basis for patients with CHF. Limited research has been done to determine the effect of supportive-educative nursing intervention in home care in patients with CHF. The importance of the need to reduce morbidity and mortality further support exploration into measures to improve the health and life of the patient with CHF. This study was pursued to determine if supportive-educative nursing interventions reduced hospital readmissions and improved medication self-care.

For this study the statistical analysis of the data does not support the hypotheses that supportive-educative interventions improve medication self-care or reduce rehospitalization rates. The results of this study also do not correlate with the study done by Fujita and Dungan (1994) which reported that Orem's (1995) supportive-educative nursing system was the most important factor in the medication regime management. Other studies (Vinson, et al., 1990, Krumholz et al., 1997, Buchnell, 1992, and Chin & Goldman, 1997) found that CHF patients are frequently rehospitalized. The only study that supported the reduction of the rehospitalization through utilization of home care was by Martens and Mellor (1997). They found that home care reduced the readmission rate at 90 days for patients with CHF. The Martens and Mellor study did not look specifically at supportive-educative nursing interventions as did this study.

The current study does not statistically demonstrate a reduction in utilization of the emergency room, a reduction in the occurrence of hospitalizations and length of stay if hospitalized or improved medication self-care at three months for supportive-educative interventions as compared to placebo interventions. The study does, however, clinically support the benefits of home care in improving medication self-care and reducing ER visits and rehospitalizations. These may be clinically significant even though not statistically significant.

The study results show a small insignificant increase in medication knowledge from the initial data collection to the three month evaluation. We are able to understand why there are not significant differences in the medication self-care between the two groups in reviewing Figure 1 on page 13. This figure shows that medication self-care will increase as there is an increase in knowledge. The medication self-care did not significantly increase because there was not a significant change in the knowledge level.

Variables affecting the results of this study might include the severity of the disease process and comorbid disease processes. Additional evaluation of these factors may have impacted the data. Some of the rehospitalizations and emergency room visits may have been related to a comorbid disease process. Additional investigation to look at those specific subjects that were rehospitalized to look for comorbidity may find that those patients that were rehospitalized deteriorated due to other health issues.

Other external factors that may have influenced the results may have been support systems available to the patient. The internal validity of the study may have been possibly influenced by the effect of using two different sites with different data collectors and nursing interventionist at each site if there were any deviations in the set protocol for the intervention administration or data collection by the graduate students. The potential for biasing the data due to the fact that the data collectors worked at the home care agencies was not an issue because the principle investigator for the larger study randomly assigned the study subjects to an intervention group and the nursing intervention provided to the subject was not known to the data collectors. The use of the two different home care agencies did not influence the composition of the study sample. The samples were evenly distributed. There weren't statistically different demographics and characteristics of the sample that would have affected the results.

Another possible reason supportive-educative nursing interventions did not show significant differences as compared to the placebo group might be that home care incorporates Orem's theory and nursing concepts in the home care protocols for care of the patient with CHF. Home care has a strong focus on education and may also utilize guiding, directing and support in their approach to patient care. All patients received the usual home care interventions in this study in addition to the placebo and supportive-educative nursing interventions so that those patients that received placebo interventions may have had this influence on their outcomes.

Limitations

Limitations include time commitments to complete this smaller study that prohibited inclusion of the entire study subject sample from the larger longitudinal study. The results are influenced by the small sample size. The data available for evaluation at three months were small and potentially affected the statistical outcomes. This made for a smaller sample size which would not be generalizable to a larger population. Time constraints limited the ability of the investigator to review the home care charts to assess factors leading to rehospitalization in the patients that were rehospitalized.

The study sample of patients with CHF also poses some difficulties in doing a longitudinal study due to their often frail health and physical status. Loss of subjects in the larger study of some of the study patients occurred due to death, placement in nursing homes, moving out of the area, or deterioration in their condition that would not allow them to remain in the study.

A limitation in the assessment of medication management was that the report was made by the patient. This type of subjective reporting may influence the accuracy of the data especially in the areas of knowledge of the medications and side effects. The Hawthorne effect may have influenced the subject to give themselves higher scores in the medication management questions because they knew they were participating in the study and it was an expectation that they would be able to practice medication self-care.

As Polit and Hungler (1995) indicate it is often difficult to ascertain why a study does not support the hypothesis. They point out that the difficulty often lies in insufficient power, or too small a sample size. This may be the main reason for the insignificant findings in this study.

Implications for Nursing Practice

CHF is a prevalent disease process in our society. As the population ages it will become an even more important and prolific issue. Important information and points for consideration regarding management of the CHF diagnosis can be realized from this study. Although supportive-educative nursing interventions were not supported by this data sample as influencing the rehospitalization rate, the study encourages nurses to examine their practice and to consider what type of nursing intervention provides the most benefit to the patients for which they provide care on a daily basis.

Nurses need to find methods to improve patient outcomes and validate their effectiveness in management of the patient with CHF. Outcomes as defined by Venner and Seelbinder (1996) include decreased length of hospital stay, decreased readmissions to the hospital, increased knowledge of disease and increased functional capacity or self-care abilities. More research is needed in the area of home health care to support the benefits of home care.

Recommendations for Further Research

Analysis of the entire data set from the larger study is recommended using the variables of home care and medication management. This analysis would allow the inclusion of the other nursing intervention group that was excluded from this study, the mutual goal setting group. The full data set may support a new hypothesis that home care interventions in general decrease the hospital readmission rate for patients with CHF.

Additional data comparing a group of patients not receiving home care interventions for readmission rates would provide information regarding the effect of home care on the readmission rate. A future study evaluating the specific interventions provided by the home care nurses would be beneficial to evaluate the home care effect. An analysis of the effect of home care in coordination with local CHF clinics when run by advanced practice nurses would also be a worth while study.

Future researchers may obtain information about medication knowledge and management by revising the medication data collection tool. The current tool allows the subject to interject perceptions of the knowledge and management of the medication regime which in reality maybe inaccurate. Use of more objective questions that would test the patients actual knowledge of the medications may give more objectivity to the answers in the medication management tool.

A study focusing on the primary health care provider may provide some important data for future effective management of the patient with CHF. This data were available from the larger study but were not evaluated in this study. Information regarding which type of health care professional provided the care for the patient and if evaluated may provide some additional information. It would be interesting to see if certain health care providers do a better job at preventing rehospitalizations than another. Looking at comorbidity may also provide some additional data for management of the patient with CHF.

Future studies of patients with CHF might group patients or evaluate them based on their support systems that are available to them. Previous research indicates that the caregiver support system may be an important factor in the management of the CHF disease process (Burns & Nichols, 1991; Chin & Goldman, 1997; Haap, Naylor & Roe-Prior, 1997; Jaarsma, Halfens & Saad, 1996,).

Studies looking at discharge planning for patients with CHF have been done (Hagenhoff et al., 1994; Prescott, Soeken & Griggs, 1995; Reiley & Howard, 1995). Additional studies that look at risk factors for the patient with CHF at discharge may help discharge planners focus on those issues that put the patient with CHF at risk for an exacerbation and a hospital readmission. This study also may provide a basis for discussion for nurses in evaluating the financial impact on the nation related to the patient with CHF.

This study reinforces the outpatient role of the nurse in the reduction of emergency room and hospital encounters. The importance of the role of the advanced practice nurse in the management of patients with CHF might be realized if additional data were available regarding outpatient CHF clinics that are run by advanced practice nurses. Research has shown the benefits of the CHF clinic run by advanced practice nurses. (Lasater, 1996). Future studies may of benefit to assess how the advanced practice nurse influences outcomes for patients with CHF.

Summary

The hope of this study was to attempt to focus on the high cost of care for patients with CHF and to realize the morbidity and mortality associated with patients with CHF. The goal was to attempt to demonstrate a nursing focused measure that would benefit not only the patient with CHF but also the nation in general in reduction of costs related to the patient with CHF. Although the results did not prove that supportive-educative nursing interventions reduce the rehospitalization rates or improved the medication self-care, perhaps it provides a basis for discussion of measures that can be pursued to accomplish these goals for future patients with CHF and a vision for future nursing efforts.

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APPENDICES

APPENDIX A

APPENDIX A

MEDICATIONS

We would like to know how often you are able to follow your prescribed medication plan. During the past 4 weeks I was able to (circle one answer for each question):

Name of Medication:	None of the time	A little of the time	Some of the time	A good bit of the time	Most of the time	All of the Time
1. Take the prescribed dose	0	1	2	3	4	5
2. Understand why I was taking the medication	0	1	2	3	4	5
3. Recognize side effects	0	1	2	3	4	5
4. Take proper action when side effects occur	0	1	2	3	4	5
5. Work this medication into my regular routine	0	1	2	3	4	5
6. Obtain this medication	0	1	2	3	4	5

APPENDIX B

APPENDIX B

DEMOGRAPHIC DATA

Record number:________ (To be collected at time of initial interview)
Subject number: ________

1. Age ________

2. Marital Status
   __Never Married
   __Married
   __Divorced
   __Widow/Widower

3. Employment Status
   __Employed (___hours per week)
   __Unemployed

4. Highest Level of Education
   __1st-7th grade
   __8th -10th grade
   __11th-12th grade
   __Associate's Degree
   __Bachelor's Degree
   __Master's Degree
   __Doctoral Degree

5. Insurance Provider
   __Private Insurance (Name of Company) ____________________________________
   __HMO (Name of Group)____
   __Medicare
   __Medicaid
   __Supplemental Insurance (Name of Company) ______________________________
   __PPO (Preferred Provider Organization) __________________________________
   __Other ____

6. Health Care provider (Who treats your heart failure?)
   __Family Practice Physician
   __Cardiologist
   __Internist
   __Nurse Practitioner
   __Physician Assistant
   __Other____

7. Annual Income in Dollars:
   __less than $10,000
   __$10,001-20,000
   __$20,001-30,000
   __$30,001-40,000
   __$40,001-50,000

8. How long have you had heart failure?
   __less than 1 year
   __1-2 years
   __3-5 years
   __more than 5 years

9. List current medical diagnoses. ____

____

____

____

____

APPENDIX C

APPENDIX C

Health Care Utilization

During the past 3 months, did you visit any medical physician? (please fill in the blank with a "0" or other number; do not include visits while in the hospital) How many visits? _______

During the past 3 months, did you receive any services from the following health professionals? (Please fill in the blank with a "0" or other number; do not include visits while in the hospital)

Psychiatrist	No. of visits?_______	Reason?_________________
Psychologist	No. of visits?_______	Reason?_________________
Other mental health counselor	No. of visits?_______	Reason?_________________
Nurse practitioner	No. of visits?_______	Reason?_________________
Home health nurse	No. of visits?_______	Reason?_________________
Physical therapist	No. of visits?_______	Reason?_________________
Occupational therapist	No. of visits?_______	Reason?_________________
Respiratory therapist	No. of visits?_______	Reason?_________________

How many times did you visit the emergency room in the past 3 months?
___None ______times Reason?_______________________________

How many different times did you stay in a hospital overnight or longer in the past 3 months?
___None ______times Reason?_______________________________

How many total nights did you stay in a hospital over night in the past 3 months?
___None ______times Reason?_______________________________

APPENDIX D

APPENDIX D

Agency Script

We are fortunate to have our home care agency included in a nursing study that has been funded by the American Heart Association. The study will be conducted by Dr. Kay Kline, Professor of Nursing at Grand Valley State University. The purpose of the study is to improve the lives of persons with heart failure. We would like you to consider participation in the study, but know that you cannot make a decision about participation without knowing more a bout the study. Can we have a registered nurse who is a graduate student at Grand Valley State University contact you to tell you more about the study?

APPENDIX E

APPENDIX E

Script to Obtain Consent

My name is ______________. I am a registered nurse. I am taking classes at Grand Valley State University to obtain a masters degree in nursing. I have been given permission by your home care agency to come here today with your home care nurse, to determine if you are willing to let me explain a nursing research study that is being conducted with people like yourself, who have been diagnosed with heart failure and are receiving home care.

After your nurse has finished providing your care today, may I stay a few minutes to explain the nursing research study we are doing? (if verbal permission is granted, proceed with explanation of study and obtaining informed consent after the home care nurse has left.)

Explanation of the study

As nurses we are concerned with how people adjust to the medical diagnosis of heart failure. We want to find nursing approaches that will help you learn how to self-manage your heart failure. We believe that when you can self-manage your heart failure you will live a better life.

The study will consist of five (5) interviews of approximately 45 minutes duration, for the purpose of obtaining information about your heart failure. You will be given $10 at the completion of each of these five (5) interviews as compensation for your time. The interviews will be spaced three months apart, starting this week. If you agree to participation, you will be placed in one of three groups.

Each group will receive a different approach to managing health. Each of the nursing approaches will be provided in addition to the regular care you receive from your home care nurse, at no extra cost. Each nursing approach will be provided to you in weekly 30-minute visits by another graduate nursing student who will call you to make an appointment to come to your home. If you participate in the study, I will give you the names of the students who are participating in this study so you will recognize the name of the student who calls you. There will be a total of eight (8) weekly visits. Each visit will provide you with information about managing your health. All visits will be scheduled at your convenience, similar to your current home care visits. You will not given compensation for these eight (8) weekly visits.

Your participation in this study will in no way affect the regular care you receive from your home care nurse, and it may help you improve your self-management of heart failure symptoms. The results of this nursing study may help nurses determine better ways to help other people with heart failure to improve their lives. Because this is a nursing research study, I will maintain the confidentiality of the information obtained during the interview. Your name will not be identified with any of the information I collect. When reporting the results of the study, only group results will be shared; no names of individuals will be published. The nurses providing your home care will not be told that your are participating in the study.

APPENDIX F

APPENDIX F

Informed Consent

I ______________________________agree to participate in the nursing research study for persons with heart failure who are receiving home care. I understand that as a participant in this study:

- I will be interviewed five (5) times for approximately 45 minutes each time, once within this week and again at 3, 6, 9 and 12 months. I will be compensated at $10 at the completion of each interview.
- I will receive information about managing my health and that this information will be delivered by a registered nurse that is a graduate nursing student at Grand Valley State University.
- I will receive this information once a week over the next eight (8) weeks and that each visit will last approximately 30 minutes. I will not be compensated for receiving this information.
- I will be able to withdraw from the study at any time by notifying Dr.Kay Setter-Kline, the Principle Investigator, at 616-895-3517, and that my withdrawal will in no way affect the care I receive from the home care nurse.
- I understand that participation or lack of participation will have no impact on my insurance coverage or rates.
- I will not be identified by name with any of the information obtained and that any sharing of information obtained in this study will be in the form of group summaries of all participants.
- There is no identified risk from participating in this study and I may benefit from receiving information about ways to manage my health
- If in the process of gathering information, any symptoms are identified that might need attention, the nurse gathering the information will refer me to either the home health agency or my health care provider
- I also give permission for review of my health records to verify my health care status If I have any questions about the research study I may contact the Primary Investigator, Dr. Kay Setter-Kline at 616-895-3517, or the Chair of the Grand Valley Human Research Review Committee, Paul Huizenga at 616-895-2472.

______________________________ ______________________
Signed Date

______________________________ ______________________
Witness Date

APPENDIX G

APPENDIX G

AHCPR Heart Failure Guidelines
Suggested Topics for Education and Counseling

GENERAL COUNSELING

1. Explanation of heart failure and the reason for symptoms
2. Cause or probable cause of heart failure
3. Expected symptoms
4. Symptoms of worsening heart failure
5. What to do if symptoms worsen
6. Self-monitoring with daily weights
7. Explanation of treatment/care plan
8. Clarification of patient's responsibilities
9. Importance of cessation of tobacco use
10. Role of family members or other caregivers in the treatment/care plan
11. Availability and value of qualified local support group
12. Importance of obtaining vaccinations against influenza and pneumococcal disease

PROGNOSIS

1. Life expectancy
2. Advance directives
3. Advice for family members in the event of sudden death

ACTIVITY RECOMMENDATIONS

1. Recreation, leisure, and work activity
2. Exercise
3. Sex, sexual difficulties, and coping strategies

DIETARY RECOMMENDATIONS

1. Sodium restriction
2. Avoidance of excessive fluid intake
3. Fluid restriction (if required)
4. Alcohol consumption

MEDICATIONS

1. Effects of medications on quality of life and survival
2. Dosing
3. Likely side effects and what to do if they occur
4. Coping mechanisms for complicated medical regimens
5. Availability of lower cost medications or financial assistance

IMPORTANCE OF COMPLIANCE WITH THE TREATMENT/CARE PLAN