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HEART FAILURE SELF MANAGEMENT

Self Management in Heart Failure Education

Michelle Brown

University of North Dakota

PERMISSION

Title: Self Management in Heart Failure Education

Department: Nursing

Degree: Master of Science

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Abstract

Heart failure is a growing health problem in the United States, costing the healthcare system billions of dollars and having a significant impact on patients' quality of life. To improve heart failure outcomes and reduce associated costs, we must educate patients to properly manage their disease condition. Traditionally, this patient education takes place during a standard office visit with a provider. However, in a self-management program, the provider, through individualized education, empowers the patient to become an active participant in their care. The purpose of this literature review was to explore the effect of self management programs, in comparison to standard in-office education, on the morbidity and mortality of heart failure patients. A total of 11 articles on self-management programs were reviewed, and it was determined that heart failure self-management programs show a great potential to improve outcomes such as hospitalizations, quality of life, and mortality. However, more research needs to be done on the topic due to some study results being mixed, or showing results that were not statistically significant. In addition, this review evaluated five studies on the role of the nurse or advanced practice nurse in the self-management process. Self-management programs led by a specially trained nurse, or an advanced practice nurse, show great success in improving heart failure patient outcomes. Finally, literature was reviewed to evaluate what components should be included in a heart failure self management program. These components are described in detail, with relevant practice recommendations directed towards providers caring for heart failure patients. In order to disseminate the important information from this literature review, a poster of the findings discussed above was created and presented to providers who care for heart failure patients. The presentation included a summary of the literature review findings, as well as practice recommendations based on those findings.

Heart Failure Self Management Program

Recent data from the American Heart Association shows there are approximately 5.7 million American adults living with heart failure (Lloyd-Jones et al., 2009). According to Lloyd-Jones et al. (2002), the lifetime risk of developing heart failure is one in five for both men and women at 40 years of age. The diagnosis of heart failure is just the first step on the road to disease management. For many, that road is a short one. Upon the diagnosis of heart failure, one out of five individuals will die within the first year (Lloyd-Jones et al., 2009).

In addition to the human element, there is a financial burden that accompanies heart failure. There are both direct and indirect costs involved. The direct cost comes from actual medical expenses incurred; whereas the indirect cost comes from lost productivity due to morbidity and mortality. For the year 2010, the projected direct cost for heart failure is \$24.7 billion dollars, with a projected indirect cost of \$9.7 billion dollars (Heidenreich et al., 2011). By the year 2030, it is estimated that combined direct and indirect costs may total over \$95 billion dollars (Heidenreich et al., 2011).

In order to reduce morbidity, mortality, and the growing financial burden of heart failure, proper management of the disease is essential. Goals of heart failure management include reducing the acuity of symptoms, slowing the progression of the disease, and preventing complications that may lead to hospitalization. Patient education is one piece of the heart failure management puzzle that aids in the achievement of the aforementioned goals. Thus, researching more effective methods of delivering patient education is important.

One type of education utilizes the concept of self-care, also called self-management. According to Moser & Watkins (2008), "Self-care is the process whereby individuals and/or their informal caregivers perform daily activities that serve to maintain or restore health and

well-being, prevent illness, and manage chronic illness” (p. 205). Healthcare providers play a key role in self-management by teaching patients the information they need to know in order to carry out self-care. In heart failure, this includes teaching behaviors such as: medication adherence, exercise, smoking cessation, dietary adherence, symptom monitoring, and weight monitoring. The key component of self-care is that it engages the patient to become an active participant in their care.

Another type of patient education is that which occurs in a provider’s office. In office management takes place when a patient sees their medical provider during a scheduled appointment. The education delivered during the appointment may vary greatly depending on the needs of the patient, the preferences of the provider, and the time available.

This project will provide a synthesis of the literature investigating the clinical question, “In adult heart failure patients, what is the effect of a heart failure self-management program, in comparison to standard in-office education only, on the morbidity and mortality rates of heart failure?” In addition, this project will include a summary of evidence-based education and practice recommendations for providers caring for heart failure patients. It will include a poster presentation given to providers that care for heart failure patients, highlighting these findings.

Purpose

Because heart failure is becoming more and more wide-spread, providers need to be knowledgeable about the most effective educational methods to help their patients achieve success in managing their chronic condition. Therefore, the focus for this project is to complete a comprehensive literature review to identify the effectiveness of a heart failure self-management program over traditional in-office education, identify components of self-management programs that lead to the best outcomes in heart failure patients, and to create a poster outlining best

practices to present to providers who care for these patients. The poster will delineate the key components of a successful self-management program. Ultimately, the purpose of investigating this clinical question is to generate evidence for the creation and implementation of a heart failure self-management program in the primary care setting.

This research is relevant to the role of the advanced practice registered nurse (APRN), because there is a large opportunity for the APRN to play a crucial role in the development and delivery of this type of program. This research is relevant to the identified problem of heart failure because better patient education may lead to reduced morbidity and mortality from the disease.

Significance

As stated earlier, heart failure is a growing problem; and important to explore because of the high morbidity and mortality rates associated with it. A study from Ross et al. (2010) examined Medicare patients age 65 and older who were hospitalized for heart failure. The study found that the 30-day hospital readmission rates from 2004 through 2006 were approximately 23% each year. Poor follow-up and lack of post-discharge professional support have been associated with a five-fold odds increase for heart failure readmission (Tsuchihashi et al., 2001). This demonstrates an opportunity for providers in the primary care venue to intervene and provide more comprehensive education and follow-up for heart failure patients. Not only would the follow-up benefit the patient, but it may also lead to decreased health care costs if future hospitalizations can be prevented.

Other research shows that less than fifteen percent of women survive longer than eight to twelve years after diagnosis; and that rate is even lower in men (Lloyd-Jones et al., 2008). Methods of patient education that contribute to improved self-management may contribute to

longer lives for those suffering from heart failure. For example, a literature review by Ditewig, Blok, Havers & van Veenendaal (2009) looked at 19 studies and concluded that self-management interventions in CHF patients show a positive impact on decreasing mortality and increasing quality of life.

In addition to exploring ways to improve heart failure outcomes and reduce healthcare costs from CHF hospitalization and symptom management, this project will also contribute to nursing practice. An important role of the Nurse Practitioner is patient education, and part of this project will involve summarizing current evidence-based recommendations for heart failure education.

This project will also emphasize the role the Nurse Practitioner has in teaching self-management skills to patients, and highlight the importance of a clinic providing heart failure self-management education in addition to their usual in office patient teaching.

Theoretical Framework

Heart failure is a complex disease to manage. Thus, many heart failure patients struggle with adequately managing their symptoms at home. As a result, hospitalizations and provider visits are common amongst this population. Orem's Self-Care Deficit Nursing Theory is a framework that can be used to explore this issue.

According to Orem (2001) a self-care deficit exists when an individual's requirements for self-care exceed his or her capabilities for engaging in self-care. In the example introduced above, the self-care deficit may exist due to a lack of knowledge about caring for one's disease. The deficit may also exist due to a lack of access to proper resources or support. Whatever the reason, it is important to keep in mind that an existing or potential self-care deficit implies that

nursing care is needed (Parker & Lynn, 2006). A heart failure patient who is struggling to manage his or herself at home is in need of nursing support to overcome the deficit.

According to Orem (1995), the Self-Care Deficit Theory of nursing consists of the concepts of self care, self-care agency, therapeutic self-care demand, self-care deficit, and nursing agency. Each of these concepts will be further described within the context of heart failure patients.

Self-Care

Orem (1995) defines self care as “the personal care that individuals require each day to regulate their own functioning and development” (p. 8). In relation to heart failure patients, self-care may include activities such as taking medications as prescribed, adhering to a prescribed diet (such as low sodium), weighing oneself, and monitoring potential symptoms. However, there are many factors that may affect one’s ability to engage in self-care, such as age, environmental conditions, developmental level, health status, and educational level.

Self-Care Agency

Self-care agency is defined as “the complex acquired capability to meet one’s continuing requirements for care of self that regulates life processes, maintains or promotes integrity of human structure and functioning and human development, and promotes well-being” (Orem, 1995, p. 212). Put another way, self-care agency is the power one has to engage in continued self-care.

Self-care agency includes the ability to change or regulate things observed, the ability to acquire knowledge of appropriate courses of action, the ability to decide what to do, and the ability to act to achieve change or regulation. For example, a heart failure patient notes that her weight has gone up three pounds over two days. She may demonstrate self-care agency by

recognizing the increased weight, deciding to cut back slightly on her water intake, and continuing to monitor her weight for changes in the following days. In this way, she demonstrated her ability to recognize a change and act accordingly in order to maintain self-care.

Therapeutic Self-Care Demand

Every person, regardless of age or other factors, has a therapeutic self-care demand. Orem (2001) describes therapeutic self-care demand as the number and kind of care measures that are known to be regulatory of an individual's development or functioning within a time frame. Therapeutic self-care demand varies from one individual to the next and may also vary within the same individual from day to day.

The calculation of one's therapeutic self-care demand requires the identification of one's self-care requisites. Self-care requisites are insights about actions to be performed by individuals that are known or thought to be necessary for human functioning or development (Orem, 2001). Self-care requisites can be very basic, such as the intake of air, food, and water. However, they may also be specific to a particular health problem. In the heart failure patient, a self-care requisite may be to carry out medically prescribed therapeutic measures (diet modifications and medications, for example) in order to effectively manage the disease.

In summary, a person's therapeutic self-care demands are derived from self-care requisites that are individualized for the person by age, gender, developmental stage, environment, and pattern of living.

Self-Care Deficit

The concept of a self-care deficit was briefly introduced earlier. Orem (1995) explains that a self-care deficit refers to the relationship between self-care agency and therapeutic self-care demands of individuals. Having a self-care deficit means that "capabilities for self-care,

because of existent limitations, are not equal to meeting some or all of the components of a therapeutic self-care demand” (Orem, 1995, p. 240). Basically, there is a self-care deficit when one’s need for self-care exceeds his or her ability to provide that care.

There may be a complete self-care deficit, in which there is no capability to meet a self-care demand; or just a partial deficit, in which only some of the self-care demands are not met. For example, a heart failure patient that forgets to take their Lasix as scheduled is experiencing a self-care deficit because their therapeutic self-care demand for a medication regimen to control their CHF symptoms is not being met.

Nursing Agency

The final idea included in Orem’s Self-Care Deficit Theory is that of nursing agency. Nursing agency is a power developed by persons through education and training to gain knowledge of the cognitive and practical operations of nursing practice, and to gain clinical experiences in nursing practice and in providing nursing to patients (Orem, 2001). In short, nursing agency is the ability of a properly trained nurse to help persons to meet their therapeutic self-care demands and to regulate the development or exercise of their self-care agency.

Continuing with the example of heart failure patients, an Advanced Practice Nurse exercises nursing agency when he or she identifies a patient’s therapeutic self-care demands and then aids them in achieving their self-care goals. For the purposes of this project, the role of Advanced Practice Nurses in leading a heart-failure self-management program is explored. According to the premises of the Self-Care Deficit Nursing Theory, a APN-led self-management educational program should aid heart failure patients in achieving self-care and meeting their therapeutic self-care demands.

Review of Literature

Process

A review of literature was conducted using the PubMed and Google Scholar databases available from the University of North Dakota medical school library. Search terms used included both “self-management” and “self-care”, as these terms are often used interchangeably. In addition, the terms “CHF”, “heart failure”, and “congestive heart failure” were used to narrow my search to specific articles on the topic. The purpose of part of the literature review was to evaluate the role of nursing in self care programs. Thus, the terms “nurse”, “advanced practice nurse” and “nurse practitioner” were used to find articles relevant to that topic. The search was limited to articles written in the English language. In addition, the search was limited to articles written in the last 15 years. Articles included were a variety of types, including randomized controlled trials, quasi-experimental studies, systematic reviews, cohort studies, quasi-experimental studies, and qualitative studies. A total of 16 relevant articles were reviewed for this project: four relating to diabetes self-management, seven relating specifically to heart failure self-management, and five relating to the role of APRNs in heart failure self-management programs.

Origins and History of Self-Care

It is thought that the origin of the concept of self-management, or self-care, dates back several decades. There is conflicting information in various sources as to the first use of the term. According to Lorig & Holman (2003), one of the first uses of “self-management” was in a book about chronically ill children written in the 1970s by Thomas Creer. Creer and his colleagues used the term in conjunction with their research regarding pediatric asthma programs.

They felt that self-management implied that a patient was an active participant in treatment (Creer, 1976). In his book, however, Creer credits the writings of Albert Bandura as the basis for their research (Creer, 1976). Bandura studied the concept of self-efficacy, and defined it as “the belief in one’s capabilities to organize and execute the courses of actions required to manage prospective situations” (Bandura, 1995, p. 2). In either case, the common thread is that the patient or person is actively involved in managing their situation.

In contrast, an article by Newman, Buffington, Hemmes & Rosen (1996) stated that B. F. Skinner (1953) is typically credited for first describing self-management. Skinner, however, used the term “self-control” rather than self-management to describe the idea. Skinner (1953) viewed self-control as a set of responses that individuals can perform to alter their own behavior (as cited in Newman et al., 1996). Again, this follows the common thread that the individual is active in controlling their situation or behavior.

Definition and Conceptualization

Though the concept of self-management is becoming increasingly common in health care, the definition is still broad and variable. In addition, the terms self-care and self-management are often used interchangeably. The lack of consensus over a standard definition may be a hurdle to understanding and promoting self-management in chronic disease.

An article by Bodenheimer, Lorig, Holman & Grumbach (2002) outlines some of the differences between traditional patient education and self-management education:

Whereas traditional patient education offers information and skills, self-management education teaches problem-solving skills. While traditional patient education defines the problems, self-management education allows patients to identify their problems and provides techniques to help patients make decisions, take appropriate actions, and alter

these actions as they encounter changes in circumstance or disease. Self-management education compliments, rather than substitutes for, traditional patient education (p. 2471).

As described earlier in this paper, another definition comes from Moser & Watkins (2008), "Self-care is the process whereby individuals and/or their informal caregivers perform daily activities that serve to maintain or restore health and well-being, prevent illness, and manage chronic illness" (p. 205). Yet another definition comes from Riegel, Carlson, Moser, Sebern, Hicks & Roland (2004), "Self-care is defined as a naturalistic decision making process involving the choice of behaviors that maintain physiologic stability (self-care maintenance) and the response to symptoms when they occur (self-care management)" (p. 350). This is just a small sample of the numerous ways that self-management has been conceptualized across various sources.

Chronic Disease Self-Management

Though the focus of this paper is on heart failure self-management, there is value in examining the success of self-management programs in other chronic disease processes. Diabetes, chronic obstructive pulmonary disease (COPD), asthma, and chronic kidney disease are among the many conditions for which self-management programs have been studied. Results in many studies show that self-care education is effective, but several studies are inconclusive, or do not show any benefit when measuring outcomes. There appears to be mixed evidence, suggesting that more research may be needed.

Diabetes self-care in particular has been studied extensively. This has contributed to the development of many diabetic education programs; as well as to the role of the diabetic educator; as many diabetes-specific studies have shown that self-management programs are successful.

A quasi-experimental study conducted by Packer et al. (2012) evaluated 458 participants who received either general chronic disease self-care information, or specific diabetes self-care information. Although the two groups varied greatly in their demographics, the results showed that participants in both groups showed statistically significant improvements in their self-management knowledge and skills at the end of the 12-week study period.

Steinsbekk, Rygg, Lisulo, Rise & Fretheim (2012) recently published a systematic review with meta-analysis looking at group-based self-management education compared to usual treatment for diabetes. They reviewed a total of 21 studies and found that diabetes self-management education resulted in improvements in clinical, lifestyle, and psychosocial outcomes. For example, they found that HbA1C and diabetes knowledge were improved at six month, twelve month, and two-year periods; and that self-management skills also improved after six months. A similar review of 72 randomized controlled trials (Norris, Engelgau & Narayan, 2001) also found evidence to support the effectiveness of self-management training, particularly in the short-term. They found things such as blood glucose monitoring, glycemic control, and dietary habits were positively affected by the self-care interventions in studies with six months or less of follow up. They did not find enough studies to determine the long-term outcomes of the intervention, however; and they also found that many of the studies included in the review may lack internal validity.

A randomized controlled trial evaluating self-care effectiveness in diabetes patients studied 145 patients and had similar results (Wu et al., 2011). The control group consisted of 73 patients who received standard diabetes education; whereas the intervention group of 72 patients received a self-efficacy program in addition to the usual education. The patients in the intervention group demonstrated greater self-efficacy and increased self-care behaviors, and

lower hospitalization rates than the control group at the 6-month evaluation period. However, this study was conducted in Taiwan and the results may not be applicable to the United States population. In addition, the study did not evaluate the long-term outcomes for the groups.

The preceding articles are a very small example of the many research articles that currently address the effectiveness of diabetes self-management. There was value in briefly looking at diabetes self-management because, like heart failure, it is a common chronic disease affecting an increasing number of people. Also, diabetic education programs have utilized a specialized diabetic educator for years, and it could serve as a model for the development of similar heart failure educators and heart failure education programs.

Heart Failure Self-Management

There are many studies examining heart failure patients who participate in self-care which show promise in the effectiveness of the intervention. However, study results are mixed. Some studies do not show that it is a useful approach to improve outcomes. Outcomes that are commonly investigated include mortality rates, hospitalizations, emergency room visits or healthcare utilization, and quality of life. According to Reigel et al. (2009), there is little empirical evidence of the direct relationship between heart failure self-care and outcomes. The following will discuss some of the existing literature, but it is already clear that more research is needed.

One of the outcome measures used in many of the heart failure self-management studies is hospitalization rates. An observational study by Gotsman et al. (2011) followed patients in a specialized heart failure clinic in which they received care from a heart failure nurse as well as information and counseling regarding self-care behaviors. The study included 324 patients from the heart failure clinic who were compared to the cohort of patients (6618) in other healthcare

facilities. The one-year survival rates between the groups were similar: 91% in the heart failure clinic patients, compared with 89% of the larger cohort. More striking, however, is that the heart failure clinic patients had reduced hospitalization rates: 29% compared with 42% in the cohort. Similar results were found in a 2011 secondary analysis by Lee, Moser, Lennie & Riegel which included 195 heart failure patients. The study utilized two self-care measurement tools, to determine what participants' level of self-care was: with higher scores indicating better self care. The study found that patients who were more engaged in heart failure self-management had a 56% reduction in hospitalizations and emergency room admissions than patients who were less engaged (Lee et al., 2011). Both of these studies provide evidence that subjective self-care management may lead to objective outcomes in the form of reduced healthcare utilization. However, both of these studies had limitations as well. In the 2011 study by Gotsman et al., the control group was not matched with the intervention group; there was a wide variability in demographics and patient characteristics. Thus the validity of the results could be questionable. The study by Lee (2011) evaluated data that was based on patients' self-care behaviors, which were self-reported based on a Likert scale. This may have allowed for the possibility of inaccurate reporting by the patients.

A recent prospective cohort study by Marti et al. (2012) showed findings similar to those in the article by Lee (2011), described above. The paper sought to assess patient adherence to eight heart failure self-care recommendations, and its association with outcomes such as resource utilization and quality of life (Marti et al., 2012). The study consisted of 308 patients who were educated regarding self-care behaviors, using a variety of mediums (including one-on-one teaching with a nurse, videos, and written materials). Then, a self-report questionnaire was administered to the study participants to evaluate their adherence to self-care, with higher

percentages indicating better self-care. Patients whose self-care adherence was “good” according to the questionnaires had fewer all-cause hospitalizations, reduced heart failure hospitalizations, and lower emergency department visits than patients whose self-care adherence was “poor”. These conclusions were closely aligned with the findings from Lee (2011). A limitation to the article published by Marti, however, is that the study participants were all part of a specialized heart failure clinic who received specialized education. The results were not repeated on a patient group in the average community clinic setting.

In continuing discussion of the two articles above, there was one major difference in findings between the studies. Marti et al (2012) found that clinical event rates (which included mortality rates), were not directly correlated with good adherence to self-care activities. In contrast, the study by Lee (2011) showed a reduction in mortality and clinical events in patients who were more engaged in self-care management. In fact, the study found that heart failure patients who were symptomatic but more engaged in self-care management practices had a risk of untoward events similar to that of symptom-free patients, even after adjusting for variables (Lee, 2011). More research is needed in this area to support findings.

Several systematic reviews have also examined the effect of heart failure self-care on patient outcomes. A review by Jovicic, Holroyd-Leduc & Straus (2006) included six randomized controlled trials with a total of 857 patients. They looked at primary outcomes, including hospital readmission rates and mortality; and secondary outcomes, including compliance with treatment and quality of life. They concluded that all-cause hospital readmissions were reduced when results from five studies measuring this outcome were pooled together. However, these studies taken individually showed no significant change in the rate.

When looking specifically at readmissions for heart failure, they found that self-management strategies decreased the risk overall (Jovicic et al., 2006).

McAlister, Stewart, Ferrua & McMurray (2004) also performed a review of randomized controlled trials, which included twenty-nine studies. They gleaned results analogous to Jovicic and colleagues (2006). Of 23 studies they examined that looked at all-cause hospitalization rate, they found a beneficial impact from interventions involving self-care activities (McAlister et al., 2004). They analyzed 19 trials which looked at heart-failure related admissions and pooled the results; finding that programs with an emphasis on self-care activities have a substantial positive impact. In short, they found a reduction in all-cause and heart-failure related hospitalizations of a 43% and 27% respectively.

Neither of these reviews, however, found that self-care programs created a statistically significant difference on mortality (Jovicic et al., 2006 & McAlister et al., 2004). One difference between the studies was their findings on the outcome of quality of life. The studies Jovicic et al. (2006) looked at did not show any significant improvement on quality of life scores; and they were unable to pool results for further analysis due to the heterogeneity between them. In contrast, McAlister et al. (2004) did find that quality of life measures improved with patients who were involved in a self-management program. However, both articles did have some limitations. Both reviews are limited by the fact that the studies included had a lack of consistency in reporting things such as patient demographics (namely race, socioeconomic factors, disease severity, and educational level; and not all studies described details about blinding. In addition, many of the studies McAlister et al (2004) included in the review were set in academic centers in urban areas. It is uncertain whether results could be generalized to rural

or underserved areas. Finally, most of the studies included in both reviews were of short duration, so the long-term outcome of the patients is not known.

A randomized controlled trial by Smeulders et al. (2009) showed results which contradict the study findings discussed above. The control group received "usual care", and consisted of 131 heart failure patients who had regular check-ups at an outpatient clinic. The intervention group of 186 patients participated in a 6-week self-management program in addition to receiving "usual care". After twelve months of follow-up, the study found no significant difference between the intervention and control groups in regards to healthcare utilization. The rate of hospitalization was nearly the same (0.4 on average) between the two groups, as well as the number of emergency room visits (0.6 on average). Overall, this studies' disease self-management program did not have a significant effect on patient outcomes, and adaptations to the program may be needed to affect healthcare utilization. This study was limited, however, in that measures of healthcare utilization were via patient recall. These records were not reviewed to confirm the self-reports, which could potentially lead to inaccurate results.

Ditewig, Blok, Havers & van Veenendaal (2010) published a systematic review with results that coincide with those of Smeulders et al. (2009). The review included nineteen randomized controlled trials which involved testing the effectiveness of a self-management intervention on patient outcomes. The studies included had to compare an intervention group, who received the self-management education, to a control group, who received standard care. Nine of the selected studies looked at mortality as an outcome, and of those, eight studies did not show a significant difference in mortality rates between the two groups. Eight of the selected studies assessed all-cause hospital admissions as an outcome. Results between the studies were mixed, with only two of the studies showing a statistically significant reduction in all-cause

hospitalizations in the intervention group. The review concluded that although self-management interventions show a positive effect on outcomes in some cases, the effect is not always significant. However, the authors also stated that many of the studies they reviewed had limitations in their method and design, which impaired their validity. They recommend that further research is done to further assess the effectiveness of the intervention.

In summary, there are many positive outcomes associated with heart failure self-management programs. Many of the studies evaluated showed these programs reduced the number of all-cause hospitalizations, as well as heart failure hospitalizations. In addition, many of the studies showed these programs reduced healthcare utilization (such as emergency room and outpatient clinic visits), decreased mortality rates, and increased quality of life. However, not all of the studies were randomized controlled trials, and not all of the studies' results were statistically significant. Furthermore, many of the studies did not investigate long-term outcomes. Thus, further research is needed on this topic to address these issues.

The Role of Nursing in Self-Management

Before moving onto a discussion about practice recommendations and guidelines, it is relevant to discuss the role that advanced practice nurses play in the development and delivery of disease self-management programs. With the number of heart failure patients increasing across the country, the role of the nurse practitioner will become critical to fill the provider gap.

A prospective quasi-experimental study by Lowery et al. (2010) specifically looked at a nurse practitioner-led disease management model in the care of patients with heart failure. The study included 969 patients, with 458 in the intervention group and 511 in the control group. They compared outcomes of patients in the intervention group, who received nurse practitioner led disease management and education, to patients in the control group who received usual care

based on a primary care physician-based model. Patients were followed and data collected after one year, and again after two years. After one year, the control group had statistically significantly more all-cause and heart failure related hospital admissions. However, the difference did not persist at year two. In addition, the mortality rate was 57% and 45% lower in the intervention group, after year one and year two respectively, after adjusting for variables. In contrast, the number of heart failure related outpatient visits (which included primary care, cardiology, phone medicine, anticoagulation clinic, etc.) was greater in the intervention group than the control group at the end of both years. According to the authors, this finding was expected; as the focus of the intervention group was on providing comprehensive outpatient heart failure care (Lowery et al., 2010). This study was limited, however, by its lack of randomization of patients into the intervention or control group. In addition, this study was conducted within the VA system, and it is unknown if these results could be repeated in non-VA facilities. Nonetheless, this study adds to the evidence that nurse practitioner led heart failure management programs have great potential.

Another study which looked at nurse-led self-management groups was performed by Otsu & Moriyama (2011). This study was a randomized, controlled trial with 102 participants with heart failure. The control group was given usual medical treatment and standard care. The intervention group received usual care, and received additional heart failure self-management education from a specialized cardiovascular nurse. The educational program was designed around evidence-based clinical guidelines from several research groups. Study participants were evaluated at baseline, and for outcomes (BNP measurements, New York Heart Association's heart function levels, quality of life indicators, etc) at three, six, nine, and twelve months. In the intervention group, BNP measurements showed a decrease at the three and six month periods.

There was also a 13.6% improvement in the NYHA's heart function level in the intervention group at twelve months compared to baseline. In addition, the study showed that systolic blood pressure improved significantly between three and twelve months; participants' weight improved from baseline to twelve months; and there was an improvement in quality of life indicators in the intervention group. Finally, they found that patient's level of compliance with therapy was higher in the intervention group. The authors concluded that their nurse-led self-management program was effective in the short-term timeframe they examined in this study (Otsu, 2011). This study, however, was conducted in Japan and it is unknown whether results can be generalized to the population in the United States. In addition, further larger-scale trials should be carried out in order to quantify the study results.

In 2012, Otsu and Moriyama published a follow up to the study described previously. They had continued to monitor the study participants from the intervention group for an additional twelve months after the completion of the first study (for a total of 24 months). In regards to BNP measurements, the intervention group showed an improvement between baseline and 24 months, however, this was not deemed to be statistically significant. The study also showed improvements in NYHA classification: there were significant improvements noted between baseline and 24 months; and at 24 months, there were no patients whose symptoms placed them in stage three (Otsu & Moriyama, 2012). In addition, they concluded that patient compliance with self-management behaviors (including diet adherence, medication management, etc) was significantly maintained over the course of the 24 month study period. Finally, they found that quality of life scores had initially increased at twelve months; but had dropped back to baseline at 24 months. Thus, they suggest to maintain quality of life scores, the patients should have regular follow-up with a provider every six months. Overall, these follow up findings

suggest that the positive effects of the self-management have a long-term effect on patient outcomes.

A systematic review was performed by Case, Haynes, Holaday & Parker (2010) to look at the role advanced practice registered nurses (APRN) play in the outpatient management of heart failure patients. The review included six articles: four randomized clinical trials, two quasi-experimental studies, and two literature reviews. Overall, the studies showed that patients in nurse management groups had fewer total hospitalizations compared with those in a control group (who received usual care). In addition, they found that nurse led self-management group patients reported improved functioning based on quality of life questionnaires. The authors concluded that this review confirmed the need for specialized outpatient management programs. It also demonstrated “a need for the unique abilities of APRNs to provide holistic care to patients with a chronic disease” (Case et al., 2010, p. 62).

Finally, a qualitative case analysis by Watts et al. (2008) sought to determine the role that nurse practitioners play in a multidisciplinary team approach to heart failure management. They looked specifically at six key elements of a chronic care model (CCM): self-management, decision support, delivery system design, clinical information systems, community resources, and organizational support. They integrated these components into a disease-management model in which a physician and a nurse practitioner are present during patient visits. They concluded that nurse practitioners have competencies that correspond well to the CCM parameters. Specifically, they concluded that nurse practitioners play a key role in self-management education and delivery. In addition, they state that because NPs are trained to “think holistically, to foster team building, and to educate and motivate patients”, they are particularly needed in the multidisciplinary disease management approach (Watts et al., 2008, p. 171).

Collectively, these studies demonstrate that nurse-led self management programs have the potential to be highly effective in improving patient outcomes. It is possible that advanced practice nurses could develop a specialized role in heart failure education as a “heart failure educator”, similar to that of a diabetic educator for diabetes patient education.

Best Practices for Managing Patients with Heart Failure

Because many of the heart failure self-management programs have shown positive outcomes, it is important for clinicians to consider utilizing this type of education with their heart failure patients. The following is a discussion of the relevant practice recommendations and guidelines for creating and implementing a heart failure self-management program.

Self-Care Behaviors.

Medications. Specific medication recommendations will vary greatly, depending on severity of symptoms, patient characteristics, and co-morbid conditions. The HFSA (2010) states that two classes of agents, angiotension converting enzyme (ACE) inhibitors and beta blockers, are the recommended cornerstone of therapy to delay or stop the progression of cardiac dysfunction and improve mortality. In addition, newer drug classes have emerged that also show potential to impact mortality: angiotension receptor blockers, aldosterone antagonists, and the combination of hydralazine and an oral nitrate (HFSA, 2010). In addition, both loop and distal tubular diuretics are essential components in the pharmacological treatment of heart failure (HFSA, 2010). Specific details about medication recommendations can be found in the Heart Failure Society’s 2010 Comprehensive Heart Failure Practice Guidelines, and will not be discussed in detail here.

A statement from the AHA discusses medication taking as one important self-care behavior to address in the education program (Riegel et al., 2009). Medication adherence is

crucial, and the provider should empower the patient to incorporate medication taking into their daily routine, to obtain and refill prescriptions, to change their medications as prescribed by their provider, and to plan properly for things such as travel or a disruption in their usual daily routine. In addition, the HFSA (2010) recommends that as part of the self-care program, patients should be able to demonstrate knowledge of the name, dose, and purpose of each prescribed medication they are on. It has been suggested that certain patient populations may even be instructed to titrate their dose of diuretic in response to symptom changes as part of their self-management program (HFSA, 2010).

Symptom Recognition and Monitoring. Another important aspect of heart failure self-care is teaching the patient to recognize and properly act upon changes in their symptoms or disease course. The AHA (Riegel et al., 2009), the ACC (Bonow et al., 2010), and the European Society of Cardiology (Lainscak, 2011) include this in their practice recommendations. Patients who note changes in their symptoms and act accordingly may prevent outcomes such as hospitalizations, acute care visits, or even death. They should be taught to assess frequency, intensity, duration, and pattern of key symptoms which are indicative of a worsening condition; including but not limited to: weight gain, increased shortness of breath, edema, and/or decreased activity tolerance. Upon identifying key symptoms, the patient should have an action plan of what to do. For example, this may include changing the dose of their diuretic, changing their diet, or restricting their fluid intake (HFSA, 2010).

Interpretation of these symptoms can still be difficult for some patients, even with proper education. Therefore, another important component to include in the self-care plan is educating the patient how and when to call the provider because of specific symptom changes (HFSA,

2010). Additionally, the provider should consider including family members in the education, so that they may aid the patient in recognizing and acting upon symptom changes.

Weight Management. There are two different pieces of weight management to consider in heart failure patients: body mass index (BMI) and fluid status.

BMI. It is thought that obesity can increase the possibility of developing heart failure and/or contribute to worsening symptoms (Lainscak, 2011). However, studies have shown that obese heart failure patients may actually have a lower mortality rate than those with a BMI within the normal range (Riegel et al., 2009). This is because heart failure can lead to anorexia, body wasting and cachexia, which poses a significantly poor prognosis. In contrast, the presence of obesity generally indicates an intact appetite and functioning metabolism.

The European Society of Cardiology (ESC) states that weight reduction should not be routinely recommended in moderate to severe heart failure because of the risk of cachexia, anorexia, and unintentional weight loss (Lainscak, 2011). However, they also state that weight loss in obese patients with a BMI >30 kg/m² could be considered to prevent progression of the disease. Similarly, guidelines from the AHA (Riegel et al., 2009) state that weight loss should not be encouraged in patients with a BMI <30 kg/m². Weight loss should only be encouraged in patients with a BMI >40 kg/m², to bring the BMI below 40 kg/m².

The difficulty in weight monitoring, however, lies in the fact that heart failure patients may experience wide fluctuations in weight due to fluid status (a topic which will be discussed in greater detail to follow). Thus, it is important for the provider to not only monitor weight, but also ask specific questions about nutritional intake and appetite. Patients should be encouraged to monitor their nutritional status as part of their self-management program. This also ties in with the self-management component of symptom recognition: A patient should be educated to

monitor for things such as decreased appetite, fatigue, and unintentional weight loss. These symptoms may indicate cachexia, which is an independent predictor of poor outcomes in heart failure patients.

Fluid Status. Daily weights are an important component of the heart failure self-management program. Daily weights are a way to measure fluid volume status, as well as to monitor the efficacy of diuretic therapy. Patients should be educated to weigh themselves daily, at the same time of day, in the same clothing, and with the same scale. They should record the weight each time in a log to track for changes. Guidelines from the ESC suggest that patients should report a weight gain greater than 2 kilograms (Lainscak, 2011). The HFSA (2010) recommends that patients should monitor for and report a short-term weight gain of 2 to 4 pounds. They also recommend that select patients may be educated to adjust their daily dose of diuretic in response to weight gain from fluid overload (HFSA, 2010). This may not be practical for all patients, but is a very feasible option in patients who have a strong grasp on self-management skills. In addition, patients may need to reduce their fluid intake in times of weight gain associated with fluid overload; a concept that will be discussed in greater detail to follow.

It is important to note that a barrier to daily weight adherence is that many patients think that it is a method of monitoring for gains in adipose tissue rather than fluid status (Riegel et al., 2009). Thus, it is important to clarify this misconception when implementing the self management plan.

Sodium and Fluid Intake. Maintaining euvolemia is one important factor for patients with heart failure. Volume overload may lead to acute symptom exacerbations; whereas volume depletion can lead to symptoms such as hypotension, dizziness, or disruption in renal function.

Fluid and sodium intake largely determine volume balance, so these become important in the management of heart failure.

Sodium. The AHA (Riegel et al., 2009) reviewed evidence on sodium intake and recommends heart failure patients consume no more than 2.3g/dL of sodium per day. Others recommend patients simply avoid “excessive” salt intake, especially if they are symptomatic (Lainscak, 2011). When educating patients about sodium it is important they know the variety of alternate names for sodium, such as salt or sodium chloride, to eliminate confusion when calculating their intake. The self-management program should also include education about how to read a food label to check the amount of sodium per serving (HFSA, 2010). In addition, the patient should be asked to demonstrate their ability to sort foods into high and low sodium groups. For example, if given the option of choosing canned or frozen vegetables, the patient should be able to identify that the frozen vegetables contain less sodium per serving. Also, many foods (soups for example) have a similar product with less sodium, thus the patient should also be taught to look for those options when grocery shopping.

Fluid Intake. There is some controversy regarding fluid intake recommendations in heart failure patients, in part due to the limited research on the topic. The ESC concluded that there is no evidence to support routine fluid restriction in stabilized patients with mild to moderate disease; but a restriction of 1.5 to 2 liters per day may be considered in patients with severe symptoms (Lainscak et al., 2011). The HFSA (2010) recommends a fluid restriction of 2 liters per day or less in patients with “severe hyponatremia”, described as serum sodium less than 130mEq/L. They also conclude that a 2 liter per day or less restriction may be considered in patients with fluid retention that remains despite high doses of diuretics (HFSA, 2010). Daily weights become important in these patients to monitor for fluid status, as discussed previously.

A challenge, however, to these restrictions is that many patients are non-adherent. For example, many patients believe that drinking water is a healthy and helpful behavior (Riegel et al., 2009). Thus, the self-management program should include education to overcome this and other barriers to adherence.

Physical Activity and Exercise. Because of the wide variability in heart failure patient characteristics and co-morbidities, there is no universal prescription for an exercise regimen. In addition, the effects of exercise on mortality rates are not clear (Riegel et al., 2009). Nevertheless, there is evidence that physical activity is beneficial to all patients with NYHA stage I-III chronic heart failure (Lainscak, et al., 2011). Routine exercise in these populations helps to improve oxygen delivery, decrease inflammation, and blood flow (Riegel et al., 2009). However, patients in NYHA class IV heart failure, or those with limitations such as angina, are not advised to participate in regular exercise (Lainscak et al., 2011).

Guidelines from the HFSA (2010) advise that patients with heart failure should first have an exercise stress test to determine their suitability for exercise before a program is started. If it is determined that a program is safe to implement, exercise training should be considered. The program should include education about exercise expectations; such as heart rate ranges, level of training, length of exercise, and number of days per week the program should be carried out (HFSA, 2010). Literature shows that hospital-based and home-based exercise training programs appear to have similar beneficial effects (Lainscak et al., 2011).

Lifestyle and Preventive Factors.

Tobacco. Guidelines from the HFSA (2010), the AHA (Riegel, 2009), and the ESC (Lainscak, 2011) are all in agreement that smoking and tobacco cessation is recommended for all heart failure patients. In addition, smoking cessation advice or counseling is one of the Joint

Commission's national quality measures for heart failure (Riegel et al., 2009). In heart failure patients who are tobacco users, the self management plan should include interventions aimed at tobacco cessation.

Alcohol. There are limited prospective studies that demonstrate the effects of alcohol consumption on heart failure patients (Lainscak, 2011). However, there is a growing body of research that suggests that alcohol in low to moderate amounts may prevent heart disease (Riegel et al., 2009). However, studies have also demonstrated the negative effects alcohol has on other organs. Thus, guidelines from the AHA suggest that alcohol consumption be limited to no more than 1 to 2 glasses (6 to 8 ounces) of wine per day (Riegel et al., 2009). However, they do not recommend that alcohol consumption be included as part of self-care therapy. Similarly, the HFSA (2010) recommends limiting alcohol intake to 1-2 drink equivalents per day in men, and 1 drink equivalent per day in women. Those with a history of excessive alcohol intake or alcohol induced cardiomyopathy should abstain from any alcohol use (HFSA, 2010).

Vaccinations. Research has found that the risk for heart failure hospitalization is increased during influenza season, and during winter months when pneumonia is more prevalent (Riegel et al, 2009). Recommendations from the HFSA (2010) state all heart failure patients should receive influenza and pneumococcal vaccinations, unless contraindications exist. The ESC guidelines agree and recommend the same (Lainscak et al, 2011).

Self-Management Program. To conclude the discussion about heart failure guidelines, the following section will briefly discuss specific recommendations for the development and implementation of a self management program.

First, it is important that heart failure patients *and* their family members or caregivers are given individualized education and counseling. According to Riegel et al (2009), some patients

can master self-management skills on their own; but many will need assistance over time. The HFSA (2010) recommends that this education should be delivered via a team approach; with specially trained nurses delivering a majority of the education, supplemented by physicians, pharmacists and other providers as needed. Prior to beginning the educational program, the provider should assess the patient's literacy, cognitive status, culture, access to resources, and current knowledge.

Next, the frequency and intensity of the counseling will vary depending on the severity of the disease. According to the HFSA (2010), patients with advanced disease will require the most counseling; as will patients that have difficulty adhering to recommendations. In addition, patients that required minimal self-care education in the beginning may need more counseling over time if the disease progresses or symptom management declines.

Patients in a self-care program should be followed closely until they or their caregivers demonstrate independence in adhering to the care plan (HFSA, 2010). However, some patients may need to be followed indefinitely, especially if they are at a high risk.

In summary, "True disease management includes population identification processes, comprehensive needs assessment, proactive health promotion, patient-focused health management goals and education, self-care education, routine reporting and feedback, and ongoing evaluation of outcomes" (Riegel et al., 2009, p. 1152).

Discussion

Interpretation

The literature included in this review showed promising, but mixed results on the effectiveness of a self-management intervention for heart failure patients. As a whole, the studies demonstrated that the self-management intervention had a positive effect on things such

as all-cause hospitalizations, heart failure hospitalizations, and quality of life; though the effects were not always significant. More studies should be carried out in attempt to reproduce the findings and quantify the outcomes. On the other hand, the studies included in this review did not show a negative effect on outcomes. Thus, it could be said that a self-management program could be carried out without harmful effects on the patients included.

The studies included which specifically evaluated the role of nursing suggested that nurse-led self-management programs have the potential to be highly effective in improving patient outcomes in heart failure. This evidence gives rise to a unique specialized role for nursing practice in the area of heart failure management.

One issue identified in this review, however, is the lack of a standard definition of self-care. Various sources describe self-care, or self-management, in different ways, with no real consistency. In addition, many of the studies did not thoroughly describe what the self-management intervention entailed, or specifics of the program. This could lead to difficulty in reproducing a successful program in a real-life setting. Further studies which specifically detail the components of the self-management program should be carried out.

Outcome/Dissemination

In order to disseminate the important information from this literature review, a poster of the findings discussed above was created and presented to providers who care for heart failure patients. The presentation included a summary of the literature review findings, as well as practice recommendations based on those findings. A copy of the poster can be found in Appendix A. The poster was presented to the providers with a short, fifteen minute lecture, followed by a question and answer period. A total of seven providers were able to attend the

presentation. None of the providers that attended currently utilize a heart failure self-management program; education is delivered in the office during a standard appointment.

To determine the effectiveness of the presentation, a six question survey using a 5-point Likert scale was used; a copy of which is included in the Appendix B. All seven of the attendees completed the survey. Results of the questionnaire are depicted below in Table 1. The numbers in the table represent the number of respondents that chose the corresponding response.

Table 1 Results of CHF self-management presentation evaluation questionnaire.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The poster display was well-organized, visually interesting and appealing.	6	1	-	-	-
2. The presenter communicated ideas clearly and effectively.	5	2	-	-	-
3. The presenter was knowledgeable about the subject matter presented.	6	1	-	-	-
4. The presentation increased my knowledge about heart failure self management programs.	5	2	-	-	-
5. The presentation communicated information that helped me understand how self-management differs from traditional in-office education.	5	2	-	-	-
6. The presentation conveyed ideas that I would consider applying to my own practice.	2	4	1	-	-

Overall, the presentation was effective in increasing the attendees' knowledge about self-management programs. However, only two of the seven attendees "strongly agreed" they would consider applying self-management ideas into their own practice. Four out of the seven attendees stated they "agreed" with the same statement; and two of those four commented that lack of time may be a barrier to implementation of a self-management program. The participant that was "neutral" to that statement also commented that he felt time constraints would be a barrier. This

illustrates the need to address providers' concern over the time commitment, and to explore other barriers to implementation.

Implications for Nursing

Practice. One conclusion gleaned from this review is that nurses, including advanced practice nurses, have the ability to play an important role in creating and delivering self-management programs. This research could lead to the development of a unique nursing role; the role of a specialized "heart failure educator" perhaps. In the future, there could be a significant cost savings to both hospitals and outpatient care centers by using registered nurses and APRNs to lead these programs. The increasing number of heart failure patients combined with the shortage of providers in the United States compels us to find a feasible solution. This is an area where nursing practice could expand to fill the gap. It has shown great success in diabetes education; and there could be equal success in heart failure education if more self-management programs can be developed and their outcomes studied.

This review may also impact nursing practice by changing the way that APRNs manage their patient's disease process. Providers that currently rely on standard in-office education sessions may find that implementing self-management programs results in better patient outcomes. Providers may shift their thinking and use this self-management method to empower their patients to become more active participants in their care.

Education. This review, combined with future related research, could potentially change the way we currently deliver heart failure education. If there is enough research done showing a significantly positive effect of self-management education on heart failure outcomes, it may become a standard of care to deliver these types of programs. In nursing there is an emphasis on evidence-based care. If more evidence can be collected showing the positive outcomes of self-

care, it is more likely to be adopted into nursing practice. Thus, future research on this topic becomes imperative.

This review also has implications for heart failure patients. It is possible that self-management programs become more common as time passes. Thus, it is possible that more patients will be enrolled in these types of programs. It will become important for the provider delivering the program to assess the individual learning needs of each participant, to tailor the program to fit their specific learning style and literacy level.

Policy. A possible barrier to the implementation of more wide-spread self-management programs is the lack of independence nurse practitioners have in some states. Thus it is important that we, as professionals, lobby to our appropriate representatives to gain more independence. There is potential that nurse practitioners could open and run a heart failure clinic to teach self-management skills. However, he or she may be very limited due to the existing laws in his or her respective state. There are still many states across the country in which nurse practitioners cannot practice independently of a physician.

Another implication for health policy is in the area of insurance reimbursement. In order for self-management programs to expand, there needs to be adequate insurance reimbursement to cover the cost of conducting this focused type of education. Moreover, insurance companies will need to see the long-term benefits of these programs on overall costs if they are to provide reimbursement for them. Therefore, more research may need to be conducted to determine the effect of self-management programs on the overall cost of care. If heart failure costs can be reduced as a result of investment in self-management programs, more facilities will be likely to utilize them.

Research. This review brings to light several areas for future research on the topic. Because of the mixed results of the studies included in this review, further randomized controlled trials need to be conducted to more solidly determine the effect of self-management programs on heart failure outcomes. Furthermore, future studies need to specifically delineate what the self-management program entailed, so the program could be repeated in the real world setting. In addition, future studies might consider lengthier follow-up periods (for example, at year one, year two, year three, and beyond) to better determine the long-term effects of the program on outcomes.

There are also opportunities for future research within specific patient populations. For example, studies could be conducted that specifically look at self-management programs for patients of lower literacy levels, patients with comorbid disease states, and patients of specific socioeconomic groups. This would aid in determining the degree to which study results could be generalized to the greater population.

Conclusion

In conclusion, heart failure self-management programs show a great potential to improve heart failure outcomes such as hospitalizations, quality of life, and mortality. However, more research needs to be done on the topic due to some study results being mixed, or showing results that were not statistically significant. Furthermore, self-management programs led by a specially trained nurse or an advanced practice nurse have shown great success in improving patient outcomes. Self-management programs may present a unique opportunity for nurses to develop a specialized role in the spectrum of heart failure care.

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Self Management in Congestive Heart Failure Education

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Significance

Heart failure (HF) is a growing and costly problem in the United States; with approximately 5.7 million Americans currently living with the disease. In order to reduce morbidity, mortality, and the growing financial burden of HF, proper management of the disease is essential. Patient education is an important part of the management plan.

Purpose

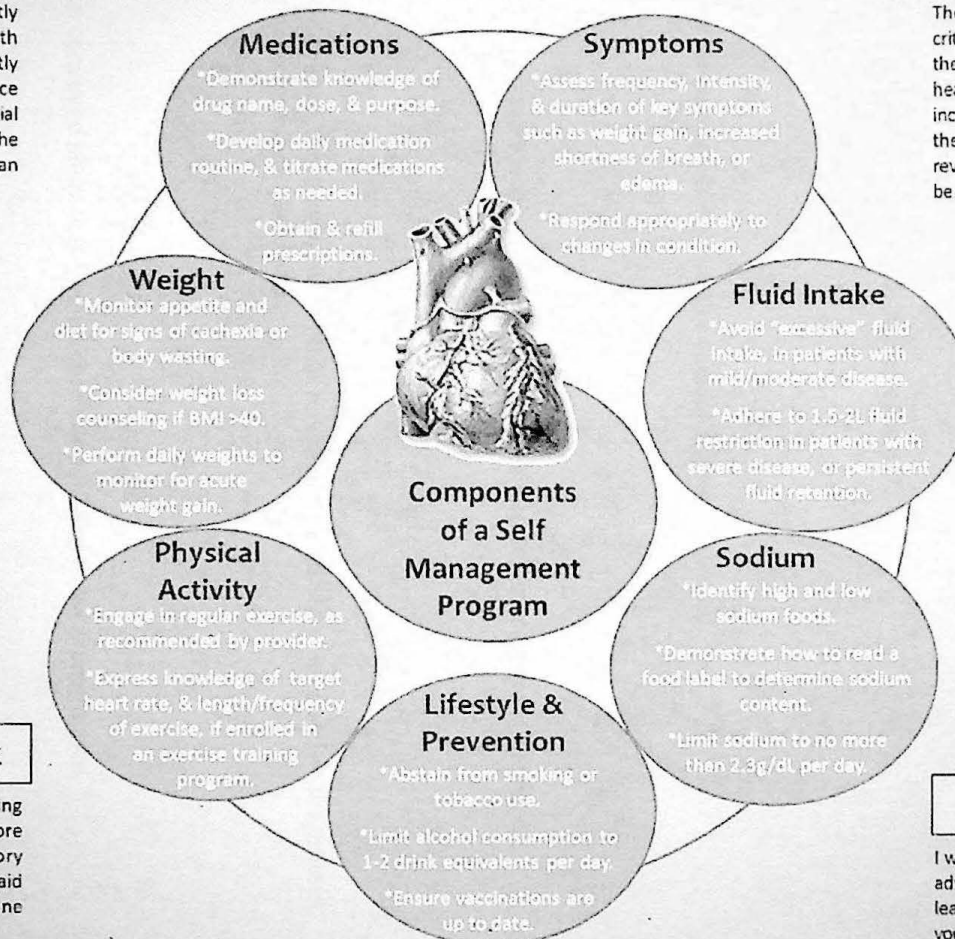
Self care, or self management, is a unique process in which an individual, and/or their caregiver, performs activities to maintain or restore health, prevent illness, and manage chronic disease. The key component of self-care is that the provider, through individualized education, empowers the patient to become an active participant in their care.

The purpose of this project was to explore the effect of self management programs, in comparison to standard in-office education, on the morbidity and mortality of heart failure patients.

Theoretical Framework

Dorthea Orem's Self-Care Deficit Nursing Theory was used as a framework to explore this topic. The premise of selecting this theory is that a self-management program could aid a patient in overcoming self-care deficit, if one exists.

Practice Guidelines and Recommendations



Review of Literature

The review of literature included analysis and critique of numerous articles which evaluated the relationship between self care education and heart failure management. In addition, it included a discussion of the role of nursing in the self care process. Finally, literature was reviewed to evaluate what components should be included in a self management program.

Discussion

The literature included in this review showed promising, but mixed results on the effectiveness of a self-management intervention for heart failure patients.

As a whole, the studies demonstrated that the self-management intervention had a positive effect on things such as all-cause hospitalizations, heart failure specific hospitalizations, and quality of life; though the effects were not always significant.

The studies included which specifically evaluated the role of nursing suggested that nurse-led self management programs have the potential to be highly effective in improving patient outcomes in heart failure.

Acknowledgments

I would like to extend a sincere thank you to my advisor, Chris Harsell, MS, RN, ANP-BC, for leading me through this project. I appreciated your guidance and support.

Appendix B**Heart Failure Self Management:
Effectiveness and Components of a Self Care Intervention**
Michelle Brown, BSN, RN, FNP-S

Please rate the presentation by circling the number that best corresponds to your answer:
1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree

1. The poster display was well-organized, visually interesting and appealing.

1 2 3 4 5

Comments:

2. The presenter communicated ideas clearly and effectively.

1 2 3 4 5

Comments:

3. The presenter was knowledgeable about the subject matter presented.

1 2 3 4 5

Comments:

4. The presentation increased my knowledge about heart failure self management programs.

1 2 3 4 5

Comments:

5. The presentation communicated information that helped me understand how self-management differs from traditional in-office education.

1 2 3 4 5

Comments:

6. The presentation conveyed ideas that I would consider applying to my own practice.

1 2 3 4 5

Comments:

Using the space below, please provide any additional comments or feedback.

Room: CRSC 103
Location: Thesis/Independent Study
Cabinet

Heart Failure Self Management



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