The Effects of Nursing Interventions To Enhance Mental Health and Quality of Life Among Individuals With Heart Failure

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Heart failure (HF) is a progressive, debilitating syndrome with significant physical and psychological comorbidities. As psychosocial variables have been found to contribute to HF morbidity and mortality, methods to improve mental health and quality of life have been explored. This study examined the effects of mutual goal setting and supportive-educative nursing interventions on mental health and quality of life. An experimental, repeated-measures design with a convenience sample of 88 participants was used. The mutual goal setting nursing intervention was found to significantly support improved mental health and quality of life in this population over a 6-month period.

Heart Failure (HF) is a progressive, debilitating syndrome that has become a major public health problem for this nation. HF has reached epidemic proportions in the United States affecting 5 million people, with approximately 550,000 new cases diagnosed each year. As a result, expenditures for HF exceed $24 billion (American Heart Association [AHA], 2002). The number of deaths attributed to HF has increased by 148% during the past 2 decades (AHA, 2002).

As a clinical syndrome, HF is characterized by the inability of the myocardium to pump sufficient amounts of blood to meet the metabolic needs of the body. Consequently, individuals diagnosed with HF are vulnerable to poor health outcomes and significant physical deterioration. Because of its life-threatening nature, individuals frequently experience feelings of anxiety, fear, and depression related to the possibility of further cardiac impairment or impending death. In view of this, psychological distress has recently gained recognition as a comorbid condition of HF (Koenig, 1998), requiring pharmacological treatment to improve mental health. The constant presence of physical limitations, progressive symptoms, and psychological concerns often result in decreased quality of life (QOL).

Given the escalating epidemiology and economics of HF, as well as its adverse physical and psychological effects, current emphasis is on reducing the morbidity and mortality associated with progressive HF, as well as symptom management and palliative measures. Equally important is the identification of nursing strategies that will improve perceptions of well-being and QOL among this population. Therefore, the purpose of this study is to examine the effectiveness of two nursing interventions in enhancing mental health and QOL among individuals with HF receiving home care.

RELATED LITERATURE

The concept of QOL remains an elusive, ambiguous, and controversial term. Adding to conceptual ambiguity is its coalescence with other concepts such as health-related QOL, health status, and functional status. Although there is consensus on the multidimensionality of QOL, the scientific community has embraced no one definition. Nevertheless, QOL can be an integral variable in understanding the effects of living with chronic illness and to assess the effectiveness of interventions. For this study, QOL is defined as the subjective, personal evaluation of and satisfaction
with areas of life that are important to him/her (Ferrans, 1990).

Individuals living with HF have consistently attributed its subsequent progressive physical deterioration and psychological impairment to their perceptions of poor QOL.

Significant mood alterations may occur over time, intensifying with increased uncertainty about disease progression and complex treatment regimens (Hawthorne & Hixon, 1994). Similarly, Scott (2000) found that worry, depression, and loss of control may contribute to feelings of powerlessness among individuals receiving treatment for advanced HF. Although cardiac transplantation recipients may experience improvements in functional capability and psychological adaptation, decrements in QOL secondary to physical limitations, family distress, and social dysfunction have been reported (Grady, Jalowiec, & White-Williams, 1998). These findings reflect the devastating psychological effects of HF and underscore the need for the development of nursing interventions for this population to improve their mental health and ultimately their QOL.

However, various interventional studies have reported mixed results concerning their effects on QOL among individuals with HF. Jaarsma et al. (2000) noted that the use of a supportive-educative nursing intervention improved self-care behaviors and decreased symptom frequency and distress, yet only limited improvements in QOL were identified. Most of the participants in this study received the supportive-educative nursing intervention during four hospital visits and one visit within the first week after discharge. Jaarsma et al. concluded that a stronger intervention “dose” might be successful in improving QOL.

Other investigators have used educational interventions to improve knowledge of and adherence to treatment recommendations, ameliorate HF symptoms, decrease uncertainty about disease progression, and to increase control and participation in decision making to enhance QOL (Bennett, Cordes, Westmoreland, Castro, & Donnelly, 2000; Carlson, Reigel, & Moser, 2001; Hawthorne & Hixon, 1994; Ni et al., 1999). Although individuals were able to learn self-care management skills, adherence to treatment recommendations was poor (Ni et al. 1999), physical symptoms remained problematic (Bennett et al., 2000; Carlson et al., 2001), and negative emotions, uncertainty, and depression were noted (Bennett et al., 2000; Hawthorne & Hixon, 1994), especially among those who had been living with HF for an extended time. It may be that individuals who are in later stages of the disease process require different nursing approaches to self-care management to improve mental health and QOL.

With this in mind, two nursing interventions that hold promise for mitigating adverse effects on mental health and QOL among individuals with HF are mutual goal setting and supportive-educative strategies. Mutual goal setting is a process in which the nurse and client collaborate to define, prioritize, and achieve client-determined goals. Active participation in the decision-making process allows clients to retain control of their own situation, thereby facilitating goal achievement (King, 1981; Maves, 1992). The supportive-educative nursing system is appropriate for patients who need to learn to perform self-care but cannot do so without assistance. It includes the “valid helping techniques of support, guidance, provision of a developmental environment, and teaching” (Orem, 2001, p. 354). These interventions tailored to meet the educational needs of HF patients and promote their participation in decision making may minimize psychological disturbances and declines in QOL. It is hypothesized that by (1) educating HF patients about their disease and supporting them in self-care management behaviors and (2) enhancing their sense of control through mutual goal setting, they will experience significant improvements in their mental health and QOL. A schematic representation of these study variables is presented in Figure 1.

**METHOD**

**Design**

An experimental, repeated-measures design was used to evaluate the effectiveness of nursing inter-
ventions in enhancing perceived mental health and QOL among individuals with HF receiving home care. Participants were recruited from two non-profit home health care agencies in the Midwest. To be eligible for enrollment, the participants had to (1) have a primary diagnosis of HF, (2) be 18 years or older, and (3) understand and speak English.

Before the initiation of the study, a power analysis was conducted to determine the sample size needed for each group. For studies using three repeated measures (entry into the study, 3 and 6 months), with an alpha = .05, a power of .80, and a moderate effect size, 30 participants were needed for each intervention group. However, because attrition was likely, effort was made to recruit as many participants as possible.

Procedure

In collaboration with the home health agency, potential participants were identified with arrangements made for a home visit during the first week of the client’s admission to agency’s care. A scripted approach was used to explain the study and to obtain informed consent. Once informed consent was obtained, initial baseline data were collected and participants were randomly assigned to one of three nursing intervention groups (mutual goal setting, supportive-educative, or placebo) by the principal investigator using a table of random numbers.

All participants received routine HF management according to the home care agency’s protocol. In addition to this routine care, three specific nursing interventions (mutual goal setting, supportive-educative, placebo) were developed for use in this study. The mutual goal setting and supportive-educative interventions were based on the Agency for Health Care Policy and Research (AHCPR) heart failure clinical practice guidelines (Konstam et al., 1994). With the mutual goal-setting intervention, nurses interacted with clients to examine their values about HF and to determine goals for achievement using the consumer version of the AHCPR heart failure clinical practice guidelines (AHCPR, 1994). Once goals were identified and prioritized, methods were mutually explored and strategies developed for goal attainment. Although the mutual goal-setting intervention was designed to allow clients to develop their own outcomes, the supportive-educative intervention had predetermined outcomes.

The supportive-educative nursing intervention taught the client about self-care management while providing additional support. The supportive-educative nursing intervention developed for this study was congruent with the home care agencies’ existing plan of care with components added from the AHCPR heart failure guidelines (Konstam et al., 1994). These specific components addressed issues related to general counseling, prognosis, activity and dietary recommendations, medications, and importance of adherence to the treatment/care plan (Konstam et al., 1994).

Once goals were identified and prioritized, methods were mutually explored and strategies developed for goal attainment

The placebo intervention consisted of health promotion topics that excluded information contained in the AHCPR heart failure guidelines (Konstam et al., 1994). Topics included such items as adult immunizations, fall prevention, general nutrition, and general health maintenance. A comparison of the interventions used in this study is presented in Table 1.

Special sessions were held to instruct graduate student nurse research assistants to administer the nursing interventions. Each intervention group (mutual goal setting, supportive-educative, or placebo) had its own nurse interventionist to prevent cross contamination. Using prepared scripts and materials, the nurse interventionists met with individual participants each week for a total of eight consecutive weeks in the participants’ own homes.
Intervention sessions were approximately 60 minutes in duration.

The outcome variables of perceived mental health and QOL were assessed before randomization and again at 3 and 6 months. Given the high rate of mortality among individuals with advanced HF, these data collection time periods were selected to minimize participant attrition. In addition, these time intervals facilitated the examination of variables that are temporal in nature, such as mental health and QOL. Data were collected by using standardized questionnaires by a second group of graduate student nurse research assistants blind to the group assignment. All data were collected in person in the privacy of the participants’ homes. Approval for this research procedure was obtained from all appropriate human subjects committees.

**Instruments**

The Mental Health Inventory-5 (MHI-5), a subscale of the Medical Outcomes Study Health Status Questionnaire Short Form 36 (Ware, Snow, Kosinski, & Gandek, 1993), was used to assess the mental health status of the participants. Responses to the five statements represent how the participants felt during the last 4 weeks before data collection and assesses major mental health dimensions such as anxiety, depression, and loss of behavioral or emotional control. The standardized scores for the MHI-5 can range from 0 to 100, with higher scores indicative of a better mental state. According to Ware et al., the general population norm is 74.74. Although reliability coefficients of .65 to .81 on the MHI-5 have been reported (Ware et al., 1993), an alpha coefficient of .86 was obtained in this study.

The cardiac version of the Quality of Life Index (QLI) was selected to assess QOL in this study. It is a condition-specific instrument that measures perceived satisfaction and importance with various domains of life (Ferrans & Powers, 1992). As such,
the QLI is operationally congruent with the conceptual definition of QOL used in this study.

The QLI consists of 36 satisfaction items, weighted by corresponding importance items. The score, ranging from 0 to 30, represents an overall assessment of perceived QOL that includes four domains: health/functioning, family, socioeco-nomic, and psychological/spiritual. Internal consistency of the total QLI has ranged from .90 to .93, with reliability coefficients of .77 to .90 for the QLI subscales (Ferrans & Powers, 1992; Scott, 2000). Similar results were noted in this study, with a reliability coefficient of .89 for the entire QLI and subscale alphas ranging from .62 (family) to .82 (psychological/spiritual).

### Statistical Analyses

Data were analyzed by using the Statistical Package for the Social Sciences (SPSS, Chicago, IL), with a level of significance established at .05 for all statistical procedures. Because of the size of the sample, statistical analyses were limited to paired $t$ tests and one-way analysis of variance procedures, with post hoc Scheffé tests.

### RESULTS

#### Participants

Of the 96 potential participants approached, 88 individuals enrolled into the study. Thirty-nine (44%) of the participants were men and 49 (56%) were women. The participants ranged in age from 33 to 94 years, with a mean age of 75 ($SD = \pm 12.3$; median = 77.5). Twelve of the participants (13.6%) were between the ages of 33 and 60 year. Forty-two percent of the participants were currently married, whereas the remaining individuals were either widowed (48%), divorced (8%), or never married (2%). Although the majority of the participants identified 8th to 12th grade as their highest level of education (75%), 17 reported having an associate, baccalaureate, or master’s degree (20%). Approximately 94% of the sample indicated annual household incomes of less than $30,000. At the time of the study, participants had been living with HF between 0 to 2 years ($n = 44$) and 3 years or greater ($n = 44$). Selected demographic characteristics by intervention group are presented in Table 2.

### Mental Health: Between-Group Comparisons

The standardized mental health scores obtained at entry into the study, as well as at 3 and 6 months for the mutual goal setting (MGS), supportive-educative (SE), and placebo intervention groups are presented in Figure 2. In general, the majority of mental health scores across all three intervention groups were lower than the general population.
norm of 74.74, indicative of psychological distress. Only the 6-month scores in the MGS group (M = 85.41, SD = 15.81) exceeded this normative value.

Further analysis revealed no significant differences between groups on the MHI-5 scores at baseline and 3 months. Yet, the 6-month assessment showed that the MGS intervention group had significantly higher mental health scores (M = 85.41, SD = 15.80) than both the SE (M = 66.22, SD = 28.02) and placebo (M = 62.61, SD = 19.03) intervention groups (F[2, 58] = 6.27, p = .003).

Mental Health: Within-Group Comparisons

The within-group comparative analysis indicates that the mental health of the participants receiving the placebo intervention did not significantly change over time. In contrast, the SE participants did reflect an improvement in their mental health from baseline (M = 63.28 ± 23.65) to 3 months (M = 70.53 ± 23.25); however, this trend did not continue at 6 months (M = 66.22 ± 28.02). Similarly, participants in the MGS intervention had improved mental health scores at 3 months (M = 72.80 ± 20.83). More importantly, individuals continued to experience a significant improvement in their mental health from the time they entered the study (t[19] = −3.120, p = .007), with mean MHI-5 scores of 85.41 (SD = 15.81) at 6 months.

QOL Scores: Between-Group Comparisons

Baseline QOL scores were similar for all three groups, with mean scores ranging between 20.71 and 20.97 (Fig 3). No significant differences in overall QOL or the QOL domains were noted until the 6-month data collection period. During this assessment, the MGS intervention group had significantly higher QOL scores (M = 25.02 ± 3.63) than the SE (M = 22.95 ± 4.75) or the placebo (M = 20.79 ± 4.78) intervention participants (F[2, 58] = 4.632, p = .01). Likewise, the MGS participants had higher perceptions of their health/functioning (F[2, 58] = 3.701, p = .03), psychosocial/spiritual (F[2, 58] = 3.054, p = .05) and socioeconomic (F[2, 58] = 4.277, p = .02) QOL domains than their counterparts in the other intervention groups at 6 months. The QOL domain scores are depicted in Figure 4.

QOL Scores: Within-Group Comparisons

Overall QOL and QOL domain scores were analyzed for changes over time within each intervention group. Although the placebo group remained unchanged, both the SE (t[17] = −3.104, p = .006) and MGS (t[16] = −5.043, p < .000) participants perceived significant improvements in their overall QOL when compared with their baseline scores at 6 months.

Additionally, the SE and MGS intervention groups experienced significant increases in two of the QOL domains. According to the results, the SE intervention participants had significant improvement in their health/functioning domain from baseline (M = 18.14 ± 5.64) to 3 months (M = 20.33 ± 6.34). Furthermore, this improvement was maintained at 6 months (t[17] = −3.558, p = .002), with a mean of 20.94 (SD = 6.68). In the psychosocial/spiritual domain, the SE participants’ scores only reflected significant improvement at 6 months (t[17] = −2.213, p = .04). The MGS intervention participants experienced significant changes over the 6-month time period in the areas of health/functioning (M = 18.54 ± 5.72 v M = 24.19 ± 6.00) and psychosocial/spiritual (M = 24.53 ± 4.53 v M = 27.57 ± 3.00).
Although no remarkable changes were noted in the areas of family or socioeconomics for either of the SE or MGS groups, there were fluctuations in the family QOL domain (Fig 3). The QOL scores among participants receiving the SE intervention continued to increase over time, whereas the scores of the participants in the MGS and placebo group vacillated. These results may be a reflection of the gender and marital status of the participants in each of the intervention groups.

Participants receiving the placebo intervention did not show any improvements in any of the QOL domains. Although the majority of their scores remained constant, declines were noted in the area of socioeconomics at both 3 months ($t[24] = 2.229, p = .03$) and 6 months ($t[25] = 2.563, p = .02$).

**DISCUSSION**

Living with HF has been described as a turbulent experience, with adverse effects on physical, emotional, and social well-being (Zambroski, 2003). As such, interventions that reduce the challenges of living with HF and minimize its devastating consequences are imperative. The findings of this study indicate that two such nursing interventions have potential for improving mental health and QOL for individuals with HF. Partial
support was shown for the use of supportive-educative and mutual goal setting nursing interventions in this population to obtain the hypothesized outcomes. In particular, the use of MGS as a nursing intervention was found to significantly enhance and sustain perceptions of mental health and QOL in HF participants.

Consistent with other findings (Bennett et al., 2000; Scott, 2000), the results suggest that the participants in this study were experiencing psychological distress upon enrollment. Although positive effects were noted in both the MGS and SE nursing intervention groups, only the MGS participants’ scores reflected a sustained improvement. Given that these individuals were allowed to become active participants in the development and actualization of goals and outcomes through MGS, they may have experienced a greater sense of control. Inasmuch as perceived loss of control, uncertainty, and feelings of powerlessness have been associated with anxiety, mood disturbances, and depression (Hawthorne & Hixon, 1994; Scott, 2000), strategies that enhance perceptions of control and allow individuals to “chart the course” (Zambroski, 2003) may ameliorate psychological distress and improve mental health.

Both SE and MGS nursing interventions were found to significantly increase perceived QOL overall, as well as perceptions of QOL related to health/functioning and psychological/spiritual domains. Informational, emotional, and tangible support given by nurses may provide the resources needed to engage in self-care management behaviors and augment QOL. Because individuals are better prepared to engage in self-care management, the physical effects of living with HF may be reduced, resulting in increased perceptions of QOL in the health/functioning domain. Furthermore, participation in MGS allows clients to make informed choices about treatment options and plans for their actualization. Knowing what to expect, examining personal values, and making knowledgeable decisions in a collaborative process may maximize autonomy while decreasing the ambiguity associated with self-care management and treatment outcomes (Maves, 1992).

Also interesting to note is the positive effect of the SE nursing intervention on the family QOL domain. This may be attributed to the number of male participants in this group who were married at the time of the study. Although the sample size prohibited an examination for interaction effects, other investigators have associated female gender (Riedinger, Dracup, & Brecht, 2002) and an absence of social support (Anderson, 1995) with poor QOL. Furthermore, family involvement in patient counseling and education improves understanding of and adherence to treatment regimens, especially among married care recipients (Ni et al., 1999).

The findings of this study suggest that MGS and SE nursing interventions may be beneficial in the care of individuals with HF who are receiving home care. Yet, the number of participants in this study limits the robustness of the statistical analysis; the convenience sample limits generalizability. However, a major strength of this study is the use of an experimental design to explore the effects of MGS and SE on mental health and QOL. Because psychosocial variables have been linked to morbidity and mortality, the examination of nonpharmacological nursing interventions that guide clinical practice and improve client outcomes are mandated. It is obvious that routine nursing care alone no longer meets the needs of this population. The adequacy of this care is further challenged given that the placebo nursing intervention group’s scores remained essentially unchanged despite the incorporation of health promotion topics and the added attention of the nurse interventionists.

It is acknowledged that measurement of an elusive psychosocial concept of QOL is difficult. Despite its successful use in measuring QOL in other illness populations, the utility of the QLI may be decreased for the individuals living with advanced HF. It may be more important to use instruments that emphasize meaning, purpose, and spirituality than health and functioning, especially among populations who are at later stages of their disease process. Additionally, the plethora of QOL definitions and instruments available for measurement limits the ability to compare disease impact within and across populations.

It is also recognized that psychosocial variables are temporal in nature. As such, it will be important to determine whether improvements in mental health and QOL can be maintained for extended periods of time. Although this study provided the SE intervention for a longer duration compared to
the SE intervention “intensity” provided by Jaarsma et al. (2000), it is essential to determine the adequate amount or “dose” of any nursing intervention approach required to sustain mental health and QOL across the illness trajectory.

Investigators need to explore whether the use of these nursing interventions upon diagnosis may prevent psychological deterioration, as well as reduce HF symptom exacerbation and frequent hospitalizations common with this disease process. Another area worthy of exploration is the combined administration effect of SE and MGS as one intervention. Given the importance of family involvement in the plan of care, nurses need to explore the effects of MGS and SE on spouses and family members of individuals with HF.

In conclusion, it is hoped that this study will serve as a catalyst for further exploration of MGS and SE nursing interventions. Its findings have implications for the foci of nursing and health care delivery. Further inquiry, knowledge development, and research utilization can be used to maximize client and family outcomes for this vulnerable population.

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REFERENCES


