

HEALTH PROMOTION BEHAVIORS OF RURAL WOMEN WITH HEART FAILURE

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ABSTRACT

The purpose of this study was to predict the influence of socioecological factors, including social support, barriers to HPB, perceived health status, and demographic variables on the health promotion behaviors (HPB) of rural women with heart failure (HF). A descriptive correlational design was used with a convenience sample of 45 older rural women with HF. Instruments to assess social support, barriers to health promotion, perceived health, and demographic data were utilized. Multiple regression was used to identify sociological influences on HPB, indicating that a significant variance in HPB was predicted by two variables: (1) New York Heart Association classification level (negative association), and (2) a history of diabetes mellitus (DM). Measures of social support, barriers to HPB, and perceived health status were not found to be predictive of HPB.

INTRODUCTION

Approximately 5 million persons are living with Heart Failure (HF) in the US today, with approximately 550,000 new cases of HF per year (American Heart Association, 2004). HF is the chief cause of 300,000 deaths in the United States per year and contributes to another 225,000 deaths yearly (Hunt, Baker, Chin, Cinquegrani, Feldman, & Francis, 2001). HF is the first listed diagnosis in about 900,000 hospitalizations yearly in the United States and is the most common diagnosis for persons 65 years of age and older (Hunt et al. 2001). While the incidence of death related to cardiovascular disease has been declining since the 1960's, the incidence of deaths related to HF have steadily increased (National Heart, Lung, & Blood Institute, 2004). An estimated \$25.8 billion is spent for direct and indirect costs associated with HF in the US per year (AHA, 2004). In 1999, Medicare paid \$3.6 billion or \$5,456 per discharge for the care of persons with HF.

HEALTH PROMOTION BEHAVIORS IN RURAL WOMEN WITH HEART FAILURE

Heart Failure (HF) is a chronic disease with potentially debilitating symptoms that can impact activities of daily living and thus the ability to engage in health promotion behaviors (HPB). The ability to perform HPB may be also compromised by the loss of social support that may occur with aging. Women living in rural areas may experience multiple barriers when trying to obtain comprehensive health care for the management of acute and chronic HF. The experience of HF may be different for women than men in several ways. The Framingham Heart Study showed that women were more likely than

men to have hypertension (Lloyd-Jones, Martin, Leip, Beiser, D'Agostino, Kannel et al. 2002). Women have also been shown to experience more symptoms of HF than men do (Mendes, Davidoff, Cupples, Ryan, & Jacobs, 1997), and also reported a higher level of impact of symptoms on daily life from fatigue and dyspnea (Bennett, Baker, & Hunter, 1998). Those with more symptoms also described a poorer quality of life. Feelings of depression and poor quality of life have been attributed to inadequate social supports available to women (Friedman, 1997).

HPB are actions taken to promote health and prevent further decompensation of the existing disease state (Stuifbergen & Rogers, 1997). These behavioral, cognitive, and emotional actions may include exercise or physical activity, nutritional strategies, life-style adjustment, maintaining a positive attitude, health responsibility behaviors, and seeking and receiving interpersonal support. Health promotion emphasizes self-care with an active and involved attitude rather than submitting to professional care with a disengaged attitude (Stuifbergen & Rogers, 1997).

Sociological models postulate that HPB are influenced by intrapersonal, social, cultural, and environmental factors and thus provide a vehicle for supporting HPB in rural women with HF. One such model developed by Moos (1979) posits that factors such as the environmental system, the personal system, cognitive appraisal, the degree of activation, and efforts at adaptation mediate the relationship between the environment and health. This model also identifies multiple feedback mechanisms that mutually influence each other factor.

The environmental system, as construed by Moos (1979), includes such aspects as the physical setting, organizational factors, the human aggregate, and the social climate, all of which are critical concerns of health care delivery in rural areas. Access to appropriate health care can be problematic among rural women, who experience higher rates of chronic diseases and also higher acuity of illness than their urban counterparts (Bushy, 1998). Rural women also tend to have fewer visits with physicians and higher rates of hospitalization when they do seek medical care. Rural women with HF may also require specialized cardiac care not routinely found in rural communities. Rural women may have different expectations about access to health care, as well as differing conceptions of health and personal responsibility toward health behaviors, when compared to urban or suburban women. Because rural residents have been found to define health as the ability to work and carry out usual tasks (Long & Weinert, 1989; Pierce, 2001), they are found to be less concerned with comfort, cosmetic, and life-prolonging aspects of care than their urban counterparts. Confounding the complexities of rural health care are issues related to self-reliance, resisting help from "outsiders", and seeking advice and treatment from neighbors and friends prior to accessing conventional medical care (Long & Weinert, 1989).

Moos (1979) described the personal system to be concerned with age, socioeconomic status, gender, intelligence, cognitive and emotional development, ego strength, self-esteem and previous coping experiences. An especially important factor in the personal system is that of interpersonal relationships. Intrinsic in those relationships is social support. Social support has been described as an exchange of resources between two individuals that is perceived by the sender and/or the recipient as enhancing the well-being of the recipient (Callaghan & Morrissey, 1993). Social support provides the individual with feelings of being loved, cared for, and valued and of belonging to a

mutually obliging communication network. Johnson (1996) found that older adults living in rural areas experienced decreased social support. Of concern are the findings that an absence of emotional support was a strong predictor of fatal and nonfatal cardiovascular events in elderly women in the first year after hospital discharge for treatment of HF (Krumholz et al. 1998).

The personal system is constantly receiving feedback from the other systems about health and HPB (Moos 1979). Perceived health status, or the subjective sense of well-being and physical health (Barsky, Cleary, & Klerman, 1992), has been shown to be related to the performance of physical activity, involvement in interpersonal relationships, good nutrition, and spiritual growth behaviors in older community-dwelling women (Lucas, Orshan, & Cook, 2000). Similarly, Speake, Cowert, and Pellet (1989) found that positive perceptions of present health were associated with higher scores of nutrition, interpersonal relationships, and self-actualization. Single questions about the severity of perceived health have been found to correlate with the evaluation of illness by physicians (Johnson, 1996).

An important concern when evaluating the environmental system, as conceived by Moos (1979), is the portion of that system that represents barriers to the performance of HPB. Rosenstock (1966) defined barriers as the perceived negative costs of health behaviors taken in response to a health problem. Barriers may be related to avoidance if the health behaviors are perceived to be inconvenient, expensive, unpleasant, painful, or upsetting. Personal barriers to health promotion may include fatigue, boredom, lack of skills needed to gain access to health care, lack of knowledge about what health care is needed, negative past experiences with the health system, or lack of confidence in ability to change (Rosenstock, 1974). Environmental barriers to health promotion may include lack of services, physical obstacles, cultural beliefs, lack of ability to pay for services, negative attitudes of care providers, health care program or governmental agency rules and regulations, and social policy issues. The composite of the personal system and the environmental system, together with the degree of cognitive appraisal, the degree of activation, and efforts at adaptation in turn impact health status and HRB (Moos 1979). Coping efforts, health status, and HRB's in turn provide feedback to the personal and environmental systems. Thus, the socioecological perspective provides a global lens to view the multiple factors influencing HRBs in rural women with HF.

PURPOSE OF THE STUDY

The purpose of this study was to predict the influence of socioecological factors, including social support, perceived health status, barriers to HPB, and selected demographic variables on the HPB of rural women with HF. The research hypothesis was as follows: significant variance in HPB of rural women with HF will be explained by social support, barriers to health care behaviors, the individual's perception of health status, and selected demographic variables.

OPERATIONAL DEFINITIONS

HPB are actions that are appropriate to promote health and prevent further decompensation of the existing disease state. These behavioral, cognitive, and emotional

actions may include exercise or physical activity, nutritional strategies, lifestyle adjustment, maintaining a positive attitude, health responsibility behaviors, and seeking and receiving interpersonal support (Stuifbergen & Rogers, 1997). These behaviors were operationalized by the Health Promoting Lifestyle Profile II (Walker, Sechrist, & Pender, 1995). Perceived health status, or the subjective assessment of overall health (Barsky, Cleary, & Klerman, 1992), was operationalized using self rated Likert-style question as adapted from Johnson (1996). Rural is defined as the territories, population and housing units not classified as urban (U.S. Bureau of the Census, 2005). In this research, rural was defined using counties designated as 6 through 9 in the Beale code of the Rural Urban Continuum for the state of New York (U.S. Department of Agriculture, 2001). This code rates counties according to both population and the level of metropolitan influence. Levels 6 through 9 include those of “Less Urbanized” (6 and 7) and “Thinly Populated” (8 and 9). Socioecological barriers to HPB, or the intrapersonal, interpersonal, and/or environmental factors that inhibit or negatively affect HPB and/or quality of life (Stuifbergen, Seraphine, A., & Roberts, G., 2000), were operationalized using the Barriers to Health Promoting Behaviors for Disabled Persons Scale (Becker, Stuifbergen, & Sands, 1991). Social support is the supportive social network of people in which one maintains social contact and a social bond involving a feeling of belonging and of being accepted, loved, esteemed, valued, and needed for oneself (Pender, 1996). In this research, social support was operationalized using the Personal Resource Questionnaire 85 (Brandt & Weinert, 1987).

DESIGN

This research utilized a correlational design with a convenience sample of 45 rural women with a medical diagnosis HF. Potential subjects for this research were women diagnosed by a primary care provider with HF related to any cardiovascular condition. Because most women are diagnosed with HF at age 71 + 10.6 years (Ho, Anderson, et al. 1993), women who are age 65 or older were included. The women were recruited from primary health care practices from rural areas according to the Beale code levels 6 through 9 of the Rural Urban Continuum Code for New York (U.S. Department of Agriculture, 2001). Other inclusion criteria included being able to read and write English and being willing to participate in the study. Multiple regression analysis was used to predict the variance in HPBs of rural women with HF influenced by the effects of social support, perceived health status, barriers to health care, and selected demographic variables. Descriptive statistics of several demographic factors and factors related to the health of women with HF living in rural areas were collected for comparison purposes.

SAMPLE

Approval for this study was obtained from the appropriate Institutional Review Boards. Forty-five women who lived in rural counties in upstate New York were the subjects of this study. The ages of the group ranged from 65 to 98 (M=77.7, SD=8.4 years). All of the women described themselves as White. The majority of women were widowed (48%), while 29 (42.2%) were married, 2 (4.4%) single, and 2 (4.4%) were divorced. Twenty five (55.5 %) listed their yearly incomes at less than \$20,000. Ten

(22.2%) listed their yearly income above \$20,000 and ten (22.2%) did not respond to this question. One (2.2%) listed less than 6 years of education, 26 (57.8%) listed 7 to 12 years, 14 (31.1%) listed 12-16 years, and 4 (8.9%) listed greater than 16 years. Twenty one (46.7%) of the women lived alone, while 19 (42.2%) lived with one other person. Five persons stated that they lived in households of three or more persons. The following self-reported comorbidities were found: hypertension (71.1%), diabetes (37.8%), myocardial infarction (35.6%), COPD (15.6%), CVA (15.6%), history of cancer (15.6%), and kidney disease (6.7%). Fourteen (31.1%) reported 2 comorbidities, 11 (24.4%) comorbidities, and 4 (8.9%) with 4 or more comorbidities. The researchers assessed a New York Heart Association classification level based on the women's report of symptoms, with Class 1 that indicated persons with cardiac disease without any resulting physical limitation through Class 4 that indicated persons with cardiac disease having an inability to perform any physical activity without symptoms. Fourteen (31.1%) of the women exhibited symptoms at Class 1, 18 (40%) at Class 2, 13 (28.8%) at Class 3, and none at Class 4. Twenty-five (57%) of the women stated that they smoked in the past, and 3 (7%) currently smoked. Pack/years for the past and current smokers averaged 30.3 (range 3-70 pack/years). The women listed the medications they were currently taking with the average number per subject being 8.14 (range 3-19). Forty-three (96%) stated that they "Always" took their medications as ordered and only two (4%) women stated that they occasionally forgot to take their medications. All of the women stated that they routinely visited a physician and drove an average of 6.4 (0-30) miles to their doctor's. Twenty two (49%) also visited a cardiologist whose office was an average of 32.6 (1-90) miles distance from their homes. Twenty one (47%) were able to drive themselves to their local physician, while only 4 (%) drove themselves to the cardiology office.

METHOD

The principal investigator visited the offices of primary health care providers in rural counties in upstate New York to explain the purpose of the study and to ask providers to identify potential subjects according to the inclusion criteria. As potential subjects were identified, the primary providers asked subjects about interest in participating in the research. Once potential subjects were identified, each individual was called to explain the study in detail and to ask the person to participate. If the individual was willing, the researcher scheduled an appointment of about 1 hour at the convenience of the participant. During a visit to the participant's home, the study was explained in detail. Signed consent was obtained, and the tools were administered.

Four instruments were used to obtain data for this study. HPB were measured by using the Health Promoting Lifestyles Profile II (HPLPII) developed by Walker, Sechrist, and Pender (1995), based on Pender's health promotion model. This instrument has been used extensively to assess behaviors aimed at decreasing the impact of illness and promoting wellness. Reliability of the HPLP II was established with Cronbach's alphas as follows: Health Responsibility (.861), Physical Activity (.850), Nutrition (.800), Spiritual Growth (.864), Interpersonal Relationships (.872), Stress Management (.793), and Total (943) (S. Walker, personal communication, February 15, 2001). Factor analysis continued to support the presence of the six factors used as subscales (S. Walker, personal communication, February 15, 2001).

Barriers to health promotion activities were measured by using the Barriers to Health Promotion Behaviors for Disabled Persons Scale (BHADPS) (Becker et al. 1991). This is a 16-item, 4-point scale asking respondents to indicate how often the barriers listed in the tool prevent them from taking care of health matters. The barriers were developed from a review of the literature and expert analysis of the content of interviews of disabled university students and experts working with disabled persons by using definitions from Pender's (1996) Model of Health Promotion. Internal consistency was computed by using Cronbach's alpha at .82, with item/ total correlations ranging from .25 to .59 (Becker, Stuijbergen, & Sands, 1991). Factor analysis with a Varimax rotation found the three factor solution accounting for 48% of the variation. To test validity, a t-test analysis of a disabled group was compared with a nondisabled group and showed the disabled group scored significantly lower than the nondisabled group ($t=8.45$, $df=259$, $p<.001$) overall, as well as on the Motivation subscale ($t=5.71$, $df=272$, $p<.001$), and the External Barriers subscale ($t=9.01$, $df=271$, $p<.001$).

Situational and perceived social support were assessed with the Personal Resource Questionnaire 85 (PRQ85) developed by Weinert (1987). Part 2 of this instrument includes a 7 point Likert-type questionnaire composed of 25 items addressing self-help issues of the individual and the effect of self-help on social support. It is expected that an increased score of self-help would inversely correlate with the level of social support received from relationships. Cronbach's alpha's were calculated at .87 to .90. Factor analysis showed that three factors, including Intimacy/ Assistance, Integration/ Affirmation, and Reciprocity accounted from 43.3% of the variance (Weinert & Tilden, 1990).

For this research a single question was used to determine the subject's self-assessment of perceived health status by choosing from a range of 1 (I think my present health is very good) to 5 (I think my health is very poor) as used by Johnson (1996). This approach has been used widely and has been shown to have a high level of correlation with physician's assessment of health (Johnson 1996) and as a predictor of the use of health services (Johnson & Wolinsky, 1993).

SPSS 10 was used to analyze descriptive and inferential statistics. A power analysis level of .80 was utilized with an alpha level of .05 and a medium effect size (.35) to project the sample size of 45 subjects (Cohen, 1988).

FINDINGS

The research hypothesis was tested by using multiple regression analysis with HPB as the dependent variable. Independent variables included social support (PRQ2), barriers to health promotion activities for disabled persons, the rating of perceived health status by the individual, and selected demographic variables. Analysis of the Pearson correlations indicated that a history of diabetes ($r = .431$, $p < 0.05$) and the New York Heart Classification level ($r = -.275$, $p < 0.01$) were the two variables that predicted HPB. The findings of the regression are presented in Table 1.

The regression model indicated that the NYHA classification level (negatively associated) and a history of diabetes predicted a significant variance in HPB ($R^2 = .334$). Social support, rating of health, and barriers to HPB were not found to be significant predictors of the variance in this population. The negative association with the NYHA

classification appears to indicate that persons with less impact of cardiac symptoms were more likely to perform HPB. A history of diabetes was positively associated with HPB. Because the Pearson correlations for subjects taking insulin in this sample were significantly correlated with hospital admissions (.539) ($p=.01$) and emergency department visits (.321) ($p=.05$), it appears that the diabetics in the group were receiving more frequent health care and presumably more health care teaching and monitoring about HPB. The adjusted R² was calculated to be .248, indicating the shrinkage error associated with the sample size and the number of variables. In this research, multicollinearity was not judged to be a problem because the tolerance of the variables (.789 to .999) and the variance inflation factor (1.073 to 1.283) were well above the acceptable levels. The power of the research was recalculated after completion of the study. With five variables and an R² of .334 with an alpha of .05, the power was computed to be .95 (Cohen, 1988). The power was adequate to confirm the research hypothesis.

Internal consistency reliabilities for all instruments and subscales used in this study were computed by using Cronbach's alpha. Table 2 displays the alpha coefficients for each instrument or subscale and the number of items per scale. All instruments had a reliability index greater than .75 and were judged to be satisfactory for use in this study. The lower reliabilities for the subscales in the HPLP may be related to the limited number of items; thus, the subscales were considered in total in further analysis.

DISCUSSION

Forty-five women participated in this research. All of the subjects described themselves as white, which reflects the homogeneous nature of the older women in this rural upstate New York area but limits the generalizability of the findings to a larger, more diverse population. Although it might be assumed that the decision to include only women 65 years of age and older might positively skew the average age of this population, the mean age of 77.7 + 9.95 years is similar to the age of samples of other studies of women with HF (Philbin & DiSalvo, 1998).

Social support was not significant in predicting variance in HPB. This finding differs from numerous research findings that have indicated a positive link between social support and health promotion (Adams, Bowden, Humphries, & McAdams, 2000; Bennett, Pressler, Hays, Firestine, & Huster, 1997; Johnson, 1996). The lack of effect of social support in this population may be related to the impact of rural life on the social support network. Although some of the subjects had very strong, supportive family and friends, others lived alone and had limited support mechanisms. It is also possible that rural women have differing attitudes about the presence or quality of social support they receive.

Barriers to health care did not contribute to the predictability of this model, which may be related to the finding that rural persons tend not to see distance or other obstacles normal to rural life as barriers (Pierce, 2001). Nor do such persons expect to have services close to their homes. The subjects in this study also may have been unwilling to identify issues of barriers because of past experiences of futility when dealing with obstacles or because of a perceived need to remain positive about health care providers.

Perceived health also was not useful in predicting HPB in the study (See Table 3), which is consistent with studies in other populations ([Lucas, Orshan, & Cook, 2000](#); [Speake, Cowert, & Pellet, 1989](#)). The comparison of NYHA classification and perceived health showed that some subjects rated their health at a much higher level than might be anticipated when considering the level of symptoms. For instance, two women who were NYHA Class 3 rated their health as very good. It is possible that the rural women in this study considered their health to be good because of perceived social support from family and friends. Also, it has been found that rural women define health in the context of being able to work ([Long & Weinert, 1989](#); [Pierce, 2001](#)). Therefore, if the women are able to maintain the activities around the home and community that are important to them, they may consider themselves to be healthy despite of physical symptoms or limitations. However, the lack of usefulness of Perceived Health in this sample may be related to a feeling of older women that complaining does little good or that it important to make the best of their situations.

In this research, a history of diabetes and the NYHA level were important predictors of the variance in HPB. The impact of the diagnosis of diabetes is surprising, but may be related to an increase in teaching and contact with health care professionals associated with management of their diabetes. [Rockwell and Reigel \(2001\)](#) found that symptom severity and education were predictive of self-care. It is possible that those persons with diabetes had more symptoms thus requiring more frequent health care visits, and that an increased amount of teaching about HPB occurred during those visits.

Nurses must become knowledgeable about the factors influencing actions taken by older women to promote health while living with the chronic illness of HF. Because this segment of the population is growing, it is critical to utilize this knowledge in efforts both to increase well-being and to decrease the cost of health care interventions. This research has identified factors that influence health promotion behaviors of women with cardiac diseases that heretofore have been underrepresented in research projects.

Rural women have unique environmental factors of accessing health care related to distance or weather, however they do not consider these to be barriers. The perception of health status in this sample, which was quite different from that of previous findings, may have varied because of the impact of rurality on the perception of health. Factors such as attitudes toward health, attitudes about outsiders or unfamiliar health care providers, and attitudes about the necessity to work rather than to take time to seek health care that have been previously identified in research with rural individuals must be further investigated.

CONCLUSIONS

The participants in this research were surprisingly active in performing HPB (mean HPLP = 142.07), and the selected features of the socioecological model for this research was useful in predicting those behaviors in rural women in upstate New York with HF. The NYHA classification and a history of diabetes were responsible for predicting the variance; however social support, rating of health, and barriers to health care were not found to be predict variance. The subjects of this research tended to minimize the impact of HF on their lives. The impact of rurality on the attitudes toward social support was not studied in this research and requires further investigation.

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