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Effects of Spirituality in Breast Cancer Survivors

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Purpose/Objectives: To examine the effects of spirituality (meaning in life and prayer) on a sense of well-being among women who have had breast cancer.

Design: Descriptive, correlational, cross-sectional.

Setting: Rural and urban communities in central Texas.

Sample: Convenience sample of 84 women, 34–80 years of age diagnosed less than one year previously (36%), within the previous one to five years (38%), and more than five years previously (26%).

Methods: The study approach consisted of completing a questionnaire assessing personal and cancer characteristics, aspects of spirituality (meaning in life and prayer), and physical and psychological responses to breast cancer.

Main Research Variables: Meaning in life, prayer, and physical and psychological responses to breast cancer.

Findings: Meaning in life was positively related to psychological responses and negatively related to physical responses. Prayer was positively related to psychological well-being. Women with higher prayer scale scores reported lower education levels, less income to meet their needs, and closer relationships with God. Meaning in life mediated the impact of breast cancer on physical and psychological well-being.

Conclusions: Strong relationships exist among spirituality and personal and cancer characteristics. Meaning in life mediated the effects of breast cancer on well-being in breast cancer survivors.

Implications for Nursing: The findings support healthcare providers encouraging women diagnosed with breast cancer to explore their spirituality as an effective resource for dealing with the physical and psychological responses to cancer.

Key Points . . .

- Meaning in life and prayer are associated with greater psychological well-being.
- Meaning in life mediates the effects of breast cancer on well-being.
- Aspects of spirituality, such as meaning in life and prayer, lessen the impact of breast cancer.

and treatment of cancer (McCray, 1993; Meraviglia, 2004). However, the way in which spirituality influences physical and psychological well-being is not well understood. Limited research is available regarding the link between spirituality and a sense of well-being among patients with cancer (Meraviglia, 1999). In particular, specific aspects of spirituality have not been investigated in women with breast cancer.

Spirituality

Spirituality often is overlooked by healthcare providers, even though several studies have identified aspects of spirituality, such as meaning and purpose in life, prayer, and spiritual perspective, as beneficial to patients with cancer (Gall & Cornblat, 2002; Meraviglia, 2002; Taylor, 1993). The concept of spirituality has been operationalized in various ways—spiritual well-being, spiritual awareness, and spiritual health—however, findings using broad spiritual concepts have been inconclusive. Evaluating spirituality using only one measurement may be unrealistic (Meraviglia, 1999). Spirituality, like the physical and psychological dimensions, must be examined by assessing more than one aspect.

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An estimated one in seven women will develop breast cancer at some time in her life, and the disease accounts for 32% of all cancer diagnoses among women. Breast cancer is the leading cause of cancer death among women younger than 55 years of age and the second most common cause among women ages 55 and older (American Cancer Society, 2005). Women diagnosed with breast cancer face immense stress from a range of causes, from disruptions in their lifestyles to suffering from treatment and its side effects.

The impact of a life-threatening disease such as breast cancer can impact every aspect of patients' lives, including physical functioning and psychological well-being. Some patients have found that their spirituality helps them withstand the physical and psychological crises brought on by a diagnosis

Based on a concept analysis, spirituality can be defined as the experiences and expressions of the spirit in a unique and dynamic process reflecting faith in God or a supreme being; connectedness with oneself, others, nature, or God; and integration of the dimensions of mind, body, and spirit (Meraviglia, 1999). The spiritual concepts of meaning in life and prayer represent two experiences and expressions of spirituality.

Meaning in Life

Meaning in life, a concept explored by Frankl (1988), represents the process of finding and fulfilling significance and purpose in one's life regardless of the circumstances. Frankl (1988) outlined three principal ways people can find and fulfill their meaning in life—through creative, experiential, and attitudinal values. Meaning in life can be found by giving to the world through creative activities, such as work and recreation; by taking from the world through experiences and relationships with other people; and by the attitudes adopted toward unchangeable circumstances. Finding meaning through the attitude a person takes toward his or her suffering occurs in unavoidable situations, such as a diagnosis and treatment of cancer (Frankl, 1946/1986).

Reker, Peacock, and Wong (1987) examined the relationship between meaning in life and well-being in various groups of older adults and found that meaning in life was positively associated with physical and psychological well-being. Reker and Butler (1990) also found that meaning in life buffered the impact of stress on physical health. Taylor (1993) reported a moderate inverse relationship between meaning and symptom distress, and Thompson and Pitts (1993) noted a positive relationship between meaning and feelings of optimism in patients with cancer. Similarly, Smith et al. (1993) found that participants in their study who had greater spiritual awareness reported less psychosocial distress.

Patients with cancer who derive meaning from their experiences also have higher levels of self-esteem and more internal locus of control in addition to lower levels of anxiety, symptom distress, and social dependence (Skinn, 1994; Taylor, 1993). One study of patients with cancer found that patients' level of meaning was significantly correlated with their emotional responses and personal control (Germino, Fife, & Funk, 1995).

Researchers using qualitative approaches have reported that patients with cancer assign meaning by redefining their experiences within a broader perspective. Gall and Cornblat (2002) described the positive role of deriving meaning from the breast cancer experience in achieving long-term cognitive adjustment. Steeves (1992) described the meaning-deriving techniques of patients who underwent bone marrow transplants as renegotiating social position and understanding the experience as a whole. O'Connor, Wicker, and Germino (1990) described approaches to assigning meaning as life review, changing attitudes, seeing the consequences of illness, and maintaining hope.

Prayer

The concept of prayer, for this study, is defined as communication with God as an experience and expression of the human spirit. Using both qualitative and quantitative designs, researchers have investigated prayer among people who are

undergoing stressful situations as well as the association of prayer with well-being. Prayer has been described by patients who are about to undergo liver transplantation as a supportive behavior (Geary, Formella, & Tringali, 1994), and several studies involving healthy adults have noted moderate correlations between prayer and psychological responses, such as hardiness, existential well-being, and purpose in life (Carson, 1993; Poloma & Pendleton, 1991). Other studies also found that religious commitment and prayer were positively associated with well-being and meaning (Gartner, Allen, & Larson, 1991; King, 1990).

Findings regarding the effects of prayer on physical responses to disease are quite striking. Byrd (1988) found that prayer had a positive effect on the physical responses of critically ill patients, and Turner and Clancy (1986) found that prayer positively affected people experiencing chronic low back pain. Many people use prayer to manage aging and disease (Bearon & Koenig, 1990; Flaskerud & Rush, 1989), and prayer has been described as an effective strategy for coping with a variety of diseases, from coronary heart disease to renal failure (Ai, Peterson, & Bolling, 1997; Flaskerud & Rush; Saudia, Kinney, Brown, & Young-Ward, 1991).

Several studies have investigated the prayer activities and experiences of patients with cancer. Gall and Cornblat (2002) reported that survivors of breast cancer emphasized the positive benefits of the spiritual resources of prayer and a relationship with God. In addition, long-term cancer survivors reported prayer and putting trust in God as important coping strategies during their cancer experiences (Halstead & Fernsler, 1994). Fuller, Clements, and Swenson (1993) reported associations between quality of life and the frequency of prayer in patients with advanced cancer.

The purpose of this study was to examine how the spiritual concepts of meaning in life and prayer mediate the impact of breast cancer on physical and psychological well-being. The desire to find and fulfill one's meaning in life is a specific empirical indicator of spirituality, reflecting connection with God, others, and oneself. Prayer is an empirical indicator of spirituality because it is an expression of the human spirit that represents connectedness with God. The conceptual framework guiding this study was tested previously in patients with lung cancer. The framework links the spiritual concepts (meaning in life and prayer) with concepts related to a sense of well-being (physical and psychological responses to breast cancer), as seen in Figure 1 (Meraviglia, 2004).

Methods

Sample

Study participants were women with breast cancer recruited from urban and rural settings in central Texas. Nurses, oncologists, and radiologists could refer women to the investigator, who determined whether they met the inclusion criteria, which were 21 years of age or older, diagnosed with breast cancer, able to read and write English, and in a fair state of health. A power analysis using nQuery[®] (Statistical Solutions, Boston, MA) was conducted to determine sample size. For a regression model including as many as four predictor and mediator variables, a sample size of 80 would have an 80% power to detect a medium R^2 of 0.15

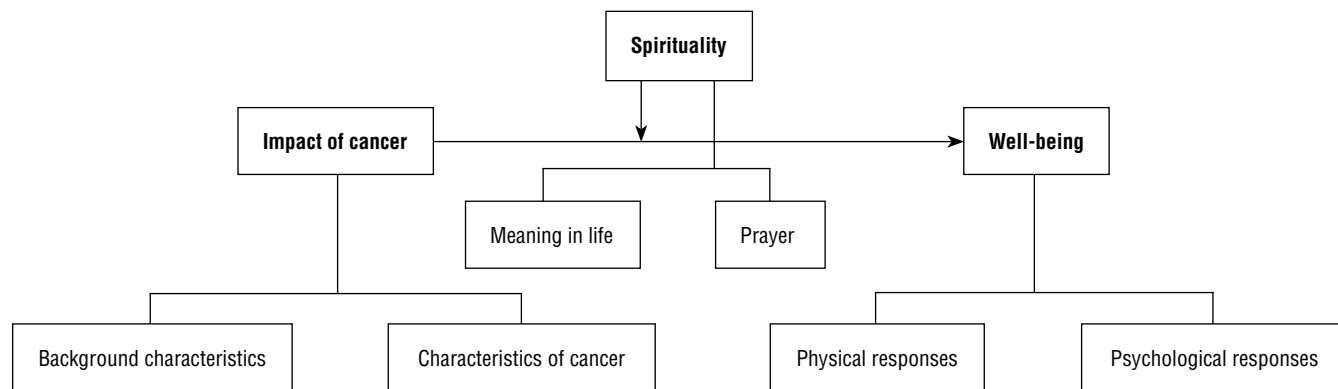


Figure 1. Conceptual Framework

($p < 0.05$). Approval was obtained from the appropriate institutional review board before beginning the study.

Procedure

Women were recruited for the study by referrals from oncology nurses and physicians, flyers posted in oncology and radiology centers, and notices in breast cancer centers, in newsletters, and on Web sites. Women interested in participating contacted the investigator to learn about the study. After a woman expressed interest and met the study criteria, a packet including the research questionnaire, a cover letter describing the study, and a postage-paid return envelope was mailed to her. Returned questionnaires constituted women's consent to participate in the study. If a questionnaire was not returned within three weeks of the initial contact, a follow-up reminder postcard was mailed to the participant. Women who participated in the study were reimbursed with a check for \$10.

Instrument

The research questionnaire consisted of six instruments. The **Background Information Survey** was developed to assess the demographic characteristics of age, ethnicity, education, employment, marital status, religion, satisfaction with income, and economics of daily living. The **Characteristics of Cancer** survey assessed the type of breast cancer, presence of metastatic disease, length of illness, past and present treatment, current physical health status, perceived functional status, presence of other diseases, daily medications, and medications used to control symptoms.

Meaning in life: The **Life Attitude Profile-Revised (LAP-R)** was used to assess one of the spiritual variables, meaning in life. The LAP-R is a 48-item Likert-type rating scale that was developed by Reker and Peacock (1981) and is based on Frankl's (1988) Motivational Theory of Meaning. The multi-dimensional instrument measures discovered meaning, purpose in life, and motivation to find meaning in six dimensions: life purpose, coherence, choice and responsibility, death acceptance, existential vacuum, and goal seeking (Reker, 1992). Dimension scores are computed by summing the item scores, which range from 8–56 per dimension. In addition to subscale scores, two composite scales are computed that include the personal meaning index and existential transcendence. The personal meaning index represents a focused measurement

of meaning and is calculated by summing the subscale scores for purpose and coherence. Existential transcendence is the accumulation of discovered meaning and motivation to find meaning and purpose and is determined by summing purpose, coherence, choice and responsibility, and death acceptance, then subtracting the sum of the existential vacuum and goal-seeking dimensions. Reker assessed construct validity using principal components factor analysis and concurrent validity through previous studies with dimension scores that correlated strongly with criterion variables (Nicholson et al., 1994; Reker, 1997; Reker & Butler, 1990). Internal consistency reliabilities for the LAP-R were acceptable, ranging from 0.70–0.85 for the subscales and 0.77–0.88 for the two composite scales.

Prayer: The **Adapted Prayer Scale (APS)** was based on Poloma and Pendleton's (1991) prayer scale and was changed to apply to patients with cancer. The APS has been used effectively in several studies of adults with cancer (Meraviglia, 2004). The APS consists of 39 items that include 3 general items regarding the frequency and amount of prayer, 1 item about the respondent's relationship with God, 17 prayer activities items, 9 prayer experiences items, 6 items regarding attitude toward prayer since cancer was diagnosed, and 3 open-ended questions. Total scores are computed by summing the item scores on the three subscales and then summing the three subscales. Internal consistency reliabilities for the APS were acceptable in this study, which was 0.96 for the total score and ranged from 0.77–0.95 for the subscales.

Physical responses: The **Symptom Distress Scale (SDS)** is a 14-item scale assessing patients' degree of discomfort related to appetite, nausea (presence and intensity), insomnia, pain (presence and intensity), fatigue, bowel patterns, concentration, dyspnea, appearance, outlook, cough, and mobility. Participants completed the SDS twice: once to assess the degree of discomfort they had experienced since being diagnosed with cancer and again to assess their symptoms within the previous month. High scores represent high degrees of symptom distress and more physical responses to breast cancer. Face and content validity as well as convergent validity have been established (McCorkle, 1987). Internal consistency reliability for the SDS was acceptable at 0.90.

Psychological responses: The **Index of Well-Being**, a nine-item semantic differential scale, assesses the cognitive and affective dimensions of patients' sense of well-being

(Campbell, Converse, & Rodgers, 1976). Participants rated their sense of well-being on eight pairs of adjectives and on their satisfaction with life as a whole. Total scores are calculated by multiplying the life satisfaction item by 1.1 and summing it with the remaining eight items. High scores represent satisfying psychological responses to breast cancer. Cronbach's alpha was acceptable at 0.95.

Data Analysis

Statistical analysis of the data was conducted using SPSS® 11.0 (SPSS Inc., Chicago, IL). Descriptive statistics (e.g., frequency, mean, standard deviation) summarized the data from the study variables (i.e., meaning in life, prayer, physical and psychological responses to cancer). Categorical variables, such as occupation and religious group, were dummy coded, and negatively worded questions were transformed for data analysis. Bivariate correlations were calculated for all study variables using an alpha less than 0.05 as the significance level. Multiple regression was used to analyze the effects of the mediator variables (meaning in life, prayer) on the relationships between predictor and outcome variables. Only variables that met the assumptions for regression and had significant correlations with the outcome variables were included in the regression analysis.

Mediation, a process by which a third variable indirectly influences the relationship between predictor and outcome variables, is present if several conditions are met in a three-step analysis recommended by Baron and Kenny (1986), as seen in Figure 2. The mediator variable must be significantly related to the predictor and outcome variables and decrease the relationship between the variables in the final equation. Separate regression analyses were conducted for each outcome variable (i.e., physical and psychological responses).

MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) studied 14 methods testing the statistical significance of mediating variable effects and found that Baron and Kenny's (1986) method had low statistical power. They recommended two methods with greater statistical power and lower type I error rates that were based on the distribution of the product (Bobko & Rieck [1980] test) or difference in coefficients (Olkin & Finn [1995] test). Shrout and Bolger (2002) also recommended calculating estimated standard errors to construct

Table 1. Cancer Characteristics of the Sample

| Characteristic | n | % |
|---------------------------------------|----|----|
| Stage of breast cancer | | |
| 0 | 11 | 13 |
| I | 25 | 30 |
| II | 32 | 38 |
| III | 11 | 13 |
| IV | 3 | 4 |
| No response | 2 | 2 |
| Metastasis at diagnosis | | |
| Yes | 23 | 27 |
| No | 57 | 68 |
| Do not know | 4 | 5 |
| Time since diagnosis | | |
| < 6 months | 15 | 18 |
| 6–12 months | 15 | 18 |
| 1–3 years | 19 | 23 |
| 3–5 years | 13 | 15 |
| > 5 years | 22 | 26 |
| Current method of therapy | | |
| None | 58 | 69 |
| Chemotherapy | 14 | 17 |
| Radiation | 6 | 7 |
| Chemotherapy and radiation | 2 | 2 |
| Surgery | 4 | 5 |
| Current physical health status | | |
| Poor | 2 | 2 |
| Some disability | 6 | 7 |
| Disability with limitations | 7 | 8 |
| Good | 40 | 49 |
| Very good | 27 | 32 |
| No response | 2 | 2 |
| Current functional status | | |
| Unable to care for self | 2 | 2 |
| Cares for self only | 7 | 8 |
| Usual activities with effort | 29 | 35 |
| Usual activities | 43 | 51 |
| No response | 3 | 4 |

N = 84

confidence intervals for accurately testing for mediation. In addition to the analysis suggested by Baron and Kenny, two tests recommended by MacKinnon et al. were used to assess for mediation.

Findings

Eighty-four women ages 34–80 (\bar{X} = 53.08) participated in the study. The majority was Caucasian, college educated, employed, and married. Fifty percent of participants reported satisfaction with their income, and 81% felt their income was adequate to meet their living needs. The majority of women in this study reported having stage I or II ductal breast cancer. Thirty-six percent of participants had been diagnosed within the previous year, 38% had been diagnosed within one to five years, and 26% had been diagnosed more than five years previously. As would be expected from this distribution, most of the women were not currently undergoing radiation or chemotherapy for their breast cancer. Additionally, the majority of participants reported good physical health and functional status on survey items about physical health and function (see Table 1).

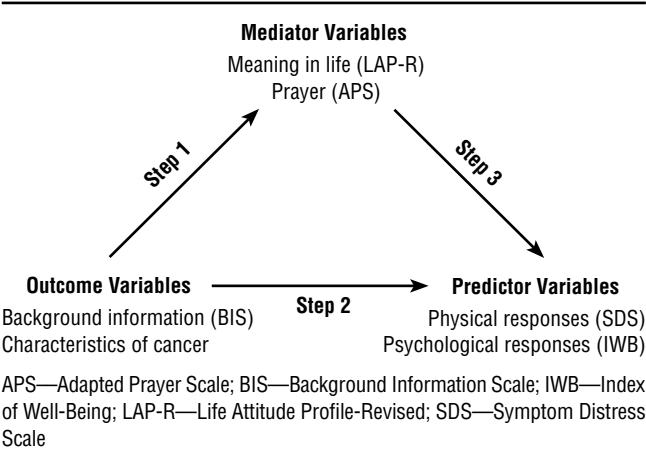


Figure 2. Diagram of the Mediator Research Model

In terms of spiritual characteristics, 71% of the women believed they had a close relationship with God. Fifty-one percent of participants reported praying three to four times a day. Religious preferences were Protestant (39%), Catholic (17%), nondenominational (11%), Jewish (4%), and various spiritual groups, such as 12-step programs and support groups (see Table 2).

Correlational analysis of outcome variables (i.e., physical and psychological responses) to sample characteristics showed women with lower symptom distress within the previous month were employed ($r = 0.30$), had lower stages of cancer ($r = 0.30$), and had no metastasis at diagnosis ($r = -0.27$). Women who reported higher psychological well-being also reported lower stages of breast cancer ($r = 0.27$), higher functional status ($r = 0.32$), and closer relationships with God ($r = 0.37$).

In comparing the mediator variables (i.e., meaning in life and prayer) to sample characteristics, those reporting more meaning in life were older ($r = 0.32$), had better functional status ($r = 0.35$), reported closer relationships with God ($r = 0.23$), and had greater satisfaction with their income ($r = 0.25$). Women with higher prayer scale scores reported closer relationships with God ($r = 0.84$), lower education levels ($r = -0.37$), and less income to meet their needs ($r = -0.24$).

Comparisons between mediator and outcome variables were significant. Meaning in life was positively related to psychological well-being ($r = 0.66$) and negatively related to symptom distress ($r = -0.27$). The personal meaning index was positively related to psychological well-being ($r = 0.70$) and negatively related to symptom distress ($r = -0.25$). Prayer was positively related to psychological well-being ($r = 0.36$) but not significantly related to symptom distress.

A mediator analysis model was used to examine the indirect effects of meaning in life and prayer on the relationship be-

Table 2. Spiritual Characteristics of the Sample

| Characteristic | n | % |
|-------------------------------------|----|----|
| Religious or spiritual group | | |
| Protestant | 33 | 39 |
| Catholic | 14 | 17 |
| Nondenominational | 9 | 11 |
| Jewish | 3 | 4 |
| Agnostic | 1 | 1 |
| Other | 11 | 13 |
| No response | 13 | 15 |
| Relationship with God | | |
| Very distant | 6 | 7 |
| Quite distant | 2 | 2 |
| Distant | 4 | 5 |
| Neutral | 11 | 13 |
| Close | 16 | 19 |
| Quite close | 14 | 17 |
| Very close | 29 | 35 |
| No response | 2 | 2 |
| Frequency of prayer each day | | |
| 0 | 13 | 16 |
| 1 | 17 | 20 |
| 2 | 11 | 13 |
| 3 | 10 | 12 |
| 4 | 33 | 39 |

N = 84

Table 3. Mediating Model of Meaning in Life on Psychological Responses

| Equation | R ² | β | p |
|----------------------|----------------|-------|-------|
| 1: Functional status | 0.119 | 0.345 | 0.002 |
| 2: Functional status | 0.104 | 0.322 | 0.003 |
| 3: Functional status | — | 0.109 | — |
| Meaning in life | 0.430 | 0.610 | 0.000 |

N = 79

^a Outcome variable: psychological responses (Index of Well-Being)

tween predictor and outcome variables. A review of a correlation matrix identified significant relationships between study variables. Because the prayer subscale and total scale scores were not significantly related to any cancer predictor variables, mediation was not analyzed for this spiritual variable.

A three-step analysis following Baron and Kenny's (1986) method was used to test for mediation for the spiritual variable, meaning in life. For psychological responses, the first regression equation showed that functional status was a significant predictor of the mediating variable, meaning in life (see Table 3). In the second regression equation, functional status was a significant predictor of the outcome variable, psychological well-being. In the third equation, functional status and meaning in life were entered simultaneously with psychological well-being. A mediating effect of meaning in life on the relationship was present because the beta weight for functional status (0.109) was less than in the second regression equation (0.322). The three-step analysis was repeated for the outcome variable, physical responses to breast cancer (symptom distress), using the predictor variable, functional status. Meaning in life mediated the relationship between functional status and symptom distress with the beta weights decreasing slightly from -0.504 to -0.463 (see Table 4). MacKinnon et al.'s (2002) multivariate delta method was used to confirm the findings of mediation for meaning in life. Two of the more powerful tests for mediation, the Olkin and Finn (1995) and Bobko and Rieck (1980) tests, produced similar findings for psychological well-being but insignificant findings for physical well-being (see Table 5).

Discussion

This descriptive, correlational study was designed to examine the influence of spirituality (meaning in life and prayer) on well-being for women who have been diagnosed with breast cancer. One of the important findings of the study

Table 4. Mediating Model of Meaning in Life on Physical Responses

| Equation | R ² | β | p |
|----------------------|----------------|----------|-------|
| 1: Functional status | 0.119 | 0.345 | 0.002 |
| 2: Functional status | 0.254 | -0.504 | 0.000 |
| 3: Functional status | — | -0.463 | — |
| Meaning in life | 0.264 | -0.115 | 0.000 |

N = 79

^a Outcome variable: physical responses (Symptom Distress Scale)

Table 5. Mediating Model Using Multivariate Delta Method

| Equation | Olkin and Finn (Standard Error) | p | Bobko and Rieck (Standard Error) | p |
|---|------------------------------------|------|-------------------------------------|------|
| Functional status, meaning in life ^a | 0.074 | 0.00 | 0.067 | 0.00 |
| Functional status, meaning in life ^b | 0.032 | 0.9 | 0.037 | 0.8 |

^a Outcome variable: psychological responses (Index of Well-Being)

^b Outcome variable: physical responses (Symptom Distress Scale)

is the mediating effect of the spiritual concept, meaning in life, on psychological well-being. Baron and Kenny's (1986) test for mediation showed that meaning in life decreased the impact of current functional status on psychological well-being as well as lessened the influence of functional status on physical well-being. The influence of the spiritual concept was examined further using statistical tests recommended by MacKinnon et al. (2002), which confirmed that meaning in life positively mediated the impact of breast cancer on women's psychological well-being. Other researchers have shown positive relationships between aspects of spirituality and well-being among patients with cancer (Gall & Cornblat, 2002; Thompson & Pitts, 1993). In addition, the mediation effect of meaning in life on well-being has been reported elsewhere (Meraviglia, 2004; Reker & Butler, 1990).

However, in spite of the significant mediating effect of the spiritual concept, meaning in life, for women with breast cancer, other areas need further exploration. No mediating effects were found for the spiritual concept, prayer, on physical or psychological well-being. Further exploration of the influence of this aspect of spirituality is warranted in a larger group of breast cancer survivors.

Another important finding of this study was that breast cancer survivors who reported high prayer scale scores had lower education levels and less income to meet their needs, yet they reported high psychological well-being. This positive association between prayer and well-being in spite of

negative life circumstances is congruent with previous research. Others have reported that prayer activities and experiences are beneficial during difficult situations like dealing with cancer (Gall & Cornblat, 2002; Meraviglia, 2004).

A number of limitations to the present study need to be addressed. First, the sample was self-selected and, thus, could be biased toward breast cancer survivors who were interested in spirituality and its role in coping with cancer. Second, a number of analyses were conducted, which increased the possibility that some findings may have occurred by chance alone (i.e., type I error). Third, the sample size, although adequate for the study, may limit the effect of the mediating variables, meaning in life and prayer, on physical well-being.

In summary, the findings from the study describe the influence of spiritual concepts (meaning in life and prayer) on physical and psychological well-being. The findings indicate that meaning in life mediates the impact of breast cancer on the physical and psychological well-being of women. Oncology nurses are in a unique position to provide comfort and direction during a critical time when women initially are diagnosed with breast cancer and are receiving treatment. The findings from this study support the use of spiritual resources (finding meaning in life and prayer) for coping with a cancer diagnosis. Oncology nurses should provide holistic care by encouraging women diagnosed with breast cancer to explore aspects of spirituality that are important to them. Additionally, nurses should assist women in examining their feelings, such as meaninglessness or loneliness, that are affecting their sense of physical or psychological well-being.

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