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Differences in Physical, Emotional, and Social Adjustment of Intimate, Family, and Nonfamily Patient-Partner Dyads Based on a Breast Cancer Intervention Study

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Cancer creates a stressful situation that affects the adjustment of patients and families (Ben-Zur, Gilbar, & Lev, 2001; Wimberly, Carver, Laurenceau, Harris, & Antonia, 2005). In identifying who is most significantly involved in the illness experience, many women with breast cancer identify their spouse as their partner (Allen, Goldscheider, & Ciambone, 1999; Manne, 1998). Partner identification may be related to the primacy of the relationship of the partner to the patient (Cantor, 1979) or to the fit between the characteristics of the partner and skills required by a given task (Litwack, 1985). Cantor's model suggests that married people first turn to their spouses for assistance and support, then children, other family members, friends, and neighbors. However, some married women may perceive that female relatives or friends could better meet their needs than their husbands (Allen et al., 1999).

Most breast cancer research has focused solely on the spousal relationship, which excludes women who do not have intimate partners and may not identify the most important or supportive relationships (Mallinger, Griggs, & Shields, 2006). Based on a study of married men and women undergoing treatment for cancer, Allen et al. (1999) reported that marital intimacy was clearly important in identifying male spouses as partners. Nomination of spouse as partner suggests that the closeness of the marital relationship is a key consideration in spousal caregiver selection. Allen et al.'s findings highlight the importance of marital intimacy in a crisis situation, such as the diagnosis and treatment of breast cancer, because both partners are obliged to nurture the other and tend

Purpose/Objectives: To assess the degree to which postsurgical adjustment in patients with breast cancer and their partners depends on the nature of the patient-partner dyad relationship.

Design: Secondary data analysis from a randomized controlled trial.

Setting: Three cancer centers and one suburban community hospital in New York.

Sample: 205 patient-partner dyads (112 intimate-partner, 58 family-member, and 35 nonfamily-member dyads).

Methods: Mann-Whitney nonparametric comparisons and chi-square tests were used to assess dyad types on continuous and categorical variables, and a mixed model for repeated measures compared postsurgical adjustment among dyad types.

Main Research Variables: Type of patient-partner dyads and physical, emotional, and social adjustment.

Findings: Patients in intimate-partner dyads were younger, had greater incomes, and discovered the lump by routine mammogram as compared to family- or nonfamily-member dyads. No significant differences were observed in patients' physical or emotional adjustment. Patients with intimate partners had greater difficulty in their social and domestic environments. Partners in intimate-partner dyads had lower scores on psychological well-being, more problems in social and domestic adjustment, and less social support to promote social adjustment.

Conclusions: Women with breast cancer experience successful physical and emotional adjustment whether they have intimate-partner, family-member, or nonfamily-member partners. Intimate partners are at greater risk for emotional and social adjustment issues.

Implications for Nursing: When designing interventions, consideration must be given to the type of patient-partner dyad involved.

to the other's needs. Furthermore, findings indicate that a substantial number of patients with cancer select nonfamily for support, despite kin availability. Spouses may be chosen to provide instrumental help, but other family or nonfamily members may provide emotional support.

The literature indicates that as people most intimately involved in the events related to patients' illnesses and treatments, partners struggle with fear of the cancer, demands placed on their lives (Ben-Zur et al., 2001; Samms, 1999), and feelings of being ineffectual (Lewis, Woods, Hough, & Bensley, 1989). Several studies have shown that spouses of patients with cancer experience levels of distress as severe as or even more severe than their partners (Gilbar, Steiner, & Atad, 1995; Hoskins, Baker, Budin, et al., 1996; Hoskins et al., 2001; Northhouse, Dorris, & Charron-Moore, 1995). The distress level of women with breast cancer also has been reported to be highly correlated with spouses' levels of adjustment and total distress. However, improvement in mood of patients and spouses was observed over time, with most having few difficulties carrying out various work, family, and social roles in the 18 months after surgery (Baider & Kaplan-DeNour, 1984; Hasida, Gilbar, & Lev, 2001; Northhouse, 1990; Northhouse, Templin, Mood, & Oberst, 1998). The nature of partners' adjustment results from affective assessments of the tasks at hand, effort needed, the patient's health status, the relationship with the patient, the caregiving environment, and characteristics of the partner (Given & Given, 1992). Studies indicate that high levels of distress and use of less effective coping strategies place partners at risk for poor adjustment with an inability to offer support for patients (Ben-Zur et al., 2001).

Segrin et al. (2003) examined the dyadic interdependence on affect and quality-of-life (QOL) trajectories among women with breast cancer and their partners. Partners included spouses (76%), daughters (17%), friends (8%), and some other relationship (8%), such as a cousin, boyfriend, or brother. The results indicated that women whose QOL deteriorated over a 10-week course had partners whose QOL also tended to be on a downward trajectory. Significant correlations were observed among depression, negative effect, positive effect, and stress between women and their partners. The results indicate that people tend to unconsciously match the same emotionally laden communication behaviors as their partners and that a process of affective transmission exists through negative reactions to the behavior of people with poor emotional adjustment (Segrin et al.). Although a third of the partners in the current study were not husbands of women with breast cancer and most of the partners were not living with the patient, a strong dyadic influence on emotional distress and QOL still was found.

Spanning a 20-year period of breast cancer research as well as caregiving literature, spouses' or intimate partners' adjustment to cancer, particularly breast can-

cer, indicates a dyadic interdependence and associated difficulty with adjustment of patients and their partners (Ben-Zur et al., 2001; Wingate & Lackey, 1989; Zahlis & Shands, 1991). As dyad types are changing, given an increase in divorce, same-sex partnerships, and single women, understanding differences in the emotional, physical, and social adjustment of various dyad types, such as intimate-partner, family-member, or nonfamily-member dyads, and the potential clinical implications is very important.

With that background, this article will focus on a secondary analysis of data arising from a randomized controlled clinical trial designed to compare emotional, physical, and social adjustment outcomes among patients and partners receiving phase-specific, evidence-based psychoeducational and telephone counseling interventions to those who received standard care in the disease management group (Budin, Hoskin, et al., 2008). The theoretical framework (see Figure 1) that guided the development of the trial was the Stress and Coping Model (Lazarus & Folkman, 1984), the Crisis Intervention Model (Morely, Messick, & Aguilera, 1967), and preliminary research (Hoskins, Baker, Budin, et al., 1996; Hoskins, Baker, Sherman, et al., 1996; Hoskins et al., 2001). This secondary analysis focused on the nature of the patient-partner pair dyads that were categorized according to whether the dyad included an intimate partner (spouse or significant other), another family member, or a nonfamily member. The objectives included (a) comparing patient and partner demographic and presurgical characteristics among dyad types and (b) assessing the degree to which postsurgical adjustment outcomes in patients and partners depend on the nature of the patient-partner dyad relationship. The hypothesis was that emotional, physical, and social adjustment differs according to dyad type.

Methods

Study Sample

The sample of the randomized controlled trial consisted of 249 patients diagnosed with early-stage breast cancer and their partners, who patients identified as having significant involvement in their cancer experience. The dyads were recruited from cancer centers located at three major medical centers in New York City and at one suburban community hospital in New York.

Inventories to assess adjustment were administered to patients and partners at baseline and the diagnostic, after surgery, adjuvant therapy, and ongoing recovery phases. Dyads had to meet the following inclusion criteria: (a) the patient had confirmed diagnosis of early-stage breast cancer, (b) the patient had identified a person most intimately involved in the breast cancer experience who would be their "partner," (c) the patient

THEORIES AND RESEARCH EVIDENCE	PHASE-SPECIFIC INTERVENTIONS GROUPS	OUTCOME VARIABLES
<p>Stress and Coping Model Lazarus & Folkman, 1984</p> <p>Derdiarian Crisis Model Morley et al., 1967</p> <p>Preliminary Study Hoskins, Baker, Budin, et al., 1996 Hoskins, Baker, Sherman, et al., 1996</p> <p>Pilot Study Hoskins et al., 2001</p>	<p>Group 1 Disease Management</p> <p>Group 2 Disease Management and Standardized Psycho-Education</p> <p>Group 3 Disease Management and Telephone Counseling</p> <p>Group 4 Disease Management and Standardized Psycho-Education and Telephone Counseling</p> <p>Each intervention was provided at each of four phases.</p> <ul style="list-style-type: none"> • Diagnostic phase • Postsurgical • Adjuvant therapy • Ongoing recovery 	<p>Emotional Adjustment PAL-C Psychological well-being subscale</p> <p>BCTRI Side-effect distress subscale</p> <p>Physical Adjustment BCTRI Side-effect severity subscale</p> <p>PAL-C Physical symptoms subscale</p> <p>SRHS Overall health status</p> <p>Social Adjustment PAIS Role function in domestic, vocational, and social environment subscales</p>

BCTRI—Breast Cancer Treatment Response Inventory; PAIS—Psychosocial Adjustment to Illness Scale; PAL-C—Profile of Adaptation to Life Clinical Scale; SRHS—self-rated health subscale

Figure 1. Phase-Specific Breast Cancer Intervention Study—Theoretical Framework

and partner were able to read and understand English, and (d) neither the patient or partner had a history of psychiatric hospitalization or drug abuse. The sample on which the present analyses were based included 205 patient-partner dyads. Dyads were categorized according to whether the dyad included an intimate partner (n = 112), family member (n = 58), or nonfamily member (n = 35). The study was approved by the review boards of the university and each of the participating institutions. The procedures for recruitment, the process of randomization and data collection, the elements of informed consent, and details regarding the interventions are reported in an article that presents the results of the randomized control trial (Budin, Hoskin, et al., 2008).

Instruments and Outcome Measures

Patients and partners completed a battery of standardized instruments that were consistent with the study's theoretical framework. All instruments were selected because of reported reliability and validity that was verified based on the findings of the randomized controlled trial (Budin, Hoskin, et al., 2008).

The **Psychosocial Adjustment to Illness Scale (PAIS)** (Derogatis, 1983) consists of 46 self-report items designed to assess the effect of the illness on adjustment. Scores for role function in domestic, vocational, and social environments were used to measure social adjustment. The domestic environment subscale reflects difficulties that arise primarily in the home or family

environment as a result of illness. Scores for domestic environment range from 0–24, with a higher score reflecting poorer adjustment or more problems. The vocational environment subscale reveals the effect of an illness on vocational adjustment related to work, school, or home, as appropriate. Scores range from 0–18, with a higher score reflecting poorer adjustment or more problems. The social environment subscale reflects the status of patients' current social and leisure time activities and the degree to which patients have suffered impairment or constriction of these activities as a result of the current illness or its residual effects. Scores for this subscale range from 0–18, with a higher score reflecting poorer adjustment or more problems.

The **Profile of Adaptation to Life Clinical Scale (PAL-C)** (Ellsworth, 1981) is a 41-item self-report inventory that is designed to measure variations in adjustment and functioning over time. The psychological well-being subscale measures enjoyment in talking with others, finding work interesting, feelings of trust, involvement, and feelings of being needed and useful. Scores range from 5–20, with higher scores reflecting higher levels of psychological well-being. Physical symptoms included the frequency of headaches, fever, dizziness, feeling tired or nauseated, and the frequency with which medications are taken for headaches and stomach problems. Scores for physical symptoms can range from 7–28, with a higher score reflecting a higher level of physical symptoms experienced.

The self-rated health subscale (SRHS) is one of three subscales within the domain of physical health on the **Multilevel Assessment Instrument (MAI)** (Lawton, Moss, Fulcomer, & Kleban, 1982). It consists of four items that were used to assess perceived overall health status. Scores can range from 4–13, with a higher score reflecting better overall perceived health status.

The **Breast Cancer Treatment Response Inventory (BCTRI)** (Budin, Cartwright, & Hoskins, 2008) provides a multidimensional assessment of the incidence, severity, and degree of distress of 19 side effects of breast cancer treatment. The side-effect incidence subscale is the sum of the number of side effects reported, ranging from 0–19, with higher scores indicating greater side-effect incidence. Scores for the side-effect severity subscale range from 1–57 depending on the number of side effects experienced, with a higher score reflecting a higher degree of side-effect severity. Scores for the side-effect distress subscale range from 0–57 depending on the number of side effects experienced, with a higher score reflecting higher degree of side-effect distress.

Social Network Support Inventory (SNSI) (Flaherty, Gaviria, & Pathak, 1983) is a self-report questionnaire in which the respondent identifies the people or groups with whom they are close and who provide specific components of support. Each member of the partial network is rated on 10 items that measure availability of support, reciprocity, emotional support, practical support, and support associated with a specific event (e.g., diagnosis, treatment for breast cancer). The score is calculated by determining the mean ratings of each of the 10 items for each of the five individuals (or four individuals and one group) identified as providing support. Scores can range from 1–5, with a higher score reflecting a higher level of total support.

The **primary medical data form** provided information, including results of previous mammography if done, history of breast cancer, previous surgical procedures if done, results of lymph node dissection if performed, staging of the cancer, how the breast lesion was detected, the patient's understanding of the breast lesion, current use of medications, and current presence of any chronic illness. The form also requests information on whether any family member had breast cancer and whether the respondent has been treated for any psychiatric problems. A **demographic data form** requested information on age, marital status, ethnicity, parental status, occupation, income, and whether English is the respondents' first language.

Statistical Analyses

Outcome measures were defined to reflect emotional adjustment, physical adjustment, and social adjustment for patients and their partners. Because patients and partners were not randomized to dyad type, identifying

and controlling for a set of potential confounding factors that may be associated with dyad type and outcomes and that may change the relationship between dyad types and outcomes was essential.

Comparisons among dyad types in baseline demographic and adjustment outcomes were performed for patients and partners. Mann-Whitney nonparametric comparisons and chi-square tests were used to assess statistically significant differences among dyad types in continuous and categorical factors, respectively. The Mixed-Effects Model for Repeated Measures (MMRM) (Verbeke & Molenberghs, 2000) was used to compare expected postsurgical values among dyad types. Parameters were estimated using Restricted Maximum Likelihood with the Newton-Raphson algorithm as implemented in the Proc Mixed procedure contained in SAS version 9.1. For this secondary analysis, pair-wise contrasts among dyad categories along with standard errors (SEs), 95% confidence intervals (CIs), and p values were considered the primary analyses.

Results

Demographic Comparisons Among Dyad Types for Patients and Partners

Based on an analysis of 205 patient-partner dyads, Table 1 provides the numbers of dyad types included from each site and additional detail regarding how dyad type was constructed from the more specific relationships between patients and partners. Patients were significantly younger ($\bar{X} = 50.5$ years) in dyads that included an intimate partner than those with family ($\bar{X} = 59.4$ years) or nonfamily members ($\bar{X} = 56$ years). In contrast, partner age did not vary significantly among dyad types. Although no significant differences were observed among dyad types in how long patients knew about the lump, significant differences in how the lump was discovered did exist. Patients in intimate-partner dyads were most likely to have the lump discovered by routine mammogram (54%) compared to those in dyads with family (49%) and nonfamily members (29%). The nonfamily-member dyads were the most likely to find the lump by self-examination (41%). The finding could not be explained by the higher income level among patients in intimate-partner dyads. No significant differences in dyad types related to family history of breast cancer.

Table 2 summarizes demographic characteristic comparisons of patients among dyad types. Significant differences were noted in living status and parental status among dyads with 91% of intimate partners being married and 85% having children. No significant differences existed based on dyad type with regard to ethnicity, religion, education, or employment. Of note, patients in intimate-partner dyads were much

Table 1. Numbers of Dyads in the Modified Intent-to-Treat Cohort^a by Dyad Type and Clinical Site

Site*	Intimate Partner (N = 112)		Family Member (N = 58)		Nonfamily Member (N = 35)	
	n	%	n	%	n	%
New York University Medical Center	19	17	8	14	7	20
Dobbs Ferry	47	42	21	36	8	23
Mount Sinai	17	15	–	–	4	11
Beth Israel	29	26	29	50	16	46

Dyad Relationship	n	%	n	%	n	%
Spouse	101	90	–	–	–	–
Significant other	11	10	–	–	–	–
Daughter	–	–	27	54	–	–
Sister	–	–	23	46	–	–
Friend	–	–	–	–	23	66
Other	–	–	–	–	12	34

* p ≤ 0.05

^a Modified intent-to-treat cohort includes all randomized subjects with any clinical evaluation in the postsurgical period or beyond.

Note. Because of missing data, not all n values total the sample size.

more likely to report a change in hours worked (43%) compared to other dyads types, with most reporting working less (65%). Substantial differences also were apparent among dyad types in reported income levels, with patients in intimate-partner dyads much more likely to be in the highest income levels (82% earning more than \$50,000 per year) than patients of the other dyad types. Analyses of demographic characteristics of partners by dyad type (see Table 3) indicate significant differences related only to parental status, with more intimate partners reporting having children (87%), and differences in income, with intimate partners (84%) earning more than \$50,000 per year. Data regarding the gender of partners were not obtained.

Postsurgical Comparisons Among Dyad Types for Patients

Emotional adjustment: Based on the psychological well-being subscale of the PAL-C, the least squares adjusted follow-up period mean values were 14.8, 14.9, and 14.7 of a possible 20 among patients in intimate-partner, family-member, and nonfamily-member dyads, respectively. None of the pair-wise contrasts among dyad types was significant.

The BCTRI side-effect distress subscale scores indicated that mean values were 22.4, 20.6, and 20.1 of a possible 57 among patients in intimate-partner, family-member, and nonfamily-member dyads, respectively. None of the pair-wise contrasts were significant.

Physical adjustment: Patients in intimate-partner dyads tended to report a higher incidence of side effects than family- or nonfamily-member dyads. Mean values on the BCTRI over the after surgery, adjuvant

therapy, and recovery phases were 6.17, 5.27, and 5.23 of 19 among patients in intimate-partner, family-member, and nonfamily-member dyads, respectively. The estimated difference in adjusted means between intimate-partner and family-member dyads was 0.89 (95% CI –0.08–1.86, p = 0.07). Similarly, the estimated difference in adjusted means between intimate-partner and nonfamily-member dyads was not significant at 0.93 (95% CI –0.18–1.21, p = 0.1). Side-effect incidence was positively associated with disease stage (p = 0.0002), indicating that the greater the stage of disease, the more side effects experienced. However, side-effect incidence was not related to age, income, or family history.

In examining side-effect severity based on the BCTRI, mean values were 28.7, 26.9, and 26.7 of a possible 57 among patients in intimate-partner, family-member, and nonfamily-member dyads, respectively. Although patients in intimate-partner dyads scored higher on side-effect severity, none of the pair-wise contrasts was significant. Increases in patient age also tended to be negatively associated with side-effect severity (slope = –0.07, standard error [SE] = 0.04, p = 0.08), indicating that greater age was associated with lower side-effect severity for patients. Controlling for patient age reduced the magnitude of differences between intimate-partner dyads and the other dyads. Controlling for patient income category increased the magnitudes somewhat, but they did not become statistically significant.

Based on the SRHS, in which higher scores reflected better overall perceived health status, mean values were 9.24, 9.59, 9.52 of a possible 13 among patients in intimate-partner, family-member, and nonfamily-

Table 2. Demographic Characteristics of Patients by Dyad Type

Characteristic	Intimate Partner (N = 112)		Family Member (N = 58)		Nonfamily Member (N = 35)	
	n	%	n	%	n	%
Living status*						
Single, never married	1	1	13	23	9	28
Single, living with partner	6	6	–	–	1	3
Married, living with partner	99	91	11	20	4	13
Divorced	1	1	10	18	11	34
Separated	1	1	2	4	–	–
Widowed	–	–	18	32	6	19
Other	1	1	2	4	1	3
Children*						
No	17	16	17	30	13	38
Yes	93	85	40	70	21	62
Ethnicity						
Caucasian	86	78	34	60	19	56
African American	6	5	14	25	12	35
Latino or Hispanic	8	7	6	11	3	9
Asian or Pacific Islander	9	8	2	4	–	–
American Indian or Alaskan	–	–	–	–	–	–
Other	2	2	1	2	–	–
Religion						
Protestant	15	15	16	29	11	32
Catholic	46	45	25	45	10	29
Jewish	27	26	5	9	8	24
Islam	1	1	–	–	–	–
Other	14	14	10	18	5	15
Education						
Partial or completed high school	19	18	21	40	6	18
Partial or completed college	61	57	25	47	16	49
Master's or doctorate degree	28	26	7	13	11	33
Employment						
Unemployed	17	16	3	5	2	6
Employed part-time (less than 30 hours)	16	15	6	11	3	9
Employed full-time (30 hours or more)	59	54	28	49	19	56
Retired	9	8	14	25	9	27
Disability from present illness	2	2	–	–	1	3
Other	7	6	6	11	–	–
Work change*						
No	55	56	37	79	22	73
Yes	42	43	9	19	8	27
Specify*						
Working less	26	65	4	44	2	25
Working more	1	3	1	11	–	–
On disability	3	8	–	–	–	–
Leave of absence	4	10	3	33	1	13
Other	5	13	1	1	5	63
Income (\$)						
Less than 19,000	3	3	11	21	6	18
19,000–29,999	3	3	10	19	3	9
30,000–39,999	6	6	9	17	4	12
40,000–50,000	7	7	4	8	7	21
Greater than 50,000	87	82	19	36	13	39

* $p \leq 0.01$

Note. Because of missing data and rounding, not all n values total the sample size and not all percentages total 100.

member dyads, respectively. None of the pair-wise contrasts was significant.

Social adjustment: The PAIS social environment subscale mean values were 4.9, 3.98, and 4.88 of a possible 18 among patients in intimate-partner, family-member,

and nonfamily-member dyads, respectively. Given that higher scores reflect more problems with adjustment, the results indicate that patients in intimate-partner dyads have lower social adjustment and more problems than the other two dyads. Neither patient age or

Table 3. Demographic Characteristics of Partners by Dyad Type

Characteristic	Intimate Partner (N = 105)		Family Member (N = 53)		Nonfamily Member (N = 32)	
	n	%	n	%	n	%
Living status						
Single, never married	1	2	11	22	6	19
Single, living with partner	5	5	3	6	1	3
Married, living with partner	92	89	22	43	14	45
Divorced	3	3	3	6	8	26
Separated	–	–	1	2	–	–
Widowed	1	1	8	16	1	3
Other	–	–	3	6	1	3
Children						
No	13	13	18	35	12	38
Yes	90	87	33	65	20	63
Ethnicity						
Caucasian	80	78	32	63	22	69
African American	7	7	11	22	6	19
Latino or Hispanic	8	8	3	6	13	–
Asian or Pacific Islander	7	7	2	4	–	–
American Indian or Alaskan	–	–	–	–	–	–
Other	1	1	3	6	3	9
Religion						
Protestant	17	17	8	16	7	23
Catholic	42	42	27	54	9	29
Jewish	24	24	5	10	7	23
Islam	1	1	1	2	–	–
Other	16	16	9	18	8	26
Education						
Partial or completed high school	19	20	8	17	1	3
Partial or completed college	51	53	29	62	17	59
Master's or doctorate degree	27	28	10	21	11	38
Employment						
Unemployed	3	3	4	8	4	13
Employed part-time (less than 30 hours)	6	6	7	14	3	9
Employed full-time (30 hours or more)	71	70	27	53	16	50
Retired	16	16	11	22	3	9
Disability from present illness	4	4	–	–	2	6
Other	2	2	2	4	4	13
Work change						
No	63	69	33	73	21	72
Yes	29	32	12	27	8	28
Specify						
Working less	18	62	8	67	3	38
Working more	–	–	–	–	1	13
On disability	2	7	–	–	–	–
Leave of absence	2	7	2	17	3	38
Other	7	24	2	17	1	13
Income (\$)*						
Less than 19,000	3	3	3	7	–	–
19,000–29,999	3	3	3	7	2	7
30,000–39,999	2	2	5	11	3	10
40,000–50,000	8	8	10	22	5	17
More than 50,000	84	84	24	53	20	67

* $p < 0.05$

Note. Because of missing data and rounding, not all n values total the sample size and not all percentages total 100.

patient income was significantly associated with patient social environment. Some evidence showed that higher levels of education were associated with better patient social environment adjustment ($p = 0.08$). Controlling for education resulted in a significant difference be-

tween intimate-partner and family-member dyads ($p = 0.03$). Those who reported a higher level of education reported fewer problems in the social environment.

On the vocational environment subscale, the mean values were 5.07, 4.53, and 5.34 of a possible 18 among

patients in intimate-partner, family-member, and non-family-member dyads, respectively, with higher scores of intimate-partner dyads denoting poorer outcomes. No significant differences were evident among dyad types.

On the PAIS domestic environment subscale, mean values were 4.06, 3.63, and 4.36 of a possible 24 among patients in intimate-partner, family-member, and non-family-member dyads, respectively, with higher scores of nonfamily members denoting poorer domestic outcomes. Patient age was not statistically significant and adding patient age to the model did not appreciably change the magnitudes of the estimated contrasts. However, higher patient income was related to greater problems in the domestic environment ($p = 0.06$). Moreover, controlling for patient income doubled the size of the estimated contrast between intimate-partner dyads and family-member dyads. The estimated difference in predicted domestic environment adjustment between patients in intimate-partner dyads and patients in family-member dyads was 1 (95% CI 0.17–1.83, $p = 0.02$) after controlling for the confounding influence of dyad type differences in income. Therefore, patients in intimate-partner dyads reported greater domestic environment problems than those in family-member dyads. Similarly, the contrast between family- and nonfamily-member dyads only became statistically significant after controlling for patient income. The estimated difference in mean domestic environment adjustment between family- and nonfamily-member dyads was -1.18 (95% CI -2.15 to -0.21 , $p = 0.02$) after controlling for income. Disease stage also was significantly associated with patient domestic environment adjustment ($p = 0.005$). The estimated difference in mean domestic environment adjustment between patients with stage I or II compared to in-situ disease was 1.65 (SE = 0.70, $p = 0.02$).

SSNI mean values were 4.17, 4.23, and 4.15 of a possible five among intimate-partner, family-member, and nonfamily-member dyads, respectively. Although family-member dyads had the highest score, none of the pair-wise contrasts among dyad types was statistically significant.

Adjustment of Partners

Emotional: As a measure of the psychological well-being of partners, the mean values on the PAL-C subscale were 14.4, 14.8, and 15.5 among partners in intimate-partner, family-member, and nonfamily-member dyads, respectively. The estimated difference in means between intimate-partner and nonfamily-member dyads was -1.1 (95% CI -2.0 to -0.1 , $p = 0.03$), indicating that although psychological well-being of intimate partners was more severely affected than for nonfamily members, none of the other pair-wise contrasts among dyad types was statistically significant.

Physical: For the PAL-C physical symptoms subscale, mean values were 10.6, 10.5, and 10.6 among partners

in intimate-partner, family-member, and nonfamily-member dyads, respectively. On this subscale, higher scores represent a higher level of physical symptoms. Contrasts among dyads were not significant.

As a measure of perceived overall health of partners, the results, based on the HSRS, indicated that the least squares adjusted follow-up period mean values were 9.83, 9.78, and 9.77 among partners in intimate-partner, family-member, and nonfamily-member dyads, respectively. However, none of the pair-wise contrasts was significant.

Social: Based on the PAIS social environment subscale, the least squares adjusted follow-up period mean values were 3.64, 3.32, and 2.29 among partners in intimate-partner, family-member, and nonfamily member dyads, respectively. Social environment adjustment was significantly worse for partners in intimate-partner and family-member dyads compared to partners in nonfamily-member dyads. The adjusted difference in mean partner social environment adjustment was 1.35 (95% CI 0.41–2.31, $p = 0.005$) and 1.03 (95% CI -0.02 –2.08, $p = 0.06$) for these two contrasts, comparing patients in intimate dyads as compared to family member or nonfamily-member dyads. The magnitude of the latter contrast increased to 1.2, with $p = 0.03$ controlling for patient age and decreased to 0.84 ($p = 0.14$) controlling for patient income. The magnitude of the first contrast of 1.35 between intimate-partner and nonfamily-member dyads did not appreciably change when controlling for age or income.

The mean values on the PAIS vocational environment subscale were 2.92, 2.68, and 2.7 among partners in intimate-partner, family-member, and nonfamily-member dyads, respectively. However, no significant differences were observed among dyad types.

On the PAIS domestic environment subscale, the least squares adjusted follow-up period mean values were 2.82, 2.92, and 2.05 among partners in intimate-partner, family-member, and nonfamily-member dyads, respectively. Family members' higher scores denote poorer domestic outcomes. Domestic environment adjustment was significantly worse for partners in intimate-partner and family-member dyads compared to partners in the nonfamily-member dyads. Specifically, the adjusted differences in means were 0.77 (95% CI -0.1 –1.6, $p = 0.07$) and 0.87 (95% CI -0.1 –1.8, $p = 0.07$) for these two contrasts, respectively. The magnitude of the contrast between family- and nonfamily-member dyads increased to 1.1 (95% CI 0.02–1.92, $p = 0.05$) controlling for patient age but decreased to only 0.36 ($p = 0.46$) controlling for patient income. The magnitude of the contrast between intimate-partner and nonfamily-member dyads decreased slightly to 0.7 (95% CI -0.18 –1.57, $p = 0.12$) controlling for patient age but increased to 1.05 (95% CI, 0.18–1.96, $p = 0.02$) controlling for patient income.

Based on SSNI, mean values were 3.88, 3.99, and 4.04 among partners in intimate-partner, family-member, and nonfamily-member dyads, respectively. This indicates that nonfamily-member dyads have a higher level of total support than intimate-partner or family-member dyads. Specifically, the adjusted differences in predicted social support network inventory were -0.14 (95% CI -0.27 to -0.01 , $p = 0.04$), which compare intimate-partner to family-member dyads, and -0.16 (95% CI -0.31 to -0 , $p = 0.05$), which compare intimate-partner to nonfamily-member dyads. Partner social support network is seen to be worse among intimate-partner dyads. Although neither patient or partner incomes were statistically significant predictors of partner social support, statistical control of either factor more than doubled the magnitude of the differences in social support scores between intimate-partner dyads and the other two dyads.

Discussion and Implications

Most breast cancer studies have examined adjustment of patients and their spouses; however, not much information is available about partners other than spouses. Limited information regarding differences in patients' and partners' ages is available. In the literature, younger husbands are reported to have more problems carrying out domestic roles and experience a greater number of life stresses than older husbands (Northouse, 1994). Yet, older couples exhibit less communication negativity than younger couples in adjustment to early-stage breast cancer (Holmberg, Scott, Alexy, & Fife, 2001). Age was not found to be a confounding variable in the current study, though the role of age should be further examined in future research in relation to patient-partner dyads.

With regard to medical characteristics, patients in intimate-partner dyads were most likely to report that the lump was discovered by a routine mammogram. Although one may assume that with sexual intimacy, intimate partners would possibly discover a lump, a thorough breast examination is a clinical rather than a sexual activity. Intimate-partner dyads also were significantly different in living arrangements and parental status, with most intimate partners being married with children, which was the case in most studies identified in the literature review. Intimate-partner dyads also reported a greater change in work hours and higher incomes, enabling patients in intimate-partner relationships to take time off from work to tend to their medical conditions. One may expect that women whose partners were family members or nonfamily members may be single and supporting themselves. Therefore, those women may need to continue to work despite treatment for breast cancer and would have a single income, which would be most often lower than married couples.

Emotional, Physical, and Social Adjustment of Patients

Postsurgical comparisons for patients indicated no significant differences based on dyad type in emotional adjustment. Although most patients identified an intimate partner as their partner through the breast cancer experience, patients with family or nonfamily members as partners did equally well emotionally. The literature regarding marital dyads presents potential reasons as to why the marital relationship may not offer additional support as one might assume. Literature indicates that the psychosocial and sexual adjustment of patients with breast cancer varies with the role of the marital relationship and a good marital relationship predicts better emotional adjustment (Holmberg et al., 2001).

Based on a qualitative study of women with breast cancer, Wai Ming (2002) found that marital problems were related to husbands' lack of understanding, a disruption of couples' sexual relationship caused by breast cancer treatment, and a perceived lack of support from partners. Marital partners of women with cancer sometimes communicate in ways that are not perceived as supportive and adversely influence women's emotional well-being, whereas partners who make their support clear can foster enhanced well-being (Wimberly et al., 2005). Hodgson, Shields, and Rousseau (2003) reported, based on 22 patients with breast cancer and their spouses and 22 patients with other types of cancer and their spouses, that disengagement of each spouse was strongly correlated with his or her own adjustment as well as their spouse's. The result helps to explain why patients report greater distress and maladjustment when their attempts to receive support are met with resistance and withdrawal by their spouse. Mallinger et al. (2006), who studied 230 women at various stages after treatment for breast cancer, found that open family communication was independently associated with better mental health outcomes. Although findings from the current study indicated that women experience emotional adjustment equally well when their major source of support is a family or nonfamily member rather than a spouse, further research is needed to examine in detail the effects of dyad type on the emotional adjustment of women with breast cancer.

No significant differences were observed among dyad types in patients' physical adjustment, measured as side-effect incidence or side-effect severity, when controlling for age, income, family history, or differences in patients' perceived overall health. Although side-effect incidence may not be expected to be different based on dyad type, one might hypothesize that living with an intimate partner would help women minimize perceptions regarding side-effect severity and that women may even complain less to protect their intimate partners from the experience. The findings indicate a trend

that patients in intimate-partner relationships scored higher on side-effect incidence and severity. Women in an intimate-partner relationship may more freely complain about the side effects of treatment. Overall, the results indicate that women's physical adjustment to breast cancer was not found to be related to whether they received support from an intimate partner, family member, or nonfamily member.

Patients in intimate-partner dyads had more problems in their social environment. Controlling for education resulted in the significant difference between intimate-partner and family-member dyads, indicating that those who reported a greater level of education reported fewer problems in the social environment. Why patients with intimate partners experienced a greater degree of social impairment than women with family or nonfamily member partners is not clear. Intimate-partner dyads may have had more active social lives beforehand and, thus, experienced more impairment during the illness experience. Yet, women in intimate-partner relationships felt less of a need to socialize and withdrew socially as they attempted to cope with the cancer experience. Women who have chosen family or nonfamily members as their partners may decide to remain as socially active as possible to maintain a sense of normalcy in their lives and maintain connections within their social circle. Women with greater education may have other coping strategies and ways of entertaining themselves (e.g., use of Internet activities, support networks) that promoted their social adjustment.

No significant differences were noted based on dyad types for patients' adjustment in the vocational environment. Although the results of the study indicated that women with an intimate partner had a greater change in work hours, no significant difference was found based on dyad type. Because most women today are employed outside the home, all working women likely felt the need to maintain their working status given employer and societal expectations of a rapid return to work. Given the improved treatment of breast cancer, which has reduced the side effects of adjuvant treatments, many women are able to remain in the workforce during cancer treatment. Indeed, many women take off only limited time from their jobs during treatment and financially feel the pressure to support their families whether they are in a two-income family or are self-supporting. In contrast to findings from the current study, Baider and Kaplan-DeNour (1984), based on a study of 20 couples, found that patients reported more role adjustment problems in regard to vocational roles, whereas husbands reported stress and exhaustion related to balancing work and home responsibilities.

Patients in intimate-partner dyads had more problems in domestic adjustment than those in family-member dyads when controlling for patient income and stage of disease. No studies have examined domestic adjustment based on dyad types for women with breast cancer.

Yet, women with intimate partners, and particularly those with children, may feel greater distress related to their ability to carry out their usual domestic roles and functions. Women who chose family- and nonfamily-member partners may be single women with fewer individuals counting on their support and involvement in their daily life. Women with family- or nonfamily-member partners may be less concerned about how work changes affect other family members and the financial status of the family and, therefore, have fewer problems with domestic adjustment as measured in the study. The findings are consistent with those of Budin (1998), who reported that women with breast cancer who were single, divorced, separated, or widowed experienced relatively low levels of problems with psychosocial adjustment at work. Most women reported only minor problems with the ability to do their job at work and only slight problems in performing duties around the house. Interest in leisure time and social activities was almost the same as before cancer diagnosis and treatment; however participation in those activities was slightly reduced. In addition, although one may assume that the higher incomes of patients with intimate partners would provide the financial resources to hire help at home, offsetting issues related to the domestic environment, perhaps women with higher incomes have more household responsibilities or a lifestyle with a difference in perceived demands. This may result in greater problems experienced by those in intimate-partner dyads in terms of domestic adjustment.

Emotional, Physical, and Social Adjustment of Partners

The psychological well-being of intimate partners was more severely affected than for nonfamily members, yet no significant differences were observed between intimate-partner and family-member dyads; both manifested lower psychological well-being than nonfamily dyads. The literature indicates that spouses experience moderate to severe levels of distress when their wives are diagnosed with breast cancer (Holmberg et al., 2001; Northouse, 1994) and that patient and partner levels of distress are highly correlated (Fang, Manne, & Pape, 2001; Northouse, Templin, & Mood, 2001; Wellisch, Fawzy, Landsverk, Pasnau, & Wolcott, 1988). Although women's perceptions of spousal support have been documented to predict adjustment to cancer, better patient adjustment may increase spousal support, and patient distress may increase partner withdrawal and negativity (Scott, Halford, & Ward, 2004). Although the current study did not examine differences in adjustment between patients and their intimate partners, the findings regarding the psychological well-being of intimate partners indicate the dyadic experience as proposed by Segrin et al. (2003). In particular, intimate partners are more severely affected by the experience of women with breast cancer.

No significant differences in physical adjustment existed based on dyad types in physical symptoms or perceived overall health of partners. Because no studies compare dyad types in terms of physical symptoms or perceived overall health, further research is warranted. Based on a study of noninstitutionalized patients with cancer and their partners, Wingate and Lackey (1989) reported that the largest number of needs for patients and partners of various relationships were in the psychological needs category. The next largest category for patients was physical and information needs, whereas for partners it was household management needs. Of the combined 264 partner need items, the partner's own physical needs made up the smallest category. Perhaps, as suggested by the current study, partners do not manifest significant physical symptoms or related physical needs, thus all partner dyads reported perceived overall health.

The social adjustment of partners was significantly worse in intimate-partner dyads compared to family- and nonfamily-member dyads when controlling for patient age and income. For intimate partners, who most likely live with the patient, reporting greater social limitations or constrictions as a result of patients' illness is understandable. Higher scores of intimate partners indicated poorer vocational outcomes relative to other dyad types, yet the differences were not statistically significant. However, the higher scores of intimate partners regarding vocational adjustment indicate that they had greater changes related to work environment. Even so, the range of scores measuring vocational adjustment is 0–18 so, therefore, a range of dyad scores from 2.7–2.92 denotes that all dyad types had positive vocational adjustment. Further research is needed to examine the effect of women's breast cancer on partners' social and vocational adjustment. Domestic environment adjustment also appeared worse for partners in intimate-partner dyads and family-member dyads compared to partners in nonfamily-member dyads. Wellisch et al. (1988) reported that many husbands ($n = 31$) had problems carrying out their work following mastectomy, beginning at the time of surgery and continuing until discharge from the hospital. In a study of 50 Israeli men whose wives had been diagnosed with breast cancer, Kadmon, Ganz, Rom, and Woloski-Wruble (2008) reported that in addition to stress and concern, half of the husbands described financial difficulties, changes in their relationships, and a reduction in communication with their families. Spencer, Carver, and Price (1998) proposed that spouses are in a double conflictive role because they must assume new roles in the household and provide emotional support while coping with the distress of potentially losing their wife and witnessing her suffering.

With regard to social support, family- and nonfamily-member dyads had significantly higher levels of social

support than partners in intimate-partner dyads. Douglass (1997) examined the relationship between mutual spousal support and psychological health of patients with a variety of cancer sites and length of time living with cancer and their spouses. The patients perceived more interpersonal support than their spouses. Marital and interpersonal support was perceived by spouses to decrease depression. Given the results, with the focus of care on the patient, the amount of support needed by intimate partners may not be recognized. Therefore, assessing the amount of support experienced by partners, particularly intimate partners, and considering strategies to increase partners' experience of support from professionals and other individuals who have shared similar experiences is important.

Conclusion

The optimistic news based on the results of the study is that women with breast cancer experience successful physical and emotional adjustment whether they have an intimate partner, a family member, or a nonfamily member as partners during the cancer experience. Nurses and other healthcare professionals can feel confident that differences in dyad types do not negatively influence patients' physical or emotional adjustment. Women without marital partners who are single, divorced, or widowed do not appear to be at greater risk for problems with physical or emotional adjustment. Furthermore, within the context of a marital relationship, husbands may be relieved to learn that family and nonfamily relationships can be equally important in providing support to their wives.

However, the social adjustment of women with breast cancer is influenced by dyad type. Women with intimate partners experienced more problems with social adjustment than family or nonfamily dyads with regard to social and domestic environments. Throughout the illness experience, healthcare professionals need to assess women with spouses or significant others for their social and domestic adjustment and offer counseling or other supportive services to promote social adjustment.

The study also provides new information about the adjustment of partners of women with breast cancer. The results indicate that intimate partners are at greater risk for adjustment issues. Intimate partners have greater problems with emotional adjustment as well as social and domestic adjustment and receive less social support. The study reinforces Hearn and Higginson's (1998) suggestions for targeted interventions to address the needs of partners rather than offering generic care. Further research is necessary to substantiate differences in emotional, physical, and social adjustment of women with breast cancer and their partners based on dyad types and to identify the clinical implications for patient-partner assessment and interventions.

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