

Depression in husbands of breast cancer patients: relationships to coping and social support

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Abstract

Purpose The purpose of the present study was to examine depression in husbands of women with breast cancer, as depression is typically as high in husbands as in patients, and impacts functioning in both.

Methods We compared husbands of patients to husbands of women without chronic illness on depressive symptoms with the Center for Epidemiological Studies Depression Scale, social support with the Interpersonal Support Evaluation List, and coping with the Ways of Coping Questionnaire. Using the stress and coping model, we examined whether coping mediated social support and depression differently by group, as has been found in the literature.

Results Husbands of patients reported higher scores on the measure of depression and lower use of problem-focused coping, while groups reported equivalent social support. Escape-avoidance coping emerged as a full mediator between social support and depression in husbands of patients, but only a partial mediator in comparison husbands. Accepting responsibility coping partially mediated social support and depression in both groups. Low social support appears particularly detrimental in husbands of patients as it is associated with ineffective coping and depression.

Conclusions Findings suggest that among husbands of patients, social support relates to depression only through its relationship with coping, indicating healthcare providers should direct attention and intervention to the coping strategies employed by husbands with low social support.

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Although most spouses adjust well to the cancer experience, more spouses of cancer patients fall in the clinical range on depression than would be expected in the general population [1, 2]. In a review of the literature, Blanchard and colleagues [3] estimated that “20% to 30%” of spouses of cancer patients “suffer from mood disturbance....” These high rates of depressive symptoms have been associated with the burden of caring for an ill partner [4] and the patients’ physical symptoms [2] among other factors.

Furthermore, research suggests that partners who are experiencing depressive symptoms may be less supportive of the patient than partners who are adjusting well [5]. Patients with supportive husbands do better physically and emotionally [5, 6]. Even when patients draw support from other sources, it does not compensate for the negative effects of a partner relationship that is not helpful [7]. As husbands of breast cancer patients are their most frequent providers of

support [8], a clear understanding of depression in these husbands would inform the design of effective interventions.

However, most studies focus on either female spouses or samples of male and female spouses together. A meta-analysis conducted by Hagedoorn et al. [9] found only four studies of couples that included comparison couples. Of these, two came from their own research and found no differences in depression between the husbands of patients and the comparison husbands [10, 11]. The third study, by Northouse, Temple, Mood, and Oberst [12] found more distress in husbands of patients than in husbands of women with benign breast disease. The fourth study by Langer, Abrams, and Syrjala [13] found that spouses (of both genders) were more depressed than comparison spouses and female spouses were more depressed than male spouses. Interestingly, the studies reporting no differences between male spouses and comparison were conducted with samples from the Netherlands, and those that found differences were conducted with samples in USA. Although the findings are clear and consistent for female spouses, the findings for male spouses are less uniform and merit future study. Also, more research conducted in USA that includes comparison groups is necessary.

Few studies are guided by theory in their investigations which limits our ability to fully explain the associations found between variables in a study. Research based on theory is better able to provide an explanation of the mechanisms through which depressive symptoms develop among husbands of patients [9]. In fact, Hagedoorn and colleagues [9] suggest the need to move beyond studies that only compare samples to studies that attempt to identify the paths through which depression may become a cause for concern in these populations.

In an effort to identify psychosocial correlates of depression among husbands of breast cancer patients, we used the framework provided by Lazarus and Folkman's model of stress and coping [14]. According to this model, the stress of breast cancer in a wife places individuals at risk for a variety of negative outcomes, including depression. Husbands of women with breast cancer may experience stress associated with the uncertain consequences of the diagnosis, side effects during treatment, and the continued physical and psychological problems patients suffer [15]. Because of the stress of the disease in their wives, spouses may activate coping responses and seek social support, which would impact their subsequent mood.

Research has consistently identified social support and coping as predictors of outcome across multiple stressors and populations. In the cancer caregiving literature, spouses' social support has been associated with their improved immune function [16], better psychological adjustment [17], and post-traumatic growth [18]. For example, among caregivers of colon cancer patients,

negative social interactions predicted increases in depression 6 months later and emotional support predicted decreases in depression 6 months later [19]. A small literature examining husbands of breast cancer patients supports general research in this area. Avoidance coping has been associated with poorer adjustment to the illness [20, 21] and denial to better adjustment among husbands of patients [21]. However, there is yet to be a systematic evaluation of how social support and coping relate to depression in this group.

In the general stress and coping literature, social support and coping are both considered mediators between stressors and depression, and they typically have been examined as such in the psycho-oncology literature as well. A less frequently examined model finds that coping may function as a mediator between social support and depression [22]. This model is a sensible one because one's choice of coping options may be dependent on one's perceived availability of social support, more specifically, having a strong social support network may lead individuals to more effective coping responses when confronted with stressors and this adaptive form of coping may be one mechanism by which social support leads to less depression. Alternatively, individuals with low social support may use ineffective coping strategies because they are not receiving information, help, or emotional relief from others. This model is a more nuanced model than the traditional one, and as such, it may inform healthcare providers more specifically where to target interventions and for whom. Manne and colleagues found support for this model in their examination of couples with cancer, although in these studies spousal support, and not general social support, was examined [23, 24].

The goal of the present study was to further our understanding of depression and its relationship to social support and coping among husbands of women with breast cancer (HBC) by examining differences among these husbands and a comparison group of husbands of women without chronic illness. We explored whether coping is utilized in the same way in relation to social support and depression during times of elevated stress (during wife's breast cancer) compared to less stressful times (comparison). We have found no study published to date that made this specific comparison. We hypothesized that (1) HBC would report higher scores on a measure of depressed mood, the Center for Epidemiological Studies Depression Scale (CES-D) than the comparison group and that (2) a higher proportion of HBC would score within the depressed range than comparison husbands. We further hypothesized that (3) coping would mediate the relationship between general social support and depression, more specifically, that higher social support would lead to higher problem-focused coping and less-emotion-focused coping, which in

turn would lead to lower depression, and that this relationship would be stronger in the HBC (the stressed group) than in the comparison husbands. This mediation model is depicted in Fig. 1. The figure depicts the unique point of view of placing coping as a mediator between social support and depression; this new approach to viewing the relationships among these variables may contribute significantly to our understanding of these relations in this population.

Method

Participants

One hundred and nineteen husbands of women receiving treatment for breast cancer were approached at a university cancer center and all agreed to participate in the current study; 81 (68%) returned completed questionnaires. Research assistants were present at the infusion clinic daily to approach each partner of women receiving treatment for chemotherapy as they waited for the patient to complete treatment. Three questionnaire sets were returned with missing data on the CES-D and were therefore excluded from the current analyses, yielding data for a total of 78 participants.

One hundred twenty-two husbands of women without chronic illness (comparison group) were recruited through an advertisement placed in the weekly university email news. This email list includes faculty and staff from campus in addition to the various university hospitals and their affiliated health and research centers, therefore reaching a broad and socio-demographically diverse population. From these 122 recruited, 99 comparison husbands returned completed surveys. Selection criteria were posted on advertisement fliers and confirmed by trained research assistants when eligible participants called. These criteria included being over age 18, English speaking, and married to a wife who had no chronic or acute health conditions.

To help ensure equivalence between groups in health and life experience, 78 participants from the comparison group were age-matched to husbands of women with breast cancer. Husbands who could not be matched were dropped from the

present analyses. There were no differences in demographics and study variables between the comparison husbands who were matched and those who were dropped, except for age. A power analysis conducted using G*Power© with alpha set at 0.05, medium effect size ($f^2=0.15$), power at 0.80 and three predictors for regression analysis showed a sample size need of 77 participants, suggesting sufficient power for the present study.

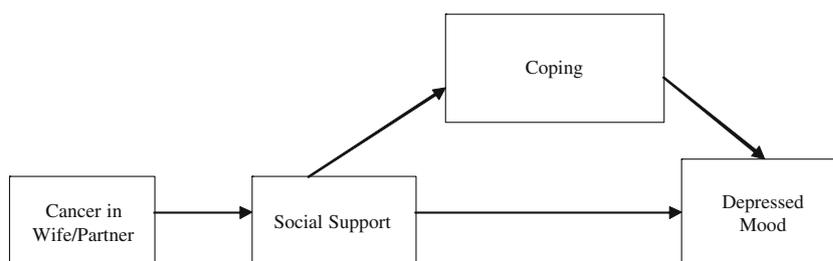
Patients' medical data

Information regarding the health status and breast cancer experience of the wives was obtained solely from husbands. According to husbands, the average time since diagnosis of breast cancer was 35 months (median=14 months). For 46.2% of the sample, the diagnosis had occurred within the past year; for 9.0% of the sample more than 10 years passed since diagnosis. In terms of current stage of disease, 19.0% of the patients were stage I; 32.9% stage II; 20.3% stage III; and 17.7% stage IV. Ten percent of the husbands were unable to report stage of illness for their wives. Husbands reported that 45.6% had mastectomy and 34.2% lumpectomy. Nine percent of husbands reported their wives had no surgery and 11.4% reported their wives had received both lumpectomy and mastectomy, suggesting possible recurrent disease for this subgroup. However, we did not specifically ask whether the breast cancer was first occurrence, recurrence, or metastatic. For adjuvant treatment, 2.4% were recruited before any adjuvant treatment, 93.7% reported having chemotherapy, 44.3% radiation, and 25.3% hormone therapy; 48.8% had received only one of the three (chemotherapy), 30.5% had two, and 18.3% had received all three adjuvant treatments.

Procedure

Research assistants approached breast cancer patients and their husbands at the cancer center in chemotherapy infusion clinics. Research assistants explained the purpose of the study and asked husbands to participate. Husbands were consented and were provided a packet of questionnaires to take home and return by mail upon completion. These procedures for recruiting family members of cancer

Fig. 1 Proposed theoretical model of the relationship between social support and depressed mood among husbands of patients with cancer



patients are regularly used in psycho-oncology research and typically yield lower percentages of participation than the present study [23, 24]. Comparison husbands called the lab in response to advertisements and after providing consent and contact information over the phone, they were mailed survey packets. Surveys required approximately 90 min to complete. All participants who returned packets were compensated for their time with \$30 grocery gift certificates. Data were entered and double-checked by trained research assistants.

Measures

Project questionnaire This instrument was developed by project personnel and used to obtain demographic information as well as information on the patient's cancer and treatment.

Depression—Center for Epidemiologic Studies Depression Scale (CES-D) This 20-item self-report instrument [25] distinguishes between various levels of problem severity, with higher scores indicating more depressive symptoms. Although not a diagnostic tool, cutoffs have been used consistently in the literature to identify individuals who are likely to be depressed. Beekman, Deeg, Van Limbeek, Braam, De Vries, and Van Tilburg [26] estimated that with the frequently used cutoff of 16, sensitivity for major depression is 100% and specificity is 88%. Reliability has been reported at $\alpha=0.88$ [25]. Reliability in the present study was $\alpha=0.90$.

Coping—Ways of Coping Questionnaire Coping strategies were measured using the Ways of Coping Questionnaire [27]. Sixty-seven items are grouped into eight subscales: positive reappraisal, distancing, self-controlling, escape-avoidance, which constitute emotion-focused, and seeking social support, accepting responsibility, planful problem solving, and confrontive coping, which constitute problem-focused coping. We examined the eight subscales instead of the categories of emotion-focused and problem-focused coping as these last two are quite broad and yield less specific information than the eight subscales. Furthermore, findings from subscale scores are more likely to be comparable to extant literature, even that which uses other instruments to measure similar constructs of coping. Higher scores indicate more frequent use of that coping strategy. The measure has internal consistency reliabilities ranging from $\alpha=0.61$ to $\alpha=0.79$. Reliability in the current study ranged from $\alpha=0.48$ (confrontive coping) to $\alpha=0.76$ (planful problem solving).

Social support—Interpersonal Support Evaluation List This 40-item measure, developed by Cohen, Mermelstein,

Kamarck, and Hoberman [28], was specifically designed to assess the “role social supports play in protecting people from the pathogenic effects of stress” (p. 74) on a true/false scale. Higher scores indicate better social support. This measure has been used successfully in studies of cancer patients and partners [29–31]. Means, in the general population, range from 32.9 to 34.4, and standard deviations range from 4.96 to 5.98. Validity was tested with other social support measures ($r=0.46$ to $r=0.62$), self-esteem measures ($r=0.74$), and self-disclosure measures ($r=0.40$). Six-month test–retest reliability was good ($\alpha=0.74$). Studies report reliability ranging from $\alpha=0.77$ to $\alpha=0.86$ [28]. Reliability for the total score in this study was $\alpha=0.90$.

Statistical analyses

One-way and multivariate analyses of variance and chi-square tests were used to compare groups on demographic characteristics, depression (first hypothesis), social support, and coping styles. Covariates of depression were explored through correlation analyses for each group independently. Coping was examined as a mediator of the relationship between social support and depression. We followed the Baron and Kenny [32] method for mediation, which is based on multiple regression analyses. According to this method, four paths are tested through a series of three regression analyses to determine whether the effects of the independent variable (in this case social support) on the dependent variable (depression) work through another variable (coping as mediator). Please refer to Fig. 2 for an illustration of each path tested in this multiple regression. In the first regression (Fig. 2, Path C), the independent

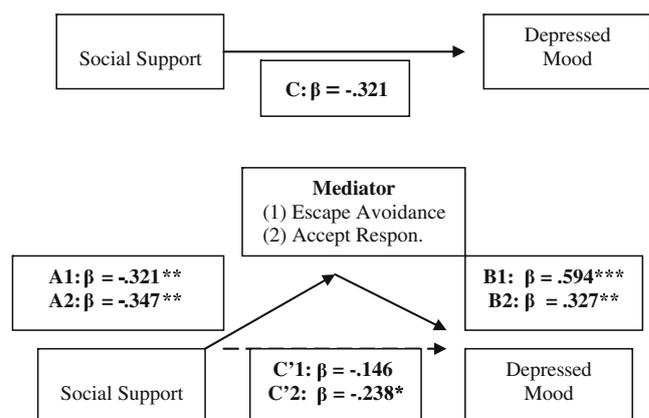


Fig. 2 Model of coping as mediator between social support and depressed mood for HBC. Dotted line illustrates the relationship between social support and depressed mood when the mediators are controlled. Betas in figure are standardized coefficients. Full mediation is demonstrated for escape-avoidance coping and partial mediation for accepting responsibility. Single asterisk indicates $p<0.05$; double asterisks indicate $p<0.01$; triple asterisks indicate $p<0.001$

variable (social support) is established as a predictor of the dependent variable (depression). In the second regression (Fig. 2, Path A), the independent variable (social support) is tested as a predictor of the mediator (coping). The third and fourth paths are tested in the same regression equation. This third and final regression establishes the mediator (coping) as a significant predictor of the dependent variable (depression, Fig. 2, Path B) and tests the independent variable (social support) as a predictor of the dependent variable (depression) controlling for the mediator (coping, Fig. 2, Path C'). If the strength of the relationship between the independent variable and dependent variable is reduced when controlling for the mediator, mediation is established. If, after adding the mediator, the independent variable loses significance, a full mediation occurs. When the independent variable remains significant, but loses strength, partial mediation is established. In partial mediation, the Sobel statistic determines whether the difference in the relation between social support and depression with and without coping present (C vs. C') is statistically significant. Separate mediation analyses for each group, followed by the Sobel test, allowed us to determine which group, if any, showed the expected mediation (hypothesis 3) and whether coping behaves similarly as a mediator during times of high stress (HBC) as low stress (comparison group).

Results

There were no significant differences in demographic characteristics between the HBC and the comparison husbands. Therefore, demographic characteristics are reported for the entire sample. The sample was predominantly Caucasian (91.7%) with an average age of 50.19 years (SD=12.59). Most participants were college graduates (54.5%), employed full-time (64.1%), and a large proportion (41.3%) earned an annual income over \$70,000. Husbands were married for an average of 21.63 years (SD=13.83). See Table 1 for detailed demographic information by group.

We examined the relationship between wife's illness characteristics and husband's depression among HBC through a series of correlation analyses and univariate ANOVAs. Wives' disease stages, time since diagnosis, type of surgery, and adjuvant treatment were all unrelated to husbands' depressive symptoms ($p > 0.05$).

Comparisons between groups on study variables

Depression (hypotheses 1 and 2) An ANOVA revealed a statistically significant mean difference between groups, $F(1, 154)=7.42, p=0.007$, with HBC reporting higher levels of depressive symptoms ($M=11.26, SD=8.93$) than com-

Table 1 Demographic variables by group

| Variable | HBC group ($n=78$) means (SD)/ frequencies | Control group ($n=78$) means (SD)/frequencies |
|--------------------------|--|---|
| Age of participants | 51.17 (12.56) | 49.23 (12.62) |
| Employment Status | | |
| Employed | 74.3% | 79.5% |
| Retired | 16.7% | 12.8% |
| Other | 9.0% | 3.7% |
| Income level | | |
| \$30,000 and below | 9.1% | 10.3% |
| \$30,001–50,000 | 24.7% | 29.4% |
| \$50,001–70,000 | 18.2% | 25.7% |
| Above \$70,000 | 48.1% | 34.6% |
| Ethnicity | | |
| Caucasian | 97.4% | 97.4% |
| Education | | |
| Less than college degree | 46.2% | 44.9% |
| Bachelor's degree | 23.1% | 23.1% |
| Post-graduate study | 30.7% | 32.0% |
| Years married | 22.14 (14.20) | 19.35 (13.91) |

There were no differences between groups on any of these variables, $p > 0.05$

parison husbands ($M=7.60, SD=7.78$; see Table 2). We also examined the distribution of scores on the CES-D to determine the percentage in each group who scored above 16, a score typically considered the cutoff for depression [26]. In our sample 30% ($n=24$) of HBC scored at or above 16 and were therefore classified as depressed, while only 11% ($n=9$) of comparison husbands were classified as depressed. This difference in the percentage of husbands falling above the cutoff score on the CES-D was statistically significant, $\chi^2=7.707, p=0.006$. Therefore, our first and second hypotheses were supported.

Social support An ANOVA comparing groups on the total score of the ISEL was not significant ($F(1, 151)=1.08, p=0.30$), indicating no difference in perceived social support between HBC and comparison husbands (see Table 2).

Coping A MANOVA was conducted to compare groups on the eight subscales of the Ways of Coping Questionnaire. The model was significant, $F(8, 141)=8.45, p < 0.0001, \eta^2=0.32$. Follow-up ANOVAs indicated HBC utilized less confrontive ($p=0.004, \eta^2=0.05$), distancing ($p=0.02, \eta^2=0.04$), self-controlling ($p=0.001, \eta^2=0.07$), seeking social support ($p < 0.001, \eta^2=0.11$), accepting responsibility ($p < 0.001, \eta^2=0.15$), and planful problem solving ($p < 0.001, \eta^2=0.14$) coping than comparison husbands (see Table 2). No differences were found in the

Table 2 Means, standard deviations, and statistical information for tests of differences between groups for stress and coping variables

| Variable | HBC group (<i>n</i> =78) means (SD) | Control (<i>n</i> =78) means (SD) | Univariate <i>F</i> value | <i>p</i> value | Effect size |
|-----------------------------|--------------------------------------|------------------------------------|---------------------------|------------------|-------------|
| CESD—depression | 11.26 (8.93) | 7.60 (7.78) | 7.42 | 0.007 | 0.046 |
| Ways of coping ^a | | | | | |
| Emotion-focused | | | | | |
| Distancing | 5.72 (3.12) | 6.91(3.75) | 5.70 | 0.019 | 0.037 |
| Escape-avoidance | 5.81 (4.11) | 5.76 (3.75) | 0.007 | 0.934 | 0.000 |
| Self-controlling | 9.12 (3.61) | 10.92 (3.09) | 10.75 | 0.001 | 0.068 |
| Positive reappraisal | 9.59 (4.21) | 9.56 (4.21) | 0.002 | 0.969 | 0.000 |
| Problem-focused | | | | | |
| Accepting responsibility | 3.09 (2.63) | 5.20 (2.32) | 27.00 | <0.001 | 0.154 |
| Confronting | 5.16 (2.70) | 6.44 (2.67) | 8.53 | 0.004 | 0.054 |
| Problem solving | 8.16 (3.90) | 10.85 (3.19) | 21.35 | <0.001 | 0.126 |
| Seeking social support | 6.06 (2.99) | 8.17 (3.00) | 20.12 | <0.001 | 0.112 |
| Social support—ISEL | 33.74 (6.08) | 32.68 (6.55) | 1.08 | 0.301 | 0.005 |

Bolded numbers in *p* value column indicate *F* test reached statistical significance

^aIndicates MANOVA was significant at *p*<0.01

degree to which HBC utilized escape-avoidance and positive reappraisal coping as compared to the comparison husbands.

Correlates of depression by group

Pearson product moment correlation analyses were conducted to identify correlates of depression for each group (See Table 3). Among HBC, higher social support was associated with lower scores on depression while higher use of escape-avoidance, distancing, accepting responsibility, and confrontive coping were associated with higher scores on depression. In the comparison group, higher social

support was also associated with lower depression, while escape-avoidance and accepting responsibility coping were associated with higher depression. Unlike HBC, distancing and confrontive coping were not associated with depression in the comparison group.

We compared the correlation coefficients between groups and found that some differed statistically significantly between groups. Specifically, the relationship between depression and social support ($z=1.82$, $p=0.035$), distancing ($z=-3.67$, $p<0.001$), and confrontive coping ($z=-3.66$, $p<0.001$) differed significantly by group. The relationship between social support and positive reappraisal ($z=3.15$, $p<0.001$) and distancing ($z=-3.32$, $p<0.001$) also differed significantly by group.

Table 3 Correlations between study variables by groups

| Variable | Depression | | Social support | |
|--------------------------|------------|----------|----------------|----------|
| | HBC | Comp | HBC | Comp |
| Social support | -0.321** | -0.446** | na | na |
| Emotion-focused coping | | | | |
| Positive reappraisal | 0.112 | -0.127 | 0.098 | 0.339** |
| Escape-avoidance | 0.601** | 0.563** | -0.321** | -0.309** |
| Distancing | 0.352** | 0.071 | -0.360** | -0.108 |
| Self-controlling | 0.205 | 0.112 | -0.186 | -0.075 |
| Problem-focused coping | | | | |
| Problem solving | 0.106 | -0.077 | -0.015 | 0.165 |
| Seeking support | 0.096 | -0.109 | 0.243* | 0.406** |
| Accepting responsibility | 0.335** | 0.422** | -0.347** | -0.271* |
| Confrontive | 0.389** | 0.114 | -0.167 | 0.202 |

Mediation of social support and depression by coping (hypothesis 3)

The only coping styles to have significant associations with both social support and depression for the two groups were escape-avoidance and accepting responsibility coping; therefore, mediation was examined for only these coping styles.

HBC group Mediation was first tested in the HBC group through multiple regression analyses with social support entered as the independent variable, depression as the dependent variable, and escape-avoidance and accepting responsibility coping as the mediators. Table 4 shows how the first two paths for mediation were established. In the third regression, social support and escape-avoidance coping were entered in the same step, resulting in the beta weight of social support becoming non-significant, while escape-avoidance remained a significant predictor. These results suggest that escape-avoidance coping fully mediated the relationship between social support and depression (see Table 4 and Fig. 2).

In the case of accepting responsibility, social support dropped in strength, but did not become non-significant when entered with accepting responsibility. Sobel's statistic reflected that this drop in beta weight in the relationship

between social support and depression was statistically significant ($z=-2.268$, $p=0.023$), suggesting a partial mediation (see Table 5).

Comparison group The mediation analysis in the comparison group revealed only a partial mediation for escape-avoidance coping ($z=-2.563$, $p=0.010$; see Table 4) and for accepting responsibility coping ($z=-2.13$, $p=0.03$; see Table 5). Given the findings on mediation for the two groups, our third hypothesis was supported only for escape-avoidance coping.

Discussion

Our primary aims were to evaluate the degree of depression found in HBC specifically when compared to a group of husbands of women without chronic illness and to generate a better understanding of the stress and coping variables associated with depression. Variables were chosen from stress and coping theory, specifically social support and coping, both of which are highly amenable to successful interventions.

In the current study, 30% of the HBC scored high enough on the CES-D to suggest a high likelihood of

Table 4 Escape-avoidance coping as a mediator of social support

| Variable | B | SE B | Beta | F (df) | R ² |
|------------------------------------|--------|-------|-----------|------------------|----------------|
| HBC Group | | | | | |
| Regression 1 (Path C): | | | | | |
| Dependent: depression (CES-D) | | | | | |
| Social support | -0.473 | 0.162 | -0.321 | 8.52** (1,74) | 0.103 |
| Regression 2 (Path A): | | | | | |
| Dependent: escape-avoidance coping | | | | | |
| Social Support | -0.215 | 0.074 | -0.321 | 8.52** (1,74) | 0.103 |
| Regression 3 (Path B and C'): | | | | | |
| Dependent: depression (CES-D) | | | | | |
| Escape-avoidance coping | 1.304 | 0.205 | 0.594*** | 40.281*** (1,74) | 0.352 |
| Escape-avoidance coping | 1.201 | 0.215 | 0.547*** | 21.57*** (2,73) | 0.371 |
| Social support | -0.214 | 0.144 | -0.146 | | |
| Control group | | | | | |
| Regression 1 (Path C): | | | | | |
| Dependent: depression (CES-D) | | | | | |
| Social support | -0.557 | 0.122 | -0.466*** | 20.76*** (1,75) | 0.217 |
| Regression 2 (Path A): | | | | | |
| Dependent: escape-avoidance coping | | | | | |
| Social support | -0.182 | 0.065 | -0.309** | 7.94** (1,75) | 0.095 |
| Regression 3 (Path B and C'): | | | | | |
| Escape-avoidance coping | | | | | |
| Escape-avoidance coping | 1.141 | 0.194 | 0.564*** | 35.01*** (1,75) | 0.318 |
| Escape-avoidance coping | 0.943 | 0.190 | 0.465*** | 25.93*** (2,74) | 0.412 |
| Social support | -0.385 | 0.112 | -0.322** | | - |

* $p<0.05$; ** $p<0.01$;

*** $p<0.001$

Table 5 Accepting responsibility coping as a mediator of social support and depression by group

| Variable | <i>B</i> | SE <i>B</i> | Beta | <i>F</i> (df) | <i>R</i> ² |
|--|----------|-------------|-----------|-----------------|-----------------------|
| HBC Group | | | | | |
| Regression 1 (Path C): | | | | | |
| Dependent: depression (CES-D) | | | | | |
| Social support | −0.473 | 0.162 | −0.321** | 8.52** (1,74) | 0.103 |
| Regression 2 (Path A): | | | | | |
| Dependent: accepting responsibility coping | | | | | |
| Social support | −0.155 | 0.049 | −0.347** | 9.97** (1,74) | 0.120 |
| Regression 3 (Path B and C’): | | | | | |
| Dependent: depression (CES-D) | | | | | |
| Accepting responsibility coping | 1.079 | 0.365 | 0.327** | 8.751** (1,74) | 0.107 |
| Accepting responsibility coping | 0.808 | 0.318 | 0.245* | 6.692** (2,73) | 0.157 |
| Social support | −0.352 | 0.171 | −0.238* | | |
| Control group | | | | | |
| Regression 1 (Path C): | | | | | |
| Dependent: depression (CES-D) | | | | | |
| Social support | −0.557 | 0.122 | −0.466*** | 20.76*** (1,75) | 0.217 |
| Regression 2 (Path A): | | | | | |
| Dependent: accepting responsibility coping | | | | | |
| Social support | −0.097 | 0.040 | −0.271* | 5.87* (1,75) | 0.073 |
| Regression 3 (Path B and C’): | | | | | |
| Accepting responsibility coping | 1.389 | 0.347 | 0.422** | 16.00*** (1,75) | 0.178 |
| Accepting responsibility coping | 1.040 | 0.330 | 0.316** | 17.12*** (2,74) | 0.319 |
| Social support | −0.416 | 0.118 | −0.391** | | – |

* $p < 0.05$; ** $p < 0.01$;*** $p < 0.001$

clinical depression among these men [26]. Our results are consistent with the general literature that shows as many as a 30% of cancer patient spouses may experience depression [2]. This may be especially true during the time the patients are receiving active treatments, such as chemotherapy, and are recently diagnosed [33], because of the additional strains the medical treatment adds and the unknown course of illness at the time [15]. Because cancer patients fare better physically and emotionally when their spouses are supportive [23, 34], a question for future research may well be how and to what degree depression in the husband impedes his ability to provide adequate support to the patient.

We expected that HBC would perceive higher levels of social support than comparison husbands because active treatment is a time when family and social resources mobilize to help cancer couples. However, this was not the case; there was no difference in perceived support by group. Additionally, while social support correlated with depression in both groups, a stronger bivariate relationship was found in the comparison group than the HBC. Although social support has long been recognized as a protective factor for those experiencing stress [29], research findings regarding the relationship between caregiver depression and level of social support are inconsistent [2]. Mantani et al. [35] for example found that high sharing of

roles within family members led to higher anxiety among husbands. The current study may clarify these inconsistent findings through the role of coping as a mediator in the social support–depression relationship.

The literature has consistently found that spouses of cancer patients who adopt maladaptive coping styles, such as escape-avoidance, distancing, and confrontive coping, also tend to suffer from higher levels of depression [2]. The findings of the current study support previous research. Interestingly, although escape-avoidance coping clearly related to CES-D scores in both HBC and comparison husbands, at similar strength, distancing and confrontive coping only correlated with depression among the HBC. It would seem that using maladaptive coping styles such as these is more problematic when faced with a stressor. Distancing during the time of a medical crisis may cause extra strain on spousal relationships during a time when a wife may be seeking extra support. Furthermore, husbands who do not confide in their wives during this time may be especially vulnerable to depression if they have no alternative means for emotional expression. Similarly, confrontive coping is ineffective when facing an uncontrollable stressor, such as breast cancer, and the frustration associated with implementing this maladaptive coping strategy relate more strongly to depression during stressful times. The discrepancy in the associations between coping

and depression between these two groups of men suggests that research findings reported for one group do not necessarily generalize to the other, highlighting the importance of further research on coping among these husbands.

More interesting however was the finding that escape-avoidance mediated the relationship between social support and depression, indicating that vulnerability to maladaptive coping during times of high stress supersedes the ability of social support to protect against depression. We based our study on a modification of Lazarus and Folkman's model of stress and coping. In our modified model, coping was expected to mediate the relationship between social support and depression. We found full mediation in the HBC and partial mediation in the comparison husbands. Among husbands of patients then, social support is related to depression fully through its relation with coping, and therefore a less powerful independent resource than among comparison husbands. These findings partially support our modified model and the use of theory to inquire about relationships among variables.

These findings partially show that coping plays an especially important role in the relationship between social support and depression. In the case of the comparison husbands, social support exerts its protective effect above and beyond its impact through coping, but for HBC, this direct effect is missing as the relationship is weaker, making HBC more vulnerable to problematic coping styles such as escape-avoidance. Escape-avoidance, an emotion-focused coping style, entails efforts to escape or avoid through wishful thinking or behavior changes. Examples of items that participants endorsed included "avoid being with people in general," "refuse to believe it will happen," and "wish the situation would go away." This type of coping has been associated with poorer outcome in the cancer literature [36], specifically when examining husbands of patients [21, 37].

Accepting responsibility is usually considered a problem-focused coping style, which is typically adaptive because it entails acknowledgment of one's own role in the problem and efforts to correct the problem. Examples of items from accepting responsibility includes agreement with items such as "criticize or lecture myself" or "apologize or do something to make up," which would not be appropriate when dealing with cancer in a partner. This may be helpful in some stressful situations, specifically those in which the individual is responsible for the stressor and/or has control over the stressor. However, in the case of breast cancer in the wife, accepting responsibility has been identified as a maladaptive coping style associated with higher depression [34] because there is no benefit or use in self-blame in this situation and doing so might place an undue and irrational burden on the husband and therefore result in poorer psychological health [38]. In the present study, this finding was supported. However, in

our data social support also related to accepting responsibility, a finding we have not been able to support with existing literature. Furthermore, accepting responsibility coping mediated social support and depression in both groups to a similar degree. Because accepting responsibility coping is not typically examined individually, there is no literature to support or refute our findings. Given the significance of these findings, however, more research needs to be conducted. First and foremost, this coping style may be mislabeled even in the general population as a generally effective style. Secondly, it would be useful to better understand the nature of the mediated relationship, possibly through a longitudinal study.

Overall these findings, along with the previously mentioned escape-avoidance coping finding, suggest that social support may impact depression through various coping mechanisms. Individuals with less social support may appraise situations as more threatening, as they are aware that they lack in this important resource, and as a result may cope in more ineffective forms. Alternatively, those with high support will be less likely to engage in maladaptive coping, resulting in lower depression. Although the bivariate relationships found in this study are frequently found in the literature, seldom is coping examined as a mediator variable, and therefore the contributions of these findings extend beyond existing literature to suggest that social support may impact depression in unseen ways and that its impact on coping has implications for mood.

Clinical implications

These findings as a whole suggest that interventions aimed at both social support and coping may produce maximum benefit. Furthermore, these interventions may be more effective if delivered to the couple, as opposed to just the husbands. Kayser [39] developed a *Partners in Coping Program* that uses cognitive behavioral techniques to help the couple learn to cope with the diagnosis and treatment of breast cancer and to effectively elicit support from family and friends. Halford, Scott, and Smythe [40] developed a couple's cognitive behavioral intervention, *Can Cope*, with similar goals as Kayser's but with the added goal of preventing or resolving sexual problems. In spite of these two existing and published interventions, there is little research on ways to reduce discomfort for the significant proportion of husbands that experience distress during the cancer in their partners.

Given the mounting evidence that a significant proportion of husbands of patients with breast cancer suffer psychological distress, it is important to further develop, evaluate, and importantly offer psychological interventions to these individuals [30].

Research implications

It is important to better understand the sources of support for these husbands in order to plan effective interventions for them. Given the average age of the population of breast cancer patients, it is likely that many of these couples have grown children who may be accessed for social support. These children themselves may be dealing with psychosocial concerns, but can be drawn on to support their fathers during the breast cancer experience.

Furthermore, there is extant literature that shows differences in social support between men and women. Women have larger social support networks that are more intimate and that come to their aid in times of need [41]. On the other hand, men draw most of their support from women, typically their wives [42], and are not always amenable to the type of support that women utilize, such as emotional support [43]. In future studies where male and female spouses are included, gender comparison regarding type and level of social support, and its influence on depression, would inform interventions.

Also, cultural factors need to be examined to better understand the different findings across studies. Most research in USA has been done with Caucasian samples, and therefore we may know little about the distress in couples of other ethnic or racial backgrounds. Researchers in northern Europe have found little to no distress among husbands [see 6]. It is possible that health care delivery factors may explain these different findings; or they may be explained by cultural differences in how couples relate during times of stress. Future research including a diverse sample or designed specifically to compare groups would clarify these issues.

Methodological limitations

There are several limitations to the current study. First, the study was cross-sectional and thus causal attributions cannot be drawn. Second, the study used a self-report measure rather than a clinical interview and did not determine whether or not spouses would have met DSM-IV criteria for depression. In a study of caregivers of advanced cancer patients for example, only 4.5% met criteria for major depressive disorder using the Structured Clinical Interview [44]. Also, our sample was homogeneous in that it was composed primarily of White, college educated, middle-aged, middle-class men. Because breast cancer is more prevalent among older women, our sample is representative of the age of the general population of breast cancer husbands. However, concern regarding the limited ability to generalize the findings to other ethnic groups and husbands from other socioeconomic groups is valid, and too often a research limitation

in this area. In addition, we did not have access to patient files; therefore, it was necessary to rely on husband report of patient stage and treatment history, which may be of questionable accuracy. The sample was heterogeneous in that it was composed of husbands of women with both new and recurrent disease and of different stages and treatments. However, research has suggested that the health status of the patient and whether the patient has new versus recurrent disease status may not predict spouse distress beyond the level of burden [45]. Heterogeneity in terms of disease characteristics may increase the external validity of the study. Finally, the sample was not only voluntary, but consisted of husbands of patients who were at the cancer center, accompanying their wives to treatment. Although this methodology increased the effectiveness of our recruitment, it did limit the generalizability of our findings in unknown ways. It is possible that these men were able to accompany their wives because they had fewer other responsibilities and therefore stressors, or because they were especially worried, or their wives were especially vulnerable. It is also possible these were husbands who are much more supportive of, and supported by, their wives. Ideally, recruiting from among all husbands of current chemotherapy patients to participate might have included a more representative sample. However, our own experience suggests problems with such methodology as well, namely poor accrual, which may explain why our procedures are commonly used [23, 24]. In a similar vein, our recruitment of comparison group participants from the broader university community could also result in a biased sample, although fortunately they were no different socio-demographically than the HBC.

Conclusions

This is not the first attempt to better understand how depression relates to variables from the stress and coping model in spousal caregivers of cancer patients [46]. The present study adds to the literature by focusing on husbands of patients and including a comparison group within a well-established theoretical framework. Future research should continue to attempt to improve upon these designs in order to continue to build on our understanding of depression in this population. Also, the examination of coping as a mediator enriches our understanding of its impact on depression and its relationship with social support. In this way, the current study provides further support for findings that suggest that male HBC do in fact experience depression in significant proportions, and that their social support is associated with inappropriate coping which in turn relates to higher depression.

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