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ORIGINAL REPORT

Social Networks, Social Support, and Survival After Breast Cancer Diagnosis

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ABSTRACT

Purpose
We prospectively examined social ties and survival after breast cancer diagnosis.

Patients and Methods
Participants included 2,835 women from the Nurses' Health Study who were diagnosed with stages 1 to 4 breast cancer between 1992 and 2002. Of these women, 224 deaths (107 of these related to breast cancer) accrued to the year 2004. Social networks were assessed in 1992, 1996, and 2000 with the Berkman-Syme Social Networks Index. Social support was assessed in 1992 and 2000 as the presence and availability of a confidant. Cox proportional hazards models were used in prospective analyses of social networks and support, both before and following diagnosis, and subsequent survival.

Results
In multivariate-adjusted analyses, women who were socially isolated before diagnosis had a subsequent 66% increased risk of all-cause mortality (HR = 1.66; 95% CI, 1.04 to 2.65) and a two-fold increased risk of breast cancer mortality (HR = 2.14; 95% CI, 1.11 to 4.12) compared with women who were socially integrated. Women without close relatives (HR = 2.65; 95% CI, 1.03 to 6.82), friends (HR = 4.06; 95% CI, 1.40 to 11.75), or living children (HR = 5.62; 95% CI, 1.20 to 26.46) had elevated risks of breast cancer mortality and of all-cause mortality compared with those with the most social ties. Neither participation in religious or community activities nor having a confidant was related to outcomes. Effect estimates were similar in analyses of postdiagnosis networks.

Conclusion
Socially isolated women had an elevated risk of mortality after a diagnosis of breast cancer, likely because of a lack of access to care, specifically beneficial caregiving from friends, relatives, and adult children.

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INTRODUCTION

There is apparent debate as to the relative importance of social support,[1] including instrumental, emotional, and informational support, versus social networks, the ties through which support is provided, to breast cancer survival. What is actually debated is the importance of instrumental versus social-emotional support. Women who receive instrumental support after a breast cancer diagnosis may have assistance in getting to medical appointments or to the pharmacy, reminders to take medications, and assistance with nutrition and mobility,[3] which might contribute to improved survival or protect against disability.[4] Social-emotional support, often provided by a confidant, may reduce stress[5] and hypothalmus-pituitary-adrenal–axis reactivity, which might improve immunosurveillance against cancer recurrence. Investigators have suggested that social-emotional support may be more critical than instrumental support for breast cancer survival.[6,7]

Previous studies have typically found elevated associations between low social networks or lack of social support and mortality, but associations have often been nonsignificant.[6-15] However, prior work has been subject to several limitations including small sample size and inadequate adjustment for factors such as disease severity and parity. Further study, with proper adjustment for potential confounding factors, is needed.

Because of the theorized health benefits of differing types of support from social networks, we hypothesized that stronger social networks would be associated with improved survival after breast cancer. Though Goodwin et al[5] found no apparent

association between social support, provided in a clinical intervention, and subsequent breast cancer survival, naturally-occurring networks may be more critical to health.[16] Therefore, we also hypothesized that women with greater social-emotional support would also have longer survival compared with women with less or no support.

PATIENTS AND METHODS

Study Participants

The Nurses' Health Study (NHS) is a prospective study of 121,700 US female nurses. At baseline, in 1976, and biennially, participants have provided health behavior and medical history information through mailed questionnaires. A subset (n = 108,170) of these women also responded to social networks questions in 1992, 1996, or 2000. Women from the full cohort and those who responded to these questions were similar with regard to body mass index, parity, age at menopause, and postmenopausal hormone use. However, compared with the full cohort, those who completed social networks questions were on average 2 years older, slightly more likely to have ever used oral contraceptives, and less likely to be a current smoker.

The study population consisted of women aged 46 to 71 in 1992 from the NHS who were diagnosed with stages 1 to 4 breast cancer between 1992 and 2002 and who responded to social networks questions before diagnosis (n = 3,248). Women with previously diagnosed cancer (except nonmelanoma skin cancer) were excluded (n = 413), leaving 2,835 women in analyses. Post-diagnosis analyses included women similarly diagnosed, without prior cancer, who completed social networks questions 1 to 4 years after diagnosis but before recurrence (defined as a second cancer on a routine NHS follow-up if she reported lung, liver, bone, or brain cancer). These analyses included 1,753 women.

Data Collection

Measurement of social networks. Social networks were measured by the Berkman-Syme Social Networks Index (SNI),[17] a composite measure of four types of social connection: marital status (married versus not); sociability (number and frequency of contacts with children, close relatives, and close friends); church group membership (yes versus no); and membership in other community organizations (yes versus no). Responses to the SNI are categorized into four levels of social connection: socially isolated (individuals with low intimate contacts—not married, fewer than six friends or relatives, and no membership in either church or community groups), moderately isolated, moderately integrated, and socially integrated.[18] Women with high networks comprised the reference group.

We also assessed changes in social networks before and after diagnosis. Women were defined as having declining networks versus either stable or improving networks (reference group).

Measurement of social-emotional support. We measured social-emotional support as the presence and availability of a confidant. In 1992 and 2000, women were asked whether or not they had a close confidant. If so, they were asked how often they talk with this confidant. We created an indicator variable from these two questions. Categories included: communicate with confidant once/d or more (reference group), communicate with confidant more than once/wk but less often than once/d, communicate with confidant more than once/mo but less often than once/wk, communicate with confidant once/mo or less, and no confidant. The correlation between presence of a confidant and extent of social networks was low ($r = 0.09$; $P < .01$).

Measurement of breast cancer. Incident breast cancer was ascertained by biennial questionnaire mailed to participants. For any report of breast cancer, written permission was obtained from study participants to review their medical records. Physicians, blinded to exposure information from questionnaires, subsequently reviewed medical records and pathology reports and abstracted information on clinical staging of disease and treatment. Overall, 99% of self-reported invasive breast cancers for which medical records were obtained have been confirmed.

Measurement of mortality. Ascertainment of deaths included reporting by the family or postal authorities. Additionally, names of persistent nonresponders were searched in the National Death Index,[19] which is a reliable method in women with breast cancer.[20] Date of death was ascertained from death certificates. The cause of death was assigned by physician reviewers. In the case of a woman who died from a breast cancer not previously reported, medical records were obtained to record details of her breast cancer diagnosis. More than 98% of deaths in the NHS have been identified by these methods.[21] Mortality in this study was defined as breast cancer mortality if cause of death was listed on the death certificate as breast cancer. All-cause mortality was defined as death from any cause. Mortality from causes other than breast cancer was determined by excluding mortality from breast cancer.

Measurement of covariates. Data on biomedical and lifestyle factors, including prior cancer, weight, hormone use, menopausal status, age at menopause, and smoking, have been assessed biennially. Diet and physical activity have been assessed every 4 years. Age at menarche was assessed at baseline in 1976. Prior oral contraceptive use and parity were assessed in 1984.

Statistical Analyses

Using analysis of covariance, we regressed potential confounding variables against categories of social networks, adjusted for continuous age (Table 1).

We employed Cox proportional hazards models (SAS PROC PHREG; SAS Institute I, Cary, NC, SAS Institute Inc, 2000) for failure-time data to assess associations of categories of social networks most recent to and before diagnosis with time to breast cancer death, death from causes other than breast cancer, or all-cause mortality.[22,23] Social networks following diagnosis may be more important determinants of subsequent outcomes than those before diagnosis. However, we focused on the analysis of social networks before diagnosis to increase power, ensure appropriate time order of exposures and outcomes, and avoid biases that may occur if women with late-stage disease are less likely to fill out subsequent social network questionnaires. This is particularly appropriate since social networks tended to be stable from before to after breast cancer, ($r = 0.75$; $P = .0001$ in our sample). We also examined social networks following diagnosis, and change in social networks with outcomes. We further assessed associations of presence and availability of a confidant before diagnosis with outcomes. Because the presence of a confidant was not measured at all time points, we did not examine change in the presence of a confidant.

Person-years of follow-up were counted from the date of diagnosis until the date of death or end of follow-up, whichever came first. Follow-up ranged from 0 to 12 years with a median of 6 years. We conducted tests for linear trend across categories of social networks or social support and computed the Wald statistic. Age-adjusted results were compared with those adjusting for potential covariates presented in Table 2. Because of potential confounding by parity, we adjusted for birth index,[24] a continuous variable that enables fine adjustment for parity and age at each birth. Variables were modeled as fixed covariates, taken from the time of return of the most recent social networks questionnaire before diagnosis or at the time of diagnosis for breast cancer-related variables.

We considered conducting stratified analyses by stage and estrogen-receptor status. However, because of the relatively low proportion of women who were defined to be socially isolated, power was limited and we did not pursue these analyses.

All tests of statistical significance were two-sided. This research was approved by the institutional review board at Brigham and Women's Hospital in Boston, MA.

RESULTS

Of the 2,835 women who were diagnosed with invasive breast cancer between 1992 and 2002, 224 died, 107 of breast cancer. Most potential confounding variables were unrelated to level of social networks. However, women who were socially isolated were more likely to be current smokers and engaged in lower levels of physical activity. They also had lower protein consumption and were more likely to be taking hormone replacement if postmenopausal. Predictably, given that the extent of social networks is, in part, defined by the number of children a woman has, women with lower social networks had fewer children.

Table 1. Selected Characteristics Across Categories of Social Networks Prior to Diagnosis Among 2,835 Women With Breast Cancer From the Nurses' Health Study

Variables	Category of Social Networks				P_{trend}
	Socially Integrated (n = 1,315)	Moderately Integrated (n = 496)	Moderately Isolated (n = 826)	Socially Isolated (n = 198)	
All-cause mortality	106	28	66	24	
Breast cancer deaths	46	15	33	13	
Deaths from other causes	60	13	33	11	
Mean age at diagnosis, years	65	64	66	65	.16
Time between diagnosis and psychosocial assessment, months	23.9	23.2	23.1	22.8	.35
Protein consumption, g/d (n = 2,253)	72.6	71.6	71.8	69.8	.02
Current smoking, %	7.2	9.8	14.0	21.6	< .01
BMI, kg/m^2	26.7	26.6	26.1	26.9	.75
Physical activity, METS (n = 2,821)	19.0	17.9	16.8	13.4	< .01
Reproductive factors					
Age at menarche < 13 years, %	48.4	49.8	50.8	50.7	.48
Ever oral contraceptive use, %	44.0	42.8	44.1	51.2	.04
Age at first birth, years* (n = 2,573)	25.2	25.2	25.1	25.7	.11
Parity, % (n = 2,797)	92.6	92.6	91.2	90.9	.29
No. of children* (n = 2,575)	3.2	3.2	3.0	2.8	< .01
Birth index	44.0	44.6	39.0	37.3	< .01
Postmenopausal, % (n = 2,833)	95.2	94.4	94.5	97.1	.25
Age at menopause† (n = 2,672)	48.2	48.5	48.0	47.5	.04
Current hormone replacement, %† (n = 2,508)	56.0	53.9	54.8	63.0	.08
Breast cancer-related factors					
Stage					
1‡	58.9	62.6	60.2	60.3	.80§
2	30.6	27.7	28.9	28.6	
3	9.8	9.0	9.2	9.9	
4	0.8	0.8	1.6	1.2	
Family history of breast cancer, %	18.7	20.3	19.1	20.8	.64
Tamoxifen, % (n = 2,477)	75.3	74.6	74.2	69.6	.12
Radiation, % (n = 2,497)	63.9	65	61.8	55.3	.02
Chemotherapy, % (n = 2,422)	38.2	35.6	38.3	38.9	.61
Estrogen-receptor +, % (n = 2,441)	84.3	85.2	85.0	82.3	.53

NOTE. All variables age standardized.
Abbreviations: BMI, body mass index; METS, metabolic equivalents.
*Among parous women.
†Among postmenopausal women.
‡On the basis of those with information on stage; 532 missing stage.
§*P* value, Mantel-Haenszel χ^2.

Breast cancer-specific factors (ie, severity, treatment) were unrelated to social networks, though women who were socially integrated were more likely to receive radiation and tamoxifen with treatment than were women who were socially isolated (Table 1).

Among breast cancer survivors, women who were the most socially isolated were significantly more likely to die from any cause (HR = 1.66; 95% CI, 1.04 to 2.65) and to die from breast cancer (HR = 2.14; 95% CI, 1.11 to 4.12), than were women who were most socially integrated. With the exception of the association with breast cancer mortality, which was characterized by a borderline significant linear trend, associations appeared to be better characterized as a threshold effect, with only women who were most socially isolated exhibiting a higher risk of an adverse event (Table 2).

In examining the components of the SNI, religious participation and participation in other group and community activities were unrelated to survival. Being married was also unrelated to survival (Table 3). However, women who lacked close relatives, friends, or living children had a significantly higher risk of mortality after diagnosis (Table 3). Specifically, women with no close relatives had an elevated risk of all-cause mortality (HR = 1.66; 95% CI, 0.93 to 2.97; P_{trend} = .02) and breast cancer mortality (HR = 2.65; 95% CI, 1.08 to 6.82; P_{trend} < .01) compared with those with 10 or more close relatives. Similarly, women with no close friends had elevated risks of all-cause mortality (HR = 2.20; 95% CI, 1.01 to 4.81; P_{trend} = .10) and breast cancer mortality (HR = 4.06; 95% CI, 1.40 to 11.75; P_{trend} < .01) compared with those with 10 or more close friends. Furthermore, women with no living children had higher risks of all-cause mortality (HR = 4.03; 95% CI, 1.65 to 9.86; P_{trend} = .11) and breast cancer mortality (HR = 5.62; 95% CI, 1.20 to 26.46; P_{trend} < .01) compared with those with six or more living children. Frequency of contact with ties appeared more weakly related to survival; and we found no significant trend across categories characterizing extent of contact with these different relations (data not shown).

In postdiagnosis analyses of social networks and survival, effect estimates were similar to those in analyses of prediagnosis social networks. Lower social networks, following diagnosis, appeared related to

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Table 2. Relative Risk of Mortality by Category of Social Networks Prior to Diagnosis Among 2,835 Women With Breast Cancer From the Nurses' Health Study

Variables	Category of Social Networks				
	Socially Integrated (N = 1,315)	Moderately Integrated (N = 496)	Moderately Isolated (N = 826)	Socially Isolated (N = 198)	*P**
All-cause mortality	106	28	66	24	
Age-adjusted					.17
No.	1.00	0.73	1.00	1.76	
95% CI		0.48 to 1.12	0.73 to 1.36	1.13 to 2.74	
Multivariate-adjusted†					.40
No.	1.00	0.73	0.93	1.66	
95% CI		0.48 to 1.11	0.68 to 1.28	1.04 to 2.65	
Breast cancer deaths	46	15	33	13	
Age-adjusted					.06
No.	1.00	0.87	1.22	2.04	
95% CI		0.48 to 1.55	0.78 to 1.91	1.10 to 3.78	
Multivariate-adjusted					.06
No.	1.00	0.91	1.24	2.14	
95% CI		0.50 to 1.68	0.78 to 1.98	1.11 to 4.12	
Deaths from other causes	60	13	33	11	
Age-adjusted					.92
No.	1.00	0.64	0.83	1.40	
95% CI		0.35 to 1.17	0.54 to 1.26	0.74 to 2.66	
Multivariate-adjusted					.42
No.	1.00	0.58	0.70	1.25	
95% CI		0.32 to 1.07	0.45 to 1.09	0.63 to 2.45	

**P* value, test for linear trend.
†Multivariate-adjusted models adjusted for age (continuous), time between diagnosis and assessment of social networks (continuous), cancer stage at diagnosis (1 [ref], 2, 3, 4), chemotherapy (yes, no [ref]), tamoxifen (yes, no [ref]), radiation (yes, no [ref]), estrogen-receptor status (positive, negative [ref]), age at menarche (< 12 [ref], 12-13, ≥ 14), oral contraceptive use (never [ref], past), birth index (continuous), menopausal status (pre-[ref], post), age at menopause (continuous), use of hormone replacement therapy (premenopausal [ref], never, past, current), smoking status (never [ref], past, current), body mass index (< 25 [reference] 25-29, 30+ kg/m^2), physical activity (< 3 [ref], 3-17, 18+ mets/week), and protein intake (quintiles, quintile 1 = ref).

an elevated risk of mortality, though results were nonsignificant given compromised power after exclusions (data not shown). In contrast with prediagnosis analyses, participation in group activities postdiagnosis appeared to predict a slightly lower risk of mortality (HR = 0.70; 95% CI, 0.44 to 1.11) consistent with the notion that the ability to participate may indicate less severe illness.

The presence and extent of contact with a confidant was unrelated to survival outcomes (data not shown). Women whose social networks declined from before to after breast cancer diagnosis did not have a significantly elevated risk of mortality. However, for those who responded to social networks questionnaires both before and following diagnosis, the level of social networks did not appear to change markedly across diagnosis, with only 6% of women declining by more than one level and 4% increasing by more than one level.

DISCUSSION

In the NHS, women with low levels of social integration before breast cancer diagnosis had a 66% increased risk of all-cause mortality and a two-fold increased risk of mortality from breast cancer. This result was adjusted for numerous covariates, most critically for stage and parity. Though the presence and extent of contact with a confidant was not associated with survival, the lack of close relatives, friends, or living children was each related to a higher risk of total mortality and mortality from breast cancer. Social networks and social support were not significantly related to mortality from causes other than breast cancer. Among women with breast cancer, social isolation may serve to limit access to care, specifically, informal caregiving from friends and family, which may affect breast cancer outcomes. This is the first study of social networks and breast cancer survival with measures of social networks obtained before cancer diagnosis.

Observational studies in women with (predominantly early stage) breast cancer have generally measured networks or support postdiagnosis. These have typically found elevated rates of mortality among those with low levels of social integration or support, adjusted at least minimally for stage of disease, though these associations have generally not reached statistical significance.[6,12] Goodwin et al[25] found no significant association of social isolation, measured by the SNI, with death (HR = 1.3; 95% CI, 0.7 to 2.6) in 188 patients. In 1,011 women in the Alameda County study, Reynolds et al[17] found a nonsignificant elevated risk of breast cancer mortality among women with low versus high social networks as measured by the SNI (HR = 1.4; 95% CI, 0.9 to 2.1), adjusted for stage of disease at diagnosis and presence of other major chronic comorbid conditions.[6] In contrast, in 133 patients, Waxler-Morrison et al[14] found that women with social ties who had 11 or more friends, relatives, or neighbors had a significantly lower risk of mortality (HR = 0.65; *P* = .0002) than those with zero to four ties.

In examining social support, Reynolds et al[6] found an elevated relative risk of breast cancer-related mortality (HR = 1.8; 95% CI, 1.3 to 2.5) with low versus high emotional support among 1,011 patients. Social support was measured with questions relating to having friends

Table 3. Multivariate-Adjusted* Relative Risk of Mortality by Category of Social Networks Components Among 2,835 Women With Breast Cancer From the Nurses' Health Study

		Cause of Death					
		All-Cause			Breast Cancer		
	N	Deaths	RR	95% CI	Deaths	RR	95% CI
Religious participation							
> Once/week (ref)	496	36	1.00		20	1.00	
Once/week	1,090	84	1.35	0.90 to 2.01	33	0.96	0.54 to 1.71
> Once/month- < once/week	674	62	1.37	0.89 to 2.10	35	1.43	0.80 to 2.55
< Once/month	575	42	1.19	0.74 to 1.89	19	0.97	0.49 to 1.92
P_{trend}†			.80			.69	
Group participation							
None (ref)	1,089	89	1.00		42	1.00	
1-2 hours/week	886	66	0.99	0.72 to 1.38	38	1.24	0.79 to 1.97
3-5 hours/week	511	42	1.00	0.69 to 1.47	18	0.96	0.54 to 1.71
6-10 hours/week	235	16	0.88	0.50 to 1.52	6	0.80	0.32 to 1.99
11-15 hours/week	60	5	0.99	0.40 to 2.47	2	0.86	0.20 to 3.65
16 or more hours/week	54	6	1.50	0.64 to 3.49	1	0.57	0.08 to 4.21
P_{trend}			.71			.54	
No. of close relatives							
None	159	18	1.66	0.93 to 2.97	8	2.65	1.03 to 6.82
1-2	744	69	1.52	0.99 to 2.32	43	3.58	1.77 to 7.23
3-5	964	63	1.11	0.72 to 1.71	30	1.75	0.84 to 3.65
6-9	487	41	1.31	0.82 to 2.09	16	1.81	0.80 to 4.07
10+ (ref)	481	33	1.00		10	1.00	
P_{trend}			.02			< .01	
No. of friends							
None	59	8	2.20	1.01 to 4.81	5	4.06	1.40 to 11.75
1-2	449	34	1.06	0.66 to 1.71	15	1.32	0.61 to 2.87
3-5	1,188	90	1.06	0.71 to 1.56	48	1.52	0.80 to 2.89
6-9	626	54	1.30	0.85 to 1.98	26	1.89	0.95 to 3.76
10+ (ref)	513	38	1.00		13	1.00	
P_{trend}			.10			.03	
No. of living children							
None	146	17	4.03	1.65 to 9.86	6	5.62	1.20 to 26.46
1-2	986	80	2.40	1.15 to 5.01	47	4.62	1.29 to 16.63
3-5	1,429	117	2.40	1.22 to 4.72	51	3.21	0.95 to 10.82
6 or more (ref)	273	10	1.00		3	1.00	
P_{trend}			.11			< .01	
Marital status							
Divorced or separated	222	16	0.96	0.57 to 1.63	9	1.26	0.62 to 2.57
Widowed	409	34	0.85	0.57 to 1.25	18	1.47	0.84 to 2.56
Married (ref)	2,204	174	1.00		80	1.00	

Abbreviation: RR, relative risk.
*Multivariate-adjusted models adjusted for variables indicated in Table 2.
†*P* value, test for linear trend.

or relatives patients could talk to about their illness or other personal problems. In a study of 168 patients, Ell et al[7] also found high versus low perceived emotional support to be significantly related to a lower risk of all-cause mortality (HR = 0.83; $P = .03$). However, use of a confidant after diagnosis was not significantly related to all-cause mortality in a study by Maunsell et al[12] (HR = 0.61; 95% CI, 0.33 to 1.12) in a study of 224 patients.

Findings from the present study on the absence of friends, living children, and close relatives were similar to findings by Waxler-Morrison et al[14] and those seen in the study by Reynolds et al,[6] who found a two-fold increased risk of breast cancer mortality among white women with an absence of close friends and relatives. Seeman et al[26] also found that a lack of friends and relatives was significantly related to poorer survival in older women. These results are consistent with the notion that social isolation may signify women who have few people in their lives who might be willing or able to step in as a care provider in the case of serious illness. Caregivers are typically family or friends of the person with cancer, including spouses, daughters, sons, siblings, parents, other family members, and close friends.[27] Interestingly, being married was not significantly associated with reduced mortality; our results are consistent with the notion that among women, the most important source of social support is often not the women's spouses, but other significant network members.[28] Also, ties to community and religious groups were not important to survival, suggesting not that social networks are unimportant

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but that certain network characteristics are more salient to breast cancer survival in this cohort.[6,14]

The main effect appeared to be best characterized as a threshold effect. Thus, women who have a somewhat small network but have a contingent of reliable friends, children, or relatives able to provide care may not be worse off than women who are even more socially integrated. The fact that the association between social networks and breast cancer (versus other) mortality was the strongest suggests that caregivers provide critical assistance to women related to their cancer, in ways that contribute to longer survival. As the health care system shifts to a greater emphasis on outpatient care, family caregivers are increasingly assuming tasks previously carried out by health care professionals. Individuals who have someone available to actively provide this kind of care may be protected from more adverse outcomes.

Study strengths include a relatively large sample size, examination of social networks both before and following diagnosis, control for a vast array of potential confounding variables, and prospective study design.

Limitations include a narrow range of race and socioeconomic status. Also, if health care providers are overrepresented in nurses' networks, these findings may overstate the per se benefits of social networks and exemplify the need for adequate care after diagnosis.

We also lacked direct information on the quality and type of support (eg, instrumental, emotional) from social contacts. Thus, though our null finding for social-emotional support is consistent with findings from randomized, controlled intervention studies,[5,13] we cannot rule out the possibility that social-emotional support may influence survival since having a confidant is a limited proxy for this type of support.

As with all observational studies, there is the possibility of residual confounding. However, we adjusted for numerous factors related to breast cancer survival, and adjustment for these covariates did not markedly alter estimates. Findings are not inconsistent with those from other studies, reducing concerns that these results are due merely to chance or confounding variables. These findings are also consistent with other work, which has demonstrated that social isolation is, generally, linked with poorer health outcomes.[2]

In summary, we found an elevated risk of mortality among breast cancer survivors who were socially isolated, specifically related to a lack of close relatives, friends, or living children. Our results are consistent with the notion that women who are socially isolated may lack access to caregiving that affects survival after a breast cancer diagnosis. Clinicians may wish to assess women's social networks to help determine the extent of available resources and to help ensure access to necessary care.

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