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Child maltreatment and breast cancer survivors: Social support makes a difference for quality of life, fatigue and cancer stress

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ABSTRACT

Purpose: To identify how child maltreatment is associated with quality of life (QOL) among breast cancer survivors.

Patients and methods: One hundred and thirty two women who had completed treatment for stage 0-IIIA breast cancer within the past 2 years (except for tamoxifen/aromatase inhibitors) and were at least 2 months post surgery, radiation, or chemotherapy completed questionnaires including the Childhood Trauma Questionnaire, the Impact of Events Scale, the Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF) and the Fact-B breast cancer quality of life questionnaire.

Results: Women who were abused or neglected as children reported more cancer-related psychological distress, more fatigue and poorer physical, emotional, functional and breast cancer-specific well-being after treatment. These relations were partially explained by the fact that breast cancer survivors reported receiving less support as adults.

Conclusion: The findings suggest that child maltreatment is an important predictor of QOL among breast cancer survivors. One reason why this association exists is because those who are maltreated as children report less support as adults. A better understanding of how child maltreatment contributes to breast cancer survivor QOL will help in tailoring and, therefore, enhancing the efficacy of interventions aimed at improving QOL.

Being diagnosed and treated for cancer is emotionally and physically challenging.[1] Breast cancer treatment contributes to mental and physical health problems.[2] Even when treatment-related problems subside, many breast cancer survivors report quality of life (QOL) difficulties including psychological distress, fatigue, occupational disruption and loss of physical functioning.[3] Clinically, understanding why some breast cancer survivors are more vulnerable to poorer QOL after treatment than others is important.

Women who have experienced past traumas are at increased risk for psychological distress when confronted with new traumatic experiences.[4] Breast cancer patients

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who experienced a serious accident, illness or death of a close loved one during the year before their diagnosis were more likely to develop PTSD symptoms.[5] Breast cancer survivors who reported severe emotional, physical or sexual trauma over the course of their lifetime were more susceptible to cancer related emotional distress than those who did not have these experiences.[6] Holocaust survivors experienced significantly more psychological distress than non-Holocaust survivors after a cancer experience.[7]

Child maltreatment is a common experience; approximately 50% of adults report experiencing some type of abuse or neglect as children.[8] Those who were abused or neglected as children are more susceptible to a host of mental and physical health problems in adulthood, especially following a life threatening experience.[9] For example, war veterans with a history of childhood abuse were more likely to have PTSD than their non-abused counterparts.[10] Child abuse has also been linked to somatic symptoms in otherwise healthy people.[11]

Women who have experienced past traumas are at increased risk for psychological distress when confronted with new traumatic experiences.[4] Breast cancer patients who experienced a serious accident, illness or death of a close loved one during the year before their diagnosis were more likely to develop PTSD symptoms.[5] Breast cancer survivors who reported severe emotional, physical or sexual trauma over the course of their lifetime were more susceptible to cancer related emotional distress than those who did not have these experiences.[6] Holocaust survivors experienced significantly more psychological distress than non-Holocaust survivors after a cancer experience.[7]

Child maltreatment is a common experience; approximately 50% of adults report experiencing some type of abuse or neglect as children.[8] Those who were abused or neglected as children are more susceptible to a host of mental and physical health problems in adulthood, especially following a life threatening experience.[9] For example, war veterans with a history of childhood abuse were more likely to have PTSD than their non-abused counterparts.[10] Child abuse has also been linked to somatic symptoms in otherwise healthy people.[11]

Women who have experienced abuse or neglect as children may be at increased risk for poorer QOL after a cancer experience. Newly diagnosed breast cancer patients who were emotionally abused as children had more psychological distress compared to those who were not abused.[12] Breast cancer patients who recalled one or more forms of abuse as children were more likely to experience emotional difficulties 2–4 d after cancer surgery.[13]

In sum, child maltreatment has been linked to cancer-related psychological distress. However, we do not know if child maltreatment also contributes to other QOL factors affecting breast cancer survivors, such as fatigue, occupational disruption, loss of physical functioning and problems specifically related to breast cancer. Furthermore, we do not know the mechanisms underlying why child maltreatment leads to these poorer QOL outcomes.[13]

Social support plays an important role in the QOL of cancer survivors.[14] Those who report receiving less social support have poorer mental health outcomes than those who report receiving more social support.[15] Breast cancer survivors who received less support from family reported higher levels of depressive symptoms, less positive and hopeful outlooks for the future, less marital satisfaction, less self-esteem, lower levels of role functioning, more sexual problems, and higher levels of hostility than those who reported more support.[16–19]

People who were abused or neglected as children report receiving less social support as adults.[20] Children who have troubled relationships with parents and other adults are less likely to develop social and emotional skills that are crucial for establishing supportive close relationships in adulthood.[21] Compared to people with positive early relationships, those with troubled early relationships are more likely to report receiving less social support later in life.[22] Accordingly, social support may play an important role linking child maltreatment to the QOL of breast cancer survivors.

The current study examined relationships between child maltreatment and QOL in breast cancer survivors. We hypothesised that those who experienced neglect or abuse as children would have more cancer-related distress, fatigue and poorer QOL after breast cancer treatment. We also hypothesised that these associations would be partially explained by the fact that those who experienced neglect or abuse as children would report receiving less social support as adults.

1. Participants

The study data were drawn from the baseline sample of 132 women who participated in a clinical trial addressing the potential benefits of yoga for breast cancer survivors. Participants were recruited through breast cancer clinics and media announcements. Eligible women had completed treatment for stage 0-IIIA breast cancer within the past 2 years (except for tamoxifen/aromatase inhibitors) and were at least 2 months post surgery, radiation or chemotherapy (whichever occurred last). Screening exclusions included a prior history of breast or any other cancer except basal or squamous cell, more than 5 h a week of vigorous physical exercise, a body mass index (BMI) of 40 or greater, diabetes, chronic obstructive pulmonary disease, uncontrolled hypertension, evidence of liver or kidney failure and symptomatic ischaemic heart disease. The Ohio State Biomedical Research Review Committee approved the project; all subjects gave written informed consent prior to participation.

1.1. *Measures*

In order to assess cancer-related psychological distress, we used the 15-item *Impact of Events Scale (IES)*, which assessed women's avoidant and intrusive thoughts about their cancer experience.[23] The current investigation used the total score. Cronbach's alpha was .88.

The Functional Assessment of Cancer Therapy-Breast (FACT-B) is a self-report inventory that provides a multidimensional assessment of QOL.[24] The items assess general areas of well-being (physical, social/family, emotional, and func-

Table 1 – Demographic and medical characteristics.

Characteristic	(*n* = 132)	
	No	%
Age, years		
Mean (SD)	51.70 (9.488)	
Abuse		
Emotional Neglect	16	12.1
Physical Neglect	36	27.3
Emotional Abuse	31	23.5
Physical Abuse	19	14.4
Sexual Abuse	19	14.4
Ethnicity		
Asian	3	2.3
Black	11	8.3
Latino	4	3.0
White	117	88.6
Marital status		
Single	18	13.6
Married	97	73.5
Separated/Divorced	15	11.4
Widowed	2	1.5
Education level		
High school or less	11	8.3
Some College	33	25.0
College or University Graduate	40	30.3
Postgraduate	48	36.4
Employment status		
Employed full or part time	90	68.2
Unemployed	22	16.7
Retired	20	15.2
Income level		
$0–$25,000	4	3.1
$25,000–$50,000	20	15.2
$50,000–$75,000	26	19.7
$75,000–$100,000	35	26.5
>$100,000	35	26.5
No report	12	9.1
Type of treatment		
Surgery Only	14	10.6
Surgery + Radiation	30	22.7
Surgery + Chemotherapy	34	25.8
Surgery + Radiation + Chemotherapy	54	40.9
Cancer stage		
Stage 0	9	6.8
Stage I	57	43.2
Stage IIA	37	28.0
Stage IIB	15	11.4
Stage IIIA	14	10.6
Months since diagnosis		
Mean (SD)	17.682 (7.953)	
Months since last treatment		
Mean (SD)	11.26 (7.777)	
Impact of events		
Mean (SD)	27.864 (14.734)	
Physical Well-Being		
Mean (SD)	22.212 (4.708)	
Emotional Well-Being		
Mean (SD)	18.667 (4.190)	

Table 1 – (*continued*)

Sample characteristics		
Characteristic	(*n* = 132)	
	No	%
Functional Well-Being		
Mean (SD)	19.750 (5.422)	
Breast Cancer-Specific Well Being		
Mean (SD)	23.705 (5.947)	
ISEL		
Mean (SD)	93.697 (14.538)	

tional), and 19 breast-cancer-specific items including breast cancer-related emotional concerns (e.g. worried about cancer risk in family members, worried about the effects of stress on illness), physical concerns (e.g. feeling short of breath, being bothered by swollen/tender arms), body image and sexual functioning. Widely used in oncology trials and clinical practice, extensive data support its reliability and validity.[24,25] For the purpose of this study, we adopted the physical, emotional, functional and cancer-specific scales. We excluded the social/family scale given its considerable conceptual and measurement overlap with the ISEL.

The Multidimensional Fatigue Symptom Inventory-Short Form (MFSI-SF) is a 30-item scale that assesses five dimensions of cancer-related fatigue.[26] The total score represents the sum of four subscales (general fatigue, physical fatigue, emotional fatigue and mental fatigue) minus the vigour scale. Alphas for individual subscales ranged from .86 to .92. Alpha for the total score was .90.

The Interpersonal Support Evaluation List (ISEL) provided a comprehensive measure of perceived social support.[27] Items are rated on a four-point scale (i.e. definitely false, probably false, probably true and definitely true). The ISEL measures the perceived availability of the following kinds of support: emotional (someone to confide in), belonging (people with whom one can do things with), self-esteem (positive social comparison) and tangible (provision of material aid). For the current analyses, we used the total ISEL score. Alpha was .93.

The Charlson index,[28] the most widely used comorbidity index for predicting mortality, was used to assess comorbidities. The measure assigns weights to 19 comorbid conditions based on their potential influence on 1-year mortality in breast cancer patients. Originally developed for predicting mortality in breast cancer patients, it has now been widely used with both cancer and non-cancer populations.[29]

The Childhood Trauma Questionnaire provided data on early childhood abuse and neglect. Widely used, it has excellent normative data for its five scales: Physical, Sexual and Emotional Abuse, and Physical and Emotional Neglect.[30] We adopted the Walker cuts[8] to make categorical cut-offs (with sensitivity and specificity >.85 for each scale). Then, we created a categorical indicator variable representing any maltreatment and a continuous variable representing number of maltreatment categories.[8]

1.2. *Analytic method*

Using separate ordinary least squares general linear models, we first addressed the question of whether child maltreatment predicted cancer-related psychological distress, as well as the following Fact-B QOL subscales: physical well-being, emotional well-being, functional well-being, and the breast cancer subscale. We modelled child maltreatment as categorical (1 = any abuse or neglect, 0 = no abuse or neglect) and continuous (the number of abusive or neglectful categories) across separate analyses. For all significant associations between child maltreatment and adjustment outcomes, we examined whether social support mediated the association. We used Barron and Kenny's[31] four step regression approach to establish mediation. First, the initial variable (i.e. child maltreatment) should be associated with the outcome. Second, the initial variable (i.e. child maltreatment) should be associated with the mediator (i.e. perceived support). Third, the mediator variable (i.e. perceived support) should be associated with the outcome. Fourth, the association between the initial variable and the outcome variable should be reduced when the mediator is added to the model with the initial variable. Subsequent research on mediation has revealed that only steps two and three are essential for partial mediation to exist as long as there is a significant mediated effect.[32] In order to test whether there was a significant mediated effect (indirect effect), we employed bias-correct bootstrap estimates (2000) to obtain a confidence interval and a corresponding *p*-value. Bias-correct bootstrapping is superior to the traditional sobel test for testing indirect effects.[33] All independent variables were grand mean centred. We examined residuals to confirm that they distributed normally.

All models were adjusted for age, cancer stage and time since last treatment. Time since last treatment was highly correlated with time since diagnosis ($r = .90$ $p < .001$), accordingly we could not put both in the model simultaneously. In ancillary analyses, we controlled for cancer treatment rather than cancer stage; none of the results presented below changed.

Table 2 – Multiple regression analyses predicting PTSD symptoms, scores on the FACT-B quality of life subscales and the MFSI-SF fatigue scale from childhood maltreatment (categorical) and social support.

Predictor	Cancer-related psychological distress			FACT-B emotional			FACT-B physical			FACT-B functional			FACT-B breast cancer			MFSI-SF fatigue			Social support		
	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p
Step 1																					
Control variables	.022			.055*			.046			.006			.069**			.024			.047		
Step 2																					
Childhood maltreatment	.062**	.256	.004	.049**	–.226	.010	.046**	–.220	.012	.068**	–.267	.003	.029**	–.173	.047	.131***	.372	.000	.073**	–.277	.002
Step 3																					
Childhood maltreatment	.066**	.180	.042	.061**	–.153	.080	.077***	–.138	.113	.262***	–.116	.138	.065**	–.098	.262	.069***	.294	.001			
Social support		–.274	.002		.262	.003		.295	.001		.546	.000		.272	.002		–.281	.001			
Test of indirect effect (bias corrected bootstrap)			.001			.002			.002			.001			.004			.004			
Total R^2	.150			.164			.169			.336			.163			.225			.120		
n	132			132			132			132			132			132			132		

* $p < .10$.
** $p < .05$.
*** $p < .001$.

Table 3 – Multiple regression analyses predicting PTSD symptoms, scores on the FACT-B quality of life subscales and the MFSI-SF fatigue scale from childhood maltreatment (continuous) and social support.

Predictor	Cancer-related psychological distress			FACT-B emotional			FACT-B physical			FACT-B functional			FACT-B Breast cancer			MFSI-SF fatigue			Social support		
	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p	ΔR^2	β	p
Step 1 Control variables	.022			.055*			.046			.006			.069**			.024			.047		
Step 2 Childhood maltreatment	.052**	.230	.009	.042**	–.208	.016	.046**	–.216	.013	.088***	–.301	.001	.099***	–.319	.000	.161***	.406	.000	.114***	–.343	.000
Step 3 Childhood maltreatment	.064**	.136	.132	.058**	–.118	.185	.072***	–.116	.190	.242***	–.117	.139	.038**	–.246	.005	.052**	.321	.000			
Social support		–.28	.003		.263	.004		.292	.001		.537	.000		.213	.015		–.25	.004			
Test of indirect effect (bias corrected bootstrap)			.001			.002			.002			.001			.002			.004			
Total R^2	.138			.156			.164			.336			.206			.237			.161		
n	132			132			132			132			132			132			132		

* $p < .10$.
** $p < .05$.
*** $p < .001$.

2. Results

Table 1 reports descriptive information for all participants. Almost half (48%) of our sample had at least one form of maltreatment, consistent with the broader literature on child abuse and neglect.[8] Maltreated and non-maltreated participants did not differ by treatment type, cancer stage, time since diagnosis, time since last treatment or age. Less than 5% of our sample had any Charlson-rated comorbidities other than their breast cancer diagnosis, and thus we did not control for them in our analyses. In ancillary analyses that included Charlson scores, the models did not substantially change.

We first present results for the analyses when maltreatment was modelled categorically. As seen in Table 2, those who were abused or neglected as children had more cancer-related psychological distress (as indexed by the IES), more fatigue, poorer physical, emotional, functional and breast cancer specific well-being. Second, the hypothesised mediator, social support, also predicted all of these outcomes. Third, those who were abused or neglected as children had lower social support. Finally, in every regression, when social support was included in the same regression model as child neglect/abuse, the association between child neglect/abuse and the QOL outcome was attenuated. Importantly, in all six models, the bootstrap procedure showed the indirect effect of social support was significant. Accordingly, social support partially mediated the association between child maltreatment and each outcome.

We then present data from the analyses when maltreatment was modelled continuously. As can be seen in Table 3, those who experienced more types of abuse/neglect as children had more cancer-specific psychological distress, more fatigue and poorer physical, emotional, functional and breast cancer-specific well-being. Second, the hypothesised mediator, social support, also predicted all of these outcomes. Third, those who experienced more types of abuse/neglect as children had lower social support. Finally, in every regression model, when social support was included in the same regression model as child neglect/abuse, the association between child neglect/abuse and the QOL outcome was attenuated. Importantly, in all six models, the bootstrap procedure showed the indirect effect of social support was significant. Accordingly, social support partially mediated the association between child maltreatment and each outcome.

3. Discussion

With more women surviving breast cancer, health professionals have focused on why some breast cancer survivors are more vulnerable to poorer post-treatment QOL than others.[34] The current study examined relationships between child maltreatment and QOL among breast cancer survivors. Those who were abused or neglected as children experienced more cancer-specific psychological distress, more fatigue, and poorer physical, emotional, functional and breast cancer specific well-being after treatment. Those who were maltreated as children also reported receiving less social support, and those who had reported receiving less social support also had poorer QOL across all of the aforementioned components. Furthermore, social support partially explained the link between child maltreatment and these quality of life outcomes.

The association between child abuse/neglect and each QOL outcome is notable. Previous studies have shown that childhood abuse predicts PTSD and emotional distress after a traumatic life event.[12,13] In addition to replicating these associations, we also demonstrated relationships between maltreatment and fatigue, and poorer physical, emotional, functional and breast cancer-specific well being. This suggests that child abuse/neglect affects facets of breast cancer survivor QOL beyond emotional distress. Health care professionals should devote increased attention to a breast cancer patient's abuse history when addressing both emotional and somatic problems.

The finding that child maltreatment predicted fatigue is particularly notable. Fatigue is the most common problem among long-term cancer survivors,[35] as well as the symptom that interferes most with their daily life.[3] Fatigue adversely affects overall QOL.[36] In general, neither disease type nor treatment variables have demonstrated reliable associations with fatigue in cancer survivors. Thus, understanding the psychological characteristics that predict cancer-specific fatigue is important.

Our findings also show that those who were maltreated as children report receiving less social support, which contributes to the association between child maltreatment and QOL outcomes. Improving women's social support networks is one of the best documented ways to improve breast cancer survivor QOL.[37] Future work examining whether interventions targeting those with a history of child maltreatment should differ from general support interventions is needed.

Child maltreatment and social support may have implications beyond QOL. Epidemiological research has linked lower levels of social support with greater breast cancer mortality.[14] For example, in a study of 2835 breast cancer survivors, women who reported less social support before diagnosis were two times as likely to die of breast cancer over a 10 year period compared with women who had greater support.[38] Furthermore, in a recent study of over 13,000 adults, those who were physically abused as children had 49% higher odds of having a cancer diagnosis than those who were not abused.[39]

This study has limitations. First, it is possible that people were biased when reporting abuse or neglect as children. However, people generally under-report rather than over report childhood abuse and neglect.[40] We focused exclusively on women who were newly diagnosed with breast cancer; thus, we do not know if our findings generalise to men. Future work assessing cancers that predominately affect males are needed in order to generalise our results to men. Additionally, our sample was predominately white, another limitation of our study that could be addressed in future work with a more diverse sample.

Well after treatment-related problems subside, many breast cancer survivors report QOL difficulties. Our findings suggest that child maltreatment is related to poorer QOL among breast cancer survivors, and social support contributes to the link. A better understanding of how child

maltreatment contributes to breast cancer survivor QOL will help in tailoring and, therefore, enhancing the efficacy of interventions aimed at improving these outcomes.

Conflict of interest statement

None declared.

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