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The protective effect of a satisfying romantic relationship on women's body image after breast cancer: a longitudinal study

Psycho-Oncology

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Abstract

Objective: To examine the protective role of relationship satisfaction on body image in women with breast cancer throughout the first year post-surgery.

Methods: Seventy-four Swiss patients engaged in a relationship filled out a questionnaire assessing body image disturbance 2 weeks, 3 months and 1 year after surgery. A univariate Latent Change Score Model was used to analyse the evolution of body image disturbance and the contribution of relationship satisfaction to body image disturbance.

Results: Women who were satisfied with their relationship reported less body image disturbance than did dissatisfied women at 2 weeks post-surgery. Being married was also associated with less body image disturbance at that time. The protective effect of these relational variables was still observable 1 year later. Changes in body image disturbance over time were explained by the negative impacts of mastectomy and chemotherapy.

Conclusions: How women perceive the impact of breast cancer treatment on their body may be partly determined by the quality of the relational context in which they live.

Keywords: Breast cancer; Body image; Longitudinal trajectories; Relationship satisfaction; Marital status; Oncology

Introduction

Body image refers to affective, behavioral, and cognitive responses towards the physical self, including attitudes and perceptions regarding one's physical appearance, attractiveness, satisfaction with the body, and bodily integrity [1]. Breast cancer treatment exposes women to marked changes in their physical appearance [2] that may result in body image disturbance (i.e., dissatisfaction with appearance, loss of a sense of femininity and attractiveness, shame), which are reported by about 30% of patients [3,4].

Numerous studies on breast cancer have examined the impact of different kinds of treatment on women's body image. Most studies found that women who received breast-conserving therapy (BCT) reported a more positive body image than did women who underwent a mastectomy [5-9]. In addition to surgery, chemotherapy-induced alopecia was among the most troublesome side effects, as patients find hair loss particularly distressing [4,10-12]. Weight gain [6,13-15], tissue damage caused by radiotherapy [8,16,17] and more general functional impairment and sensory changes [15,18] have also been found to affect women's self-assessment.

Although the negative effect of physical changes has been widely documented, little is known about changes in body image over time and across treatments, or about the protective factors that may explain why some women have a less negative body image than others.

Different treatments take place at different times during therapy (e.g., radiotherapy follows surgery), and their effects on physical appearance vary in intensity and duration [16,19]. It can therefore be presumed that the impact of treatments on body image also varies with the time frame. To date, few studies have assessed body image in the immediate post-surgical period and examined how it changes during the active treatment phase (approximately the first year after diagnosis). A recent longitudinal study showed that women followed different body image trajectories over the first year of treatment and that these early patterns predicted body image 6

years later [20]. These results highlight the importance of early detection of body image disturbance to prevent them from crystallizing over the long term.

In addition, women's reactions may vary considerably. Most patients cope successfully with physical changes and do not report body image disturbance; thus, the objective physical change is not the only factor associated with body image disturbance: Individual protective and risk factors must also be taken into account [21]. Studies have shown that there is a strong direct link between a supportive, satisfactory romantic relationship and a positive body image [22-24]. Women's relationship experiences, such as a sense of security or of being loved and valued [25,26], trust in the partner and jealousy [27], may predict their body image. The few studies that have examined the role of the quality of the couple relationship in moderating the impact of treatment-related physical changes on the body image of women with breast cancer have highlighted a significant association between body image and relationship satisfaction [28, 29]. We therefore hypothesized that individual variability in women's body image after treatment is partly explained by a satisfying romantic relationship, which acts as a protective factor.

To date, no study has examined body image disturbance in the immediate post-surgical period and its evolution over the first year of active treatment by considering both medical and relational factors as predictors of this evolution. We had two aims in the present study. First, we aimed to describe women's body image disturbance in the immediate post-surgical period and its changes during active treatment, considering three phases: the immediate post-surgical period (2 weeks post-surgery, T1 in the research design), the adjuvant treatment phase (3 months post-surgery, T2) and the beginning of the rehabilitation phase (12 months post-surgery, T3). We hypothesized that body image disturbance would change over time depending on the treatment phase, and we expected an improvement in body image (i.e., less body image disturbance) when the patient entered the rehabilitation phase (i.e., end of active treatment). Second, we aimed to

examine the unique contribution of relationship satisfaction to women's body image disturbance across time, over and above the effect of medical treatment. From previous research, we hypothesized that women who were more satisfied with their romantic relationship would report less body image disturbance.

Methods

Sample

Women waiting for breast surgery at the University Hospital of Lausanne (Switzerland) were invited to participate in a longitudinal study (three follow-up sessions, 1 year of participation) on the psychosocial impact of breast cancer on women and couples. Inclusion criteria were as follows: diagnosis of breast cancer, breast surgery required (mastectomy or BCT), ability to read French and being in a couple relationship. Ninety-five of the 167 eligible patients (56.9%) consented to participate in the study and completed the first assessment. Seven women dropped out at the first follow-up assessment and three women at the second follow-up assessment. Eleven women were excluded from the analyses because of missing data in principal variables or because questionnaires were returned too late. The final sample comprised 74 women.

Procedure

The invitation to take part in the research was issued by the referent nurse at the Senology Unit of the University Hospital of Lausanne (Switzerland) during pre-hospital consultation (1–2 weeks before surgery). Women received documentation about the research and signed an informed consent form. The women were asked to complete at home a set of self-report questionnaires at three assessment points: 2 weeks (T1), 3 months (T2) and 12 months (T3) after surgery. Self-addressed stamped envelopes were provided to participants, with instructions to send the completed questionnaires to the referent nurse within a month.

The project was approved by the Ethics Committee of the University Hospital of Lausanne (Protocol Number 228/11) in July 2011.

Measures

The Body Image Scale (BIS) [16] was used to measure women's body image disturbance at T1, T2 and T3. This instrument is specifically designed to assess negative changes in cancer patients' body image after treatment. Each of the 10 items is scored on a 4-point Likert scale from 0 (*not at all*) to 3 (*very much*). A summary score is computed by calculating the sum of the 10 questions (α T1 = .94; α T2 = .94; α T3 = .92). This score ranges from 0 to 30: The higher the score, the greater the body image disturbance.

The Relationship Assessment Scale (RAS) [30] was used to measure women's satisfaction with their romantic relationship at T1. Each of the seven items is scored on a 5-point Likert scale from 1 (*low satisfaction*) to 5 (*high satisfaction*). A summary score is computed by calculating the mean of the seven items (α = .95). This score ranges from 1 to 5: The higher the score, the higher the relationship satisfaction.

Sociodemographic data were collected with an ad hoc questionnaire and medical data were obtained from medical records.

Data analysis

To examine the predictive effect of relationship satisfaction on body image disturbance and its change across time, over and above the effect of medical variables, we carried out a Latent Change Score Model (LCSM) analysis [31] with IBM SPSS AMOS 21 software. In this model, changes are accumulated over time, such that each score is defined as the sum of the previous score and the intervening change score. To estimate the latent variable, we used two parcels of items instead of using every item of the BIS. This procedure allowed us to account for

measurement error, which in turn reduces bias in parameter estimation. Moreover, parcelling reduces the number of estimated parameters of the model [32]. Since the BIS is a unidimensional measure, we split the 10 items into two parcels of 5 items each (see Figure 1 for a graphical representation of the model).

- Insert Figure 1 near here -

Because adjuvant treatments may depend on the kind of surgery performed, treatment-related variables may be highly interrelated. If two variables were found to be strongly correlated ($r \geq .50$), an analysis of covariance (ANCOVA) was conducted.

Given the small sample size, only medical and sociodemographic variables that were significantly correlated ($p < .050$) with the BIS were entered in the LCSM as predictors. After describing the results of the LCSM, we present a graphical representation of the different trajectories of body image disturbance over time as predicted by this model.

Results

Descriptive statistics

Descriptive statistics for sociodemographic and medical characteristics of participants are reported in Table 1.

- Insert Table 1 near here -

The mean summary score on the BIS in our sample was 10.67 (*SD* = 8.27, range 0-28) at T1, 11.20 (*SD* = 8.23, range 0-30) at T2 and 9.65 (*SD* = 7.27, range 0-26) at T3, on a theoretical range of 0 to 30 (*low* to *high* level of body image disturbance). These scores are similar to, although slightly higher than (especially at T1 and T2), those reported in other studies [e.g., 16,33], probably due to proximity to surgery and active treatment. Concerning relationship satisfaction, the mean summary score on the RAS at T1 was 4.28 (*SD* = 0.86, range 1.43-5.00), on a theoretical range of 1 to 5 (from *low* to *high* satisfaction). This score is similar to that

reported in studies of couples in the general population and higher than that reported in studies of clinical couples [34].

Preliminary checks

Preliminary analyses showed that only the ‘mastectomy’ and ‘radiotherapy’ variables were significantly highly correlated ($r = –.607$, $p < .001$). Women who had a mastectomy were treated with radiotherapy less often than were women with BCT.

Bivariate links between predictors and body image disturbance

Concerning medical data, the BIS at T1 was correlated only with mastectomy ($r = .579$, $p < .001$); at T2 it was correlated with mastectomy ($r = .405$, $p < .001$), chemotherapy T1–T2 ($r = .274$, $p = .018$) and radiotherapy T1–T2 ($r = –.398$, $p < .001$); and at T3 it was correlated with mastectomy ($r = .523$, $p < .001$), chemotherapy T1–T3 ($r = .269$, $p = .021$) and radiotherapy T1–T3 ($r = –.366$, $p = .001$). ANCOVAs showed that the association of radiotherapy with the BIS was no longer significant at either T2 or at T3 when mastectomy was controlled for. Because of this interdependence between mastectomy and radiotherapy, the latter was not included in the model.

The results concerning sociodemographic variables (i.e., age, socioeconomic status, marital status, cohabiting, length of the relationship) showed that only being married was significantly associated with body image disturbance: Married women reported less body image disturbance than did unmarried women at T1 ($r = –.242$; $p = .038$).

Concerning relationship satisfaction (RAS), we found that the greater the relationship satisfaction, the lower the body image disturbance as reported by the women at all three assessment points ($r = –.440$, $p < .001$; $r = –.351$, $p = .003$; $r = –.329$, $p = .005$, respectively).

Relationship satisfaction as predictor of body image disturbance

The results of the LCSM show that the BIS score at T1 was significantly explained by mastectomy, relationship satisfaction and being married (see Table 2). Mastectomy significantly increased the BIS score, whereas relationship variables (i.e., relationship satisfaction and being married) lowered the BIS score.

- Insert Table 2 near here -

The change in the BIS score between T1 and T2 was explained by the initial BIS score (T1) and whether women had undergone chemotherapy between T1 and T2. The higher the initial BIS score, the greater the decrease in body image disturbance between T1 and T2. Having had chemotherapy induced an increase in the BIS score at T2 (i.e., increase in body image disturbance).

Finally, the change in the BIS score between T2 and T3 was explained by the BIS score at T2 and whether women had undergone a mastectomy at T1. Again, as with the T1–T2 interval, the higher the BIS score at T2, the greater the decrease in the BIS score between T2 and T3. Having had a mastectomy led to a higher BIS score at T3.

The model showed an excellent fit to the data ($\chi^2(19) = 17.710$, $p = .542$; Comparative Fit Index (CFI) = 1.00, Tucker-Lewis Index (TLI) = 1.007; root mean square error of approximation (RMSEA = .000).

- Insert Figure 2 near here -

Figure 2 shows the different trajectories of body image disturbance over time as predicted by the LCSM. We represented the estimated values of the BIS at the three time points for each possible configuration of treatment (i.e., with or without mastectomy and with or without

chemotherapy) and each possible marital status and relationship satisfaction configuration (i.e., married-satisfied, married-dissatisfied, unmarried-satisfied and unmarried-dissatisfied).

Figure 2 shows how relationship satisfaction and being married determine the starting point of body image disturbance. The difference between the initial BIS scores of a married and highly satisfied woman and an unmarried and dissatisfied woman was 8 points regardless of surgical treatment. Even though the gap between them tended to shrink over time, the effect of relationship satisfaction and being married could still be detected 12 months after the surgery. The graph also shows that satisfied women (independent of their marital status) have less body image disturbance at T1 than do dissatisfied women and that this difference continues to characterize these women over the first year post-surgery. In general, relationship satisfaction has a more important role than marital status in determining the initial level of body image disturbance: A married but dissatisfied woman is likely to report more body image disturbance than is an unmarried but satisfied woman.

In relation to medical treatments, Figure 2 shows that, for BCT without chemotherapy, body image disturbance slightly increased between T1 and T2, and then decreased between T2 and T3, reaching the T1 level for married and unmarried satisfied women and a lower level than T1 for married and unmarried dissatisfied women. Women who underwent BCT and chemotherapy showed a substantial increase in body image disturbance between T1 and T2 and a subsequent decrease between T2 and T3. For all relationship configurations of women, the level of body image disturbance at T3 was higher than at T1. For the mastectomy without chemotherapy configuration, however, there was a decrease between T1 and T2. Between T2 and T3, only married and unmarried dissatisfied women showed a slight decrease in body image disturbance, whereas for married and unmarried satisfied women, the level remained stable. Finally, for the mastectomy with chemotherapy configuration, there was an increase in body

image disturbance between T1 and T2 and a decrease between T2 and T3 for all relationship configurations.

Discussion

This is the first study examining the protective effect of relationship satisfaction on body image disturbance and its change over time from the immediate post-surgical period through the first year post-surgery in a sample of women with breast cancer. In accordance with our hypothesis, the results showed that greater relationship satisfaction reported by women was predictive of less body image disturbance in the immediate post-surgical period (i.e., 2 weeks after surgery, T1). In addition, married women reported less body image disturbance than did unmarried women at T1. Results also showed that relationship satisfaction determined the level of body image disturbance more than marital status did. Independent of their marital status, satisfied women experienced less body image disturbance than did dissatisfied women. Nevertheless, with equivalent relationship satisfaction, married women reported less body image disturbance than did unmarried women. In addition, results showed that the protective effect of relationship satisfaction persisted during the first year post-surgery: Satisfied women reported less body image disturbance at the three time points considered. These results are in line with those of previous studies on the general population and with those of the few existing studies on women with breast cancer [22,28,29]. A poor couple relationship may induce a feeling of being less physically attractive and desirable. Conversely, a satisfactory relationship has a protective effect: Women may experience a sense of security and of being loved that may reassure them and help them better adjust to treatment-induced physical changes. Similarly, being married may play a protective role, as women may feel that the relation is secured by the wedding engagement. This has nevertheless to be explored further, as other studies did not find a link between marital status and body image [4,22].

Beyond the importance of relationship factors, the LCSM showed that, 2 weeks after surgery (T1), the level of body image disturbance reported by women was also determined by the kind of breast surgery performed. In particular, women who had undergone mastectomy reported more body image disturbance. This result confirms previous findings about the existence of major differences in body image across types of breast surgery [5-9]. The longitudinal design of our study allows us to show that the negative impact of mastectomy on body image persisted during the first year post-surgery. Women who underwent BCT reported less body image disturbance and it remained lower throughout the study period than it did in women who underwent mastectomy. Overall, mastectomy not only influenced the initial level of body image disturbance, but also significantly influenced the overall change between T2 and T3 and impaired the recovery of body image with time.

Chemotherapy also influenced the change in body image disturbance over time. At T2, women who underwent chemotherapy reported more body image disturbance; for most of them, body image had not regained the initial level (T1) 9 months later. This strong impact may be explained by a particularly harmful side effect of this treatment: hair loss. The complete loss of hair normally occurs 2 to 3 months after the beginning of treatment [35], which corresponds to our second assessment point. Hair normally regrows 1 or 2 months after the discontinuation of chemotherapy (before T3 in our sample). Although hair loss is temporary, the impact of chemotherapy on body image persists in the medium term [12].

Overall, the results of this study showed that both medical and relationship factors may affect the level of body image disturbance over the first year post-surgery. Further studies are needed to examine how body image continues to change in the long term, considering the combined effect of the treatment side effects and the relational context of the patient. Some studies showed that body image tends to be stable in the long term [3,20,36], which in turn

highlighted the relevance of early detection of body image disturbance to avoid the crystallization of problems and related distress in the long term. However, the contribution of the couple relationship to this stability has not yet been studied.

This study has several limitations. The modest sample size limits the generalizability of the results. The 56.9% participation rate was not high, but it is nonetheless reasonable given the requirement for patients to complete questionnaires three times during active treatment. Middle to upper socioeconomic classes were over-represented and there is thus a need to confirm these results in women with a lower socioeconomic status. The instrument used in this study, the BIS [16], asks women for the 'change after treatment'; it therefore allows one to obtain a measure of treatment-related body image disturbance, but it does not reveal a woman's current satisfaction with her body image. A satisfaction measure would allow one to compare women with breast cancer to other populations. Other information that would have been useful concerns breast reconstruction, which may partly mitigate the negative effect of mastectomy [5]. Finally, it would also be interesting to know how women think their partners see them (e.g., a woman may think her partner finds her less attractive). The partner is an important source of social feedback, which may determine women's self-evaluation [37,38].

Our study showed that how a woman perceives the negative impact of breast cancer treatment on her body may be moderated by the relational context in which she lives. From an intervention perspective, it would be useful to give the woman an opportunity to discuss her feelings and worries about physical changes with a practitioner as soon as possible during treatment. In addition, as qualitative studies have shown, women often fear their partner's reaction to physical changes [e.g., 39,40]. Including the partner in the discussion would thus be helpful for both patient and partner. Meeting with both partners would be an opportunity to ask about the possible changes that the disease has had on the functioning of their relationship to

detect any difficulties. Depending on the needs of the patient (and couple) and on available resources, it may be necessary to suggest a more in-depth couple intervention to improve the quality of the relationship. Improving a couple's relationship would offer the woman a secure environment in which she feels accepted, which may reduce the negative impact of treatment on her self-evaluation.

Conflicts of Interest and Source of Funding

The authors have no conflicts of interest to disclose.

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Table 1. Descriptive statistics of patients' sociodemographic and medical characteristics (*n* = 74)

Age, *M* (*SD*), range, y	52.11	(12.08)	26–79
Socioeconomic status, *N* (%)			
Upper	20	(27.0)	
Upper-middle	16	(21.6)	
Middle	21	(28.4)	
Lower-middle	10	(13.5)	
Lower	7	(9.5)	
Married, *N (%)*	51	(68.8)	
Cohabiting, *N (%)*	64	(86.5)	
Length of relationship, *M* (*SD*), range, y	21.26	(16.50)	0–67
Tumour stage, *N* (%)			
In situ	11	(14.9)	
I	29	(39.2)	
II	25	(33.9)	
III	9	(12.2)	
Surgical treatment, *N* (%)			
BCT	34	(45.9)	
Mastectomy	40	(54.1)	
ALND	23	(31.1)	
Adjuvant treatment, *N* (%)			
Chemotherapy			
T1	9	(12.2)	
T1–T2	19	(25.7)	
T1–T3	19	(25.7)	
Radiotherapy			
T1	17	(23.0)	
T1–T2	39	(52.7)	
T1– T3	46	(62.2)	
Hormonal therapy			
T1	25	(33.8)	
T1– T2	49	(66.2)	
T1– T3	62	(83.8)	

BCT, breast-conserving therapy; ALND, axillary lymph node dissection

Table 2. Latent Change Score Model (*n* = 74)

	T1		T2		T3	
	B	*SE*	*B*	*SE*	*B*	*SE*
Intercept	21.660***	3.496	6.199	4.518	3.561	3.047
Married	–3.040*	1.371	–0.583	1.423	–0.092	1.005
Mastectomy	9.400***	1.313	–0.114	1.784	3.785***	1.068
Chemotherapy	–	–	4.189**	1.502	1.122	1.128
RAS	–3.346***	0.791	–0.622	0.909	–0.579	0.618
Previous BIS	–	–	–0.341**	0.128	–0.431***	0.081

RAS, Relationship Assessment Scale; BIS, Body Image Scale
*$p < .05$; **$p < .01$; ***$p < .001$

Figure 1. Graphical representation of the Latent Change Score Model. BIS, Body Image Scale; P, parcel indicator. Variables of interest are Mastectomy (yes/no); Chemotherapy (yes/no); Married (yes/no); and RAS, Relationship Assessment Scale.

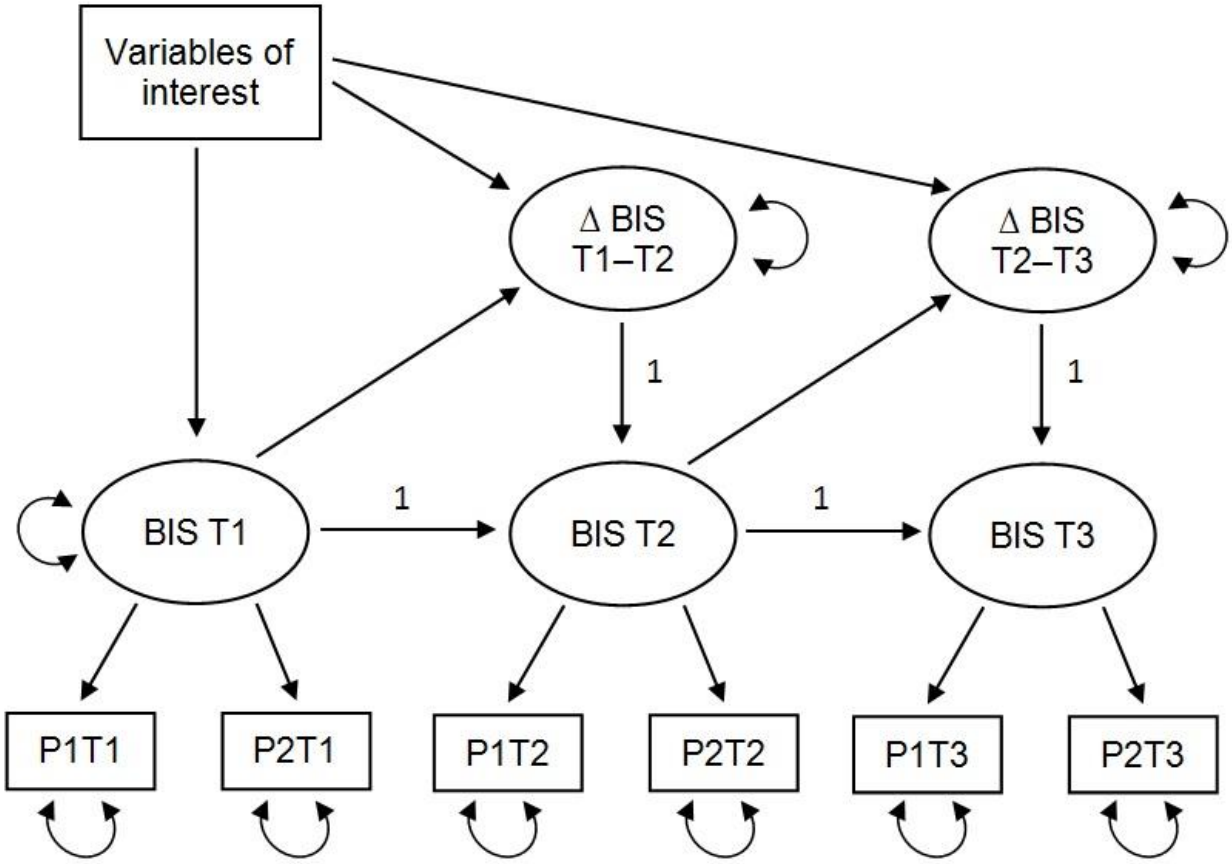

Figure 2. Predicted trajectories of body image disturbance over time according to the LCSM. For relationship satisfaction, we used two extreme values of the RAS to maximize the protective/risk effect. For 'satisfaction' we used the mean summary score of the RAS + 1 *SD* (RAS = 5) and for 'dissatisfaction' we used the mean summary score of the RAS – 1 *SD* (RAS = 3.42). Marital status, mastectomy and chemotherapy are dichotomous (yes = 1/no = 0) variables.