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Sexual Adjustment and Body Image in Breast Cancer Patients (SABIS): A New Measure for Breast Cancer Patients

E. Jane Dalton^{1,*}, Valaire Rasmussen^{2,*}, Catherine C. Classen^{3,C}, Mareile Grumann⁴, Oxana Gronskaya Palesh², Julia Zarcone⁵, Helena C. Kraemer², Jeffrey J. Kirshner⁶, Lauren K. Colman⁷, Gary R. Morrow⁸, and David Spiegel²

¹Women's Mental Health Program, Women's College Hospital, ON, Canada

²Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, CA, USA

³Centre for Research in Women's Health, University of Toronto, ON, Canada

⁴Psychosocial Therapy Center for Women, "Die Insel", Juist, Germany

⁵Integrative Health Studies, California Institute for Integral Studies, CA, USA

⁶Central New York Community Clinical Oncology Program, NY, USA

⁷Northwest Community Clinical Oncology Program, USA

⁸University of Rochester CCOP, NY, USA

Abstract

Disturbances in sexuality and body image are common among women with breast cancer. However, there are few scales designed specifically to assess body image and sexuality in breast cancer patients. The purpose of this study was to develop and validate a self-report measure of body image and sexual adjustment in breast cancer patients: the Sexual Adjustment and Body Image Scale (SABIS). Three hundred and fifty three women diagnosed with primary breast cancer that had completed initial surgical treatment were enrolled in a randomized multi-centre intervention trial to evaluate the benefits of brief group psychotherapy. For the current study, participants completed the SABIS and various other measures of psychological and psychosocial functioning. Psychometric properties of the SABIS were examined. The factor structure of the two scales was established. The SABIS subscales demonstrated good test-retest reliability and internal consistency. Concurrent, convergent and discriminant validity were demonstrated. The SABIS provides a reliable and valid means of assessing disturbances in body image and sexuality in breast cancer patients.

Keywords

sexual adjustment; body image; breast cancer; scale development

^CCorresponding author: Catherine Classen, Ph.D., Women's College Hospital, 76 Grenville Street, 9th Floor, Toronto, ON, Canada M5S 1B2. catherine.classen@wchospital.ca. Office: 416-323-6041. Fax: 416-323-7718.
^{*}co-equal first authors

Breast cancer is the most common cancer diagnosed in women in North America today (1). Given that medical advancements in the treatment of breast cancer have increased the five year survival rate for all stages of breast cancer (1), quality of life issues following breast cancer are increasingly important. Furthermore, although all cancers can lead to disturbances in sexual adjustment and body image, there is evidence that breast cancer patients are particularly likely to experience disturbances in these domains of functioning (2, 3, 4, 5).

The higher risk of disturbance in sexual adjustment in breast cancer patients may be partly due to the range of potential pathways through which sexual functioning is affected following breast cancer treatment. Perhaps most important is the fact that a woman's sexuality encompasses not only the ability to engage in sexual activity, but also feelings about one's own body and ideas about body image and femininity (2, 6). Given that sexuality is so closely related to body image, any disruption in body image may also lead to disturbances in sexual functioning (3, 7, 8, 9). In Western culture in particular, breasts play a key role in body image and sexuality. For example, Fallowfield and Hall report that for a significant minority of women, "losing a breast was a worse fear than that of having cancer" (10).

In addition to the role of body image disturbances, physical changes that are treatment related and secondary to breast cancer may also lead to decreased sexual functioning. For example, ovarian failure occurs in up to 90% of women over the age of 35 years treated with chemotherapy (2). The onset of premature menopause following chemotherapy and hormonal treatment may reduce sexual desire and increase fatigue (11). Chemotherapy treatment is also associated with decreased vaginal lubrication, rendering sexual activity more painful (12). Finally, there are numerous other potential factors that may lead to disturbances in sexual functioning such as; fear of death, fear of recurrence of cancer, emotional investment in breasts, loss of self-esteem, and disintegration of established patterns for achieving sexual satisfaction (10, 13, 11).

The effects of breast cancer treatment on sexual functioning and body image have been well documented. For example, Ganz and colleagues' longitudinal study of women following breast cancer surgery demonstrated that after one year approximately 50% of women reported sexual problems such as not feeling sexually attractive, difficulty becoming sexually aroused and disinterest in sex (14). Three years following surgery, 43% of women continued to report being uncomfortable with body changes, 47% continued to experience lack of sexual interest, and over half reported problems with specific sexual dysfunction. Barni and Mondin reported that following breast cancer there was a significant decrease in the number of women who considered their sex life to be "good" and a significant increase in the number of women who reported their sex life to be "poor" following surgery (15). Fobair, Stewart, Chang, D'Onofrio, Banks and Bloom found that in women under fifty over half reported at least some disturbances in body image and sexual functioning following breast cancer treatment (16).

While some of these difficulties with sexual functioning may be the result of the onset of premature menopause associated with chemotherapy treatment, it is likely that at least some of the changes are a direct result of breast cancer itself (12). Although, sexual dysfunction

and body image disturbances are prevalent sequelae of breast cancer and disturbances in sexual adjustment exert considerable influence on the well-being of breast cancer patients (17), research examining the impact of breast cancer on women's body image and sexuality has been hindered by conceptual and methodological problems (18, 12, 19, 6).

Body image has often been assessed as part of a broader investigation of quality of life, psychological well-being, adjustment, or distress (20, 21, 22, 23). Only a small number of studies have specifically examined body image (24, 8, 25). While mainstream body image psychology has produced a number of assessment tools, they are generally inappropriate for use in most samples of oncology patients as they focus on weight-based appearance, a dimension that has far less importance to most cancer patients, especially those with breast cancer (6, 19).

However, several scales have been developed specifically to measure body image in cancer patients. For example, the Measure of Body Apperception (MBA), which has two sub-scales that measure concern about appearance as well as body integrity (26). The Body-Self Relations Questionnaire (BSRQ) examines body image across dimensions that are directly relevant to cancer patients; appearance evaluation, appearance orientation, fitness evaluation, fitness orientation, health evaluation, health orientation, and illness orientation (27). The Cancer Rehabilitation Evaluation System (CARES) includes a Marital and Sexual Scale and a sub-scale that measures Body Image, but like the others was designed for cancer patients in general (28).

Although these scales provide a means of examining body image they do not address the potentially unique body image concerns relevant to women with breast cancer. One scale, the Body Image Scale (BIS), although originally designed to measure body image across cancer patients, was later used for psychometric testing in a large sample patients with breast cancer (29). However, the items in the BIS were not specifically designed for measuring disturbances in body image in breast cancer patients.

It was only very recently, in 2006, that the first scale specifically designed to measure body image in women diagnosed with breast cancer was published. The Body Image after Breast Cancer Questionnaire (BIBCQ) was developed using a sample of women diagnosed with breast cancer (30). Initial findings suggest that this scale is a reliable and valid means for measuring body image disturbances specific to breast cancer patients.

Just as there are many scales that measure body image in cancer patients, numerous scales have been developed to measure sexual activity in cancer patients, but there are no scales designed to measure sexual functioning in breast cancer patients in particular. For example, the Sexual Function Questionnaire (SFQ) was developed to measure sexual functioning in cancer survivors and healthy controls (31). The Sexual Activity Questionnaire (SAQ) was designed to measure sexual functioning in women at high risk for breast cancer, but not for women already diagnosed and/or treated for breast cancer (32).

The primary aim of the current study was to develop and validate a self-report measure of body image and sexual adjustment in women diagnosed with breast cancer. For validity testing, we hypothesized that a relationship would exist between body image and sexuality

and various aspects of psychological and psychosocial functioning. The following hypotheses were developed and tested to establish convergent and discriminant validity: (a) women who report higher levels of depression and anxiety would also report more disturbances in body image and sexuality; (b) women who report higher levels of avoidance and intrusion would report greater disturbances in body image and sexuality following their diagnosis, but not prior to diagnosis; (c) women who report that their breast cancer had a greater impact on their overall quality of life, would also report greater problems with body image and sexuality; (d) respondents with higher levels of subjective pain, would report that breast cancer had a greater impact on their sexual functioning (e) women who report more problems with body image and sexuality, would also report that their breast cancer had a greater impact on their relationship with their spouse and their sex life; (f) women treated with mastectomy would report greater disturbances in body image, than those treated with lumpectomy; (g) women who reported greater disturbances in body image would also report greater disturbances with sexual functioning and (h) higher ratings of sexual importance of breasts would be associated with greater impact of cancer on women's relationship with spouse and their sex life.

Method

The current study is part of a larger project: Group Therapy for Primary Breast Cancer Patients: A Randomized, Prospective Multi-centre Trial (33, 34). Participants were women diagnosed with primary breast cancer who had been recruited to evaluate the psychosocial benefits of 12-week supportive-expressive group psychotherapy for women with primary breast cancer. Participants were recruited from 9 Community Clinical Oncology Program practice groups across the United States and two medical academic settings.

Participants

The 353 women in the present study were all diagnosed with primary breast cancer: participants had documented, biopsy-proven, breast cancer of stages I (45.1%), II (48.8%), and III (6.1%) diagnosed up to one year prior to recruitment with the initial surgical treatment completed. All participants had completed breast cancer treatment: 46.2% had a lumpectomy, and 53.8% had a modified radical mastectomy. Women also received a variety of other treatments including: chemotherapy (67.7%), hormone therapy (40.8%), and radiation treatment (48.3%).

Exclusion criteria included any residual detectable disease or metastasis beyond adjacent lymph nodes or detection of any other cancers (except basal cell or squamous cell carcinoma of the skin or *in situ* cervical cancer) within the past ten years. Other exclusion criteria included; medical problems likely to limit life expectancy to less than 10 years, a history of major psychiatric illness which required hospitalization or medication (with the exception of anxiety or depression treated for less than one year), or prior participation in a cancer support group for more than two months.

The average age of the women in the present study was 49.8 years. With respect to race 89.5% were Caucasian, 4.7% were Native American 2.9% were African American, 2.0% were Asian, and 0.9% were Hispanic. Twenty-two percent of the sample had graduated from

high school, 29% had some college education and 43.3% had a college degree. The majority of the women were married or in a committed relationship (76.5%), 10.2% were single and 13.3% were separated, divorced, or widowed.

Scale Development

The SABIS was designed as a brief self-report questionnaire to assess body image and sexuality in women with breast cancer following surgery.

Item generation—Two separate sets of items were generated; one set to measure sexual adjustment and one set measure body image. Multiple strategies were utilized for item generation including reviewing existing sexuality and body image scales, clinical observation, patient interviews, and conversations with psychotherapists and physicians treating breast cancer patients.

Finally, all items were reviewed for face validity by psychotherapists and physicians treating breast cancer patients. This process yielded a total of 28 items (see table 1). Ten of these items were related to body image: satisfaction with physical attractiveness, and comfort with showing body to others before and after cancer. Eighteen of these items were related to sexual adjustment: confidence and sexual satisfaction pre-cancer, the quality sexual relationship following cancer and the importance of breasts to her overall sexual experience.

Participants were asked to rate the extent to which breast cancer and its treatment affects “your perception of your body image and your sexuality”. All items were rated on a 5-point Likert scale (with the additional option of answering “not applicable” to any of the 28 items). The meaning of each Likert scale anchor point varied by item (see Table 1). Only non-gender specific words such as “other,” and “partner” were utilized to avoid a heterosexual bias in the measure.

Final Scale Development: Item selection and Factor Structure

Scale development was completed utilizing two thirds ($n=235$) of the total sample ($N=353$), while the remaining one third of the sample was reserved for establishing scale validity ($n=118$). Two separate factor analyses were conducted in order to determine the factor structure of the different scales (Body Image and Sexual Adjustment). Factors with an Eigenvalue of one or greater were retained. Chronbach’s alpha coefficients were calculated to determine inter-item correlations. Items with an adequate alpha coefficient, and that did not load highly on more than one factor were retained. Following the final item selection, a confirmatory factor analysis was conducted on both scales.

Analysis of Scale Psychometric Properties

Reliability—Reliability of the SABIS was assessed by two means. To determine the internal consistency of each SABIS subscale Cronbach’s alpha coefficients were generated. Test re-test reliability was assessed using Spearman rank-order correlations between baseline and three month follow-up scores on the five SABIS subscales (only subjects randomized to the control group condition that did not receive group therapy between test administrations were included in this analysis).

Validity—All analyses related to establishing validity were classified as “hypothesis testing” and therefore executed using the one third sub-sample of women reserved for this purpose. Three types of validity were examined: concurrent, convergent and discriminant. Concurrent validity refers to the degree to which the test to be validated correlates with other established and valid measures that assess the same construct. In the present study concurrent validity was examined by computing Spearman rank order correlations between SABIS subscales and scales that measured like constructs (see scales below).

Convergent validity refers to the degree to which the test to be validated is associated with other tests that measure theoretically related constructs. Convergent validity for SABIS subscales was examined by first formulating hypotheses about expected relationships between SABIS subscales and various related psychological and psychosocial constructs (assessed by the self-report measures described below). Then, to test these hypotheses, Spearman rank order correlation coefficients were calculated between SABIS subscales and these self-report measures. Discriminant validity is demonstrated by showing that the test to be validated can differentiate between groups already known to differ on the relevant variable. Discriminant validity for the SABIS subscales was examined by comparing scores on the SABIS to women across surgery types (a variable known to be associated with body image).

Measures

Sexual Activity Questionnaire (SAQ: 32)—This self-report scale was designed to measure the sexual functioning of women at risk of breast cancer. For the present study, only two items of the SAQ were utilized. It was predicted that women who endorsed the two SAQ items related to disturbances in sexual functioning (“I am not interested in sex” and “I have a physical problem that makes sexual relations difficult or uncomfortable”) would also report greater impairments in sexual adjustment as measured by the “Impact on Sexual Functioning” SABIS subscale (concurrent validity). It was also predicted that women who reported sexual problems on these two SAQ items, would also report disturbances in body image as measured by SABIS subscales (convergent validity).

Hospital Anxiety and Depression Scale (HADS: 35)—This fourteen item self-report scale was designed to measure symptoms of depression and anxiety. It is comprised of two seven item subscales: the depression subscale and the anxiety subscale. It was hypothesized that greater depression scores would be associated with higher self-report scores of disturbances in body image and sexuality on the SABIS (convergent validity). It was also hypothesized that greater anxiety scores as measured by the HADS would be associated with higher levels of self-reported disturbances in body image and sexuality on the SABIS (convergent validity).

The Profile of Mood States (POMS: 36)—The POMS yields a total mood disturbance (TMD) score based on six subscales: Anxiety (e.g. tense), Depression (e.g. unhappy), Hostility (e.g. “angry), Confusion (e.g. unable to concentrate), Vigor (e.g. “lively) and Fatigue (e.g., “worn-out”). The total score for the POMS is calculated by adding all the subscales (except Vigor) and then subtracting the Vigor scale from the total. This measure

has adequate test-retest reliability and good internal consistency (Cronbach's alpha $\alpha = .89$ in the present sample). It was hypothesized that greater self-reported mood symptoms as measured by the POMS would be associated with greater disturbances in body image and sexuality as measured by SABIS subscales (convergent validity).

Impact of Event Scale (IES: 37)—This fifteen item self-report scale was designed to measure subjective distress following a stressful life event. It consists of two subscales that measure commonly reported symptoms of avoidance and intrusion related to experiencing a stressful life event. Higher scores on the IES subscales indicate higher levels of avoidance and intrusion. It was hypothesized that higher reported symptoms of avoidance and intrusion would be associated with greater self-reported disturbances in body image and sexuality post diagnosis as measured by the SABIS (convergent validity).

Impact of Illness on Your Life (IIYL: 38)—This 13 item self-report measure examines the impact of the illness on various domains of life (e.g., sex, finances, work, diet, relationships, etc). Participants rate the extent to which the illness interfered with various aspects of their life over the past two weeks on a seven point Likert scale from “not very much” to “very much.” Thus, higher scores indicate greater interference in that part of one's life. For the present study two items that measured the impact of illness on “sex life” and “relationship with your spouse” along with the total score for the overall impact on life were utilized.

It was predicted that women who reported that breast cancer had affected their lives to a greater degree would also report greater disturbances on body image and sexual functioning as measured by the SABIS (convergent validity). It was also predicted higher scores on disturbances in sex life and relationship would be associated with higher scores on disturbances in body image as measured by the SABIS (convergent validity). It was also expected that the relationship disturbance item would be associated with disturbances in sexuality as measured by SABIS (concurrent validity), and that the sex life disturbance item of the IES would be associated with the “Impact on Sexual Functioning” subscale of the SABIS (concurrent validity).

Pain Rating Scale (PRS: 39, 40)—This self-report measure consists of items that ask participants to rate their cancer related pain. We used one item that assesses “suffering at this moment” on a Likert type scale that ranges from 1 “not noticeable” to 10 “excruciating, worst ever.” Higher scores indicate greater pain. It was predicted that higher ratings of subjective pain would be associated with higher scores on the “Impact on Sexual Functioning” subscale of the SABIS (convergent validity).

Procedure

All 353 study participants completed the initial 28-item version of the SABIS, and the various self-report measures at baseline and the three month follow-up visit.

Results

Factor Analysis: Scale Structure

Two factor analyses were performed to establish the factor structure of the two scales. A factor analysis with Varimax rotation was performed on the ten items of the Body Image Scale, for women in the two thirds sub-sample who had completed all items ($n = 214$, 91.1 percent response rate). This analysis resulted in a two factor solution. The first subscale measured a woman's comfort with her body prior to having breast cancer and was labeled "Prior Body Image." The second subscale reflected a woman's comfort with her body since being diagnosed with breast cancer and was labeled "Post Body Image."

Following the completion of this initial factor analysis four of the ten original items were eliminated due to either low Cronbach's alpha coefficients or high loadings on more than one factor. A confirmatory factor analysis revealed that "Prior Body Image" accounted for 23 percent of the variance (Eigenvalue = 1.38), while "Post Body Image" accounted for 55 percent of the variance (Eigenvalue = 3.28) (see Table 2).

A second factor analysis with Varimax rotation was performed on the 18 items of the Sexual Adjustment Scale. Only "partnered" participants that had answered all the sexuality items were included in this analysis ($n = 144$ or 82.0% of partnered women). This analysis resulted in a four factor solution, of which we selected only three labeled "Prior Sexual Adjustment," "Impact on Sexual Functioning" and "Sexual Importance of Breasts". The fourth factor of the Sexual Adjustment Scale, "Sexual Comfort with Breast Area," was not included as a subscale because this factor was moderately correlated with the "Post Body Image" subscale ($r = .54$). Based on the factor analysis 10 of the original 18 items were eliminated due to low alpha coefficients or high loadings on more than one factor.

A confirmatory factor analysis of the Sexual Adjustment Scale revealed that "Prior Sexual Adjustment" accounted for 22 percent of the variance (Eigenvalue = 1.76), "Impact on Sexual Functioning" accounted for 41 percent of the variance (Eigenvalue = 3.25), and "Sexual Importance of Breasts" accounted for 17 percent of the variance (Eigenvalue = 1.33) (see Table 3).

Sexual Adjustment and Body Image Scale: Final Version

Scoring—The final version of the SABIS consists of two separate scales: the six item Body Image Scale and the eight item Sexual Adjustment Scale (see Table 4). The two sub-scales in the Body Image Scale are: "Prior Body Image" and "Post Body Image." The three sub-scales of the Sexual Adjustment Scale are: "Prior Sexual Adjustment," "Impact on Sexual Functioning" and "Sexual Importance of Breasts".

With respect to scoring, items are scored on a five-point Likert Scale. For all subscales except "Impact on Sexual Functioning," Likert scores range from one to five. For these four subscales, mean scores range from one to five, with lower scores indicating worse body image and sexual adjustment. The four items of the "Impact on Sexual Functioning" are scored on a Likert Scale ranging from negative two to positive two. On this subscale

negative scores indicate decreased sexual functioning following breast cancer, while positive scores indicate improved sexual functioning following breast cancer.

There are no total scores for either of the SABIS scales: Body Image or Sexual Adjustment. Instead a mean score is generated for each subscale by dividing the total subscale score by the number of subscale items. A mean score is used rather than a total score, to allow for one missing item per subscale.

SABIS Scores for Total Sample

Utilizing the above scoring procedures, mean scores for the entire sample of women in the present study ($N = 353$) were calculated (see Table 5). The mean score on “Prior Body Image” indicated that women were moderately comfortable with their body image before breast cancer, and only somewhat comfortable with their body image following breast cancer. Mean scores on “Prior Sexual Adjustment” indicated that women were moderately satisfied with their sex life pre-cancer, but that their sexual adjustment worsened/decreased following breast cancer. Finally, the mean score on “Sexual Importance of Breasts” indicated that women rated their breasts as moderately important in terms of their sexual experience.

SABIS Psychometric Properties

Reliability—Both sub-scales of the Body Image Scale had good internal consistency: “Prior Body Image” ($\alpha = .80$) and “Post Body Image” ($\alpha = .87$). Similarly, all three sub-scales of the Sexual Adjustment Scale had good internal consistency: “Prior Sexual Adjustment” ($\alpha = .78$), “Impact on Sexual Functioning” ($\alpha = .91$) and “Sexual Importance of Breasts” ($\alpha = .66$).

Test-retest reliability was calculated by computing Spearman rank order correlations between SABIS scores at baseline and three months later. These scores were only calculated for control group subjects who did not receive the active group therapy treatment. Test-retest reliability statistics indicate that test consistency was adequate for all five SABIS subscales: “Body Image Prior” ($r_s = .81, p < .001, n = 147$), “Body Image Post” ($r_s = .70, p < .001, n = 146$), “Prior Sexual Adjustment” ($r_s = .77, p < .001, n = 130$), “Impact on Sexual Functioning” ($r_s = .70, p = .001, n = 109$) and “Sexual Importance of Breasts” ($r_s = .66, p < .001, n = 143$).

Validity Testing—For the analyses relating to hypothesis testing for establishing the validity of the SABIS the one third sub-sample of women reserved for hypothesis testing was utilized. Evidence for concurrent, convergent and discriminant validity was examined. The Spearman rank order correlation coefficients calculated between scores on the SABIS subscales and the study questionnaires used for establishing validity are displayed in Table Seven.

Concurrent validity—Concurrent validity was established for the “Impact on Sexual Functioning Subscale” of the SABIS. The “Impact on Sexual Functioning” subscale was strongly associated with item number eight (Sex Life item) of the IYYL, that measures the degree to which breast cancer has affected women’s sex lives. Women whose breast cancer

interfered more with their sex life, scored lower (e.g. greater impact of cancer on sexual functioning) on this SABIS subscale.

Further evidence for the concurrent validity of the SABIS was examined by comparing SABIS subscale scores to women's self-reported sexual functioning as measured by the Sexual Activity Questionnaire (SAQ)¹. Two items of the SAQ were examined: "I am not interested in sex" and "I have a physical problem which makes sexual relations difficult or uncomfortable". It was anticipated that women who endorsed these items would score lower on the subscales of the SABIS designed to measure sexuality and body image following surgery. As predicted, women who endorsed the "I am not interested in sex" item of the SAQ scored received significant lower scores on the "Impact on Sexual Functioning" subscale (indicative of worse sexual functioning) than those who did not endorse this item ($t = 4.7$, $df = 264$, $p < .001$). Similarly, women who endorsed the "...sexual relations difficult..." item of the SAQ scored significantly lower on the "Impact on Sexual Functioning Scale" (indicative of worse sexual functioning) than women who did not endorse this item ($t = 5.12$, $df = 264$, $p < .001$).

Convergent Validity—To varying degrees, evidence for convergent validity was established for all five SABIS subscales: "Prior Body Image", "Post Body Image", "Prior Sexual Adjustment", "Impact on Sexual Functioning", and "Sexual Importance of Breasts".

In keeping with our predictions, greater overall mood distress (POMS) was associated with more disturbances in body image and sexual functioning, both before and after surgery. As would be expected, the strength of the relationship between negative mood state and greater disturbances in body image and sexual functioning was higher for the post sub-scales ("Post Body Image" and "Impact on Sexual Functioning"), than the prior sub-scales ("Prior Body Image" and "Prior Sexual Adjustment"). The same relationship was found between mood state and body image and sexuality using the HADS-Depression subscale. Again, as anticipated the relationship between depression and body image and sexuality was stronger following surgery, than for the two prior subscales. It was also hypothesized that anxiety would be associated with disturbances in body image and sexual functioning. This prediction was also supported by the correlations between the HADS-Anxiety subscale and the "Post Body Image" and "Impact on Sexual Functioning" subscales.

Further evidence for convergent validity was demonstrated by the pattern of correlations between the Impact of Event (IES) subscales of avoidance and intrusion and the SABIS subscales. Given the potential impact of the diagnosis of and subsequent treatment of breast cancer on women, it was hypothesized that avoidance and intrusion symptoms would be associated with disturbances in body image and sexuality following surgery. This hypothesis was supported by the association between both IES subscales and "Post Body Image and Prior Body Image".

¹It should be noted that despite the fact that these analyses were considered to be hypothesis testing, they were conducted on the entire sample of women, rather than the one third sub-sample that was used for all other analyses concerning validity. The reason for this is that too few of the women in the one third sub-sample endorsed these items to allow us to complete the analysis.

Also as predicted, there were negative correlations between the overall degree to which women's lives were impacted by their breast cancer (IYYL total score), and "Post Body Image" and "Impact on Sexual Functioning". As expected, the more women's lives were affected by their breast cancer, the lower their satisfaction with their body image and sexual functioning, as measured by the SABIS. Also as anticipated, there was a slight but significant negative correlation between higher ratings of pain (PRS) and "Impact on Sexual Functioning". The more pain women reported, the lower their rating on this SABIS subscale (indicating decreased sexual functioning).

It was predicted that the SABIS subscale "Impact on Sexual Functioning" would be associated with the degree to which they reported that their breast cancer interfered with their sex life and relationship. As predicted, there were moderate negative correlations between the "Impact on Sexual Functioning" and the IYYL "relationship with spouse" and "sex life" items: the more women reported that their breast cancer had interfered with their relationship and sex life, the lower their ratings on the "Impact on Sexual Functioning" subscale.

It was also predicted that there would be correlations between the "Post Body Image" subscale and the IYYL (impact on relationship and spouse items). There were small, but significant correlations between the degree that breast cancer impacted women's relationships and sex life and disturbance in body image (SABIS).

Further evidence for convergent validity of the SABIS was established by comparing the "Post Body Image" subscale with items of the SAQ. It was expected that the "Post Body Image" subscale would be associated with self-reported sexual functioning. It was found that women who endorsed the "I am not interested in sex" item of the SAQ scored significantly lower on the "Post Body Image" subscale of the SABIS than women who did not endorse this item ($t = 2.71$, $df = 349$, $p < .01$). Also, women who endorsed the "...sexual relations difficult..." item of the SAQ scored significantly lower on the "Post Body Image" subscale of the SABIS than those who did not ($t = 2.44$, $df = 349$, $p < .05$).

It was also hypothesized that there would be a relationship between the body image and sexuality subscales of the SABIS. As hypothesized there was a positive association between the "Prior Body Image" and "Prior Sexuality" subscales. Similarly, there was a positive association between the "Post Body Image" and "Impact on Sexual Functioning" subscales (see Table Six). The finding of these anticipated associations between SABIS subscales provides further evidence for the convergent validity of the SABIS.

With respect to convergent validity of the "Sexual Importance of Breasts" subscale, contrary to one of our a priori predictions it was not associated with impact of illness on sexual functioning (IYYL: "Sex Life" item). In keeping with our predictions this subscale was associated with relationship quality: the greater the degree to which breasts were rated as being important to sexuality, the more women reported their breast cancer had interfered in their relationship (IYYL: "Relationship" item).

Discriminant Validity—Discriminant validity for the “Post Body Image” scale was tested and supported. It was predicted that surgery type would be associated with degree of disturbance in body image. As predicted, scores on the “Body Image Post” subscale of the SABIS were significantly higher for women that had a lumpectomy (mean = $2.67 \pm .89$), than women that had a mastectomy (mean = $1.98 \pm .95$) ($t = 3.17$, $df = 70$, $p < .01$). In keeping with the literature, women that had a mastectomy scored lower on this subscale indicating greater disturbances in body image.

Discussion

Disturbances in body image and sexuality are common among women diagnosed with breast cancer. Despite the prevalence of these concerns among breast cancer survivors, to date only one scale, the BIBCQ, has been developed to measure disturbances in body image unique to breast cancer survivors (30). To date, there are no scales specifically designed to measure disturbances in sexual adjustment in breast cancer patients.

The SABIS was developed to address the need for a reliable and valid self-report measure to assess disturbances in body image and sexuality specific to breast cancer patients. In the present study, factor analyses led to the development of the two scales that comprise the fourteen item SABIS: the Body Image Scale and the Sexual Adjustment Scale. The psychometric properties of the SABIS were assessed in order to establish adequate reliability and validity.

Reliability analyses demonstrated that all five SABIS subscales had adequate internal consistency and test-retest reliability. Validity testing was conducted by testing various hypotheses concerning predicted relationships between SABIS subscales and various psychological and psychosocial variables. The confirmation of many a priori hypotheses provided evidence in support of concurrent, convergent and discriminant validity of SABIS subscales. More specifically, concurrent validity was established for the “Impact on Sexual Functioning”, convergent validity was established for all five sub-scales, and discriminant validity was established for the “Post Body Image” subscale.

The hypothesized relationship between mood disturbances and disturbances in body image and sexuality was confirmed. Women who had higher levels of depression reported greater disturbances in body image and sexuality following breast cancer. The finding of an anticipated association between depression and body image and sexuality disturbances is consistent with previous research (30, 16). Interestingly, there was also an association between women’s recollections of their body image and sexual functioning prior to breast cancer and current mood state. This finding may be due to recall bias such that women with current mood symptoms recall their prior body image and sexuality more negatively, than those without current mood symptoms. Alternatively, this finding may reflect the fact that depression is associated with disturbances in body image and sexuality even in the absence of breast cancer (41).

Further evidence for the convergent validity for the SABIS was established through the confirmation of the hypothesized relationship between avoidance and intrusion symptoms

and body image and sexuality disturbance. As predicted there was also an association between the subscales of the SABIS that measured body image and sexuality. This finding is also consistent with previous literature that supports an association between sexual functioning and body image (16). It is also consistent with the theory that changes in body image as a result of breast cancer treatment is one of the major causal pathways for the sexual dysfunction found in breast cancer patients following treatment (11). It was also found that disturbances in body image and sexuality were associated with decreased relationship quality. Given the importance of sexual intimacy to relationship quality, and previous research (42) this finding is as expected.

Initial evidence for the discriminant validity of the SABIS was also established. The “Post Body Image” scale differentiated between surgery groups as expected. Women who had a mastectomy reported greater disturbances in body image than those that had a lumpectomy. This finding is consistent with previous findings that mastectomy is associated with great disturbances in body image than lumpectomy (29, 43, 16).

Clinical Applications

The SABIS has several important clinical applications. The prevalence of disturbances in body image and sexuality in women recovering from breast cancer and the apparent long-standing nature of these problems (at least for a subset of women), coupled with the fact that disturbances in body image and sexuality may interfere with functioning in other areas, highlights the importance of the identification and treatment of these disturbances.

Moreover, some patients may fear reporting disturbances in body image and sexuality due to embarrassment or the belief that worrying about “unimportant” sequelae like sexual functioning may not be justified in light of the seriousness of their illness (9, 44). Given the relatively high rates of disturbances in body image and sexuality, and the possibility that these concerns may be under-reported, routine screening of breast cancer patients is important. The SABIS could be utilized as a screening tool to assess body image disturbance and problems with sexual adjustment in women with breast cancer in order to identify those in need of intervention.

Limitations and Future Research

One limitation of the present study is that the demographic composition of our sample may reduce the generalizability of the results. Given that the majority of women in the present study were Caucasian, findings cannot be assumed to apply to women from different cultural backgrounds. Similarly, the fact that almost half of the women in the present study had a college degree may also limit the generalizability of these results. A third factor that may limit generalizability is that women who completed the SABIS were those who had enrolled in a group therapy treatment study for breast cancer survivors. It cannot be determined whether women who seek treatment of this kind, differ from women who do not. Further research will be required to demonstrate whether the SABIS is also a reliable and valid measure of disturbances in body image and sexuality in breast cancer survivors from diverse cultural backgrounds, with varying levels of educational attainment and who are not actively seeking treatment.

Another limitation of the present study is that data about body image and sexuality prior to breast cancer was collected post-diagnosis. Measuring body image and sexuality prior to breast cancer by relying on recall, introduces the possibility of various recall biases in assessing these constructs.

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The 28 items of the original SABIS

Table 1

Body Image Scale				
1.	Prior to having breast cancer, how satisfied were you with your physical attractiveness?			
	Not at all satisfied	Somewhat satisfied	Moderately satisfied	Very satisfied
				Extremely satisfied
2.	How satisfied are you with your physical attractiveness since having breast cancer?			
	Not at all satisfied	Somewhat satisfied	Moderately satisfied	Very satisfied
				Extremely satisfied
3.	Prior to having breast cancer, how comfortable were you showing your body to others?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
4.	How comfortable are you showing your body to others since having breast cancer?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
5.	How comfortable are you with the changes in your body since having breast cancer?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
6.	How comfortable are you showing your affected breast area to others since having breast cancer?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
7.	Prior to having breast cancer, how comfortable were you with your body weight?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
8.	How comfortable are you with your body weight since having breast cancer?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
9.	Prior to having breast cancer, how comfortable were you with the shape/proportion of your body?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
10.	How comfortable are you with the shape/proportion of your body since having breast cancer?			
	Not at all comfortable	Somewhat comfortable	Moderately comfortable	very comfortable
				extremely comfortable
Sexual Adjustment Scale				
11.	Prior to having breast cancer, how satisfied were you with your sex life?			
	Not at all satisfied	Somewhat satisfied	Moderately satisfied	Very satisfied
				Extremely satisfied
12.	How satisfied are you with your sex life since having cancer?			
	Not at all satisfied	Somewhat satisfied	Moderately satisfied	Very satisfied
				Extremely satisfied
13.	Prior to having breast cancer, how confident did you feel about yourself as a sexual partner?			
	Not at all confident	Somewhat confident	Moderately confident	Very confident
				Extremely confident
14.	How confident did you feel about yourself as a sexual partner since having breast cancer?			
	Not at all confident	Somewhat confident	Moderately confident	Very confident
				Extremely confident

15. How has having breast cancer affected your desire for sexual contact?
 Substantially Decreased Decreased No effect Increased Substantially increased
16. How has having breast cancer affected your sexual relationship(s)?
 Substantially Worsened Worsened No effect Improved Substantially improved
17. How has having breast cancer affected communication with your partner(s) about your sexual needs?
 Substantially Worsened Worsened No effect Improved Substantially improved
18. How has having breast cancer affected the frequency with which you initiate sexual contact?
 Substantially Decreased Decreased No effect Increased Substantially increased
19. How has having breast cancer affected the frequency with which your partner(s) initiates sexual contact?
 Substantially Decreased Decreased No effect Increased Substantially increased
20. How has having breast cancer affected your sexual satisfaction when you have sex?
 Substantially Worsened Worsened No effect Improved Substantially improved
21. How has having breast cancer affected the frequency with which you feel sexually satisfied when you have sex?
 Substantially Decreased Decreased No effect Increased Substantially increased
22. How important are your breasts to your sexual experience?
 Not at all important Somewhat important moderately important very important extremely important
23. How important are your breasts to your partner's sexual experience?
 Not at all important Somewhat important moderately important very important extremely important
24. How comfortable is it for you to have your partner(s) see your chest?
 Not at all comfortable Somewhat comfortable Moderately comfortable very comfortable extremely comfortable
25. How comfortable is it for your partner(s) to see your chest?
 Not at all comfortable Somewhat comfortable Moderately comfortable very comfortable extremely comfortable
26. How comfortable is it for you to have your partner(s) touch your affected breast or breast area?
 Not at all comfortable Somewhat comfortable Moderately comfortable very comfortable extremely comfortable
27. How comfortable is it for your partner(s) to touch your affected breast or breast area?
 Not at all comfortable Somewhat comfortable Moderately comfortable very comfortable extremely comfortable
28. How important are your breasts to your sexual identity as a woman?
 Not at all important Somewhat important moderately important very important extremely important

Table 2

The two Body Image Subscales: Prior Body Image and Post Body Image showing percentage of variance accounted for and weighted factor loadings

Factor 1: Prior Body Image (22%)		Weighted Factor Loading
1.	Prior to having breast cancer how satisfied were you with your physical attractiveness?	.89
2.	Prior to having breast cancer, how comfortable were you showing your body to others?	.73
6.	Prior to having breast cancer, how comfortable were you with the shape/proportion of your body?	.88
Factor 2: Post Body Image (55%)		
3.	How comfortable are you showing your body to others since having breast cancer?	.88
4.	How comfortable are you with the changes in your body since having breast cancer?	.83
5.	How comfortable are you showing your affected area to others since having breast cancer?	.91

Table 3

The three Sexual Adjustment Subscales: Prior Sexual Adjustment, Impact on Sexual Functioning, and Sexual Importance of Breasts showing percentage of variance accounted for and weighted factor loadings

		Weighted Factor Loading
Factor 1:	Prior Sexual Adjustment (22%)	
1.	Prior to having breast cancer, how satisfied were you with your sex life?	.92
2.	Prior to having breast cancer, how confident were you about yourself as a sexual partner?	.92
Factor 2:	Impact on Sexual Functioning (41%)	
3.	How has having breast cancer affected your desire for sexual contact?	.91
4.	How has having breast cancer affected your sexual relationship(s)?	.86
5.	How has having breast cancer affected the frequency with which you initiate sexual contact?	.83
6.	How has having breast cancer affected your sexual satisfaction when you have sex?	.83
Factor 3:	Sexual Importance of Breasts (17%)	
7.	How important are your breasts to your sexual experience?	.88
8.	How important are your breasts to your identity as a woman?	.89

Table 4

Final version of the SABIS

These two questionnaires are designed to help us better understand the impact that breast cancer and its treatment have on your perception of your body and your sexuality. Your answers will be kept confidential. Please select the single BEST ANSWER for each question.

BODY IMAGE SCALE

1. Prior to having breast cancer, how satisfied were you with your physical attractiveness?

☐	☐	☐	☐	☐
<i>not at all satisfied</i>	<i>somewhat satisfied</i>	<i>moderately satisfied</i>	<i>very satisfied</i>	<i>extremely satisfied</i>
2. Prior to having breast cancer, how comfortable were you showing your body to others?

☐	☐	☐	☐	☐
<i>not at all comfortable</i>	<i>somewhat comfortable</i>	<i>moderately comfortable</i>	<i>very comfortable</i>	<i>extremely comfortable</i>
3. How comfortable are you showing your body to others since having breast cancer?

☐	☐	☐	☐	☐
<i>not at all comfortable</i>	<i>somewhat comfortable</i>	<i>moderately comfortable</i>	<i>very comfortable</i>	<i>extremely comfortable</i>
4. How comfortable are you with the changes in your body since having breast cancer?

☐	☐	☐	☐	☐
<i>not at all comfortable</i>	<i>somewhat comfortable</i>	<i>moderately comfortable</i>	<i>very comfortable</i>	<i>extremely comfortable</i>
5. How comfortable are you showing your affected breast area to others since having breast cancer?

☐	☐	☐	☐	☐
<i>not at all comfortable</i>	<i>somewhat comfortable</i>	<i>moderately comfortable</i>	<i>very comfortable</i>	<i>extremely comfortable</i>
6. Prior to having breast cancer, how comfortable were you with the shape/proportion of your body?

☐	☐	☐	☐	☐
<i>not at all comfortable</i>	<i>somewhat comfortable</i>	<i>moderately comfortable</i>	<i>very comfortable</i>	<i>extremely comfortable</i>

SEXUAL ADJUSTMENT SCALE

1. Prior to having breast cancer, how satisfied were you with your sex life?

☐	☐	☐	☐	☐
<i>not at all</i>	<i>somewhat</i>	<i>moderately</i>	<i>very</i>	<i>extremely</i>
<i>satisfied</i>	<i>satisfied</i>	<i>satisfied</i>	<i>satisfied</i>	<i>satisfied</i>

2. Prior to having breast cancer, how confident did you feel about yourself as a sexual partner?

☐	☐	☐	☐	☐
<i>not at all</i>	<i>somewhat</i>	<i>moderately</i>	<i>very</i>	<i>extremely</i>
<i>confident</i>	<i>confident</i>	<i>confident</i>	<i>confident</i>	<i>confident</i>

3. How has having breast cancer affected your desire for sexual contact?

☐	☐	☐	☐	☐
<i>substantially</i>	<i>decreased</i>	<i>no effect</i>	<i>increased</i>	<i>substantially</i>
<i>decreased</i>				<i>increased</i>

4. How has having breast cancer affected your sexual relationship(s)?

☐	☐	☐	☐	☐
<i>very much</i>	<i>worsened</i>	<i>no effect</i>	<i>improved</i>	<i>very much</i>
<i>worsened</i>				<i>improved</i>

5. How has having breast cancer affected the frequency with which you initiate sexual contact?

☐	☐	☐	☐	☐
<i>substantially</i>	<i>decreased</i>	<i>no effect</i>	<i>increased</i>	<i>substantially</i>
<i>decreased</i>				<i>increased</i>

6. How has having breast cancer affected your sexual satisfaction when you have sex?

☐	☐	☐	☐	☐
<i>very much</i>	<i>worsened</i>	<i>no effect</i>	<i>improved</i>	<i>very much</i>
<i>worsened</i>				<i>improved</i>

7. How important are your breasts to your sexual experience?

☐	☐	☐	☐	☐
<i>not at all</i>	<i>somewhat</i>	<i>moderately</i>	<i>very</i>	<i>extremely</i>
<i>important</i>	<i>important</i>	<i>important</i>	<i>important</i>	<i>important</i>

8. How important are your breasts to your sexual identity as a woman?

☐	☐	☐	☐	☐
<i>not at all</i>	<i>somewhat</i>	<i>moderately</i>	<i>very</i>	<i>extremely</i>
<i>important</i>	<i>important</i>	<i>important</i>		

Table 5

Mean Scores on SABIS subscales for entire sample

Scale Name	Subscale Name	Mean ($\pm$ Standard Deviation)
Body Image Scale	Prior body Image	2.81 ($\pm$.86)
	Post Body Image	2.35 ($\pm$ 1.0)
Sexual Adjustment Scale	Prior Sexual Adjustment	3.27 ($\pm$.98)
	Impact on Sexual Functioning	-0.49 ($\pm$.71)
	Sexual Importance of Breasts	2.91 ($\pm$.97)

Spearman rank order correlations between SABIS subscales and questionnaires used for validity testing

Table 6

	Prior Body Image	Post Body Image	Prior Sexual Adjustment	Impact on Sexual Functioning	Sexual Importance of breasts
<i>Mood symptoms</i>					
POMS	-.24* (113)	-.36*** (111)	-.27** (97)	-.41*** (77)	.02 (95)
<i>HADS</i>					
Anxiety Subscale	-.14 (118)	-.19* (117)	-.09 (107)	-.26* (83)	.02 (117)
Depression Subscale	-.18* (118)	-.35*** (117)	-.28** (107)	-.42*** (83)	.05 (117)
<i>Subjective distress</i>					
<i>IES</i>					
Avoidance Subscale	-.01 (118)	-.32*** (117)	-.01 (107)	-.32** (83)	.04 (117)
Intrusion Subscale	-.1 (118)	-.37*** (117)	.02 (107)	-.34*** (83)	.16 (117)
Pain Scale Item: "Suffering at this Moment"	.04 (113)	-.07 (111)	.01 (96)	-.26* (76)	-.10 (94)
<i>Psychosocial Functioning</i>					
<i>IIVL</i>					
Total score	-.09 (113)	-.41*** (111)	-.05 (97)	-.40*** (77)	.11 (95)
Item 7: "Relationship with spouse"	.03 (111)	-.25** (110)	-.02 (96)	-.41*** (77)	.22* (94)
Item 8: "Sex Life"	-.01 (111)	-.24** (110)	.24* (96)	-.59*** (77)	.16 (94)

* $p < .05$,** $p < .01$,*** $p < .001$

Table 7
Intercorrelations between the subscales of the Body Image and Sexual Adjustment scales

Subscale	1	2	3	4	5
1. Prior Body Image	--	.34*** (117)	.35*** (107)	.27* (83)	.19 (95)
2. Post Body Image		--	.18 (106)	.40*** (82)	.03 (94)
3. Prior Sexual Adjustment			--	.01 (83)	.20 (87)
4. Impact on Sexual Functioning				--	.11 (68)
5. Sexual Importance of Breasts					--

* $p < .05$,
** $p < .01$,
*** $p < .001$