Running Head: HIGH RISK FOR BREAST CANCER AND SEXUALITY

An Examination of Sexuality in Women with an Elevated Risk for Breast Cancer Development

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Introduction

Breast cancer is the leading cause of cancer in women. One in eight women may face a breast cancer diagnosis. While this is a significant percentage of the female population, medical advancements are responsible for improved outcomes, with a five-year survival rate for all stages of 86% (Jemal et al., 2008). This is due to advancements in technology that make it possible to diagnose breast cancer earlier and more accurately. With the discovery of the BRCA1 and BRCA2 genes, is it now even possible to determine which women possess a highly elevated risk of breast cancer development in their lifetime (Lester, 2007).

Women who are diagnosed with breast cancer experience serious challenges to their physical and emotional health. In particular, younger women undergoing treatment for breast cancer are at a higher risk for alterations in sexuality due to both the disease itself and the treatment for the disease (Knobf, 2006). Detection rates and treatment for this disease have significantly improved in recent years, resulting in an increase in the number of survivors living with the lingering effects of their disease and its treatment. Researchers have begun to look at both short- and long-term effects of breast cancer treatment on survivors' sexuality and overall quality of life. However, there is another emerging group of women who may suffer many of the same side effects: women with an increased risk of breast cancer development, based on genetics or a personal health history.

The focus of this research is to analyze how sexuality may be affected by the factors related to an increased risk of breast cancer development. In order to accomplish this, it is important to gain a better understanding of the contributing factors, the related unpleasant symptoms, and whether these factors are physical, psychological, or a combination of the two. This research was conducted with the hope that any findings will help influence the focus of future research as well as help guide healthcare providers in addressing and treating these very personal issues in this patient population.

Theoretical framework

The theory of unpleasant symptoms, a middle-range nursing theory, guides the examination of the subjective symptom experiences of sexuality, including alterations in satisfaction, function, and bodily image (Figure 1). Symptoms are central to the model with potential influences from

physiologic, psychologic, and/or situational factors; performance outcomes are identified as consequences of the symptom experience. Interactions between influencing factors as well as feedback from performance outcomes enable multi-directional movement within the model to further explore symptom phenomena (Lenz & Pugh, 2003). The influencing factors represent a dynamic balance of influences within the host that may influence the development, persistence, and/or severity of unpleasant symptoms (Lester, 2008).

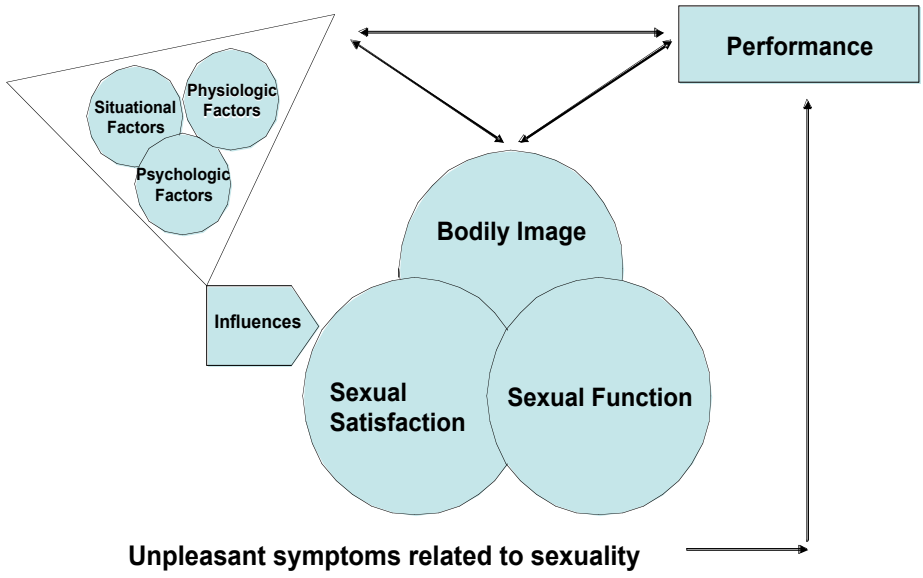

Figure 1. Unpleasant symptoms related to sexuality.

The theory of unpleasant symptoms provides a theoretical framework for the study of symptoms related to alterations in sexuality in women at increased risk of breast cancer development. The physiologic factors of chemoprevention, psychologic factors of the diagnosis itself and potential bodily image changes, and situational factors related to the social aspects of a high-risk diagnosis can all potentially influence the unpleasant symptoms related to alterations in sexuality.

Review of literature

Breast cancer

Breast cancer is the most common cancer in women in the United States. Women have a one in eight chance of developing invasive breast cancer over their lifetime. In 2008, over 178,000 new cases of invasive breast cancer and over 67,000 non-invasive breast cancers were diagnosed in the United States (American Cancer Society, 2008). Advancements in the treatment of breast cancer have improved survival rates. Unfortunately, the effects of a breast cancer diagnosis and treatment may create challenges for survivors long after they have overcome their cancer. Breast cancer has been reported to have a negative impact on a woman's sexuality.

According to Kunkel and Chen (2003), a breast cancer diagnosis "has a unique, often complex impact that raises concerns related to femininity, sexuality, body image, self esteem, and mortality." These side effects can be severe and include fatigue, early menopause, hot flashes, dyspareunia, mood swings, lowered libido, and vaginal dryness in addition to alterations in body image related to surgical interventions (Huber, Ramnarace, & McCaffrey, 2006). Researchers report that there is not sufficient focus placed on these issues by healthcare providers. Kneece (2003) found that 87% of breast cancer patients who had undergone surgical intervention with adjuvant chemotherapy had not been educated about possible sexual side effects after treatment.

Symptoms related to urogenital atrophy, including alterations in sexual functioning are usually chronic in nature and rarely resolve within the first five years after diagnosis. In a study examining long-term survivors (defined as greater than five years post diagnosis), researchers found that long-term breast cancer survivors reported worse sexual functioning as characterized by a greater lack of sexual interest, inability to relax and enjoy sex, difficulty becoming aroused, and difficulty achieving an orgasm compared with women with no history of breast cancer (Broeckel, Thors, Jacobsen, Small, & Cox, 2002). These are not simple, transient manifestations of symptoms that will disappear once treatment is completed, but rather, potentially life-long burdens. Women identified at increased risk for breast cancer development may elect to undergo some of the same

treatments offered to women with breast cancer; however, little research is available concerning alterations in sexuality in these women.

Breast cancer treatment

Treatment options for breast cancer patients include surgery, chemotherapy, radiation therapy, hormonal therapy, and biologic therapy (Bakewell & Volker, 2005). Surgery and hormonal therapy have been adapted to be used as prophylactic treatment for patients that are at high-risk for breast cancer development. Unfortunately, both of these treatments carry the potential of physical or physiological changes that may cause alterations in a woman's sexuality.

Surgical interventions, including lumpectomy, mastectomy, and reconstruction, have been reported to impact a woman's body image and satisfaction with sexual life (Markopoulos et al., 2009). There is a potential for patients to experience alterations in body image regardless of the type of surgery; however, patients undergoing breast-conserving surgery or breast reconstruction appear to have better outcomes related to body image and sexual satisfaction than patients who have undergone modified radical mastectomy (Markopoulos et al., 2009).

Hormone therapy is a treatment modality for women who have estrogen- or progesterone-positive breast cancer. Tamoxifen and raloxifene, both selective estrogen receptor modulators, are used to prevent estrogen from binding to breast cancer cells. Hormone therapy may cause menopausal-type symptoms that are generally expected to resolve when the woman stops taking the medication. Some of the associated side effects are "hot flashes, vaginal discharge, mood swings, weight gain, and bone pain" (Bakewell & Volker, 2005).

Aromatase inhibitors are another classification of hormone therapies used in breast cancer treatment. These drugs block estrogen pathways, and potentially cause even more significant side effects than the anti-estrogen drugs such as tamoxifen (Ribi, et al., 2007). In addition to the use of hormonal therapies as treatment, women with breast cancer are advised to abstain from exogenous hormone therapies such as hormone-replacement therapy (HRT) for the treatment of severe menopausal symptoms. This recommendation is based on a Women's Health Initiative Study that

found a statistically significant increase in breast cancer risk in women taking estrogen plus progesterone (Rossouw et al., 2002).

High-risk women

Factors that increase a woman's risk for breast cancer are divided into five categories based on the National Comprehensive Cancer Network (NCCN) clinical practice guideline (NCCN, 2009). Risk factors include demographics, reproductive history, environmental factors, familial/genetic factors, and breast health history. Demographic factors include age, race, ethnicity and body mass index. Women of Ashkenazi Jewish descent are at increased risk due to a higher rates of BRCA1 and BRCA2 mutations observed in this population. Reproductive risk factors include age of menarche, parity, age at first live birth, and age at menopause. Environmental risk factors include women who have undergone thoracic radiation therapy prior to age 30, have a history of alcohol consumption, or have previously used or are currently using estrogen and progesterone hormone-replacement therapy.

Familial or genetic risk factors include known or suspected BRCA 1 or BRCA 2, p53, PTEN, or other genetic mutations associated with breast cancer. Family history is another indicator of breast cancer risk and should include a review of three generations on both sides. The risk quotient is evaluated based on prevalence of breast cancer within the family, age of relatives at diagnosis and if the cancer was unilateral or bilateral (Lester, 2007). The presence of ovarian cancer in a family history also increases a woman's risk for breast cancer.

A woman's personal breast health history is also an important risk factor for consideration. Multiple variables should be evaluated including number of breast biopsies, tissue pathology, presence or absence of ductal or lobular atypical hyperplasia, and lobular carcinoma in situ (LCIS). Breast density patterning and the persistence of density with age are considered risk factors (NCCN, 2009).

The presence, or absence of the above criteria warrants further assessment to determine a woman's breast cancer risk profile. Instruments used to determine high-risk status include the Gail Model and the Claus model (NCCN, 2009). The Gail model is used to calculate a women's risk

based on several risk factors: race, current age, menarche, age at first live birth, number of first-degree relatives with breast cancer, and number of personal breast biopsies. The presence, or absence, of these risk factors is used by healthcare professionals to determine a woman's overall risk of developing breast cancer in order to tailor a personalized preventative treatment plan. For example, women who have BRCA1 and BRCA2 mutations have up to an 80% lifetime risk of developing breast cancer and are offered prophylactic treatment options similar to those used in women diagnosed with breast cancer: generally bilateral prophylactic mastectomy, bilateral prophylactic oophorectomy, or hormone therapy (American Cancer Society, 2007).

Sexuality concerns

There is increasing research in regard to alterations in sexuality of women diagnosed with breast cancer, or those undergoing treatment for breast cancer. Fewer studies have been done, however, regarding women who are at a high risk for developing breast cancer. It is becoming more common for women with a significant risk profile to undergo prophylactic treatment, such as chemoprevention using hormone therapy, or surgical intervention. Little is known, however, regarding the unique sexuality needs of these women. Nurse researchers must study this unique group of women and explore the potential effects of influencing factors on outcomes related to sexuality.

Previous studies have been conducted comparing the physiologic side effects of different prophylactic hormone therapies such as tamoxifen and raloxifene. However, these studies were limited in that they compared only the severity of the physical side effects of the medications, with minimal analysis of any unique psychosocial effects on these particular patients.

Fallowfield, et al. (2001) explored the psychosocial effects of tamoxifen on women with an increased risk of breast cancer. Women taking tamoxifen reported a higher incidence of hot flashes as compared to women taking a placebo. Symptoms related to sexuality were not reported. Another study conducted by Atkins & Fallowfield (2007), sought to determine any psychological impact associated with high-risk status. In this study, the researchers found that "psychological morbidity was associated with decreased pleasure in sexual activity among the women with an elevated risk of

cancer." However, women who had undergone chemoprevention or prophylactic mastectomy were just as likely to engage in sexual activity as the healthy control group with 71 - 77.3% of participants being sexually active (Atkins & Fallowfield, 2007).

Brandberg et al. (2008) studied body image and sexual functioning in women at increased risk for breast cancer development who had undergone prophylactic mastectomy. They found no negative effects on quality of life, anxiety or depression after six months or after one year (Brandberg et al., 2008). In the same study, statistically significant differences in body image (self-consciousness, feeling sexuality attractive, and dissatisfaction with scars) and sexuality (defined as sexual pleasure) were noted at one-year post mastectomy (Brandberg, et al., 2008).

Women who face the risk of developing breast cancer undergo a unique experience. Many have experienced the illness of a family member and observed the difficulties associated with a breast cancer diagnosis and treatment. These women experience the psychological trauma of breast cancer to an extent, without ever actually having the disease. Women with an increased risk of breast cancer development are encouraged to abide by the same precautions as women diagnosed with breast cancer. This includes the avoidance of hormonal medications, such as birth control pills, and hormone replacement therapies, whether prescriptive or over-the-counter.

To better support this groups of women, more information is needed on how they respond, both psychosocially and physically, to their high-risk diagnosis and recommended risk reduction interventions. In the following study, we will evaluate sexual function, sexual satisfaction, and body image in women diagnosed with an increased risk for breast cancer development as compared to normal risk women. The presence of any significant differences between the two groups will help provide a better understanding of the unique sexuality needs of these high risk women and will help focus future research and practice.

Methods

A secondary analysis was performed on existing data from a survey study of breast cancer survivors and women without breast cancer, and their self-report symptoms related to urogenital atrophy. In this study, the investigator identified two subsets within the sample of women without

breast cancer: women at increased risk of breast cancer development (N=93) and women without increased risk factors (N=73). These two subsets were compared based on three factors: sexual function, sexual satisfaction, and body image. The hypothesis was that women with an increased risk of breast cancer development would experience decreased sexual functioning and sexual satisfaction and a poorer body image than women without increased risks.

Design

The urogenital atrophy study utilized an explorative, descriptive design. In this secondary analysis, selected items from the study instruments were used to assess for differences in sexual function, sexual satisfaction, and body image between women at increased risk of breast cancer development and women without increased risks (Table 1).

	Selected Items	Questionnaire from which items where selected
Sexual Satisfaction	1. I desire sexual activity 2. I initiate sexual activity 3. I am interested in sexual activity 4. Sexual activity without vaginal penetration is satisfying 5. Sexual activity with vaginal penetration is satisfying 6. Sexual activity without genital touching is satisfying 7. I am happy with my sex life	Urogenital Atrophy Questionnaire
Sexual Function	1. FSFI scored as a whole 2. Individual scores for six subcategories a. Desire b. Arousal c. Lubrication d. Orgasm e. Satisfaction f. Pain	FSFI
Body Image	1. I am self-conscious about the way I dress 2. I feel sexually attractive 3. I am bothered by weight changes 4. I am able to feel like a woman 5. I am bothered by hair loss 6. I have gained weight	FACT-B FACT-B ES

Table 1. Selected Questionnaire Items

Sample

The urogenital atrophy study was conducted in 2007. Inclusion criteria included women aged 18 or older, female, able to speak and read English, willing to participate in the study, and having completed written informed consent. Exclusion criteria included women attending clinic for the first time (to avoid potential increase of stressors), history of pelvic, perineal, or intravaginal radiation therapy, and/or previous history of other cancer(s).

The primary study sample (N=364) consisted of breast cancer survivors (N=198) and women without breast cancer (N=166). Within the sample of women without breast cancer, 93 women were identified to be at increased risk of breast cancer development, and 73 women were identified to be without increased risk. High-risk status was determined based on individual chart reviews and self-report history. Women with a Gail score >1.7 were identified as high-risk. Participants were recruited using convenience sampling from surgical and medical oncology clinics at a Midwestern comprehensive breast health center and an obstetric-gynecology practice, both affiliated with an academic medical center and cancer hospital.

Instruments

Participants completed four instruments including (1) a demographic instrument, (2) the Urogenital Atrophy Questionnaire, (3) the Female Sexual Function Index (FSFI), and (4) the Functional Assessment of Cancer Therapy, Breast with Endocrine subscale (FACT-B, ES). The demographic instrument included nearly 100 items about height, weight, smoking history, obstetric, gynecologic, and urinary histories, daily fluid and caffeine intakes, partner status, ranking of sexual life/satisfaction, medication history, and breast cancer treatment.

The Urogenital Atrophy Questionnaire consisted of 45 items related to urologic, genital, and sexual symptoms that were identified from an extensive literature review. These included factors of pain/discomfort, function, satisfaction, and urogenital quality of life from the urinary, genital, and sexual domains. Response options for all items included: (1) none of the time, (2) some of the time, (3) most of the time, and (4) all of the time. Questions with regard to current sexual activity included an additional response option of (5) no sexual activity. Items included the biophysical aspects of urogenital symptoms, as well as psychosocial effects, with consideration of the presence or absence

and severity of symptoms in the past four weeks. Seven items were selected from this questionnaire as being related to sexual satisfaction.

Baseline reliability and validity measures were established for the urogenital atrophy instrument with face and content reliability (CVI score of 1), test-retest (r = 0.444-0.937), and measures of internal consistency (Cronbach's standardized alpha = 0.772-0.874). Factor analysis (Kaiser-Mayer-Olkin test = 0.774 and Bartlett's test of sphericity, $p < 0.000$) resulted in a 30-item instrument suitable for all women, regardless of partner status, sexual orientation, level of sexual activity, and practice of penile vaginal intercourse

The Functional Assessment of Cancer Therapy – Breast Symptom Index (Version 4) with the endocrine scale (FACT-B, ES) was used as a validated instrument to measure urogenital quality of life. It consists of 54 self-report items using a Likert-type scale that measures quality of life indicators. FACT-B, ES contains subscales that assessed physical well-being, social/family well-being, emotional well-being, functional well-being, and breast cancer-specific and endocrine treatment-related symptoms and concerns (Fallowfield, Leaity, Howell, Benson, & Cella, 1999). Six items were selected from this questionnaire as being related to body image.

The Female Sexual Function Index (FSFI) was used as a validated instrument with 19 self-report items that measure sexual functioning in females, irrespective of gender, menopausal status, or level of sexual activity. The FSFI contains multiple subscales to assess domains related to sexual function including desire, arousal, lubrication, orgasm, satisfaction, and pain (Meston, 2003). This questionnaire was analyzed as a total score and also broken down into its six subcategories.

Human Subjects

The study was approved by institutional research and ethics review boards. All forms were in Tele-Form format and electronically scored in The Ohio State University General Research Center (GCRC). Data were stored on encrypted files and imported into SPSS®, Version 16.0 for statistical analyses.

Procedure

Participants for the study were recruited from breast cancer screening and treatment clinics, and private obstetric and gynecology practices. Each subject who agreed to participate was given the questionnaire to complete while at her clinic visit. After completion, it was returned to the primary researcher.

Measures

The secondary analysis focused on characteristics and differences between the groups. Descriptive data was examined, including demographic data, breast cancer risk profile, and self-report symptoms related to sexual function, sexual satisfaction, and body image. Differences were evaluated using Chi-Squares measures as appropriate. Theory and the investigators' clinical experiences suggested that there would be a meaningful difference (medium effect size) between women with increased risk factors of breast cancer development, and those without risk factors.

Results

Sample Characteristics

The original study had a total of 364 participants. Of those, 166 women were found to be eligible for the secondary analysis while 198 were excluded for having a breast cancer diagnosis. Of the women without breast cancer, 93 were identified as women at increased risk for breast cancer development, while 73 women did not have increased risk factors. As shown in table 2, the age range among the participants was 23 to 74 years old with a mean age of 53.35 and a standard deviation of 10.97. Of the 166 participants, 66 women were premenopausal (39.8%) and 100 (60.2%) women were postmenopausal. Most of the women were sexually active (79%). The sample was predominantly Caucasian (86%).

	Population Demographics (N=166)
Age	Min- 23 years old Max- 86 years old Mean- 53.35 years old SD- 10.97 years
Menopausal Status	Premenopausal- 66 (39.8%) Postmenopausal- 100 (60.2%)
Sexually Active	Yes- 130 (78.8%) No- 35 (21.2%)

Race	Caucasian- 143 (86.7%) Asian- 10 (6.1%) African American- 4 (2.4%) Am Indian/Alaskan- 4 (2.4%) Other- 4 (2.4%)

Table 2. Sample Demographics

Differences Between Groups

As shown in table 3, the ages of the women in the two groups were very similar, with the age range of the control group being 23 to 62 years old with a mean age of 49.9 years, and the age range of the high-risk group being 26 to 74 years old with a mean age of 52.0 years . Within the control group 49.3% of the women were premenopausal compared to 32.3% of women in the high-risk group. A slight difference in the level of sexual activity was seen between the two groups, with 76.7% of women in the control group reporting that they were sexually active compared to 71.7% percent of women in the high risk group. The majority of both groups were Caucasian, with 80.8% of the control group and 90.3% of the high-risk group.

	Control (N= 73)	High Risk (N=93)
Age	Min- 23 Max- 72 Mean- 49.9	Min- 26 Max- 74 Mean- 52.0
Menopausal Status	Premenopausal- 49.3% Postmenopausal- 50.7%	Premenopausal- 32.3% Postmenopausal- 67.7%
Sexually Active	Yes- 56 (76.7%) No- 17 (23.3%)	Yes- 66 (71.7%) No- 26 (28.3%)
Race	Caucasian- 59 (80.8%) Asian- 6 (8.2%) African American- 2 (2.7%) Am Indian/Alaskan- 2 (2.7%) Other- 4 (5.5%)	Caucasian- 84 (90.3%) Asian- 4 (4.3%) African American- 2 (2.4%) Am Indian/Alaskan- 2 (2.2%) Other- 0 (0.0%)

Table 3. Demographics Between the Groups

Sexual Functioning

The data collected from the FSFI was used to determine if there were any differences between the two groups in terms of sexual functioning. The data revealed no statistically significant differences between the benign and high-risk groups in either the individual subcategories of the FSFI or in total score. Findings are shown in Table 4.

	Control (mean±sd)	High Risk (mean±sd)	p-value
Desire Score	3.99±1.20	3.76±1.36	0.266
Arousal Score	2.19±1.65	2.13±1.65	0.822
Lubrication Score	2.57±1.77	2.75±1.77	0.509
Orgasm Score	1.20±1.26	1.35±1.29	0.457
Satisfaction Score	2.27±1.12	2.39±1.36	0.597
Pain Score	3.48±2.70	3.61±2.60	0.757
Total Score	70.99±23.86	67.61±22.83	0.356

Table 4. FSFI Statistics

Sexual Satisfaction

Selected items from the primary study's questionnaire on urogenital atrophy were used to analyze sexual satisfaction. Initial findings showed no statistically significant differences in the distribution of responses between the two groups, although some noteworthy trends were observed. Although the distribution of responses was not significantly different, the percentage of women choosing "none of the time" in response to the question asking how often they desired sexual activity was 8.8% in the high-risk group compared to less than 3% in the control group (Table 5). Of those who reported being sexually active, 22.2% of the women in the high-risk group reported that they "always" or "most of the time" initiated sexual activity compared with 8.2% of control women (Table 6). Of those who reported being sexually active, 5.1% of high-risk women responded that they found sex without vaginal penetration satisfying "none of the time" compared to 0% of control women (Table 7). Additionally, trends were observed in the responses of the two groups when asked about happiness with their sex lives with 14.3% of high-risk women reporting that they were happy "none of the time" compared to 8.2% of women in the control group (table 8).

Desire Sexual Activity

	Control	High Risk
All of the time	5 (6.8%)	6 (6.6%)
Most of the time	27 (37.0%)	33 (36.3%)
Some of the time	39 (53.4%)	44 (48.4%)
None of the time	2 (2.7%)	8 (8.8%)

Table 5.

Initiate Sexual Activity

	Control	High Risk
All of the time	1 (1.6%)	5 (6.2%)
Most of the time	4 (6.6%)	13 (16.0%)
Some of the time	44 (72.1%)	51 (63.0%)
None of the time	12 (19.7%)	12 (14.8%)

Table 6.

Sexual Activity Without Vaginal Penetration Satisfying

	Control	High Risk
All of the time	12 (20.0%)	21 (26.6%)
Most of the time	31 (51.7%)	31 (39.2%)
Some of the time	17 (28.3%)	23 (29.1%)
None of the time	0 (0.0%)	4 (5.1%)

Table 7.

Happy With Sex Life

	Control	High Risk
All of the time	15 (20.5%)	17 (18.7%)
Most of the time	28 (38.4%)	37 (40.7%)
Some of the time	24 (32.9%)	24 (26.4%)
None of the time	6 (8.2%)	13 (14.3%)

Table 8.

Body Image

Selected items from the FACT-B, ES were evaluated to determine whether a high-risk status had an impact on body image. As with the finding regarding sexual satisfaction, initial analyses indicated no statistically significant differences in the distribution of responses between the two groups, although trends were observed. The percentage of women answering “not at all” in response to whether they felt sexually attractive was 12.0% in the high-risk group compared to 4.2% in the control group. Likewise, the percent of women answering “very much” was 4.3% in the high-risk group compared to 12.5% in the control group (Table 9). A notable difference was also seen in response to the item regarding whether a study participant was able to feel like a woman, with 7.6% of high-risk women responding “not at all” compared to only 1.4% of women in the control group (Table 10).

Feel Sexually Attractive

	Control	High Risk
Not at all	3 (4.2%)	11 (12.0%)
A little bit	10 (13.9%)	12 (13.0%)
Somewhat	30 (41.7%)	39 (42.4%)
Quite a bit	20 (27.8%)	26 (28.3%)
Very much	9 (12.5%)	4 (4.3%)

Table 9.

Feel Like a Woman

	Control	High Risk
Not at all	1 (1.4%)	7 (7.6%)
A little bit	1 (1.4%)	1 (1.1%)
Somewhat	5 (6.8%)	11 (12.0%)
Quite a bit	28 (38.4%)	41 (44.6%)
Very much	38 (52.1%)	31 (33.7%)

Table 10.

Discussion

Research has shown that a breast cancer diagnosis and subsequent treatment can negatively impact a woman's body image, sexual functioning, and sexual satisfaction (Fobair, Stewart, Chang, D'onofrio & Banks, 2005). Women with a breast cancer diagnosis potentially face physiologic, psychological, and situational stressors that can negatively affect sexuality. Women who have an increased risk for breast cancer development likewise face some of the same stressors as women who have already been diagnosed. In addition, learning of one's high risk status at a young age might create a looming threat that could place an added burden on relationships and increased concern over the possibility that genetic mutations may be passed on to children. High-risk women who have undergone prophylactic treatment may experience a negative psychological effect, similar to women who have a breast cancer diagnosis. Therefore, we hypothesized that the secondary analysis would indicate that women with an increased risk of breast cancer development would report decreases in sexual functioning, sexual satisfaction, and body image, similar to women diagnosed with breast cancer.

The findings of this study, however, did not support this hypothesis. The women with an increased risk profile did not report these negative sequelae that have been reported by women with a breast cancer diagnosis. These findings are encouraging from a health care perspective, as it provides a hopeful outlook for these patients. However, the trends pertaining to body image and sexual satisfaction warrant further investigation. Further analysis of the data should seek to identify explanations for the identified trends and should examine more closely the commonalities among the women reporting poorer outcomes.

According to the theoretic framework utilized in this research, the theory of unpleasant symptoms, many factors contribute to an individual's experience of adverse symptoms. The influencing factors were not examined in this secondary analysis of the data. The preliminary nature of this analysis represents a limitation of the study. The unexamined factors may represent gaps in the reported outcomes, and may, or may not be related to the observed trends. The potential effects of influencing factors on the groups remain unknown and are of interest for future study.

Physiological factors that may have influenced the subjects' sexual functioning, sexual satisfactions or body image include individual menopausal status and individual prophylactic treatment history. Changes in hormones related to menopause can greatly impact sexual functioning (Addis et al., 2006). It is plausible that the combined stress of menopausal changes and changes related to a client's high-risk status and treatment could lead to poorer outcomes. Another factor to consider in this population is the restriction on the use of hormone replacement therapy due to its potential impact on the development of breast cancer in high-risk women. Due to the fact that hormone replacement cannot be used, some of these women may experience more severe menopausal symptoms and subsequently poorer outcomes in the three identified measures related to sexuality. Alternatively, women may experience a more severe psychological impact if they were to learn of their high-risk status when they were younger and premenopausal due to the impact the diagnosis may have regarding decisions related to reproduction as high-risk status may be passed on.

Individual treatment histories may also help to explain the observed trends. Some women diagnosed as high-risk for breast cancer may pursue prophylactic treatment in the form of chemoprevention, prophylactic mastectomy or prophylactic oophorectomy. Any of these treatment modalities have the potential to alter body image, sexual satisfaction, or sexual function. Analyzing the data further to determine if women who have pursued these treatment options experienced worse outcomes would be helpful in identifying potential risks for undergoing prophylactic treatment.

Psychological factors that may have influenced the reported outcomes include knowledge of high-risk status. For the purpose of this study, high-risk status was determined based on self-report of medical and family history and extensive chart reviews. The participants themselves did not identify necessarily identify themselves as high-risk. This is important when attempting to determine if being high-risk had had any impact on sexuality in these women. Future research might include the woman's perception of her high risk status, and its perceived effect on her quality of life.

Situational factors that may have influenced reported outcomes include partner support. This factor may be influential in a person's evaluation of their sexual satisfaction and sexual functioning. It may also affect confidence, which could impact reported satisfaction with body image. Determining if partner status is linked to outcomes would help providers to establish which high-risk women may be particularly vulnerable to negative sequelae. Further examination of the influence these factors may have had in accounting for the observed trends would help to identify if one particular segment of this population is more prone to poorer outcomes.

Further limitations of this research include the retrospective design of the secondary analysis and the reliance on self-report of symptoms by participants. Additional research on this topic should focus on determining if any subgroup of the high-risk population is more likely to experience a negative impact on sexuality. In the secondary analysis, a closer examination of the demographic and medical history information, as well as of chart reviews of the high-risk women reporting poorer outcomes, may be helpful in providing further explanation of the previously identified trends. The limitations of the secondary analsysis make interpretation of the data difficult; however, thoughtful

exploration of potential explanations of the observed trends helps determine where researchers should focus future research.

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