RESEARCH ARTICLE

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Breast Conserving Surgery is Better for Sexual Satisfaction Compared to a Modified Radical Mastectomy for Breast Cancer

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Abstract

Purpose: This study aimed to determine the difference between the level of sexual satisfaction in breast cancer patients with Modified Radical Mastectomy (MRM) and Breast Conserving Surgery (BCS). **Methods:** This study used a cross-sectional study using a validated Female Sexual Function Index questionnaire. This study was conducted from 2020 until 2021. Data were collected and analyzed using the chi-square test for bivariate variables and logistic regression for multivariate variables. **Results:** Patients with BCS were more satisfied with their sexual activity than patients undergoing modified radical mastectomy (p = 0.0001, OR 6.25, CI = 2.78 – 14.01). Other factors having effect on sexual satisfactions were: age that showed a statistically effect on sexual satisfaction (patients <55 years were more satisfied than patients ≥55 years (p = 0.004, OR = 3.23, CI 1.44 – 7.22), the period after operation (<5 years vs >5 years) showed a statistically significant difference in sexual satisfaction (p = 0.087, OR=0.53, CI = 0.25-1.10), Having chemotherapy treatment showed statistically significant risk for sexual satisfaction (p = 0.003, OR=7.39, CI= 1.62-33.83). Factors having no statistically significant effect on sexual satisfactions were: Radiotherapy treatment (p = 0.133, OR=1.75 and CI = 0.84 -3.64), length of marriage as defined with <10 years and > 10 years (p = 0.616, OR=1.39 and CI = 0.38-5.09), marital status (p = 0.082, OR =0.39, CI=0,13 – 1.16), educational status (p = 0.778, OR = 1.18, CI = 0.37 – 3.75), and work at home vs outside home (p = 0.117, OR=1.8, and CI = 0.86 – 3.78). **Conclusion:** BCS as surgical therapy option is the most dominant factor related to sexual satisfaction followed by age group, and chemotherapy group.

Keywords: Breast Cancer- modified radical mastectomy- breast-conserving surgery- sexual satisfaction

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Introduction

Breast cancer remains a global health problem today. It is known that one in eight women in the world has breast cancer. The type of breast cancer treatment is defined based on several factors, especially related to the stage of cancer itself. Several combination methods are applied, including systemic and surgical therapies. Breast-Conserving Therapy and Modified Radical Mastectomy are some of the operative therapy (Masoud and Pagès, 2017; Cipora et al., 2018; Yarso et al., 2012). It is now recognized that advanced breast cancer patient management has lowered the death rate of breast cancer survivors. As a result, oncology practitioners frequently face a pressing issue involving the quality of life of breast cancer survivors (Aerts et al., 2014).

Surgical, chemotherapy or radiotherapy for breast cancer (frequently in combination) can significantly affect a patient's appearance. One or both breasts may be reduced completely or partially in some patients. Patients commonly have a low self-image, a loss of confidence, and feelings of embarrassment. Patients also commonly experience diminished body image, poor health, loss of normal function, and impaired sexuality, all of which contribute to depression and a poor quality of life. Mastectomy has long been recognized as one of the most significant breast cancer surgical options. However, a mastectomy can also have a significant negative effect on a woman, as it can cause a feeling of mutilation, lower self-esteem, and a danger to the perception of femininity. In a woman's body image, the breasts acquire symbolic and meaningful significance. According to a study, losing one or both breasts might cause women to lose their femininity, fertility, appeal, and sexuality, among other issues (Türk et al., 2018; Kang et al., 2018).

According to certain studies, between 15 and 30 percent of breast cancer patients also have body image issue. Sexual function is an important quality of life concern for breast cancer patients (Türk et al., 2018). The degree of sexual satisfaction for breast cancer survivors

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is a crucial aspect of their quality of life. Additionally, a number of oncologic treatments including surgery, radiation, chemotherapy, hormone therapy, and cytostatics are linked to a higher prevalence of sexual dysfunction (Krychman and King, 2006).

Breast cancer and/or its treatment can impair sexual function through physiological and psychosocial mechanisms. Based on the study, a female breast cancer survivor who underwent breast cancer surgery (BCS) reported problems with sexual arousal 6 months after her surgery compared to before surgery. Months and a year after surgery due to problems with sexual desire, arousal and ability to achieve orgasm. Although no significant differences in sexual function were found after BCS surgery compared to healthy controls, women who underwent MRM reported problems with sexual desire, arousal, orgasmic ability, and orgasmic intensity. Although a prospective analysis found little difference in sexual function in the BCS group compared with healthy controls, the analysis showed that women undergoing MRM were at risk for postoperative sexual dysfunction. was shown (Aerts et al., 2014).

A reliable and precise indicator of female sexual function is the Female Sexual Function Index (FSFI). It consists of 19 questions with six subscores for each question, including ones about lubrication, orgasm, satisfaction, pain, and sexual desire (Wallwiener et al., 2010). The FSFI is used to assess sexual function, including recent sexual desire. A higher level of sexual function is indicated by high scores throughout the board (Rosen et al., 2000). A diagnosis of female sexual dysfunction can be made using the Female Sexual Function Questionnaire (FSFI). According to studies by FSFI cut-off scores below 26.55 are indicative of female sexual dysfunction (Wiegel et al., 2005).

Not many studies have discussed the function of sexuality in breast cancer survivors in Indonesia. The researcher intends to examine how the relationship between sexual satisfaction and the selection of surgical management in patients with breast cancer.

Materials and Methods

This study used a cross- sectional design to study sexual satisfaction in breast cancer patients undergoing breast conserving surgery (BCS) versus modified radical mastectomy (MRM) techniques. The study recruite patients from the Lovely Pink Solo (LPS) community starting from July 2020 and ending July 2021. The study obtained permission through the Research Ethics Committee at the Faculty of Medicine, Sebelas Maret University, Surakarta. Conducted in Surakarta, Central Java, Indonesia

An interview was conducted and a sexual satisfaction questionnaire was completed using the validated FSFI questionnaire. After that, the questionnaire data were categorized into patients with breast-conserving surgery and patients with a modified radical mastectomy who had completed all surgical treatment, chemotherapy, and radiation. Furthermore, the questionnaire data was processed into two categories, patients with good sexual satisfaction and patients with poor sexual satisfaction. The data analysis technique used was the chi-square test to determine whether there were differences between variables and the logistic regression test to determine the significance of differences between variables. Statistical analysis was carried out with the help of the SPSS 25.0 program.

Results

There were 120 participants in this study, and the research subjects' characteristics are shown as a frequency distribution value (%). According to this study, 69.2% of the subjects who were under 55 years old. There were 108 married subjects (90%), whereas just 12 (10%) were not constrained by marital status. The percentage of subjects working outside the house was 69 (57,5%), whereas the percentage of subjects working from home was 51 (42.5%).

Based on their education, it is known that 107 subjects (89.2%) who participated in this study as respondents had a high school education or higher, and 13 subjects (10.8%) had a high school education or less. According to the duration of time since surgery, subjects with one to five years since surgery were 74 (61.7%), and those with more than five years were 46 (38.3%). 109 subjects (90.8%) underwent chemotherapy as a type of follow-up therapy; 11 subjects (9.0%) did not get chemotherapy. 64 participants (53.3%) had radiation therapy, compared to 54 subjects (45.0%) who did not. Only 11 (9,1%) of the participants were married for less than ten years, while 109 (90,9%) of the participants had been married for ten years or more (Table 1).

From the results (Table 2), based on age, the majority of respondents in this study were less than 55 years old (69.2%), and the majority had sexual satisfaction. The chi-square significance value is $p = 0.004 < 0.05$ and the odds ratio value is 3.23, which means that the 55-year-old group has a 3.23-fold tendency to get satisfaction compared to the >55-year-old group.

Regarding marital status, the majority of the study's sample, 61 subjects (50.8%) were married and reported some level of sexual satisfaction. A significant score of $0.082 > 0.05$ indicated that there was no difference in the amount of sexual satisfaction based on marital status (Table 3).

Based on profession, the following characteristic. The majority of respondents to this study- 69 subjects (57.5 %) worked outside the home, and 41 subjects (34.2%) reported having sexual satisfaction with the p-value $0.117>0.05$, indicating that there is no difference in the degree of sexual satisfaction. The majority of the breast cancer patients who participated in this study's sample had a high school degree or higher, and 59 subjects (49,2%) classified into the satisfied category but there is no difference in the level of sexual satisfaction depending on education, according to p value $0.778>0.05$. 46 subjects (38,3%) of the respondents in this study have had surgery for less than five years on average, and the majority of them have reported feeling sexually satisfied. There is no difference in the degree of sexual satisfaction, as evidenced

Table 1. The Breast Cancer Patients Socio-Demographic and Clinic Pathological Characteristic

Description	Frequency	Percentage (%)
Age		
< 55 years	83.0	69,2
> 55 years	37.0	30,8
Total	120.0	100,0
Marital Status		
Married	108.0	90.0
Unmarried	12.0	10.0
Total	120.0	100.0
Work		
At home	51.0	42.5
Outside the house	69.0	57.5
Total	120.0	100.0
Education		
Under high school	13.0	10,8
High school and above	107.0	89,2
Total	120.0	100,0
Period after surgery		
< 5 years	74.0	61.7
> 5 years	46.0	38.3
Total	120.0	100.0
Radiation		
Not	56.0	46.7
Yes	64.0	53.3
Total	120.0	100.0
Chemotherapy		
Not	11.0	9.2
Yes	109.0	90.8
Total	120.0	100.0
Length of marriage		
< 10 years	11.0	9.1
> 10 years	109.0	90.9
Total	120.0	100,0

by the p-value of 0.087 > 0.05.

Radiotherapy is the next component. 39 participants (32.5%) reported doing radiation, and the majority of them reported having sexual satisfaction. The chi-square test's p = 0.133 > 0.05 indicates that there is no difference in sexual satisfaction. The majority of participants in this study-62 subjects (51,7%)-reported sexual satisfaction after undergoing chemotherapy. A significance value of 0.003 > 0.05 and an odds ratio value of 21.107 indicate that the group undergoing chemotherapy tended to experience sexual satisfaction 21.1017 times more intensely than the group not receiving chemotherapy.

Based on the duration of their marriages, it is known that 61 respondents (50,8%)-the majority of the subjects who participated in this study-have been married for more than 10 years and report experiencing sexual satisfaction in a high level. There is no difference in sexual pleasure based on the length of the marriage, according to the significant value of 0.616 > 0.05.

According to the analysis's findings, there were 28 subjects (23.3%) and 44 subjects (36,7%), respectively, in the categories of satisfied and dissatisfied patients who had undergone mastectomy surgery. The majority of BCS patients had sexual pleasure, with 38 subjects (31,7%) and 10 subjects (8,3%), respectively, reporting that they are satisfied with their sexual experiences. According to mastectomy and BCS measures, there is a difference in the level of sexual satisfaction of breast cancer patients, with an odds ratio value of 6.245 indicating that the BCS group tends to experience higher levels of sexual satisfaction than the mastectomy group. This difference is indicated by the significance value of the chi-square test p = 0.000 > 0.05.

Age (p = 0.004), the group undergoing chemotherapy (p = 0.003), and the selection of BCS as surgical therapy (p= 0.000) were significant variables. Added to the analysis that obtained the results of p=0.200, additional variables were obtained, namely marital status, occupation, length of time after surgery, and radiation. Multivariate analysis was performed on these 7 variables to determine the dominant variables that influence patients' sexual satisfaction. Based on multivariate analysis, we obtained data for BCS as follows: surgical therapy (p = 0.000), age (p = 0.001), the group undergoing chemotherapy (p = 0.001), radiation (p= 0.221), bound marriage (p= 0.252), employment (p = 0.257), and length of time after surgery >5 years (p = 0.585). The group that was engaged had the lowest

Table 2. Bivariate and Multivariate Analysis Comparing Sexual Satisfaction for Different Variables

Variable	Bivariate		Multivariate	
	OR (CI 95%)	P	OR (CI 95%)	P
Age < 55 years	3.23 (1.44 – 7.22)	0.004	6.31 (2.107 – 18.92)	0.001
Married	0.39 (0.13 – 1.16)	0.082	0.45 (0.114 -1.77)	0.252
Work at Home	1.8 (0. 86 – 3.78)	0.117	1.73 (0.668 – 4.51)	0.257
Education Above High School	1.18 (0.37 – 3.75)	0.778	-	-
Period after Operation > 5 Year	0.53 (0.25 – 1.10)	0.087	0.77 (0.29 – 2.00)	0.585
Radiation	1.75 (0.84 – 3.64)	0.133	1.87 (0.69 – 5.09)	0.221
Chemotherapy	7.39 (1.62 – 33.83)	0.003	21.1 (3.22 – 138.45)	0.001
Length of marriage < 10 years	1.39 (0.38 – 5.09)	0.616	-	-
BCS	6.25 (2.78 – 14.01)	0.000	6.08 (2.30 – 16.21)	0.00 0

Table 3. The Female Sexual Function Index (FSFI) Scores Obtained for Each Patients Characteristics

Variables	Satisfaction level				P Value
	Satisfied (FSFI <26,55)		Not satisfied (FSFI >26,55)		
	n	%	n	%	
Breast Cancer					
MRM	28.0	23.3	44.0	36.7	0.000
BCS	38.0	31.7	10.0	8.3	
Total	66.0	55.0	54.0	45.0	
Age					
< 55 years	54.0	45.0	29.0	24.2	0.004
> 55 years	12.0	10.0	25.0	20.8	
Total	66.0	55.0	54.0	45.0	
Marital Status					
Married	61.0	50.8	47.0	39.2	0.082
Unmarried	5.0	4.2	7.0	5.8	
Total	66.0	55.0	54.0	45.0	
Work					
At home	25.0	20.8	26.0	21.7	0.117
Outside the house	41.0	34.2	28.0	23.3	
Total	66.0	55.0	54.0	45.0	
Education					
Under high school	7.0	5.8	6.0	5.0	0.778
High school and above	59.0	49.2	48.0	40.0	
Total	66.0	55.0	54.0	45.0	
Period after surgery					
< 5 years	46.0	38.3	28.0	23.3	0.087
> 5 years	20.0	16.7	26.0	21.7	
Total	66.0	55.0	54.0	45.0	
Radiation					
Not	27.0	22.5	29.0	24.2	0.133
Yes	39.0	32.5	25.0	20.8	
Total	66.0	55.0	54.0	45.0	
Chemotherapy					
Not	4.0	3.3	7.0	5.8	0.003
Yes	62.0	51.7	47.0	39.2	
Total	66.0	55.0	54.0	45.0	
Length of marriage					
< 10 years	5.0	4.2	6.0	5.0	0.616
> 10 years	61.0	50.8	48.0	40.0	
Total	66.0	55.0	54.0	45.0	

significance value. This means that of the several independent variables examined in this study, BCS as a surgical therapy option is the dominant variable affecting the level of sexual satisfaction of subjects, followed by age group and chemotherapy, with a difference in the analysis results that is not much different.

Discussion

This study aims to determine the difference between the level of sexual satisfaction in breast cancer patients with Modified Radical Mastectomy (MRM) and Breast Conserving Surgery (BCS). Breast cancer is a major public health problem affecting women's health (Erdogan and Karakas, 2019). The number of breast cancer patients is currently increasing in developing countries (Hirko et al., 2013). In addition to being a disease that has the potential to cause morbidity and mortality breast cancer can cause more sexual problems than other types of cancer, due to surgery, radiotherapy or hormone therapy, thus negatively affecting the quality of life of many women (Erdogan and Karakas, 2019; Prajoko and Supit, 2021).

The prevalence of sexual dysfunction in patients with breast malignancy who have undergone surgical treatment ranges from 23% to 85% of women (Oberguggenberger et al., 2017). Patients with breast cancer may have a partial or complete loss of breast tissue, and extensive scarring, resulting in loss or poor appearance of the breast. This condition is concerning because it symbolizes womanhood and sexuality (Prajoko and Supit, 2021). Various psychological changes and sexual discomforts such as loss of attractiveness, depression, reduced sexual interest, arousal, and orgasm may result from partial or complete loss of breast tissue as a secondary sexual organ (Elmas, 2020).

The majority of respondents in this study were less than 55 years old, a study conducted by mentioned almost the same thing, namely the majority of breast cancer cases that became the research sample aged 40-49 years (31.8%) (Hirko et al., 2013; Balekouzou et al., 2016). conducted research on epidemiological studies of breast cancer patients in Bangul, Central Africa, obtaining data on breast cancer patients the age group of 45-54 years represents the majority.

The increasing number of breast cancer patients in young women is influenced by unhealthy lifestyles such as alcohol consumption and limited physical activity, thus affecting reproduction (fertility) and causing obesity which supports the increase in breast cancer incidence (Hirko et al., 2013). The majority of patients aged <55 years had sexual satisfaction with the satisfied category, the urge to be sexually active is greater in younger patients (Elmas, 2020), so the level of satisfaction in younger patients is greater. Recent trends reveal that more women diagnosed with advanced disease at a younger age are sexually more active than older women (Leclère et al., 2013).

Aging is associated with various changes in biological and physiological factors in the human body, decreasing circulating levels of androgens and the sex hormone testosterone. Such changes tend to contribute to decreased sexual satisfaction. This also relates to sexuality, which is a broad concept comprising the emotional, intellectual, and sociocultural components of a relationship. For women, sexuality also includes notions of desire for intercourse and fertility (Wiegel et al., 2005).

The education of patients who are willing to be sampled, the majority of SMA (senior high school) and above. When compared to Erdogan's study, the level of education in this study was lower. Her results showed that 29.0% of all patients were university graduates (Wiegel et al., 2005). In theory, educational attainment should reduce breast cancer rates, as better-educated women are likely to have higher levels of cancer awareness and breast

self-examinations. Women with a high level of education have a significantly higher risk of breast cancer (relative risk 1.22, 95% confidence interval), which may be related to alcohol use, parity, and menopause (Dong and Qin, 2019). Meanwhile, the level of sexual satisfaction based on education level did not have a significant difference between those with high and low education. In contrast to our research (Telli, 2020) mentioned in their study that patients who have a higher education have a better level of sexual satisfaction when compared to lower education. This is related to insight, knowledge, and a more open mindset about the meaning of sexuality.

The study suggested that women with breast malignancy undergoing chemotherapy are more prone to experience problems with their sex life after treatment than women without breast cancer. The most significant impact of chemotherapy is related to problems with arousal, lubrication, orgasm, and pain during sexual intercourse. Chemotherapy itself causes chemically induced menopause (CIM).

The effect of chemotherapy on patients in this study showed the opposite result, where the majority had sexual satisfaction in the satisfied category ($p = 0.003$). This may also be seen from a study conducted by which stated that there was no significant difference between breast cancer patients who received chemotherapy and without chemotherapy with the level of sexual satisfaction (Ganz et al., 2016).

A study by (Elmas, 2020) conducted in Turkey in 2020, obtained the same results as previous studies which showed that sexual function was better and more satisfying in patients who chose BCS than MRM (Elmas, 2020). In line with the research we conducted in Surakarta Central Java Indonesia, the level of satisfaction of breast cancer patients with mastectomy surgery in the satisfied and dissatisfied categories was almost the same, while patients with BCS the majority have sexual satisfaction.

Breast cancer patients' FSFI scores worsened significantly after surgery compared with their pre-surgery scores, according to the study by (Harirchi et al., 2012). However, there was no association between the type of surgery performed and the sexual function of patients (Harirchi et al., 2012). Another study looked at the relationship between type of surgery and FSFIs in breast cancer patients and found that BCS patients had higher arousing, contentment, desire, orgasmic and overall FSFIs than MRM patients (Öztürk and Akyolcu, 2016).

There are contradicting studies on the correlation between the type of breast cancer surgery and sexual function (Panjari et al., 2011). There are reports that the type of surgery (BCS and MRM) was not correlated with sexual function. There have been studies that show the quality of life and sexual satisfaction in breast cancer patients, as well as the fact that the surgery choice had no effect on sexual satisfaction (Mic and Jach, 2017).

In women, breast surgery has a direct impact on the anatomy of the body. Losing breasts after surgery also affects a woman's sexuality, leading to a lack of sexual attractiveness, poor self-image and ultimately a range of psychosocial problems (Fouladi et al., 2021). Changes due to radiotherapy cause unpleasant breast appearance while chemotherapy causes disruption of female sexual function. Hormone replacement therapy also causes more severe menopausal symptoms than regular menopause, reducing libido and fertility and affecting sexual function (Fouladi et al., 2021).

It can be said that the diagnosis and treatment of breast cancer causes physiological and psychological stress for patients with regard to sexual dysfunction. In addition, a review of the literature suggests that physical and psychological changes caused by the disease or its treatment may affect the sexual desire of the spouse of a person with the disease (Kang et al., 2018). Literature studies show that one important factor in marital happiness is the presence of sexual satisfaction, and sexual dissatisfaction may lead to divorce (Foroutan, 2008)

In East Asia, 80% of women are reluctant to discuss their sexual problems, according to the Global Survey on Sexual Attitudes and Behaviour (GSSAB), compared with 50-63% in non-Asian countries. For this reason, professional medical, psychological and social support is essential for every breast cancer patient before and/or immediately after medical treatment (Shafaee et al., 2018). There aren't many research on how breast cancer affects women's sexuality in Southeast Asia. There is very little study on the sexuality of breast cancer patients in Indonesia (Heinemann et al., 2016).

These results imply that the surgical choice and diagnostic process may have an impact on the sexual and marital satisfaction of women with breast cancer. Indonesia has the world's largest Muslim population, which is generally conservative about sexual issues, especially among women, who tend not to discuss sexual issues. This makes it a challenge for health workers to identify and manage these issues. In addition, Indonesian breast cancer patients later choose the surgical therapy in accordance with the doctor's or medical staff's opinion, with the aim that sexual quality, social quality, and quality of life can be maintained as much as possible.

Limitations of our study were the lack of information on family history of breast cancer and additional detailed information on breast reconstruction. Improve the quality of life, social well-being, and emotional problems of breast cancer patients by involving the patient's family in the treatment program and collecting their support before, during, and after treatment. The quality of life of breast cancer patients who have undergone modified radical mastectomies and breast conservation surgery, and the education and explanation of the procedures, will be the focus of future research.

In conclusion, There is a difference between the level of sexual satisfaction in breast cancer patients with Breast-Conserving Surgery and Modified Radical Mastectomy in Surakarta Central Java Indonesia with the Breast Conserving Surgery group having a better level of sexual satisfaction.

Author Contribution Statement

Conception and design of study: Muhammad Fahmi Salafuddin, Kristanto Yuli Yarso, Henky Agung Nugroho, Arga Scorpianus Renard; Acquisition of data (laboratory

or clinical): Henky Agung Nugroho; Data analysis and/or interpretation: Muhammad Fahmi Salafuddin, Kristanto Yuli Yarso, Arga Scorpianus Renard; Drafting of manuscript and/or critical revision: Muhammad Fahmi Salafuddin, Kristanto Yuli Yarso; Approval of final version of manuscript: Muhammad Fahmi Salafuddin, Kristanto Yuli Yarso.

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Ethical Issue

This study has obtained permission through the Research Ethics Committee at the Faculty of Medicine, Sebelas Maret University, Surakarta with the ethical feasibility number 69/UN27.06.6.1/KEP/EC/2021

Conflict of Interest

The authors have no conflicts of interest to declare.

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