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Sexual Functioning in Women with Breast Cancer: Role of Depression, Anxiety and Coping Styles

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Abstract: Sexual dysfunction encompasses a broad spectrum of issues, all of which are susceptible to insult after treatment for cancer. Sexual dysfunction affects up to 90% of women treated for breast cancer, and sexual quality of life is a significant concern for breast cancer survivors. This study investigated role of depression, anxiety and coping styles in developing sexual dysfunctions in 210 women with breast cancer, one year after diagnosis. The median age was 58. Female Sexual Functioning Index (FSFI), Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI) and Coping Inventory for Stressful Situations (CISS) were used for this purpose. All women stated that before breast cancer they did not have significant sexual problems that would interfere with sexual pleasure. It is noticeable that women included in this study report high levels of pain and discomfort during and after vaginal penetration have low levels of sexual arousal and have significant difficulty achieving orgasm and lubrication, which is significantly associated with high levels of anxiety and moderate to high levels of depression. They are more likely to use a task-oriented coping strategy, and within avoidance as a coping strategy, they are more likely to use a distraction. More frequent use of avoidant strategies and less propensity for emotion-oriented strategies is associated with greater sexual desire. Women who used emotion-oriented coping strategies have more pronounced symptoms of depression and anxiety. Lower levels of overall sexual function were found in women who had a mastectomy (total and partial). Breast reconstruction after mastectomy has a positive influence on sexual functioning, especially on sexual arousal and pleasure, and women who have not had a mastectomy report greater sexual desire and arousal, and less pain during sexual intercourse. Participants who were not exposed to radiotherapy during treatment expressed greater satisfaction with achieving orgasms and lubrication during sexual intercourse. Hierarchical regression analysis indicated that depression, anxiety and coping styles significantly contribute to all domains of sexual functioning. These results add to growing evidence that sexual quality of life is a multidimensional construct with aspects differentially affected by variables related to cancer survivorship.

Keywords: Breast Cancer, Sexual Dysfunctions, Anxiety, Depression, Coping Style

1. Introduction

All malignant diseases affect a person's sexuality and intimacy, and cancer per se does not eliminate sexual feelings. However, the treatment of malignant diseases influences the development of certain sexual dysfunctions, regardless of the type of malignancy, gender, age, culture, etc. Numerous physical and psychological factors associated with the treatment of malignant diseases greatly affect sexual quality of life. Although numerous studies have indicated sexual dysfunctions in cancer patients, the sexuality of patients is very rarely discussed, and most health professionals neglect this important aspect of human functioning.

1.1. Breast Cancer

In the world's population, breast cancer is one of the most common diagnoses of malignant diseases. WCRFI statistics ranked breast cancer in second place with an overall prevalence of 12.3% among all cancer patients and is the most common cause of death among the female population. [1, 2]. In the Republic of Croatia, the results are even more unfavourable and breast cancer is a growing public health problem. It is one of the most common forms of tumour with a total prevalence of 25% among all cancer patients. According to the Cancer Registry in Croatia, 2,767 women had a breast cancer in 2017, while the mortality rate of 853

women ranks Croatia at the very top of Europe [3].

Diagnosis, treatment of breast cancer, and harmful effect of the treatment can negatively affect women's health (physical and emotional), increasing fear of death and feelings of social isolation [4, 5]. Treatment of breast cancer can lead to decreased physical activity, loss of sensitivity on the breast and changes in psychological and emotional states, and anxiety and depression often occur. Numerous side effects of treatment also leave lasting consequences on the patient, from changes in body image to impaired self-esteem, as well as significant sexual problems [5 - 7]. Measuring the quality of life of women with breast cancer has been in the focus of clinical practice and research in recent decades and is of great importance for assessing the outcome of the treatment itself [8, 9]. However, quality of sexual functioning assessment, especially in women with breast cancer remains relatively unexplored and neglected.

1.2. Breast Cancer and Sexual Health

Sexuality is a very important aspect of human functioning and is influenced by the interaction of biological, psychological, social, spiritual, religious, economic, political, and historical factors [10]. As defined by the World Health Organization [11], sexual health is "a state of physical, emotional, mental, and social well-being in relation to sexuality."

Sexuality includes feelings about one's own body, need for touch, interest in sexual activity, talking to one's partner about sexual needs, and the ability to engage in satisfying sexual activities [11].

It primarily refers to sexual activity that can be changed under the influence of experience and it affects how people see themselves, their bodies, and sexual relationships [12]. Sexual dysfunction includes experiencing sexual desire disorders and physiological changes associated with loss of sexual desire and arousal, decreased sexual pleasure, difficulty to reach orgasm, anxiety due to sexual performance, pain during intercourse, and loss of comfort [12]. Emilee, Ussher, and Perz [13] report about the complexity of changes in female sexuality that can occur after a breast cancer diagnosis. These changes often become one of the most problematic aspects, affecting different spheres of a woman's life, can last for years after successful completion of treatment, and in some situations are associated with serious physical and emotional difficulties [13].

Numerous researchers agree that the sexual quality of life of women with breast cancer is greatly impaired, and research by Wang, Chen, Huo, Xu, Wu, Wang and Lu [14] implies that women facing breast cancer show a significant decline in sexual activities, the appearance of depressive symptoms accompanied by loss of sexual desire, the appearance of menopausal symptoms, altered body image and dissatisfaction with body image primarily as a result of mastectomy, changes in the relationship with a partner and misconceptions about sexual relations due to lack of adequate and verified information. Furthermore, a study conducted on a sample of sexually active women under the age of 50 showed that women who underwent a mastectomy, hair loss due to chemotherapy, weight variation, weight loss, poorer mental health, lower self-esteem were more dissatisfied with body image and had problems in emotional relationships [12].

It is worrying that more than a third of women with breast cancer develop a major depressive disorder, generalized anxiety disorder, or adjustment disorder [15]. Also, cancer treatment per se causes several psychological effects such as lower self-esteem, body image disorders, decreased interest in sexual relationships and deteriorating private and professional relationships that can lead to depressive syndrome [16].

Beckjord and Compas [17] showed that sexual quality of life is an important concern of women who have survived breast cancer. A study conducted on the European sample of newly diagnosed patients showed that 60% of women experience changes in the quality of sexual life -especially women who received chemotherapy, having a higher stage of the disease, being younger, and reporting severity of depressive symptoms and women who underwent total mastectomy [17]. In addition to the physical changes that accompany cancer, it is important to focus on women's perceptions of their sexual attraction and femininity, which shape the way they perceive their disease and body [13].

1.2.1. Body Image

The female breast is a major feature of femininity, fertility and motherhood and plays a major role in the perception of physical attractiveness. Women who are faced with breast cancer and undergo various therapies may experience major changes in body image due to loss of body part, scarring, skin removal, or various skin changes [18]. Research has shown a connection between the type of breast surgery and body image, and surgery leads to a negative change in body image, reduces feelings of femininity and attractiveness, and increases feelings of shame and discomfort [19]. In addition, it was found that women who underwent mastectomy showed negative changes in body experience and lower results in sexual satisfaction, but there were no significant changes in satisfaction with their emotional relationship [20]. It is worrying that women who are more dissatisfied with their own bodies show higher levels of depressive and anxiety symptoms and lower levels of self-esteem [21].

1.2.2. Depression and Anxiety

Some research indicates a negative association between depression and feelings of femininity and body image, i.e., most women who felt less feminine and attractive reported a worse image body, had more depressive symptoms and were more dissatisfied with the quality of life [6].

A longitudinal study on English sample of breast cancer patients found that more than 50% of women one year after diagnosis developed depression, anxiety, or both [22]. Environmental factors, such as lack of intimate and social relationships, poor social support, the impact of previous psychological treatments, younger age, and exposure to major stressors determine the length and intensity of anxiety [22]. Female sexuality is particularly affected by the presence

of anxiety symptoms - women mostly reported poorer sexual functioning and decreased sexual satisfaction [23].

1.2.3. Breast Cancer Treatments and Sexual Health

Treatments of breast cancer can greatly affect the development of depression, anxiety, sexual dysfunction and significantly reduce sexual quality of life. One prospective study involving almost 1000 women who were evaluated over five years following surgical treatment for breast cancer showed that women who had mastectomy reported more difficulties in their lives, worse body image, and numerous difficulties in the domains of sexual functioning [24]. One of the concerns is while some problems are improved over time, sexual functioning is not. Data related to breast reconstruction and sexual quality of life are inconsistent; some studies suggested that reconstructive surgery improved sexual health [25], but the other study showed that there were no significant differences in quality of life, sexual functioning, cancer-related distress, body image, anxiety, and depression [26].

Radiotherapy is an essential part of therapy in breast cancer but has negative impact on sexual functioning. One survey reported that women who had radiotherapy showed lower sex satisfaction, worse scores in sexual well-being and breast satisfaction, and health-related quality of life compared to those who did not undergo radiotherapy [27].

A large proportion of patients with breast cancer will undergo adjuvant chemotherapy, which includes a risk of chemotherapy-induced ovarian failure and onset of early menopause, which may include issues related to sexual dysfunction, negatively affecting global physical function, reducing sexual interest, arousal, and desire [5]. While most women will experience improvement once chemotherapy ends, for others, the symptoms persist beyond the end of treatment. One study reported that problems in sexual functioning, desire, arousal, and quality of partnered relationships were persisting one year after chemotherapy [28]. A cross-sectional study showed that chemotherapy was associated with both depression and unmet sexual needs, even three years out from treatment [29].

Endocrine therapy has negative impact on sexual health and approximately 30% to 40% of women treated with tamoxifen report sexual complaints, while over 50% of those on an aromatase inhibitor report issues related to sexual health [5]. While aromatase inhibitor significantly increased the risk of dyspareunia, tamoxifen significantly reduced sexual interest, showing negative impact on female sexual health. More importantly, women at younger ages were significantly more likely to experience toxicities [5].

1.2.4. Coping with Cancer

How people cope with cancer can have long-term effects on health outcomes, patients' survival, and overall prognosis [30]. Adaptive coping mechanisms such as task-oriented coping predict better health outcomes, while maladaptive coping mechanisms such as avoidance coping predict poorer psychological adjustment and physical health [31].

Although numerous recent studies show that sexuality is an important part of women's lives that is significantly affected by the diagnosis and treatment of breast cancer, there are still not enough studies that explore sexuality and give a more comprehensive overview of factors that can change and reduce quality and satisfaction with sexual life in women with breast cancer.

The main goal of this study is to determine the role of cancer treatment, anxiety, depression, coping styles in the development of sexual dysfunction in women with breast cancer.

2. Methods

2.1. Participants and Procedure

All participants were recruited from the civil organizations (clubs) which provide and conduct various workshops and other activities for improving quality of life of cancer patients. Participants received an invitation to participate in this study, and they were interviewed after they confirmed they had read the informed consent and agreed to participate in the study. Participation in this study was completely voluntary, and participants did not receive any monetary compensation. At the beginning of the study, data anonymity was guaranteed. Participants were told that they can withdraw from the participation at any time and that decision would not affect their club work. The exclusion criteria were if the participants had another type of cancer, mental illnesses such as psychosis, the existence of sexual disorders even before the diagnosis of breast cancer, and if they were not in an emotional relationship. The study included 210 women with breast cancer, with an average age of 49 years (SD = 6.98). In the highest percentage, these are women who have completed high school (54.3%) and are on sick leave due to primary disease, i.e., breast cancer (40%) and 77.4% are menopausal or postmenopausal women. They are mostly married (57.1%) and have children (74.3%). Descriptive data focused on certain aspects and treatments indicate that most of them are women in whom the tumour is localized in one part of the breast, without spreading metastases (45.7%), and who are in remission (71.4%). Almost all participants had surgery (94.3%), of which 82.9% received radiotherapy, 80% received chemotherapy, and 71.4% of participants received hormone therapy. The study, in a slightly higher percentage (51.4%), included women who had a total or partial mastectomy. 62.9% of women stated that they did not have metastases in the first year after they were diagnosed with breast cancer, and 74.3% of them did not have metastases at the time of this study. 80% of women deny breast cancer heredity. 82.9% of women receive pharmacotherapy for breast cancer, and 77.1% of them sought psychological counselling after being diagnosed with the disease.

2.2. Measures

For the purposes of this study, we used a sociodemographic questionnaire, Beck Depression Inventory, Beck Anxiety Inventory, Coping Inventory for Stressful

Situation and Female Sexual Function Index.

The sociodemographic questionnaire included questions about age, gender, marital status, number of children, occupation, health status and information related to breast cancer (stage of tumour, tumour grades, cancer treatments, medication, psychological counselling).

2.2.1. Beck Depression Inventory (BDI)

BDI is a measure of self-assessment of cognitive, motivational, emotional, and physical symptoms of depression in adults and adolescents over 13 years of age. From each of the 21 groups of claims, participants choose one that describes how they felt in the past two weeks (0 – no symptom present to 3 – very present). The total score is determined by the sum of all items, with a higher score indicating a higher prevalence of depressive symptoms. A score of 0 -11 indicates minimal depression, 12-19 points on mild, 20-27 points on moderate, and a score above that of severe depression [32]. The results of previous research show high coefficients of internal consistency (α = .89-.91), good test-retest reliability at one week (r = .73-.86) [33], and appropriate content, convergence and discriminant validity [34]. The overall reliability of the scale in this study is α = .881.

2.2.2. Beck Anxiety Inventory (BAI)

BAI is a 21-item multiple-choice self-report inventory that measures the severity of an anxiety in adults and adolescents [35]. Respondents are asked to report the extent to which they have been bothered by each of the 21 symptoms (0 – not at all to 3 – severely). The total score is determined by the sum of all items, and higher score indicates a higher prevalence of anxiety symptoms (range can be between 0 to 63 pints; 0 – 7 is interpreted as minimal level of anxiety; 8 – 15 as mild level; 16 – 25 as moderate level and 26 – 63 as sever level of anxiety. Internal consistency (Cronbach's alpha) ranges from .92 to .94 for adults and test-retest (one week interval) reliability is .75. The overall reliability of the scale in this study is α = .924.

2.2.3. Coping Inventory for Stressful Situations (CISS)

CISS is a 48-item self-report measure that asks respondents to report how much they engage in various coping activities during a stressful situation using a Likert scale ranging from 1 (not at all) to 5 (very much) [36]. The CISS is assessing Emotion-oriented coping (Emotion scale), Task-oriented coping (Task scale), and Avoidance (Avoidance scale). The Avoidance scale also can be divided into separate Distraction and Social scales. The reliability of the Task scale in this study is α=0.866; Emotion scale is α=0.734 and Avoidance scale is α=0.683.

2.2.4. The Female Sexual Function Index (FSFI)

The Female Sexual Function Index (FSFI) is a 19-item self-report inventory designed to assess female sexual function in six domains: desire, arousal, lubrication, orgasm, satisfaction, and pain [37]. Internal consistency (Cronbach's alpha) ranges from .82 to .95. Internal consistency in this research is α = .95.

2.3. Statistical Analyses

Data were analysed in the IBM SPSS Statistics program (version 25). The Shapiro-Wilk normality test showed a deviation from the normal distribution in all variables observed in the study (Table 1). This was stated and expected, given that data were collected on members of the clinical population. In addition, the mentioned test is sensitive to the sample size meaning that it is easier to declare significant deviations from the normality if the sample is large enough [38]. If the assumption of a large sample is met, which is the case in this study, deviations from the above prerequisite for parametric statistics have a minimal impact on the results [39]. Since no extreme values are observed in the indices of skewness (<3) and kurtosis (<8) (Table 1), it remains to use parametric procedures [40]. In order to determine if there were differences in aspects of sexual functioning considering different breast cancer treatments, a one-way analysis of variance (ANOVA) was performed. To determine the relationship between sexual functioning, anxiety, depression, ways of coping with stressful situations and certain aspects of illness and treatment, the values of Pearson's correlation coefficient were observed. To examine the contribution of anxiety, depression, and ways of coping with stressful situations in explaining overall sexual functioning and its domains, hierarchical regression analyses were conducted. A set of three blocks was used, with the first block covering the level of depression, the second block the level of anxiety, and the third block containing ways of coping with stressful situations, i.e., problem-oriented strategies, emotion-oriented strategies, and avoidance.

3. Results

Descriptive data for the subscales of the FSFI, CISS, BDI and BAI are presented in Table 1. The average overall score of the FSFI is below the theoretical average of the scale and indicates impaired sexual functioning of women with breast cancer. This is confirmed by the relatively low average results and positively asymmetric distributions obtained on individual subscales. It is noticeable that women included in this study report high levels of pain and discomfort (M=1.10; *SD=1.86)* during and after vaginal penetration. The results also indicate a low level of sexual arousal (M=1.12.; *SD*=1.65) and significant difficulties in achieving orgasm (M=0.95; *SD*=1.79) and sufficient lubrication (M=1.00; *SD*=1.82) during sexual intercourse. When dealing with stressful situations, the participants are mostly focused on actively solving the existing problem, i.e., they most often use task-oriented coping strategies (M=57.37; *SD*=8.09). Within avoidance as a way of dealing with stressful and disturbing situations, they are more inclined to use distraction (M=21.74; *SD*=4.73).

The average score on Beck's anxiety inventory is above the theoretical average of the scale and indicates a high level of anxiety in women with breast cancer (M=23.86; *SD*=12.63). The average score on BDI (M=18.94; *SD*=10.03) indicates that women with breast cancer have moderate to high level of

depression.

Table 1. *Descriptive data and Shapiro-Wilk test for sexual functioning, anxiety, depression and coping styles in women with breast cancer (N = 210).*

		Descriptive data						Shapiro-Wilk
		Min	***Max***	***M***	***SD***	***Skewness***	***Kurtosis***	***p***
FSFI	Desire	1.20	3.60	2.14	0.79	0.60	-0,731	< .001
	Arousal	0.00	5.40	1.12	1.65	1.27	0,441	< .001
	Lubrication	0.00	6.00	1.00	1.82	1.53	0,811	< .001
	Orgasm	0.00	6.00	0.95	1.79	1.67	1,316	< .001
	Satisfaction	0.80	6.00	2.57	1.37	0.73	-0,223	< .001
	Pain	0.00	6.00	1.10	1.86	1.36	0,353	< .001
	Total	2.00	31.40	8.89	8.40	1.47	0,762	< .001
CISS	Task-oriented	39.00	80.00	58.37	8.09	0.23	0.68	< .001
	Emotion-oriented	37.00	67.00	51.26	7.69	-0.16	-0.70	< .001
	Avoidance-oriented	31.00	65.00	47.34	8.02	0.30	-0.28	< .001
	Social diversion	6.00	24.00	16.71	4.79	-0.23	-0.88	< .001
	Distraction	14.00	34.00	21.74	4.73	0.36	-0.18	< .001
BAI		0.00	56.00	23.86	12.63	0,202	-0.47	< .001
BDI		0.00	39.00	18.94	10.03	0,281	-0.65	< .001

Legend: FSFI-Female Sexual Function Index; CISS- Coping Inventory for stressful situations; BAI- Beck Anxiety Inventory; BDI- Beck Depression Inventory.

To determine the relationship between sexual functioning, depression, anxiety, and ways of coping with stressful situations, the Pearson correlation coefficient was observed. It is found a significant negative correlation between overall sexual functioning and anxiety (r = -.337; p< .001) and depression (r = -.180; p< .001) in women with breast cancer (Table 2). Women with higher levels of anxiety and depression report decreased sexual desire and satisfaction and higher levels of pain during sexual intercourse. Sexual arousal and satisfaction with achieving orgasms and lubrication during sexual intercourse decrease with increasing anxiety. More frequent use of avoidant strategies and less propensity for emotion-oriented strategy is associated with greater sexual desire. Women who usually use emotion-oriented coping strategies have more pronounced symptoms of depression and anxiety (Table 2).

Table 2. *Relationship between sexual functioning, depression, anxiety and coping styles in women with breast cancer (N = 210).*

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1. FSFI desire	1	.342**	.387**	.431**	.384**	.403**	.489**	-.090	-.233**	.361**	.462**	.028	-.304**	-.258**
2. FSFI arousal		1	.914**	.924**	.743**	.898**	.943**	-.028	.120	-.130	-.144*	-.036	-.217**	-.110
3. FSFI lubrication			1	.955**	.803**	.941**	.975**	-.051	.188**	-.134	-.027	-.135	-.286**	-.109
4. FSFI orgasm				1	.820**	.912**	.977**	-.053	.161*	-.049	.067	-.127	-.288**	-.130
5. FSFI satisfaction					1	.727**	.854**	-.059	.058	.121	.137*	-.007	-.441**	-.223**
6. FSFI pain						1	.952**	-.007	.109	-.102	-.032	-.081	-.320**	-.209**
7. FSFI total							1	-.047	.110	-.034	.039	-.080	-.337**	-.180**
8. CISS task								1	-.072	.201**	.033	.238**	-.091	-.104
9. CISS emotion									1	-.118	-.035	-.011	.275**	.407**
10. CISS avoidance										1	.688**	.694**	-.070	-.070
11. CISS social diversion											1	.007	-.093	-.074
12. CISS distraction												1	-.011	-.079
13. BAI													1	.790**
14. BDI							-							1

Legend: *p< .05; **p< .01; FSFI-Female Sexual Function Index; CISS- Coping Inventory for stressful situations; BAI- Beck Anxiety Inventory; BDI- Beck Depression Inventory.

Table 3. *Relationship between sexual functioning and some aspects of cancer treatment in women with breast cancer (N = 210).*

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1. Chemotherapy	1	.360**	-.104	.273**	-.546**	-.105	-.061	-.099	-.052	-.139	-.145*	-.187**	-.029	-.118
2. Radiotherapy		1	.378**	-.153*	-.327**	.123	.120	-.099	.131	.188**	.240**	.017	.074	.126
3. Hormone-endocrine therapy			1	-.135*	-.183*	-.097	-.071	-.076	.088	.170*	.134	-.060	.123	.090
4. Mastectomy				1	.243**	-.504**	.130	.436**	.332**	.285**	.243**	.202**	.371**	.332**
5. Breast reconstruction					1	.293**	.169	.270**	.054	.158	.149	.488**	.158	.256**
6. Partial mastectomy						1	.126	-.148	-.246**	-.192*	-.169*	-.270**	-.191*	-.226**
7. Menopause/ post menopause							1	.099	-.048	.014	-.074	.001	-.038	-.021
8. FSFI desire								1	.431**	.470**	.517**	.463**	.514**	.578**
9. FSFI arousal									1	.927**	.934**	.738**	.914**	.952**
10. FSFI lubrication										1	.948**	.774**	.937**	.971**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
11. FSFI orgasm											1	.799**	.898**	.973**
12. FSFI satisfaction												1	.708**	.843**
13. FSFI pain													1	.951**
14. FSFI total														1

Legend: *p< .05; **p< .01; FSFI-Female Sexual Function Index.

To determine the role and relationship of certain aspects of illness and treatment and sexual functioning of women with breast cancer ANOVA and Pearson's coefficient of correlation were calculated (Table 3). ANOVA showed that women who had a mastectomy without reconstruction show poorer sexual functioning in all measures compared to women who did not have a mastectomy or had breast reconstruction after a mastectomy (F_{desire} = 33.215; p< .01; $F_{arousal}$ = 12.703; p< .01; $F_{lubrication}$ = 7.597; p< .01; F_{orgasm} = 5.499; p< .05; $F_{satisfaction}$=6.496; p< .01; F_{pain}=12.164; p< .01; F_{total}=12.395; p< .01).

Women who did not have a mastectomy reported greater sexual desire (r = .436; p < .01) and arousal (r = .332; p < .01) and less pain during sexual intercourse (r = .371; p < .01). Sexual arousal was less present in women who had partial mastectomy (r = .246; p < .01), while higher levels of sexual arousal and pleasure were found in women who underwent reconstruction after mastectomy (r = .270; p < .01; r = .488; p < .01). Women who were not treated with radiotherapy showed greater satisfaction with achieving orgasms and lubrication during sexual intercourse (r = .188; p < .01; r = .240; p < .01) (Table 3).

Hierarchical regression analysis of sexual functioning as a criterion variable indicates the importance of all three blocks (depression, anxiety and coping styles). All predictors included in the analysis explain 17.4% ($R^2_{adj.}$= 0.145, p< .01) of variance of sexual functioning; the first block, the level of depression, explained 3.2% of variance ($R^2_{adj.}$= 0.028, p< .01), and the second block, level of depression and anxiety, explained 13.4% variance ($R^2_{adj.}$= 0.125, p< .01) sexual functioning. The level of depression, introduced in the first step, and anxiety introduced in the second step significantly explained sexual functioning of women with breast cancer. In the last step, anxiety proved to be the most important predictor, and of the strategies for coping with stressful situations, only emotion-oriented strategies proved to be significant. In the third block, the predictor of depression loses its significance. This can be partially attributed to emotional-oriented coping style. Although emotional-oriented coping style is a significant predictor, this variable has a low correlation with the criterion variable (sexual functioning), which may indicate the presence of suppressors in regression analysis.

Table 4. *Hierarchical regression analysis in predicting overall sexual functioning in women with breast cancer (N = 210).*

Predictors	β		
	1. step	2. step	3. step
BDI	-.180*	-.230**	.081
BAI		-,519**	-,467**
CISS task-oriented coping			-,054
CISS emotion-oriented coping			,220**
CISS avoidance-oriented coping			,221
CISS social diversion			-,140
CISS distraction			-,216
R	,180**	,365**	,417
R^2	,032**	134**	,174
R^2 adjusted	,028**	125**	,145
ΔR^2	,032**	,101**	,040

Legend: **p< .01; *p< .05; CISS- Coping Inventory for stressful situations; BAI- Beck Anxiety Inventory; BDI- Beck Depression Inventory.

Hierarchical regression analyses were conducted with individual domains of sexual functioning as criterion variables. Given the slightly lower percentage of explanation of variance by predictor variables, below are listed only the most important results of the hierarchical regression analysis for the criteria variables of sexual arousal, orgasm, lubrication, and pain. Table 5 and Table 6 show the overall results as they explain the higher percentage of variance of the criterion variables (sexual desire and sexual satisfaction).

Anxiety, depression, and coping styles with stressful situations explain 19% of the variance ($R^2_{adj.}$= 0.162, p< .01)) of satisfaction with the lubrication level during sexual intercourse and 17.2% of the variance ($R^2_{adj.}$= 0.144, p< .05) of satisfaction with orgasm. Within the last, third block of predictors, only anxiety and emotion-oriented coping significantly contribute to the explanation of the mentioned domains of sexual functioning. All predictors included in the analysis, i.e., depression, anxiety, and coping styles stressful situations explain 15.6% of the variance ($R^2_{adj.}$= 0.127, p< .05) of the pain level during sexual intercourse and 11.3% of the variance ($R^2_{adj.}$= 0.082, p< .05) of sexual arousal. Significant predictors of pain and sexual arousal were anxiety and emotion-oriented coping.

Table 5. *Results of hierarchical regression analysis in predicting sexual desire in women with breast cancer (N = 210).*

Predictors	β		
	1. step	2. step	3. step
BDI	-.258**	-.048	.017
BAI		-.265*	-.227*
CISS task-oriented coping			-.155*
CISS emotion-oriented coping			-.128
CISS avoidance-oriented coping			.346
CISS social diversion			.204
CISS distraction			-.181
R	.258**	.305*	.576**
R^2	.067**	.093*	.331**
R^2 adjusted	.062**	.084*	.308**
ΔR^2	.067**	.027*	.238**

Legend: *p< .05; **p< .001; CISS- Coping Inventory for stressful situations; BAI- Beck Anxiety Inventory; BDI- Beck Depression Inventory.

Table 6. *Results of hierarchical regression analysis in predicting sexual satisfaction in women with breast cancer (N = 210).*

Predictors	β		
	1. step	2. step	3. step
BDI	-.223*	.333*	.098
BAI		-.705**	-.592**
CISS task-oriented coping			-.107
CISS emotion-oriented coping			.266*
CISS avoidance-oriented coping			1.03*
CISS social diversion			-.601*
CISS distraction			-.687*
R	.223*	.486**	.555*
R^2	.05*	.237**	.308*
R^2 adjusted	.045*	.229**	.284*
ΔR^2	.05*	.187**	.072*

Legend: *p< .01; **p< .001; CISS- Coping Inventory for stressful situations; BAI- Beck Anxiety Inventory; BDI- Beck Depression Inventory.

The highest percentage of variance explained by predictors of depression, anxiety, and coping strategies was found in sexual desire and sexual satisfaction. The conducted hierarchical regression analysis for sexual desire indicates the significance of all blocks that together explain 33.1% of the variance ($R^2_{adj.}$= 0.308, p< .001) (Table 5). The first block explained 6.7% of the variance ($R^2_{adj.}$= 0.062, p< .001), and the second block explained 9.3% of the variance ($R^2_{adj.}$= 0.084, p< .05). In the last step, the level of anxiety and task-oriented coping strategies proved to be significant predictors.

All above predictors explained 30.8% of the variance ($R^2_{adj.}$= 0.284, p< .01) of sexual satisfaction; the first block explained 5% of the variance ($R^2_{adj.}$= 0.045, p< .01) and the second block explained 23.7% variance ($R^2_{adj.}$= 0.229, p< .001)) (Table 6). In the last step, the predictor of depression loses its significance. Variables that make a significant contribution to explaining the sexual satisfaction of women with breast cancer are levels of anxiety and emotion-oriented coping strategies f and avoidance.

4. Discussion

Breasts play a significant role in a woman's body image, sexuality, and motherhood [41], and sexuality is one the most impaired domain of quality of life in women with breast cancer [17, 42]. There is insufficient research in Croatia that studied sexual quality of life in women with breast cancer and sexual dysfunctions among mentioned women, so the main aim of this study was to determine the relationship between cancer treatment, anxiety and depression with sexual functioning in women with breast cancer and to determine the role of anxiety, depression and coping styles in the development of sexual dysfunctions.

Different types of cancer treatment have o huge effect on women's sexual health due to changes in body image, fertility, and physical conditions, leading to emotional distress and sexual dysfunction. This sexual dysfunction is a neglected quality of life issue in breast cancer patients. [43]. Cancer is directly linked to the reduction of certain domains in sexual dysfunction, especially in psychological problems such as low desire and arousal, and it can reduce sexual function to a greater degree than problems of organic or functional nature (vaginismus, sexual pain) [41]. Recent research indicates that women with breast cancer report impaired sexual quality of life, and over time, sexual functioning and sexual quality of life become worse [42, 44, 45]. Invasive breast cancer therapies cause major physical changes and have an impact on a woman's perception of her own body, and feelings of being not enough feminine and concerns about sexual attraction are the most common [12]. After mastectomy and chemotherapy, women report more dissatisfaction and changes in their sex lives and do not view their bodies as a source of femininity and attraction, have less sexual activities, enjoy sex less, and report impaired sexual satisfaction [18,

20]. One review study found that anxiety, depression, self-esteem, feelings of shame about the body, cancer progression, duration and treatments, various physical deformities greatly impair sexual functioning [46].

Our research showed that mastectomy without breast reconstruction greatly impairs sexual functioning in all areas (sexual desire and pleasure, sexual arousal, lubrication, orgasm, pain during intercourse and sexual functioning in general). Although most research indicated that depression significantly affects sexual functioning, hierarchical regression analysis indicates that depression negatively affected sexual functioning until anxiety is introduced into the regression block and becomes the leading variable that directly impairs sexual functioning in all domains.

Furthermore, the coping style that stood out as protective is a task-oriented coping style. This data is not surprising because people who use more task-oriented coping strategies are more proactive and more likely to seek solutions to problems and try to minimize problem's effects [47]. Probably they more often communicate about the problem, but that should be investigated by some other research and put focus on the relationship between communication about sexual problems and quality of sexual life. On the other hand, avoidance as a coping style (social diversion and distraction) greatly impairs sexual pleasure and satisfaction as well as emotion-oriented coping strategies. It can be explained that women avoid thinking about the problems, reducing the effort to solve the problem, postponing tasks, denial, or simply giving up. A person may avoid a stressful situation by engaging in substitute activities (distraction) or seeking out other people (social diversion). In social diversion people usually want to be with other people rather than confronting the stressful situational task and solving a problem [47]. Diagnosis of cancer, treatment and living with cancer in most people causes stress and requires adjustment mechanisms and understanding of coping styles are particularly important in explaining physical, psychological, and emotional well-being.

There are few studies examining the direct relationship between coping styles and sexual quality of life. One Malaysian qualitative study highlighted three coping styles: accepting illness and praying, seeking help, and avoiding intimacy [48]. Most women pointed out that they see cancer as God's test and test of their faith and patience, and that their bodies belong to God, so prayer is one way to gain strength and create positive attitudes toward illness and sexual dysfunction. Women who used seeking help as a coping style showed more active strategies for finding solutions to sexual problems, primarily from health professionals, more communicated with partners and members of various support groups. Women who used an intimacy avoidance strategy stated that they were more likely to go to bed earlier than their partners, avoided touching, were more engaged in householding activities and more supported polygamy [48].

The conducted research has some limitations. Primarily the research is cross-sectional and there is no control group of healthy women or women without breast cancer diagnosis. Furthermore, there is no data on the quality of partner's relationships before cancer diagnosis, during treatments, and at the time of data collection. However, regardless of the observed limitations, these results, especially for the Croatian population, provide a good insight into the sexual quality of life and how types of treatments, depression, anxiety and coping styles can impair the sexual functioning of women with breast cancer. These data enable planning of psychotherapeutic interventions and psychosexual education and counselling that can improve sexual functioning of women.

5. Conclusion

The results of this research showed that mastectomy without breast reconstruction, chemotherapy and radiotherapy have a negative impact on the sexual functioning of women with breast cancer. Anxiety has a greater negative impact than depression on sexual functioning and avoidance and emotion-oriented coping strategies stand out as negative predictors of sexual satisfaction.

As it is seen, sexual dysfunctions have become a challenge for breast cancer patients and addressing sexual problems and concerns has become a necessity in managing the care. So, health professionals need to open communication about this important part of women's lives, and healthcare policies need to pay more attention to this important aspect of quality of life.

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