

Aim of the study: The goal of our study was to assess the sexual functioning of patients undergoing mastectomy, five years after surgery, compared to a control group.

Material and methods: A cross-sectional study included 170 patients five years post mastectomy (group A1) and 149 healthy women (group A2) who had never been diagnosed with breast cancer. The study was conducted at the Oncology Centre in Bydgoszcz, at the Amazon Clubs, and at the University of the Third Age by the University of Economy in Bydgoszcz. Standardised questionnaires: the Female Sexual Function Index (FSFI) and Rosenberg's SES (self-esteem scale) were used.

Results: Our study results show significantly worse sexual functioning in the domains pertaining to desire ($p = 0.0015$), arousal ($p = 0.0052$), lubrication ($p = 0.0026$), ability to reach orgasm ($p = 0.0417$), sexual satisfaction ($p = 0.0142$), and the presence of clinically significant sexual dysfunction ($p = 0.0028$) among patients after amputation of the mammary gland. On the scale of pain relating to sexuality, there were no significant differences between the two groups ($p > 0.05$). The overall score in the FSFI questionnaire was also lower ($p = 0.0066$) among women after mastectomy. Highly statistically significant ($p < 0.0001$) differences in self-esteem were also noted between the two groups, with worse results observed in patients after mastectomy.

Conclusions: Diagnosis of sexual dysfunction in patients treated for breast cancer allows timely implementation of counselling and interventional therapy depending on the causal factors and individual preferences of patients.

Key words: mastectomy, sexual functioning, self-esteem.

Contemp Oncol (Pozn) 2020; 24 (2): 106–111
DOI: <https://doi.org/10.5114/wo.2020.95876>

Sexual functioning and self-esteem in women after mastectomy – a single-centre, non-randomised, cross-sectional study

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Introduction

Epidemiological data indicate that breast cancer is now the most commonly diagnosed cancer in women living in developed countries [1]. Surgical and adjuvant breast cancer treatment may contribute to the “half-woman complex”, reduced self-esteem and sense of competence, depressive disorders, and difficulties in accepting the change in physical conditions [2]. Fear of returning to sexual activity is also an important problem in this group of patients, because in our culture breasts belong to the attributes of femininity and motherhood. Therefore, negative self-perception of one's changed body and the fear of rejection by the partner may lie at the heart of sexual dysfunction [3]. Undesirable effects of anticancer treatment, such as medical menopause, hormonal disorders, weight change, bladder dysfunction, vaginal shortening, disorders of arousal and lubrication, or pain during intercourse, also affect sexual satisfaction and the relationship with one's partner [4, 5]. Disruption of physical integrity of the female body often contributes to sexual dysfunction, even many years after therapy [6]. For many patients, returning to satisfactory sexual activity and regaining a sense of bodily attractiveness are measures of effectiveness of breast cancer treatment [4]. Literature indicates that patients receive insufficient support from medical staff when it comes to limiting sexual dysfunction after oncological treatment [5].

The aim of this work was to assess sexual functioning of patients undergoing mastectomy, five years after surgery, compared to a control group.

Material and methods

This cross-sectional study included 170 patients post mastectomy five years after surgery (group A1). Patients were recruited at the Oncology Centre in Bydgoszcz during a follow-up visit and at the Amazons Clubs of the Kuyavian-Pomeranian Voivodeship during club meetings. The control group included 149 healthy women who had never been diagnosed with breast cancer – recruitment was carried out at the University of the Third Age at the University of Economy in Bydgoszcz (group A2). The study was conducted between

February 2019 and December 2019 after obtaining approval of the CM UMK Bioethical Committee (No. 34/2019).

A diagnostic survey was used to assess sexual functioning and self-esteem in both groups. Standardised research tools, such as the Female Sexual Function Index (FSFI) and Rosenberg's SES (self-esteem scale) were used. The FSFI questionnaire is the most commonly used measuring tool for assessing sexual function in women around the world. The scale is available in many languages. It consists of 19 questions that enable assessment of sexual dysfunction in areas such as: arousal, ability to reach orgasm, desire, lubrication, pain problems associated with sexuality, and sexual satisfaction. The overall sexual functioning score allows for the detection of clinically significant sexual dysfunction. The higher the score, the better the performance on a given scale.

Rosenberg's SES was used to assess the overall level of self-assessment. It consists of 10 statements. By providing responses to questions on a four-point scale, the examined person determines to what extent he/she agrees with individual statements. The demographics of the sample were evaluated using our own questionnaire containing questions about age, education, place of residence, professional activity, marital status, number of children, duration of relationship, and socioeconomic status. Moreover, the use of neoadjuvant and adjuvant therapy, type of intervention performed on the regional lymphatic system, operated side, or partner's attitude towards reconstructive surgery were also identified in the mastectomy group.

Inclusion criteria:

- good general condition (ECOG 0–1),
- age 50–70 years,
- breast amputation 5 years ago (A1 only),
- married or in a partnership for a minimum of 7 years.

Exclusion criteria:

- undergoing reconstructive breast surgery after mastectomy (group A1),
- bilateral mastectomy,
- no partner in the previous 4 weeks,
- active cancer,
- continuation of HTH adjuvant treatment (group A1),
- mental illness,
- body mass index above 35,
- gynaecological surgeries during the previous year.

Statistical analysis

Statistical analyses were conducted using PQStat statistical software 1.8.0.201. Sociodemographic (qualitative) data in the studied groups were compared using the χ^2 test. Sociodemographic (quantitative) data in the studied groups were compared using the Mann-Whitney U test. SES and FSFI scores were compared using the Mann-Whitney U test. The χ^2 test was used to assess significant sexual dysfunction in the compared groups. Testing probability of $p < 0.05$ was considered significant, and testing probability of $p < 0.01$ was considered highly significant.

Results

Selected sociodemographic and clinical characteristics of study population were identified. Distribution of such

characteristics, such as education, place of residence, professional activity, socioeconomic status, marital status, number of children, and duration of relationship, did not differ significantly ($p > 0.05$) between the study groups. A statistically significant ($p = 0.0411$) difference between the groups was reported with regard to age. In women after mastectomy, the average age was 63.06 years, while in the control group it amounted to 64.83 years.

Among patients after breast amputation we also identified the use of neoadjuvant therapy, type of adjuvant treatment, type of surgical intervention performed on the regional lymphatic system, the operated side, and partner's opinion about breast reconstruction. Nearly 30% of patients were qualified for induction treatment. Adjuvant treatment was as follows: 89 patients were qualified for chemotherapy, 100 patients for radiotherapy, 43 for immunotherapy, and 101 for hormone therapy. Axillary lymphadenectomy (ALND) was performed in 113 patients, and 57 were referred for sentinel lymph node biopsy (SLNB). Right-sided mastectomy was performed in 75 women and left-sided in 95 women. Among mastectomy patients ($n = 170$), 27 admitted that their partner urged them to undergo breast reconstruction surgery. The details are presented in Tables 1 and 2.

Self-esteem in the studied groups was assessed using Rosenberg's SES. Statistical analysis revealed highly significant differences between the results ($p < 0.0001$). In the mastectomy group the average score was 27.0, and in the control group it amounted to 30.8. Higher score in the control group means higher self-esteem compared to patients after breast amputation. Detailed data are presented in Table 3.

The following aspects of sexual functioning were assessed using a standardised FSFI questionnaire: desire, arousal, lubrication, ability to reach orgasm, sexual satisfaction, and sexual pain. In the domains of desire ($p = 0.0015$), arousal ($p = 0.0052$), and lubrication ($p = 0.0026$) highly significant differences were noted between the studied groups, and significant differences were identified in the domains of ability to reach orgasm ($p = 0.0417$) and sexual satisfaction ($p = 0.0142$). In all of the above-mentioned domains, women after mastectomy demonstrated lower results than the control group, indicating poorer sexual functioning in a given domain. The two groups did not differ significantly with regard to the scores obtained in the sexual pain domain ($p > 0.05$). Detailed results are shown in Table 4.

In the next part of the study we analysed the overall results of sexual functioning between the study groups. There was a highly significant difference within the overall results of FSFI ($p = 0.0066$) between the breast amputation patients and women from the control group. In the control group, the results were higher than those in the mastectomy group, which indicates poorer sexual functioning among patients after mastectomy. When considering these results qualitatively, i.e. divided by the presence or absence of dysfunction, a highly significant relationship ($p = 0.0028$) with the study group was found, i.e. clinically significant sexual dysfunction was more frequent (80%) in women after mastectomy and less frequent (65%) in

Table 1. Sociodemographic (qualitative) characteristics of the studied groups (mastectomy vs. control group)

Independent variable	Characteristics	A1		A2		χ^2 ; <i>p</i>
		<i>n</i> = 170	%	<i>n</i> = 149	%	
Marital status	Married	134	78.82	104	69.8	3.94; 0.2685
	Single	3	1.76	2	1.34	
	Divorced	9	5.29	12	8.05	
	Widow	24	14.12	31	20.81	
Education	Primary	11	6.47	8	5.37	0.4586, 0.9279
	Vocational	49	28.82	45	30.20	
	Secondary	89	52.35	75	50.34	
	Higher	21	12.35	21	14.09	
Residence	City	144	84.71	126	84.56	0.0012; 0.9720
	Rural	26	15.29	23	15.44	
Professionally active	Yes	44	25.58	36	24.00	0.1252; 0.7235
	No	126	74.12	113	76.00	
Socioeconomic status	Very good	26	15.29	22	14.77	0.20362; 0.9770
	Good	66	38.82	61	40.94	
	Average	70	41.18	60	40.26	
	Low	8	4.70	6	4.02	
Treatment before surgery	No	120	70.59	0	0	–
	Yes	50	29.41	0	0	
Treatment after surgery	CHTH	89	52.35	0	0	–
	RTH	100	58.82	0	0	
	HTH	101	59.41	0	0	
	Immunotherapy	43	25.29	0	0	
Partner urged for breast reconstruction	No	143	84.12	0	0	–
	Yes	27	15.88	0	0	
Operated side	Right	75	44.11	0	0	–
	Left	95	55.88	0	0	
Surgical procedure on the axillary fossa	SLNB	57	33.53	0	0	–
	ALND	113	66.47	0	0	

A1 – mastectomy patients, A2 – control group, CHTH – chemotherapy, RTH – radiotherapy, HTH – hormone therapy, *p* – significance level, SLNB – sentinel lymph node biopsy, ALND – axillary lymphadenectomy

Table 2. Sociodemographic (quantitative) characteristics in the study groups (mastectomy vs. control group)

Descriptive statistics	Age		Number of children		Duration of relationship	
	A1	A2	A1	A2	A1	A2
M	63.06	64.83	2.19	2.13	30.84	32.66
Me	64	65	2	2	32	37
SD	6.50	4.76	1.23	1.13	14.14	14.14
Z statistics	2.0427	0.4423	1.0593			
<i>p</i>	0.0411	0.6583	0.2895			

A1 – mastectomy patients, A2 – control group, *p* – significance level, SD – standard deviation, Me – median, M – arithmetic mean

women without an oncological history. Detailed results are presented in Table 5.

Discussion

This work compares the quality of sexual life among patients treated with mastectomy and healthy women of similar age. The standardised FSFI and Rosenberg's SES

were used. The results of our study show significantly worse sexual functioning with regard to desire, arousal, lubrication, sexual satisfaction, ability to achieve orgasm, and presence of clinically significant sexual dysfunction among patients after amputation of mammary gland. The overall FSFI score was also lower in patients who had undergone breast amputation. Moreover, this group also

Table 3. Rosenberg's self-assessment scale (SES) results in the study groups

Descriptive statistics	SES	
	A1	A2
M	27.0059	30.8054
Me	27	30
SD	4.0943	3.9002
Z statistics	7.8867	
p	< 0.0001	

A1 – mastectomy patients, A2 – control group, p – significance level, SD – standard deviation, Me – median, M – arithmetic mean

Table 4. Results of the Female Sexual Function Index (FSFI) questionnaire in the studied groups

Descriptive statistics	FSFI I – desire		FSFI II – arousal		FSFI III – lubrication		FSFI IV – orgasm		FSFI V – sexual satisfaction		FSFI VI – dyspareunia	
	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2
Study group	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2	A1	A2
M	2.73	3.24	2.55	3.12	2.76	3.38	2.78	3.19	3.70	4.07	3.17	3.47
Me	2.4	3	2.4	3.3	3	3.9	3.2	3.6	4	4.4	3.6	4.4
SD	1.25	1.36	1.76	1.84	1.98	2.17	2.02	2.23	1.51	1.71	2.16	2.36
Z Statistics	3.1845		2.797		3.0128		2.0367		2.4521		1.7204	
p	0.0015		0.0052		0.0026		0.0417		0.0142		0.0854	

A1 – mastectomy patients, A2 – control group, p – significance level, SD – standard deviation, Me – median, M – arithmetic mean

reported lower self-esteem compared to healthy women – the difference between the two groups was highly statistically significant.

A great advantage of our study is the fact that it was conducted on a large group of women many years after the end of oncological treatment, who were included on the basis of strict inclusion and exclusion criteria. Moreover, it should be stressed that the two compared groups did not differ with regard to demographic characteristics. Age is one exception – the average age among mastectomy patients was 63.06 years, while in healthy women it amounted to 64.83 years. Paradoxically, while women from the control group were older, their self-assessed sexual functioning and self-esteem scores were much better.

Surgical treatment of breast cancer patients, especially if mastectomy is necessary, can lead to development of the so-called “half-woman complex” and may contribute to lowering one's self-esteem [7]. According to Rosenberg, high self-esteem means respect for oneself as a human being, but also the ability to see our own limitations, without assuming that they make us inferior to others [8, 9]. After mastectomy, the perception of one's own body and self-esteem changes. Women feel inferior, incomplete, fearful of returning to everyday life. In our study, Rosenberg's SES was used to evaluate self-esteem in patients five years after breast amputation and in healthy women of similar age. We found a statistically highly significant reduction in self-esteem among mastectomy patients compared to the control group. Lower self-esteem in patients after breast cancer treatment was also reported by many other authors [10, 11]. Many researchers also point out that self-esteem is an important factor in recovery and in returning to the level of activity from before the diag-

nosis among cancer patients [9, 12]. Prospective studies conducted by Montazeriet *et al.* demonstrated significant deterioration in self-perception of one's body in mastectomy patients. This takes place even after the adverse symptoms of surgical and systemic treatment [13] have resolved. Both breast-conserving treatment as well as amputation affect patient functioning, not only physically, but also on psychosocial, emotional, and sexual levels [3]. Significant surgical intervention to the mammary glands can impair the integrity of physical as well as mental domains, which translates into the quality of sexual life [14].

Table 5. The overall sexual functioning score and presence of significantly clinical sexual dysfunction

Descriptive statistics	Overall FSFI score			
	A1		A2	
M	17.6906		20.4725	
Me	18.85		22.3	
SD	9.1678		10.2913	
Z statistics	2.7153			
p	0.0066			
Presence of clinically significant sexual dysfunction	n	%	n	%
No	34	20	52	34.9
Yes	136	80	97	65.1
χ^2 ; p	8.95; 0.0028			

A1 – mastectomy patients, A2 – control group, p – significance level, FSFI – Female Sexual Function Index, SD – standard deviation, Me – median, M – arithmetic mean

Factors that positively influence sexual satisfaction include acceptance of a new body image (both by a woman as well as her partner), strong emotional bonds, and a sense of attractiveness [7]. Sbitti *et al.* showed that treatment of breast cancer can contribute to sexual dysfunction [15]. In our study, the FSFI self-assessment questionnaire was used to evaluate factors influencing sexual satisfaction. We found significantly impaired functioning in all assessed domains – desire, arousal, lubrication, sexual satisfaction, sex-related pain – among patients who had undergone mastectomy five years prior, compared to women without a history of breast cancer. Moreover, clinically significant sexual dysfunction was noted in mastectomy patients compared to the control group. Similar

results were obtained by other authors [3, 7, 10, 14, 16–18]. Observations made by Karabulut *et al.* in a group of 123 married women showed reduced sexual interest and sexual satisfaction among women after amputation of the mammary gland [18]. Aerts *et al.* compared sexual functioning among different groups of women: patients after mastectomy, patients after breast-conserving treatment (BCT), and a control group of healthy women. Evaluation was performed before the procedure, and six and 12 months after the surgery. The results were as follows: 71% of BCT patients and 64% of mastectomy patients declared their return to sexual activity six months and 12 months after surgery. In the BCT group, there was a marked increase in problems with arousal half a year after surgery. In mastectomy patients, a statistically significant deterioration in scores was noted at both follow-up dates in the following domains: arousal, sexual desire, and ability to reach orgasm, compared to preoperative results. Comparing the results of the control group and BCT patients, there were no significant differences in sexual functioning in either scale. Patients after mastectomy had significantly higher incidence of sexual dysfunction compared to the control group of women of similar age [3]. Fobiar *et al.* also pointed to a significant risk of developing dysfunction of a psychosexual nature in women after surgical treatment of breast cancer [17]. A study of 546 sexually active women aged 22–50 years, who declared to be married or in partnership for at least seven months before the diagnosis, found difficulty in accepting their changed body image as a consequence of mastectomy, reconstruction, hair loss, and risk of weight gain or weight loss. Nearly 160 sexually active women also reported problems in two or more areas of sexual functioning. The factors affecting the quality of intimate life were vaginal dryness, deterioration of mental health, and lack of understanding on the part of the partner [17]. Markopoulos *et al.* indicated that self-assessment of sexual functioning and self-esteem largely depends on the type of breast surgery and is worst among patients after mastectomy without immediate or deferred reconstruction [10]. Other authors indicated that the sexuality of patients after treatment of breast cancer is often overlooked, and treatment of sexual dysfunction is delayed [6]. Results reported by Hill *et al.* show that nearly 40% of patients undergoing therapy for breast cancer are interested in counselling on sexual functioning [19]. Other authors confirm that sex education of breast cancer patients brings tangible benefits and improves the quality of sexual life [14]. Some publications showed no effect of the extent of surgery on sexual life of women undergoing surgical treatment for breast cancer [16]. On the other hand, a study by Mroczek *et al.* from 2012 showed improvement in the quality of the sexual life of patients treated for breast cancer, especially if their intimate life was important to them before the procedure and there was a strong emotional bond between partners [7]. Long-term studies showed that a modern approach to women after mastectomy should also include professional activities aimed at preserving or regaining sexual function to the extent the patient finds satisfactory [3, 4].

Despite its high substantive value, our study has some limitations. It was planned as a retrospective, cross-sectional study; therefore, we do not know the results of self-assessment of sexual functioning among mastectomy patients before diagnosis of breast cancer and at various stages of antineoplastic treatment.

Conclusions

Our study showed significantly impaired self-esteem and significant deterioration in the quality of sexual life among women after mastectomy compared to women without an oncological history. Our study has shown that even several years after the end of treatment, patients need professional support to reduce adverse sequelae of cancer treatment and to aid in coping. It is important to discuss sexual problems at every stage of treatment, as well as to identify couples at risk of sexual dysfunction and provide them with professional assistance at the right time. Diagnosis of sexual dysfunction allows the adjustment of counselling and interventional therapy, depending on the causal factor and individual preferences of patients.

The authors declare no conflict of interest.

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Submitted: 12.03.2020**Accepted:** 30.03.2020