Assessment of sexual dysfunction in females with breast cancer after mastectomy in Upper Egypt

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Objective
To assess the sexual function among females suffering from breast cancer after mastectomy and to evaluate the effect of different cancer treatment modalities such as surgery, chemotherapy, and radiotherapy on the sexual function of these patients.

Patients and methods
One hundred females with cancer breast who had undergone mastectomy at childbearing age were recruited from the Outpatient Clinic of the Clinical Oncology Department in Assiut University Hospital and South Egypt Cancer Institute. Their sexual function was evaluated by the Arabic version of the Female Sexual Function Index (FSFI).

Results
There was a significant difference in desire, arousal, lubrication, orgasm, satisfaction, and full FSFI scores as they were significantly lower in participants who were on chemotherapy compared with those who were on radiotherapy. Sixty-five percent of participants had abnormal total FSFI scores.

Conclusion
Most participants who have undergone mastectomy experience sexual dysfunction after mastectomy. Chemotherapy has a negative impact on sexual function more than radiotherapy.

Keywords:
cancer breast, mastectomy, female sexual dysfunction

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Introduction

Female sexual dysfunction (FSD) is characterized as a disorder in which females experience changes in sexual function during the sexual arousal, anticipation, and/or orgasm response process, which is considered unsatisfactory, not recommended, or inadequate [1]. The prevalence in normal females was 25–63% in the American population and up to 30% in the Asian population. In 1992, the National Health and Social Life Survey estimated the prevalence at 43% [2].

In Egypt, 68.9% of women had one or more sexual problems [3,4] and 76.9% of normal females reported one or more sexual dysfunction problems.

Breast cancer is the most common malignancy in women and the leading cause of cancer death in women in developing countries [5]. It accounts for 18.9% of the total cases of cancer in women, with a younger age distribution according to the Egyptian National Cancer Institute [6].

Having a tumor can influence the person's sexuality, sexual desire, and sexual function. [7]. Psychosocial problems caused by changes in appearance, self-image, and the ailment itself can impact sexuality [8].

Women who had undergone a mastectomy experienced more disruptions in their lives and had lower scores on body image, body parts, and sexuality. A few issues might improve over time, but not those related to sexuality [9].

Numerous unfavorable changes that occur after treatment of breast cancer, such as altered body image due to removal or distortion of breasts, trauma, weight changes, hot flashes, and mood swings, are common. Also, mental trouble from her misfortune, compounding their quality of life, and sexual brokenness counting vaginal dryness, dyspareunia, and trouble with orgasm [10]. Sexual issues, distorted body image, and mental trauma develop more in those treated with chemotherapy compared with hormonal and radiation treatment [11].

People in Arabic countries may have special characteristics, different lifestyles, and limited access to opportunities to express their fears and thoughts. Our aim in this study was to evaluate the sexual

function among women with breast cancer and who had undergone mastectomy and to assess the effect of different treatment modalities such as chemotherapy and radiotherapy on female sexual function.

Patients and methods

This study was approved by the Local Ethical Committee, Faculty of Medicine, Assiut University Hospital (IRB no: 17100011), carried out according to the Principles of the Declaration of Helsinki. Informed oral consent was obtained from all the participants before the study.

Participants

One hundred married female patients of childbearing age with cancer breast who had undergone either modified radical mastectomy or lumpectomy mastectomy were included. They were recruited from Assiut University Hospital's Clinical Oncology Department's Outpatient Clinic and the South Egypt Cancer Institute during the period between December 2018 and October 2019. Patients who had a performance status of (0–1) with Eastern Cooperative Oncology Group (ECOG) scores were included [12]; those with diabetes mellitus, hypertension, or any genital tract diseases were excluded.

Approach to patients

A detailed history was obtained from each patient, including age, residence, level of education, occupation, and circumcision; marital data (age at marriage, duration of the marriage, and number of children); and obstetric data (age of menarche and sexual history). Also, oncologic history was obtained [duration of breast cancer, duration of mastectomy, type of mastectomy, histopathology, and type of therapy (chemotherapy or radiotherapy), and family history of breast cancer].

Female sexual function assessment

Sexual function was assessed using the Arabic version of the Female Sexual Function Index (FSFI) [13], which was validated and translated into the Arabic language [14]. FSFI is a Likert-type scale consisting of a 19-item questionnaire and used to evaluate sexual dysfunction in women. Educated women completed the FSFI by themselves, but uneducated women were provided assistance by the doctor in a private room.

The FSFI scale consists of six separate domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. For each domain, a score was calculated between 1 and 6, and the total score was obtained by adding the scores from the six domains. The total score ranges from 2 to 36. The cut-off score to indicate sexual dysfunction was determined to be below 26.55.

Statistical analysis

Data were entered using Excel 2007 program. Data were analyzed using SPSS (version 19, SPSS Inc., Chicago, IL, USA). The frequencies, percentages, mean, and SD were computed. A χ^2 test was used to compare qualitative variables between groups. The Mann–Whitney test was used as the test of significance to compare quantitative data between groups. The 5% level was chosen as the level of significance and a 95% confidence interval.

Results

The age of the participants ranged from 25 to 40 years, with mean±SD 35.8±3.74. Sixty-two percent of the patients were educated and 38% were uneducated. A negative family history of breast cancer was reported by 82% of the participants.

Clinical characteristics of the participants showed that 36% of the participants had undergone mastectomy than 1 year ago, while 39% had undergone mastectomy more than 2 years ago. Eighty-two percent had undergone modified radical mastectomy, while only 18% had undergone lumpectomy. Sixty-eight percent were receiving chemotherapy, while 32% were on radiotherapy.

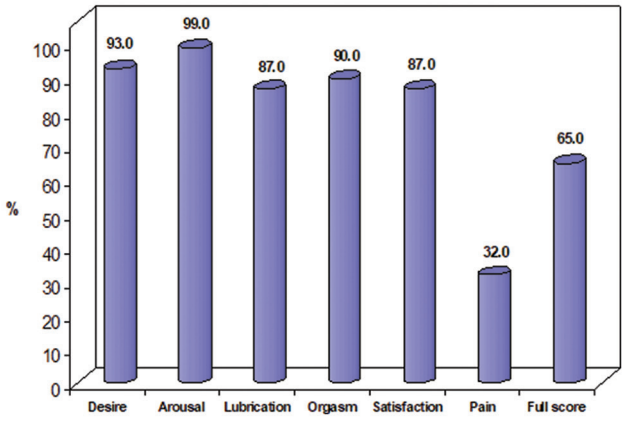
The sexual history of participants revealed that 94% had been circumcised; husbands of 10% of the participants suffered from premature ejaculation, while husbands of 4% of the participants suffered from erectile dysfunction. Thirty-nine percent of the participants had a sexual problem; most of them, 74.4%, reported that the problem began after mastectomy (Table 1).

The FSFI individual and total domains were used for each patient. Sixty-five percent of the participants had abnormal total FSFI scores, with a mean of 22.68±7.10. Arousal disorder was the most frequent sexual problem among the participants (99.0%), followed by desire disorder (93.0%), while problems related to lubrication, orgasm, satisfaction, and pain were present in 87, 90, 87, and 32% of the participants, respectively (Fig. 1).

The most affected domain was desire, with mean±SD (2.89±0.93), and the least affected domain was the pain score, with mean±SD (5.09±1.70) (Table 2).

On studying the effect of obstetric data such as age at marriage, age at menarche, and the number of children

Figure 1



FSFI individual and total domains. FSFI, Female Sexual Function Index.

Table 1 Sexual history of the participants

	n (%) (*n*=100)
Circumcision	
Yes	94 (94.0)
No	6 (6.0)
Sexual problems of the husband	
Premature ejaculation	10 (10.0)
Erectile dysfunction	4 (4.0)
No	86 (86.0)
Sexual problems of the wife	
Yes	39 (39.0)
No	61 (61.0)
Onset of problem	
Before mastectomy	10 (25.6)
After mastectomy	29 (74.4)
Cause of problem	
Lack of foreplay	16 (41.0)
Sexual problem of the partner	7 (17.9)
Problems with the wife	
Fatigue after chemotherapy session	6 (15.4)
Embarrassed due to her body image	10 (25.6)

Table 2 Female Sexual Function Index individual and total scores (mean and range)

	Mean±SD	Range
Desire score	2.89±0.93	1.2-4.8
Arousal score	2.96±1.13	0.0-5.1
Lubrication score	4.45±1.53	0.0-6.0
Orgasm score	3.43±1.43	0.0-6.0
Satisfaction score	3.87±1.42	0.8-6.0
Pain score	5.09±1.70	0.0-6.0
Full score	22.68±7.10	2.0-33.5

on FSD, no significant correlation was obtained between them.

FSD was significantly more common in participants who had undergone mastectomy less than 1 year ago ($P = 0.036$). There was also a statistically significant increase in the percent of FSD in participants who were on chemotherapy ($P = 0.000$) (Table 3).

A statistically significant positive correlation was observed between the total FSD score and each of the individual domain scores ($P<0.05$). By studying the effect of the participant's demographic and obstetric data on each of the individual domain scores, nothing except for education poses a statistically significant risk for sexual dysfunction.

Arousal, orgasm, and satisfaction scores were significantly higher in educated participants than uneducated ones ($P = 0.012, 0.023, 0.008$, respectively).

Desire, arousal, lubrication, orgasm, pain, and full scores were lower in participants less than 35 years old than those more than or equal to 35 years old, while the satisfaction score was higher in those less than 35 years old, with no statistical significance, P value more than 0.05.

In terms of the adjuvant therapy used, desire, arousal, lubrication, orgasm, satisfaction, and full FSFI scores were significantly lower in participants who were on chemotherapy compared with those who were on radiotherapy (Table 4).

Discussion

The present study was carried out on 100 women of childbearing age, who were diagnosed with breast cancer and had undergone a mastectomy, and were on adjuvant chemotherapy or radiotherapy. This was similar to the study of [15], where age at diagnosis ranged from 29 to 50 years, with a mean of 43 years. Sixty-two percent of the participants were uneducated and 38% were educated, similar to the study of Usta and Gokcol [16], where only 36.4% of the patients had completed their high school education.

In our study, we found that 65% of the participants had FSD according to the total FSFI score, inconsistent with our results. Paiva *et al*. [17] reported that 63.3% of breast cancer survivors were identified to have sexual dysfunction. Also, in a study carried out by Maiorino *et al*. [18], the prevalence rate of FSD was 65%. Another study by Usta and Gokcol [16] revealed that 98.3% of breast cancer survivors had sexual dysfunction, which is higher than our results, as all patients in their study were on chemotherapy at the time of the study [16], but in ours, only 68% were on chemotherapy and 32% were on radiotherapy, which had less effect on sexual function than chemotherapy.

In the current study, arousal disorder was the most frequent sexual problem reported among the participants, followed by desire disorder, followed by

Table 3 Proportion of female sexual dysfunction relative to oncological data of the participants

	Total score [*n* (%)]		*P*
	<26.55	>26.55	
Family history			0.702
Positive	11 (61.1)	7 (38.9)	
Negative	54 (65.9)	28 (34.1)	
Duration of disease (years)			0.218
<1	22 (59.5)	15 (40.5)	
1 to <3	19 (59.4)	13 (40.6)	
≥3	24 (77.4)	7 (22.6)	
Duration of mastectomy (years)			0.036*
<1	25 (69.4)	11 (30.6)	
1 to <2	11 (44.0)	14 (56.0)	
≥2	29 (74.4)	10 (25.6)	
Type of mastectomy			0.478
Modified radical mastectomy	52 (63.4)	30 (36.6)	
Lumpectomy	13 (72.2)	5 (27.8)	
Type of therapy			0.000*
Chemotherapy	53 (77.9)	15 (22.1)	
Radiotherapy	12 (37.5)	20 (62.5)	

*Statistically significant (P<0.05).

Table 4 Female Sexual Function Index individual and total scores relative to the type of therapy

	Type of therapy (mean±SD)		*P*
	Chemotherapy	Radiotherapy	
Desire score	2.62±0.84	3.45±0.85	0.000*
Arousal score	2.66±1.09	3.59±0.97	0.000*
Lubrication score	4.21±1.65	4.95±1.13	0.015*
Orgasm score	3.05±1.37	4.23±1.24	0.000*
Satisfaction score	3.54±1.36	4.56±1.30	0.001*
Pain score	4.92±1.86	5.46±1.25	0.203
Full score	21.01±7.01	26.24±5.99	0.000*

*Statistically significant (P<0.05).

lubrication, orgasm, satisfaction, and pain disorders. The most affected domain was desire and the least affected domain was the pain score. Arousal, satisfaction, and orgasm domains were more affected than the lubrication domain.

In line with our results, Usta and Gokcol [16] found that sexual dysfunction was detected mostly in relation to arousal and desire, followed by problems related to lubrication, pain, unsatisfaction, and orgasm. Also, the most important effect of cancer, according to other studies, included a decrease in desire, arousal, difficulties in achieving the expected level of vaginal lubrication during intercourse, and achieving an orgasm [19]. Furthermore, problems related to lubrication, satisfaction, desire, and excitement were reported by women with breast cancer, in addition to problems in achieving an orgasm and pain during the sexual act, according to a study [20].

No statistically significant difference was found in desire, arousal, lubrication, orgasm, pain, and full scores in participants younger than 35 years old and older participants; similarly, Sbitti *et al.* [21] found that in breast cancer patients, age had no effect on sexual dysfunction. Also, Takahashi *et al.* [22] found that age was not found to be a major factor in changes in the frequency of sex, in contrast to Usta and Gokcol [16], who found that age and the presence of sexual dysfunctions have a statistically significant correlation. Also, Pytka and Spych [23] reported that 78–88% of women experienced decreased sexual satisfaction as a negative effect of cancer and therapy in older women.

On comparing educated and uneducated participants, we found that the arousal, orgasm, and satisfaction scores were significantly higher in educated participants than uneducated ones, with a significant difference. In contrast, desire, lubrication, and full scores were also higher in educated participants, but with no statistical significance. This can be attributed to early diagnosis among the educated participants.

In the current study, we found that all FSFI scores (except satisfaction scores) were higher in participants diagnosed with breast cancer for less than 1 year with no statistical significance. Similar to our results, Usta and Gokcol [16] found that duration of illness had no statistically significant effects on the FSFI score [16], which is consistent with the findings of a former study carried out by Sbitti *et al.* [21].

Our study revealed that participants who had undergone lumpectomy had better FSFI scores than those who had undergone total mastectomy, but with no statistically significant difference. Similarly, Barni and Mondin [24] found no statistically significant correlation between the presence of sexual dysfunction and type of surgery. The study of Markopoulos *et al.* [25] demonstrated that women whose breasts had been partially removed due to breast cancer were more satisfied with their body image than women who had undergone total mastectomy.

A study by Jach [19] compared women undergoing surgery due to breast cancer to a control group to determine whether they had significantly lower scores on the PL-FSFI scale due to mastectomy or breast-conserving therapy.

In this study, desire, arousal, lubrication, orgasm, satisfaction, and full FSFI scores were significantly lower in participants who were on chemotherapy compared with those who were on radiotherapy. Similarly, using the FSFI for the evaluation of women's sexuality, a study observed that sexual dysfunction was diagnosed in the majority of breast cancer patients who were undergoing chemotherapy [26]. Cavalheiro *et al.* [27] found that prechemotherapy and postchemotherapy comparisons showed significant decreases in scores across all domains,

with particularly marked reductions in discomfort/pain and satisfaction domains. Another study revealed that the women who were on chemotherapy reported a decrease in the frequency of sexual relations, pleasure, and interest in sex [28].

In line with our results, Arora *et al*. [29] examined the quality of life after surgery and systemic therapy; they discovered that patients on systemic therapy had markedly poorer sexual function than those who had only undergone surgery.

Similar results were reported by Webber *et al*. [30] as they concluded that after chemotherapy, the proportion of women reporting sexual problems increases markedly and that there is a considerable decrease in FSD scores after a period of chemotherapy, affecting all its domains.

This research has some limitations: lack of a control group; we believe that placebocontrolled studies with larger sample sizes are needed. Our participants were recruited from a single oncology center in South Egypt; therefore, the findings of this study cannot be generalized to all women with breast cancer in Egypt. Also, this research did not collect data on the clinical symptoms (alopecia, nausea, etc.) or the presence of psychosocial problems of the participants (depression and anxiety). However, we could not follow participants before mastectomy. Despite these limitations, we conclude that this research offers valuable information about the rate of sexual dysfunction and related factors in women undergoing chemotherapy and radiotherapy for breast cancer.

In conclusion, cancer breast surgeries have a great effect on female sexual function; according to the total FSFI score, sexual dysfunction was present in 65% of the participants. Problems related to arousal were the most frequent sexual problem, while desire was the most affected domain. Chemotherapy has a negative impact on sexual function more than radiotherapy.

Conflicts of interest

There are no conflicts of interest.

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