VIA MEDICA

Artykuł oryginalny / Original article

Biuletyn Polskiego
Towarzystwa Onkologicznego
NOWOTWORY
2022, tom 7, nr 2, 84–89
© Polskie Towarzystwo Onkologiczne
ISSN 2543–5248, e-ISSN: 2543–8077
www.nowotwory.edu.pl

Sexual health in breast cancer patients in Poland

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Introduction. Breast cancer is the most common malignancy among women in Poland and in the world, with a mortality rate second only to that of lung cancer. Breasts are one of the most important symbols of femininity and sexuality. Cancer surgery, but also systemic therapy (chemotherapy and hormone therapy) cause a change in the perception of one's body. The aim of the survey proposed by us was to assess interest in sex by breast cancer patients during and after oncological treatment, as well as to identify ways to improve the quality of patients' sex lives.

Materials and methods. The proposed survey consisted of 3 parts: the first part included questions about the demographic, in the second part there were the author's questions about sexual dysfunction (12 questions), in the third part there was the Female Sexual Function Index (FSFI) form assessing the sexual functioning of women. The questionnaires were made available online from October 13, 2020 to December 20, 2020 through the social networks of patient organizations involved in breast cancer care. 287 women diagnosed with breast cancer were included in the survey.

Results. Before the disease almost all patients were sexually active and had a partner (95.5%; n = 274); at the time of filling the questionnaire only slightly more than half of the patients remained sexually active (57.1%; n = 164). About 30.7% (n = 88) stated that the disease was the main reason for not being sexually active. More than 60% of patients (60.9%; n = 137) used products to improve the comfort of sexual intercourse, mainly lubricants (39.7%; n = 114). Only about ⅓ of the patients (32.1%; n = 92) were satisfied with their sex life, 48.1% (n = 138) stated they were not satisfied with their sex life, 19.9% (n = 57) did not answer this question. The main reasons for lack of satisfaction with sex life included: decreased libido (65.9%; n = 189), vaginal dryness (55.1%; n = 158). The mean score of forms filled out by the respondents was 24.50 in FSFI form.

Conclusions. Assessment of sexual dysfunction in patients with breast cancer should be performed on a routine basis before treatment and regularly during treatment.

Key words: breast cancer, sexual health, FSFI, chemotherapy

Introduction

Breast cancer is the most common malignancy among women in Poland and in the world, with a mortality rate second only to that of lung cancer [1]. The increasing incidence concerns patients of all age groups, resulting in younger, sexually active women struggling with cancer and the negative effects of oncological therapy. Among the most common are a significant reduction in sex hormone levels, and the following:

Jak cytować / How to cite:

Kufel-Grabowska J, Lachowicz M, Bartoszkiewicz M, Ramlau R, Maliszewski D, Łukaszuk K. ***Sexual health in breast cancer patients in Poland.*** *NOWOTWORY J Oncol* 2022; 72: 74–79.

- mood deterioration,
- vaginal dryness,
- decreased libido or painful sexual intercourse.

Breasts are one of the most important symbols of femininity and sexuality. Cancer surgery, but also systemic therapy (chemotherapy and hormone therapy) cause a change in the perception of one's body [2–4].

It is emphasized in the literature that the negative effects of breast cancer and cancer therapy affect patients of reproductive age to a greater extent than those after menopause [5]. Breast cancer in women of reproductive age has a negative impact on many spheres of a woman's life that do not affect postmenopausal patients: premature cessation of ovarian function, a rapid decline in the level of sex hormones and the appearance of all the symptoms of menopause, cytostatic-induced infertility, disruption of the family model, interruption of the continuity of work during the greatest period of a woman's life [6–8].

The course of cancer in the young tends to be more aggressive, biological subtypes with higher malignancy are more often diagnosed, as well as cancers diagnosed at higher stages due to their unusual course and diagnostic difficulties, for example, pregnant or postpartum patients. Cancer treatment of young women is more intensive and sometimes prolonged, may last for years, and frequently occurs at the time of greatest sexual activity [9].

Sexual dysfunction is a serious complication of oncological therapy that affects the quality of patients' lives [10]. They should be diagnosed and regularly evaluated during anticancer treatment, and the patient should receive support from specialists (gynecologists, sexologists, psychologists).

Aim of study

The aim of the survey proposed by us was to assess the interest in sex by breast cancer patients during and after oncological treatment as well as to identify ways to improve the quality of patients' sex lives.

Material and methods

The proposed survey consisted of 3 parts: the first part included questions about the demographic data of respondents (10 questions – age, place of residence, education, employment, year of breast cancer diagnosis, place of treatment, type of surgical and systemic treatment, children), in the second part there were the author's questions about sexual dysfunction (12 questions), in the third part there was the Female Sexual Function Index (FSFI) form assessing the sexual functioning of women.

The questionnaires were made available online from October 13, 2020 to December 20, 2020 through the social networks of patient organizations involved in breast cancer care. The FSFI questionnaire was available in Polish.

Statistics

The analysis was performed using IBM SPSS Statistics 26. The significance level was adopted as 0.05. In the analysis, the Spearman correlation coefficient was counted for numerical, ordinal, and binary data (due to the lack of normal distribution in the data). For the remaining data, the values of statistics for the chi square test for independence of data were counted. In order to make the correlations more detailed, the z-test was used to compare the structure indexes (percentages).

Ethics

Personal data was not processed, the survey was fully anonymous and voluntary. The anonymous survey does not have to be submitted to the opinion of the institutional review board, which was confirmed by the institutional review board at the Poznan University of Medical Science in Poland.

Results

Participants

A total of 287 women diagnosed with breast cancer were included in the survey. The mean age for the entire group was 41.42 years, the median age was 41 years, 199 (72.89%) constituted women 20–45 years old, the remaining respondents (n = 74; 27.11%) were from 46–64 years old.

More than ⅓ of respondents came from cities with a population over 250 thousand (36.6%, n = 105), then from cities with population up to 50 thousand (17.8%, n = 51) and from villages (17.4%, n = 50); 15.7% (n = 45) of respondents came from cities with population between 50 thousand and 100 thousand, 12.5% (n = 36) from cities with population between 100 thousand and 250 thousand.

More than half of the respondents were employed (52.3%, n = 150), almost ⅓ were on sick leave (31.7%, n = 91), and 7.3% of the patients (n = 21) were on pension, then 5.9% of the respondents (n = 17) were unemployed and 2.8% of the patients (n = 8) were on maternity leave. The vast majority of patients declared higher education (66.0%, n = 192), more than ¼ secondary education (28.6%, n = 82) and 4.2% vocational education (n = 12).

In the majority of patients (77.7%), cancer was diagnosed in the last 4 years: for 19.9% (n = 57) in 2020, for 28.9% (n = 83) in 2019, and for 17.8% (n = 51) in 2018, and for 11.1% (n = 32) in 2017. The diagnosis of breast cancer in 2016–2014 was declared by less than 10% of patients (2016 – 7.7%, n = 22; 2015 – 4.2%, n = 12; 2014 – 3.8%, n = 11). The vast majority of patients (83.6%; n = 240) had children.

More than half of the patients (62.0%, n = 178) were treated in cancer centers, 16.7% (n = 48) in multispecialty hospitals, 14.6% (n = 42) in university hospitals – and the smallest group of patients was treated in specialty clinics – 6.6% (n = 19). 42.9% (n = 123) of patients underwent a mastectomy with reconstruction, 22.3% (n = 64) underwent breast-conserving treatment, and 34.8% (n = 100) underwent a mastectomy.

More than ¾ of patients (76.6%; n = 220) were undergoing systemic treatment (56.4% under hormone therapy, 20.2% under chemotherapy or immunotherapy); 81.2% of respondents had received systemic treatment in the past (72.1% chemotherapy, 9.1% hormone therapy).

Sexual activity

Before the disease, almost all patients were sexually active and had a partner (95.5%; n = 274), at the time of filling the questionnaire only slightly more than half of the patients remained sexually active (57.1%; n = 164), 95.5% (n = 274) had a partner.

About 30.7% (n = 88) stated that the disease was the main reason for not being sexually active, 2.1% (n = 6) did not have a partner, 0.3% (n = 1) never liked sex, 10.5% (n = 30) mentioned other reasons for not being sexually active (vaginal pain and dryness, decreased libido, fear of infection during treatment, fear and dislike of partner, dislike of their body, loss of regular partner due to disease) (tab. I).

More than 60% of patients (60.9%; n = 137) used products to improve the comfort of sexual intercourse, mainly lubricants (39.7%; n = 114), vaginal globules (19.9%; n = 57), rarely estrogen creams (1.4%; n = 4). Respondents were asked why they would like to be sexually active: 88.5% (n = 254) would like to feel pleasure from sexual activity, 43.9% (n = 126) would like to please their partner, 12.2% (n = 35) would like to have a child.

Satisfaction with sex life

Only about ⅓ of the patients (32.1%; n = 92) were satisfied with their sex life, 48.1% (n = 138) stated they were not satisfied with their sex life, 19.9% (n = 57) did not answer this question. The main reasons for lack of satisfaction with sex life included: decreased libido (65.9%; n = 189), vaginal dryness (55.1%; n = 158), lack or loss of sexual desire (43.2%; n = 124), problem with acceptance of own body (36.2%; n = 104), not feeling pleasure during intercourse (34.1%; n = 98), reluctance and lack of sexual pleasure (32.1%; n = 92), pain during intercourse (31.4%; n = 90), lower sense of attraction to sexual partner (28.6%; n = 82), orgasmic disturbance (21.6%; n = 62), sense of frustration (14.6%; n = 42), as well as partner leaving due to breast cancer, partner's reluctance to have intercourse, fear of acceptance from partner, shame of undressing due to failed reconstruction, shoulder and mastectomy site pain, recurrent infections, menopause (tab. II).

Table II. Reasons for lack of satisfaction with sex life

Do any of the following problems apply to you?		
	frequency	percent
pain during intercourse (dyspareunia)	90	31.4%
reluctance or lack of sexual pleasure	92	32.1%
lack or loss of sexual desire	124	43.2%
lack of pleasure during intercourse	98	34.1%
orgasmic disturbances	62	21.6%
decreased libido	189	65.9%
lubrication disorder (vaginal dryness)	158	55.1%
lower sense of attraction to a sexual partner	82	28.6%
problems with acceptance of one's body	104	36.2%
depression	31	10.8%
feelings of frustration	42	14.6%
none of the above applies to me	24	8.4%
other	14	4.9%

Support from medical staff

The vast majority of respondents (98.3%; n = 282) reported that they did not receive any information from medical staff about possible sexual dysfunction related to cancer or treatment, or methods to support sexual problems related to the disease (96.5%; n = 277).

The Female Sexual Functioning Index form

The Female Sexual Functioning Index (FSFI) is a self-report measure of sexual functioning that has been validated on a clinically diagnosed sample of women with female sexual arousal disorder. The present investigation extended the validation of the FSFI to include women with a breast cancer diagnosis. The form is a standardized, validated, and recognized form regarding aspects of a woman's sexual sphere.

The advantage of this form is the possibility to compare the obtained results with literature data. The assessment concerns 6 domains: desire, excitement, lubrication, orgasm, sexual satisfaction, and pain related to sexuality. The assessment covers the past 4 weeks. The outcome refers to sexual functioning ranging from 2 to 36 points. A value of 26 points or less indicates the presence of significantly clinical sexual dysfunction [11].

The mean score for the surveyed population was 24.5, and the lowest mean scores were obtained for questions on the

Table I. Discontinuation of sexual activity

If NO, what is the reason that you are not currently sexually active? (if you are, please skip this question)			
	frequency	percent to total (n = 287)	percent to inactive (n = 123)
I do not have a partner	6	2.1%	4.9%
I have not been sexually active due to my disease	88	30.7%	71.5%
I have never enjoyed sex	1	0.3%	0.8%
other	30	10.5%	24.4%

desire domain (3.67), followed by the pain (4.04) and orgasm (4.09) domains.

Women after a mastectomy with reconstruction + BCT obtained significantly higher results in the overall assessment of sexual functioning than women after reconstruction only. Women after a mastectomy with reconstruction + BCT obtained significantly higher results in the lubrication domain ($p = 0.013$) and in the domain of pain related sexuality ($p = 0.008$) than in women after a mastectomy. In the case of other domains, there are no significant differences in the obtained results.

Discussion

Cancer treatment

Breast cancer is the most common malignancy among women in Poland and in the world, the increasing incidence concerns patients of all age groups. The increasing overall survival of breast cancer patients is associated with modern diagnostic methods and increasingly effective therapies. Perioperative treatment (pre- and postoperative) protects patients from cancer recurrence, but affects their quality of life.

Chemotherapy causes changes in a woman's appearance, loss of hair, eyelashes, eyebrows, change in shape and color of nails and many others. However, its effect is limited mainly to the time of treatment, while later complications of chemotherapy are much rarer (cardiotoxicity, nephrotoxicity, inhibition of ovarian function) [12]. The mentioned changes in the patient's appearance are not without influence on self-esteem, the woman's sense of beauty and aesthetics. For many women, especially the younger ones, good looks, an attractive appearance and beauty are extremely important [13, 14]. Lack of self-acceptance may lead to depression, withdrawal from partner and social relations, and further to a feeling of loneliness, rejection or social exclusion. Shame, sadness, sometimes anger or resignation, which may appear when looking in the mirror during everyday care or social interaction, also significantly affect the patient's psyche and lower self-esteem. Therefore, an important part of the therapy is also taking care of the patient's psychological comfort. The patient should feel attractive and self-confident regardless of the undesirable side effects of the treatment.

Menopause caused by chemotherapy depends on the drugs used, the time of their use and, above all, the patient's age. In very young women (about 35 years of age) it may be temporary, whereas in slightly older women it may occur even a few years earlier than natural menopause and carry all the consequences of premature cessation of ovarian function [15]. Natural menopause is a process that takes several years, occurs in a gradual manner, while idiopathic menopause occurs abruptly, almost overnight, and causes significantly increased prolapse symptoms, worsening the well-being of patients and reducing their quality of life, as well as leading to infertility, destroying women's maternity plans [16]. Among the respondents, 57.1% remained sexually active despite oncological treatment, and 12.2% of the respondents indicated the desire to have offspring as one of the most important reasons for sexual activity. Taking care to preserve the fertility of breast cancer patients prior to anticancer treatment should be a standard component of breast cancer care. The awareness of having frozen oocytes or embryos and the possibility of using them for *in vitro* fertilization after completion of cancer therapy significantly improves the quality of life of breast cancer patients and offers hope for a return to full activity [17].

The vast majority of breast cancers, approximately 80%, are hormone-dependent cancers that express estrogen and/or progesterone receptors in the nuclei of tumor cells and require long-term (5–10 years) adjuvant hormonal therapy.

Premenopausal patients may receive tamoxifen as monotherapy or a gonadoliberin analog in combination with tamoxifen or an aromatase inhibitor. Tamoxifen is a selective modulator of the estrogen receptor, stimulating its effects in the bones or endometrium and inhibiting its effects in the mammary gland. Tamoxifen monotherapy does not reduce blood estrogen levels and does not induce menopause in patients of reproductive age. Aromatase inhibitors, by inhibiting aromatization of androgens to estrogens, reduce the production of sex hormones in adipose tissue, which is the largest source of estrogens in postmenopausal women. They can be used as monotherapy in postmenopausal women or in combination with a gonadoliberin analog in premenopausal women. Studies show that extending hormone therapy to 10 years in patients with the highest risk of cancer recurrence, reduces this risk, but this is not without impact on the patients' quality of life [12].

The effects of chemotherapy are most troublesome and visible during the therapy, late complications occur with varying severity and do not affect all patients. On the other hand, the long-term use of hormone therapy causes permanent and burdensome changes in the well-being and functioning of the body, which also affects the sexual sphere of women [18]. The study was performed among conscious women, almost all patients had at least secondary education (28.6% secondary; 66.9% higher), half of them were professionally active (52.3%). The respondents were treated in highly specialized centers (oncology centers, university hospitals and multi-specialty hospitals). About $^2/_3$ of the patients (64.8%) were from cities with a population of more than 50,000. Despite the fact that the effects of systemic treatment are long-lasting and predictable, the vast majority of patients (98.3%) were not informed by medical personnel about the possibility of a deterioration in the quality of their sex life, nor about methods of assisting sexual dysfunction (96.5%).

In a study conducted by Usher et al., 68% of patients stated that they would like to receive information about sexual dysfunction, but only 41% received it [19]. Almost half of the respondents (47.7%) who took part in our study independently

sought methods to improve the comfort of sexual intercourse, which indicates the great need of women for support from medical personnel.

An open and frank conversation about the problems, disease, and thus clear communication on the part of the medical staff should constitute an important support during therapy. It should be an fundamental point, an element of properly conducted sexual rehabilitation.

The sexual dysfunction of breast cancer patients are often perceived as negative effects of systemic treatment (chemotherapy and hormone therapy), but the problem is much more complex. Surgical treatment changes the appearance of a woman with breast cancer, which affects both the perception of herself and her partner, thereby potentially affecting their mutual relationships.

An extremely important psychological aspect of the treatment process is the feeling of attractiveness to the partner, which undoubtedly has an impact on the quality of sexual life. It is strongly related to the female psyche and acceptance of her body, often changed as a result of treatment [20]. This was also shown in our study. Patients after a mastectomy with reconstruction and after breast conserving surgeries had higher scores in the FSFI than those after a mastectomy without reconstruction. Patients with breast after breast surgery had less pain related to intercourse and less vaginal dryness.

Among the respondents, 34.8% had a mastectomy, i.e. removal of the entire breast, while the remaining patients had either a breast-conserving operation (22.3%) or a mastectomy with simultaneous reconstruction (42.9%), where the woman has never had to face life without the breast, one of the most important symbols of female sexuality. In a study conducted by Collins et al., patients with T1–T3 tumors undergoing breast-conserving treatment had a better perception of their bodies than those undergoing mastectomy with reconstruction. This was not the case for patients with greater local disease severity (T4). Patients with T2 tumors perceived their bodies better after mastectomy than those after mastectomy with reconstruction.

The Female Sexual Functioning Index form

The mean score of forms filled out by the respondents was 24.50, which indicates clinically significant sexual dysfunction and correlates with the data obtained by Blouett et al. where the mean total score of the form was 25.14 [20]. These results differ from those obtained in the control population reported in the literature: in the study by Rosen et al., where 30.5 ± 5.3 was obtained; and in the study by Wiegel et al. 30.75 ± 4.8 [21]. Both the study population and Blouett's study were dominated by young breast cancer patients. In both studies, the greatest problems were found with the feeling of desire and the feeling of orgasm. Both of these domains are closely related to each other, but also have a huge psychological basis [21].

Sexual dysfunction – the main part of the survey

Young women of reproductive age participated in this study, with a mean age of 41.42. Most studies on the quality of life of patients focus on postmenopausal women, who account for over 90% of all breast cancer cases. However, the deterioration of sexual quality of life is much less expressed in this group than in patients of reproductive age, which is also confirmed by the study conducted by Bloulet et al. [20]. This study included patients under 35 years of age, about half of them declared dissatisfaction with sexual activity. Similar results were obtained by analyzing data from a questionnaire, where almost 73% were women aged 20–45 years. Before beginning therapy, 95.5% of patients had a partner and exactly the same number of women were sexually active; at the time of filling the questionnaire, only 57.1% of patients remained sexually active, still 95.5% had a partner. Almost ⅓ (30.7%) of the patients indicated cancer as the main reason for not being sexually active, another 10% mentioned decreased libido, vaginal dryness, or dislike of their own bodies, without directly linking the reason to cancer or cancer therapy.

Only 32.1% remained satisfied with their sex life. The main reasons for dissatisfaction were: decrease of libido, vaginal dryness, loss of sexual needs, lack of pleasure during sexual intercourse, problems with acceptance of own body, depression.

Among the respondents, women after a mastectomy with reconstruction obtained significantly higher results in the lubrication domain than women after a mastectomy. Women after a mastectomy with reconstruction obtained significantly higher results in the domain of pain related sexuality than women after mastectomy. In the case of the remaining domains (desire, excitement, orgasm, sexual satisfaction) there were no significant differences in the obtained results.

Summary

The study included women undergoing active systemic treatment, 56.4% on hormone therapy, 12.2% on chemotherapy. The FSFI test is a useful diagnostic tool for sexual dysfunction occurring in a woman in the past four weeks. The author's questions in the main part of the survey are an interesting source of information on sexual activity and the sex life satisfaction of patients during oncological treatment. Almost all of the women declared having a partner (95.5%), and 69.7% were satisfied with the emotional relationship between them, thus the reasons for the discontinuation of sexual activity in as many as 38.4% of the patients should be considered as follows: decrease of libido, problems with body acclimatization and physical changes making intercourse difficult. These results do not correlate with the results of the FSFI test, where the biggest problem for patients seemed to be achieving orgasm and pain during sexual activity.

Conclusions

Breast cancer diagnosis, surgical and systemic therapy can worsen the quality of a patient's sex life. From the very begin-

ning of the treatment, preventive measures should be implemented to reduce the impact of the therapy on the patients' sex life. Currently, there are many treatment options available to improve libido in women with breast cancer. One should remember about an individual approach for each patient. Correct communication is also extremely important, i.e. the way of talking to the patient and her partner. Medical staff should be open to discussions about the sexuality of patients treated for breast cancer and be careful and empathetic about these topics. This is why:

- Patients should be informed by medical personnel about the possibility of sexual dysfunction during breast cancer treatment.
- Patients should be informed by medical personnel about the possibility of oncofertility counselling before the therapy.
- Patients should receive appropriate support from medical staff in improving the quality of their sex lives.

Recommendations for physical sexual dysfunction:

- moisturizers (lubricants),
- anti-inflammatory agents,
- vaginally administered estrogen,
- relaxation exercises for the vaginal muscles.

Psychological and sexual support:

- psychotherapy,
- sexual rehabilitation,
- psychotherapy for the partner.

Conflict of interest: none declared

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Received: 7 Sep 2021
Accepted: 2 Feb 2022

References

1. Coughlin SS. Epidemiology of Breast Cancer in Women. Adv Exp Med Biol. 2019; 1152: 9–29, doi: 10.1007/978-3-030-20301-6_2, indexed in Pubmed: 31456177.
2. Rosenberg SM, Partridge AH. Management of breast cancer in very young women. Breast. 2015; 24 Suppl 2: S154–S158, doi: 10.1016/j.breast.2015.07.036, indexed in Pubmed: 26255745.
3. Jankowitz RC, McGuire KP, Davidson NE. Optimal systemic therapy for premenopausal women with hormone receptor-positive breast cancer. Breast. 2013; 22 Suppl 2: S165–S170, doi: 10.1016/j.breast.2013.07.032, indexed in Pubmed: 24074781.
4. Mathew A, Davidson NE. Adjuvant endocrine therapy for premenopausal women with hormone-responsive breast cancer. Breast. 2015; 24 Suppl 2: S120–S125, doi: 10.1016/j.breast.2015.07.027, indexed in Pubmed: 26255743.
5. Stamatakos M, Stefanaki C, Xiromeritis K, et al. Breast cancer in reproductive age. The new plaque or just myth? Surg Oncol. 2011; 20(4): e169–e174, doi: 10.1016/j.suronc.2011.05.004, indexed in Pubmed: 21680175.
6. Radecka B, Litwiniuk M. Breast cancer in young women. Ginekol Pol. 2016; 87(9): 659–663, doi: 10.5603/GP.2016.0062, indexed in Pubmed: 27723074.
7. Kufel-Grabowska J, Jędrzejczak P, Bartoszkiewicz M, et al. Strategies and results of oncofertility counseling in young breast cancer patients. Nowotwory. Journal of Oncology. 2021; 71(5): 263–266, doi: 10.5603/njo.2021.0053.
8. Anastasiadi Z, Lianos GD, Ignatiadou E, et al. Breast cancer in young women: an overview. Updates Surg. 2017; 69(3): 313–317, doi: 10.1007/s13304-017-0424-1, indexed in Pubmed: 28260181.
9. Dizon DS. Quality of life after breast cancer: survivorship and sexuality. Breast J. 2009; 15(5): 500–504, doi: 10.1111/j.1524-4741.2009.00766.x, indexed in Pubmed: 19614908.
10. Słowik AJ, Jabłoński MJ, Michałowska-Kaczmarczyk AM, et al. Evaluation of quality of life in women with breast cancer, with particular emphasis on sexual satisfaction, future perspectives and body image, depending on the method of surgery. Psychiatr Pol. 2017; 51(5): 871–888, doi: 10.12740/PP/OnlineFirst/63787, indexed in Pubmed: 29289967.
11. Shien T, Iwata H. Adjuvant and neoadjuvant therapy for breast cancer. Jpn J Clin Oncol. 2020; 50(3): 225–229, doi: 10.1093/jjco/hyz213, indexed in Pubmed: 32147701.
12. Howard-Anderson J, Ganz PA, Bower JE, et al. Quality of life, fertility concerns, and behavioral health outcomes in younger breast cancer survivors: a systematic review. J Natl Cancer Inst. 2012; 104(5): 386–405, doi: 10.1093/jnci/djr541, indexed in Pubmed: 22271773.
13. Campbell-Enns H, Woodgate R. The psychosocial experiences of women with breast cancer across the lifespan: a systematic review protocol. JBI Database System Rev Implement Rep. 2015; 13(1): 112–121, doi: 10.11124/jbisrir-2015-1795, indexed in Pubmed: 26447012.
14. Knobf MT. „Coming to grips" with chemotherapy-induced premature menopause. Health Care Women Int. 2008; 29(4): 384–399, doi: 10.1080/07399330701876562, indexed in Pubmed: 18389434.
15. Vincent AJ. Management of menopause in women with breast cancer. Climacteric. 2015; 18(5): 690–701, doi: 10.3109/13697137.2014.996749, indexed in Pubmed: 25536007.
16. Sonigo C, Grynberg M, Bringer S, et al. Oncofertilité et cancer du sein. Bull Cancer. 2019; 106(12): S43–S52, doi: 10.1016/s0007-4551(20)30047-3, indexed in Pubmed: 32008738.
17. Lindert O, Skrzypulec-Plinta V, Plinta R, et al. Use of hormone therapy in gynaecological oncology and therapy of breast cancer. Menopausal Rev. 2010; 14(2): 78–83.
18. Ussher JM, Perz J, Gilbert E. Information needs associated with changes to sexual well-being after breast cancer. J Adv Nurs. 2013; 69(2): 327–337, doi: 10.1111/j.1365-2648.2012.06010.x, indexed in Pubmed: 22500731.
19. Munhoz AM, Gemperli R, Filassi JR. Effects of breast cancer surgery and surgical side effects on body image over time. Breast Cancer Res Treat. 2011; 126(1): 261–2; author reply 263, doi: 10.1007/s10549-010-1266-4, indexed in Pubmed: 21110083.
20. Blouet A, Zinger M, Capitain O, et al. Sexual quality of life evaluation after treatment among women with breast cancer under 35 years old. Support Care Cancer. 2019; 27(3): 879–885, doi: 10.1007/s00520-018-4374-z, indexed in Pubmed: 30116944.
21. Wiegel M, Meston C, Rosen R. The female sexual function index (FSFI): cross-validation and development of clinical cutoff scores. J Sex Marital Ther. 2005; 31(1): 1–20, doi: 10.1080/00926230590475206, indexed in Pubmed: 15841702.