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Review

Sexual functioning in young women in the context of breast cancer treatment

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ABSTRACT

Breast cancer is the most common type of cancer among women worldwide. The number of breast cancer survivors has been growing because of earlier detection and improved treatment. Young women under 50 years of age account for relatively small percentage of all newly diagnosed breast cancer patients. However, their medical and psychosocial context of the disease is unique. Breast cancer is diagnosed at the most productive time in life. Concerns about childbearing, partner rejection, sexual function, body image, sexual attractiveness and career are common. For all these reasons experience of breast cancer diagnosis and treatment among young women requires special attention. Researches indicate that oncological treatment may negatively affect female sexual functioning. Chemotherapy is one of the greatest risk factors of sexual dysfunctions, especially when it results in medication-induced menopause. The duration and severity of sexual problems depend on a wide variety of factors: medical, psychological and interpersonal. These side effects may last for many years after the end of treatment. It is known that breast cancer affects both patients and their partners. The first sexual experience after surgery may be a turning point in sexual adaptation in couples. Communication is crucial in this process. More knowledge about sexual difficulties and sexual adaptation process of young breast cancer survivors (YBCSs) and their partners is needed. Knowing protective and risk factors is necessary to identify couples at risk for sexual dysfunctions in order to professionally support them in the best way and at the right time.

1. Introduction

Breast cancer is the most common type of cancer in women in the USA and both in the developed and developing countries in Europe. Young women under 50 years of age account for a relatively small percentage of all newly diagnosed breast cancer patients. For example, in the USA women under the age of 50 constitute approximately 24%,[1] in the United Kingdom – 10%,[2] in Poland – 18.2% of all women diagnosed with breast cancer. Incidence rates have remained relatively stable over the past 20 years while mortality has decreased. As a result, more young women are becoming long-term survivors.

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Earlier diagnosis and advances in breast cancer treatment have led to a growing number of breast cancer survivors. As a result, the quality of life issues have become a matter of great importance and particular attention has been paid to sexuality.

2. Aim

This study reviews the literature to present up-to date research findings on sexual life among YBCSs. Firstly, from individual perspective, it describes side effects of every treatment modality (surgery, radiotherapy, chemotherapy, and hormonal therapy) on female sexuality and short-term and long-term consequences from the very beginning to years after the end of treatment. Secondly, dyadic perspective is used to show the ways by which couples can cope with the challenges of the disease.

Scientific articles were searched via the PubMed and Medline browsers and the web using the phrases: *breast cancer*, *young women*, *premenopausal*, *sexual*, and *sexual functioning*. References given in the articles were also used.

3. Younger women – the unique experience

The experience of breast cancer diagnosis and treatment in young women requires special attention because of the unique medical and psychosocial context of the disease.

Younger women are diagnosed at more advanced stages than older women.[3] Early detection is much more difficult than in postmenopausal women because younger population is not screened as rigorously as the older one and because of lower sensitivity of mammography due to greater breast density in this population. Breast cancer is more likely to be estrogen-receptor-negative, poorly differentiated with lyphovascular invasion.[4] They have poorer 5-year prognosis and receive more aggressive treatment. Breast conserving surgery, highly desirable, is associated with increased risk for local recurrence in women under age of 35, while young patients treated with mastectomy have a similar recurrence rate as older ones.[3,4]

What is more, young women are in a development period of the highest productivity, when partners are chosen, families settled, careers started and professional aspirations fulfilled. Young adulthood is a particular time when sexual activity is an important aspect of life. Facing up breast cancer diagnosis and treatment, young women have to cope with multiple role demands as a partner, a mother, an employee and the demands of a life-threatening illness. It is noteworthy to mention that women under the age 50 are mostly premenopausal, married or in committed relationships, many have children at home and many continue childbearing, with higher percentage of single women and women without children in comparison to older women.[5] This unique context creates special vulnerability. As a result, Young Breast Cancer Survivors (YBCSs) have poorer quality of life and emotional well-being, higher rates of depressive symptoms, more disruptions in body image, more difficulties in relationship, especially in communication, they experience concerns about

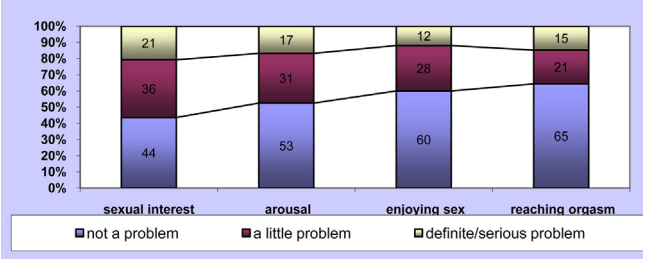

Fig. 1 – The prevalence of sexual problems within 2–7 months after breast cancer diagnosis.[6]

fertility, premature menopause and higher rate of sexual problems than older BCSs.

Numerous studies report that diagnosis and breast cancer treatment may have a detrimental effect on female sexual functioning. In Fobair's study,[6] about half of women experienced severe or moderate sexual problems in early months after diagnosis. These data show the magnitude of the problem (Fig. 1). In addition, the sexual sphere for young women seems to be indispensable to fulfill their developmental tasks.

4. Female sexuality – M. Basson's model

Neither the linear model proponed by Masters&Johnson, nor Kaplan's model is adequate to describe female sexuality. Both of them stress the importance of vaginal reactions and fit well with male sexual response. Nowadays, we know that female sexual response is highly individual and contextual with the overlapping phases and the circular model is the most appropriate to capture the true essence of female sexual experience (Fig. 2).[7]

Female sexual functioning depends on many factors: medical, psychological, interpersonal and sociocultural. They play an important role in the occurrence and severity of sexual dysfunctions (Table 1).

In the context of breast cancer treatment, a lower level of sex hormones and alteration in body image, poor emotional-wellbeing, and low quality of relationship with a partner may decrease libido, affect subjective arousal and lubrication leading to painful intercourses and anorgasmia. The loss of sexual satisfaction due to pain and disappointment remarkably reduces sexual activity and the quality of relationship both in the affected women and her partner.

5. Sexual functioning versus treatment modalities

5.1. *Surgery*

The loss or deformation of a breast as a result of mastectomy or breast reconstructive surgery can evoke a lot of negative feelings regarding body image.[8] It could be especially difficult for younger women because of their youth and high social and cultural expectations of physical beauty. Although the type of surgery – mastectomy versus breast-conserving surgery – has no direct impact on sexual functioning, altered body

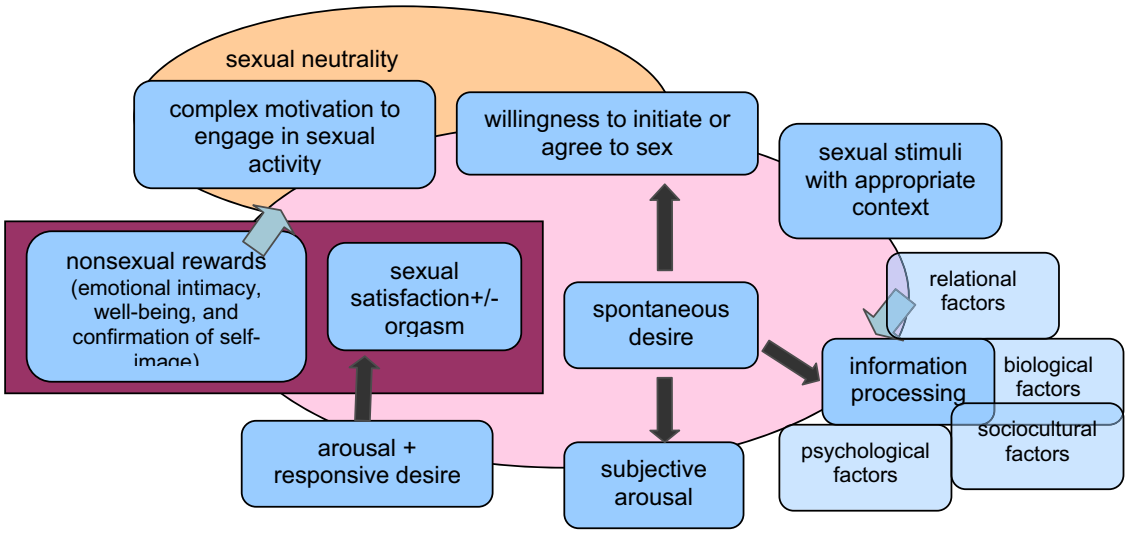

Fig. 2 – Female sex-response cycle.[7]

image may be a mediating factor.[9,10] When different aspects of sexual functioning were considered, breast reconstructive surgery resulted in fewer problems with sexual interest, but no difference was reported in sexual dysfunctions.[11,12] The loss of breast sensitivity can lead to modifications in foreplay. The more breast caressing is important for couple's foreplay the greater disruptions in sexual life may occur.

5.2. *Chemotherapy (CTH)*

Chemotherapy can cause a wide variety of side effects which directly or indirectly affect female sexuality (Fig. 3), especially if it results in a premature menopause.[5,13]

The impact of CTH on menopausal status appears to be one of the most important factors. Ochsenkuhn's study[14] shed light on the mediating role of menopause, while chemotherapy itself did not significantly affect sexual desire, unless permanent menopause was induced. The abrupt onset of menopause induced by chemotherapy is a great source of stress for young women, because attendant symptoms: hot flashes, night sweats, mood swings, cognitive changes, sleep disturbances, joint pain, low sexual desire and vaginal dryness are at more severe level than when they occur in natural process of gradual menopause. It is known that a substantial percentage of YBCSs experience bothersome menopausal symptoms.[15] Menopause is also unexpected at this stage in life and many women are not prepared for such a change.

In addition, chemotherapy in a reproductive age is related with concerns about future childbearing. This treatment can cause follicular damage with preservation of menses, temporary amenorrhea, irregular menses or irreversible amenorrhea.[16] Fertility after chemotherapy strongly depends

Table 1 – Complexity of factors related to sexual functioning in BCSs.

Medical and biological	Psychological/intrapersonal	Interpersonal/relationship	Sociocultural
• Breast cancer treatment modality (surgery, radiation therapy, hormonotherapy, chemotherapy) and its side effects	• Prior sexual experiences	• The quality of relationship with the partner	• Social norms
• Menopausal status	• Emotional well-being (depression, anxiety)	• Social support from partner	• Cultural values
• Antidepressants	• Negative expectations regarding sexual interactions	• Attractiveness of women breast cancer treatment for her partner and vice versa	• Stereotypes
• Drugs	• Body image	• Communication (especially the degree to which sexual issues were discussed within relationship)	• Discriminations
• Age	• Self-esteem	• Prior sexual life with the partner	Religious beliefs
• Fatigue	• Sense of feminity	• The importance of sex for quality of relationship	
	• Level of stability of identity; the role of breast as a an element of female identity	• The importance of breast as a part of a foreplay	
		• Partners' sexual problems	

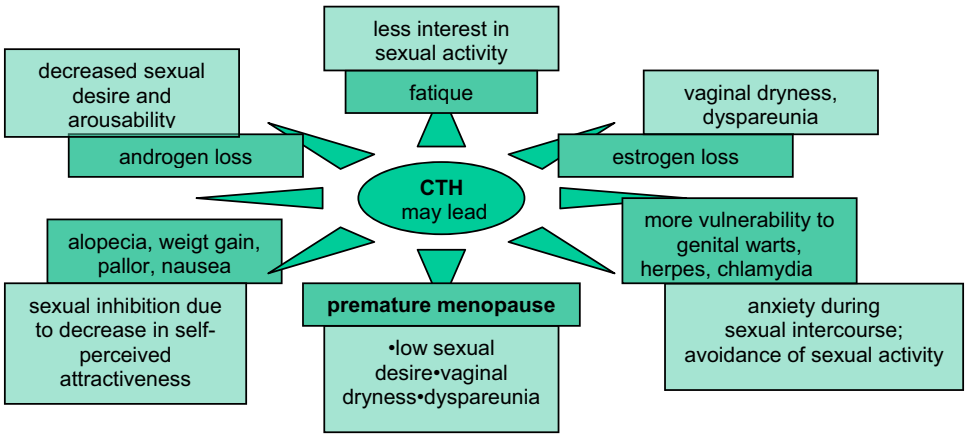

Fig. 3 – Chemotherapy as the greatest predictor of sexual dysfunctions.[8,9]

on women's age. The probability that women will enter menopause dramatically increases over the age of 35.[5] Younger women can tolerate high doses of chemotherapy longer than older ones, for example women under 40 develop amenorrhea in 4–8 months compared to women over 40 who can develop amenorrhea in 2–4 months.[16] Infertility causes a sexual act to be only able to meet psychological needs for pleasure and interpersonal needs for closeness and intimacy while biological needs for procreation cannot be fulfilled.

5.3. *Radiotherapy (RTH)*

Consequences of radiotherapy are mostly local and temporary and are generally limited to pain and irritations of the breast skin. In some cases severe side effects, as chronic fibrosis, may limit physical positioning during a sexual intercourse. The pattern of sexual adjustment was shown in a longitudinal study by Dow and Lafferty[17] Data were collected at four time points: T1 – the first week of RTH (baseline), T2 – the third week of RTH (midpoint) when side effects like skin reactions and fatigue occur, T3 – the fifth week of RTH when side effects are most troublesome, T4 – six months after beginning of RTH. Sexual adjustment decreases from the beginning till the end of treatment which corresponds to the growing severity of side effects with its peak at the end of RTH, and improves to near baseline levels six months later (Fig. 5).

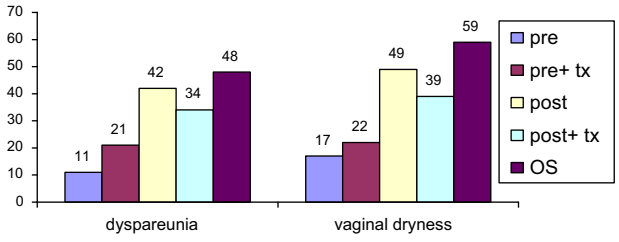

Fig. 4 – A substantial percentage of YBCSs experience bothersome menopausal symptoms.[15] Pre – premenopausal; post – postmenopausal; tx – tamoxifen, OS – ovarian suppression.

5.4. *Endocrine therapy (ETH)*

As far as endocrine therapy is concerned, sexual functioning outcomes are mixed, with some suggesting no effect on sexuality.[16] ETH is frequently associated with abrupt menopause; however, not consistently associated with sexual problems.[11] Tamoxifen can lead to increased vaginal dryness.[9] Fig. 4 shows different impacts of tamoxifen which are dependent on menopausal status. In postmenopausal women tamoxifen has a weak estrogenic effect, but in premenopausal women it has a stronger estrogenic effect on vaginal and uterine epithelium and can lead to increased vaginal dryness and abnormal uterine bleeding.[9]

6. Consequences of breast cancer treatment

There is another trend in research on sexuality of BCSs which distinguishes short-term consequences of breast cancer treatment from long-term ones.

6.1. *Short-term*

In general, sexual activity decreases in young women with breast cancer during 1 year after surgery.[18] In a prospective study conducted by Burwell et al.,[19] more sexual problems were experienced immediately after surgery and the end of treatment. Although problems diminish over time, some women still report problem 1 year after surgery (Fig. 6). Chemotherapy itself has short-term effect on sexual

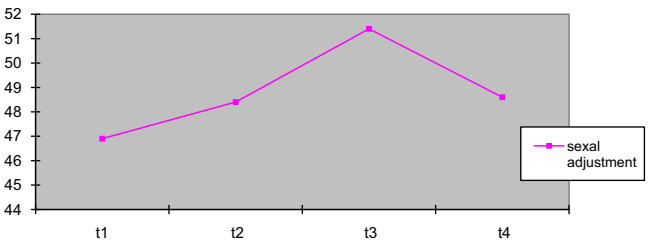

Fig. 5 – Sexual adjustment during radiotherapy.[17] Lower scores indicate higher sexual adjustment.

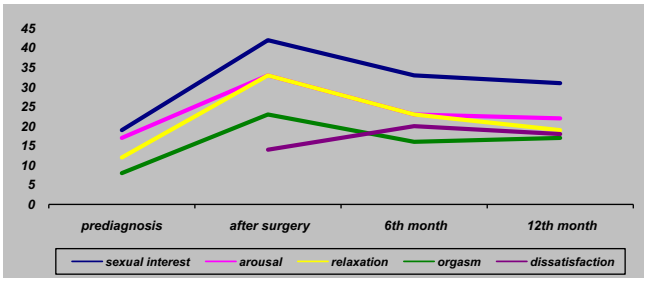

Fig. 6 – Sexual problems within 12 months after surgery.[19]

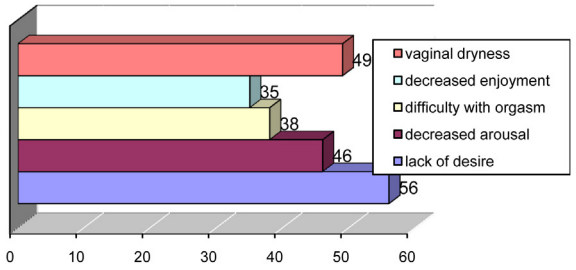

Fig. 7 – Sexual functioning among sexually active YBCSs 5 years after surgery.[21]

functioning; however, disruptions in sexuality are long-term when CHT leads to menopausal transition.[19] The devastating effect of premature menopause in young women was shown in Ochsenkuhn research[14] which claims that sexual functioning was most impaired for women no longer menstruating after chemotherapy. Sexual interest was the most problematic domain.[6,19] Romantic stimuli are much more effective in evoking sexual activity than erotic ones according to Biglia et al.[18] There is also evidence that women are much more interested in nonsexual, affectionate behaviour like: hand holding, sitting close, and embracing than in sexual act itself.[20]

6.2. *Long-term consequences*

Sexual dysfunction and diminished sexual satisfaction can persist for more than a year and may increase over time.[9] Five years after surgery, sexual activity and difficulties in this area have not significantly changed in the group of 185 YBCSs (Fig. 7); nearly three fourths of the women were premenopausal and a lot of them experienced hot flashes, night sweats and vaginal dryness.[21] Most probable explanation is that at the beginning sexual problems are mostly caused by treatment, 5 years later, by menopause.

Women with menopause permanently induced by CHT have impaired sexual desire 2–8 years after surgery.[14] From 5 to 10 years following diagnosis vaginal dryness, reduced frequency of sexual activity and reduced breast sensitivity were still experienced, but impaired sexual desire and dyspareunia were not common.[22] An interesting research conducted to compare sexual functioning between 10-year BCSs and 5-year BCSs showed a decline in sexual activity (62% vs. 71%) and a lower rate of reported sexual problems due to cancer (19% vs. 27%).[1] However, there were no impairments of the sexual domain of quality of life 10 years after surgery.[23] In a study conducted by Alder et al.,[10] 68% of BCSs reported sexual dysfunctions a few years after surgery which was much higher a percentage than among healthy women. The only significant predictor for sexual desire was quality of relationship, rather than androgen level which is supposed to be associated with sexual interest. Chemotherapy was predictive for difficulties with arousal, lubrication, orgasm and sexual pain. These results fit well with the model for female sexual response proposed by Basson.[24–28]

To sum up: firstly, sexual problems may persist and worsen with time and aging. Nowadays, it is difficult to answer whether these changes 1, 5 and 10 years[1,21] after the end of treatment can be attributed to the late effects of treatment or the normal effects of aging. There is a need to compare findings with same-age control group. Secondly, female sexuality is affected for a long time both by persistent side effects of treatment and quality of relationship with a partner.

7. First sexual experience after surgery as a turning point of couple's sexual adjustment

Sexual functioning is particularly relevant to a couple relationship and may be disrupted by breast cancer treatment. Sexual

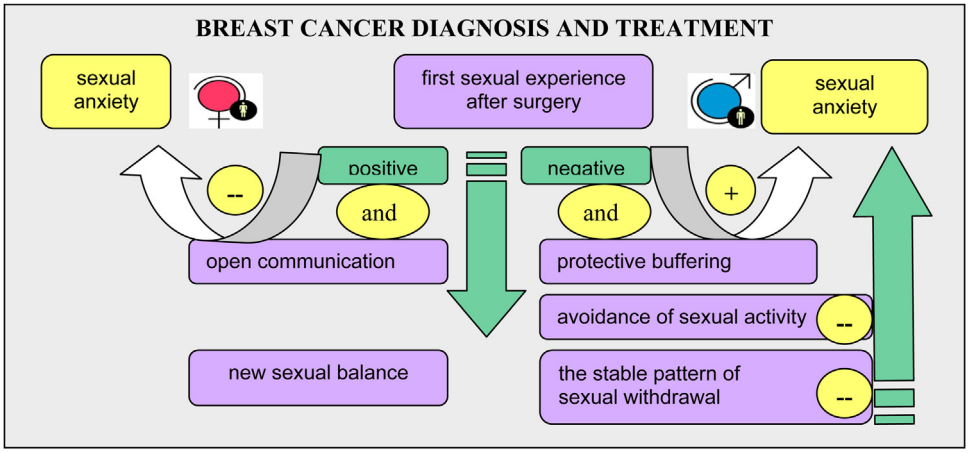

Fig. 8 – The sexual dysfunctions model in couple after breast cancer treatment.[5]

Table 2 – Many factors have an impact on women's sexual adjustment.[5,20,29]

Factors important to women's sexual adjustment
• The quality of the first sexual experience after surgery[20]
• How frequent partner initiates sexual activity[20]; if the partner initiates sex women are able to become aroused and enjoy sexual act although some of them do not feel sexual desire and do not initiate sexual contact[29]
• Perceptions of partner positive emotional involvement in the relationship[20]
• The females' perceptions of their male partners' reaction to breast cancer diagnosis[20]
• Communication about sex within relationship
•Prior sexual life
• The quality of couple relationship
• The importance of breasts in the foreplay
• Partner initial reaction on naked BCSs[29]

problems occur with great frequency. They depend on many factors that have an impact on the outcomes of the first sexual experience after surgery (Table 2).

Breast cancer diagnosis affects a woman, her partner and the couple's life. The context of disease and treatment is highly stressful. The couple must face a wide range of changes: physical and physiological, intrapersonal and interpersonal. As a consequence, both partners suffer more emotional distress. It is worth to pay attention to partners' distress. Male partners of young women can be overwhelmed with multiple and competing demands. They provide women with emotional support and at the same time they deal with their own distress, respond to children needs, support the family who are mostly unaware or uninformed how to best assist the patient.

The relationship with the partner is essential in women's adaptation to illness. In most cases in western culture partners are supportive. However, for some couples breast cancer can bring previous problems under magnification or for some women it may become an impetus to end unsatisfying relationships. In a study conducted by Walsh et al.,[30] 75% of partners strengthened their bond, felt increased closeness and intimacy and 17% of patients acknowledged appreciating their partner more. But 25% of respondents reported increased relational strain which was mostly related with communication avoidance and in 12% of cases ended up in separation or termination of relationship. Nearly 70% of couples experienced sexual problems.

A lot of fears are related to sexuality, for instance female concerns about her partner's reaction to breast cancer itself, disfigurement of the body, fears of rejection, and male concerns about any changes in woman's body (if they would be acceptable for him), loss of a partner or recurrence, how to avoid hurting the partner during a sexual intercourse, about caressing insensitive breast. Marshall and Kiemle's[29] qualitative study on the impact of breast reconstruction following cancer on patients' and partners' sexual functioning shed some light on the experience of partners who must adapt to a new situation. Anxiety about damaging the reconstructed breast, pain while touching or doing something wrong when being intimate may have an impact on their desire and arousal. Changes in touching and caressing due to insensitive breast, longer time to arouse the wife are great challenges for partners, even though initially the majority of men found their partner's survival as a priority rather than sexual concerns.[29] What is more, not only women but also their partners may experience difficulties with arousal when their worries distract them from sexual pleasure. Consequently, they may feel embarrassed.

In some cases, a role change within the caring process from symmetric relationships between partners to asymmetric relationship between a caregiver and a dependant caretaker invalidates the sexual aspect of interactions. Consequently, sexual attractiveness and desire disappear with partner's feeling more like a caregiver than a lover.

For all these reasons, the first sexual act after surgery may be a turning point in sexual adaptation. Apart from medical factors, psychological ones disrupt sexual functioning. Both the man and the woman during a sexual act focus more on their worries than on pleasure of erotic sensations and emotional intimacy which decreases arousal to such an extent that it prevents the development of a sexual response and makes genital intercourse impossible. As a result, both partners are left at first with the sense of failure and when this situation becomes repeatable – with anticipations of pain and discomfort related to sexual performance. When combined with communication difficulties and protective buffering, that is the avoidance of discussion of every single concern in order to protect the other person, it may lead to a stable pattern of sexual avoidance and withdrawal, especially if reinforced by the decrease in anxiety. Undoubtedly, open communication with the partner, sharing feelings about cancer related issues and sexual needs and expectations are essential to achieve a better sexual satisfaction (Fig. 8).

According to Baucom et al.,[5] younger women experience a particularly high rate of sexual difficulties which do not appear to be a short-term problem and communication concerns are the most problematic relationship difficulty.[12,30,31] It is known that an overall good marital relationship is not sufficient for sexual adaptation. Certain types of interactions are crucial[5]:

- candid communication about cancer-related issues,
- the ability to express emotions and to have one's partner listen supportively,
- effective problem solving skills,
- high level of empathy from spouses,
- the more male partners disclose (sharing his feelings and thoughts about cancer), the more intimate women felt,
- partner immediate response to cancer-related topic with their own disclosure or with humor was more helpful than unsolicited task oriented or intellectual response.

8. Single women as a risk group

Single women have generally more worries about their sexual attractiveness and are more likely to feel embarrassed than partnered women.[6] Seeking new dating relationship can be a great source of stress for a young single women. In their search for a partner and in a new relationship she faces multiple problems: feeling less desirable for a potential mate can be an obstacle in meeting someone, an important issue could

be the best time and the best way to divulge anatomic changes of the body. She may worry about her partner's reaction to her naked and deformed breast and the fact that she is a breast cancer survivor and as a result avoid taking part in any sort of sexual relationship. Concerns about dating are relatively high.[12] All these fears, when not confronted with reality, have a tendency to maintain and intensify. For this reasons single women may need more support than partnered ones.

9. Conclusions

In general, research about women's cancer-related sexual dysfunctions and their treatment has lagged behind that for men and YBCSs's sexuality is still an overlooked issue. For example, sexual functioning in testicular cancer survivors is a far better-examined area of research than in YBCSs, even though testicular cancer is relatively rarely diagnosed.[32] Although breast cancer affects both patients and their partners, little is known about the partners' perspective and relationships in couples. More research on sexual functioning in heterosexual and same-sex couples in the cultural context is needed with more attention paid to a good methodological background. Many studies are limited due to the lack of control groups and the use of unstandardised instruments for measuring sexual functioning. What is more, findings are difficult to compare because of the differences in the definitions of 'young' as women under 50, or under 45, 40, or 35. Also, different questionnaires are used, various aspects of sexuality are examined, and even theoretical models of sexuality differ from one study to another. For all these reasons, results of studies should be approached with a lot of caution. The current evidence-based model of female sexual response should be used as a theoretical framework and recommendations for new definitions of sexual dysfunctions in assessment and treatment should be taken into account in future studies.

Research shows that there is a need to develop methods to help women deal with premature menopause and attendant menopausal symptoms. Understanding the impact that breast cancer diagnosis and its treatment have on sexual functioning in young women and their partners during treatment and recovery period, it is necessary: primarily to provide both partners with adequate information and discuss important sexual issues at every stage of treatment and recovery, and secondly, to identify couples at risk for sexual dysfunctions and offer them professional and adequate help at the right time. Nowadays, age-related and couple-based psychoeducational interventions with an element of sexual therapy interventions seem to be the most beneficial treatment modality.[33]

Conflict of interest

None declared.

Financial disclosure

None declared.

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