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Review article

Sexual dysfunction in female cancer survivors: A narrative review

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ABSTRACT

Objectives: Due to improvements in earlier detection and expansions in available treatments, the number of individuals surviving with cancer is steadily increasing. Sexual dysfunction is a common and often persistent complication for cancer survivors, affecting > 60% of women diagnosed with cancer. Although highly prevalent, issues related to sexual health are often not addressed among survivors, with women reporting less discussion with providers compared to men.
Methods: In this narrative review, we present a case series of three women seen in a psycho-oncology clinic who experienced sexual dysfunction following a cancer diagnosis. We then review existing literature on the presentation and management of sexual issues associated with cancer and its treatment.
Results: The three cases highlight different mechanisms of sexual dysfunction after cancer, including anatomic changes, hormonal alterations, psychiatric conditions and medication side effects. The literature review includes discussion of the prevalence and course of sexual dysfunction in female cancer survivors. Tools for screening and assessment are then reviewed, as well as contributing factors and common presenting symptoms. We conclude with a discussion of both pharmacologic and non-pharmacologic approaches to management.
Conclusions: Despite its high prevalence and considerable impact on quality of life, the complication of sexual dysfunction after cancer diagnosis and treatment is still under recognized and undertreated. Improving awareness, communication, and screening, as well as appropriate referral to treatment, could have a profound impact on the ever growing number of women surviving with cancer with sexual health concerns.

1. Introduction

Due to improvements in earlier detection and expansions in available treatments, the number of individuals surviving with cancer is steadily on the rise [1]. Sexual dysfunction is a common and often long-term complication for cancer survivors, affecting > 60% and up to 100% of women with various cancers [1,2]. Although highly prevalent, issues related to sexual health are often not addressed among survivors, with women reporting less consultation and information from oncologists compared to men [3]. In this review, we offer three different cases of women who experienced sexual dysfunction in the aftermath of cancer diagnosis and treatment as a frame to explore the common symptoms, contributing factors, screening tools, and treatment options for this common survivorship issue for cancer patients.

2. Case A

Mrs. A is a 52 year old female with invasive high-grade urothelial carcinoma of the bladder staged initially as IIB (T2 Nx M0). She was treated with chemotherapy regimens, followed by radical cystectomy with ileal loop conduit urinary diversion and total abdominal hysterectomy, with further chemo- and radiation therapies. Four years later, she was found to have a left supraclavicular lymph node mass that biopsy confirmed to be metastases. She was referred to psychiatry at that time for evaluation of depression and anxiety that was inadequately managed on fluoxetine. She was diagnosed with adjustment disorder and posttraumatic stress disorder by history from prior sexual trauma.

At initial evaluation, Mrs. A shared that she had not been able to have sex since her operation five years prior due to partial removal of her vaginal wall during her radical cystectomy and hysterectomy. She attempted to have sex after recovery from surgery, but found her vagina was too small for penis-vagina intercourse. She and her partner had since been using alternatives to penis-vagina intercourse, which provided pleasure and ability to achieve orgasm. Mrs. A reported her libido had always been low since previous sexual trauma, and did not feel that surgery, chemotherapy, or her antidepressant had impacted this positively or negatively. Mrs. A noted that neither her surgeon nor oncologist had warned her of the potential sexual complications from treatment, or asked about her sexual health after her invasive surgery.

3. Epidemiology

3.1. Prevalence, course and gender differences

Sexual dysfunction is one of the most common concerns affecting

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female cancer patients, with early incidences ranging from 20% to 90% [4]. In a 2010 Livestrong survey, sexual functioning and satisfaction were ranked as third most frequent concern among cancer survivors [5]. Over half of female patients with breast, gynecologic, and rectal cancers experience symptoms of sexual dysfunction, which can develop at any point during the disease course [6–8]. Studies also indicate that sexual symptoms and reduced sexual activity appear to persist long into survivorship, lasting even years after the emotional and physical sequelae of initial cancer diagnosis and treatment have normalized [9–11].

Prevalence of sexual dysfunction varies by cancer type. Reported rates of physical sexual dysfunction in gynecologic cancers range from 30 to 100% [12,13], with rates of 63% among women with cervical cancer receiving pelvic radiation [14]. Rates among women with ovarian cancer are varied, with one study showing 57% of women reporting worsened sexual functioning [8], while another failed to demonstrate a difference in sexual dysfunction between survivors and normal controls [15]. Among women with breast cancer, prevalence rates range from 16 to 100% [2], with the majority reporting between 50 and 75% [9,12]. Women who undergo surgical treatment for rectal cancers have rates of sexual dysfunction from 19 to 62% [6], with most approximating prevalence around 60% [12,16–18]. Hematologic disorders are also associated with sexual dysfunction, with 54% of long-term survivors of Hodgkin lymphoma reporting decreased sexual activity, and 41% reporting decreased sexual interest [19]. Similarly, studies in individuals with lung cancer demonstrate almost 50% of patients reporting loss of libido, and a study of women specifically reporting nearly 40% decrease in sexual activity [20]. Twenty-four to 100% of individuals with head and neck cancers have reported negative impact on sexuality [21]. Rates of sexual dysfunction are even present in survivors of childhood cancer, with rates of nearly one-third [22].

Rates of sexual dysfunction are comparable among male and female cancer patients, with men most commonly reporting loss of desire for sex and new erectile problems and women most commonly noting loss of desire and vaginal dryness [22,23]. Women appear to have less sexual dysfunction in setting of rectal cancer compared to men [2], whereas women with lung cancer have worse sexual functioning than male counterparts, particularly early into treatment [20].

3.2. Provider communication about sexual dysfunction

With the exception of prostate cancer, the majority of cancer patients across all cancer types never receive communication from a health care provider about sexual issues [3]. Despite the similarities in prevalence, female cancer patients are half as likely than their male counterparts to have discussions with oncology providers about the impact of their disease and treatment on sexual health [24]. Whereas 80% of men diagnosed with prostate cancer reported discussing sexual concerns with their cancer providers, only one third of women with breast cancer discussed such issues [25]. In one study of almost 2000 women with breast cancer, only 41% of women had received information about sexual well-being in cancer, despite 68% of women wanting that information [26]. Similarly, in a study of primary care physicians who provide the majority of survivorship care among cancer patients, only a quarter discussed sexual issues with their female cancer patients, even when the treating physicians had concerns about this potential side effect of cancer treatment [27]. This lack of communication with patients about potential sexual dysfunction was highlighted in Case A, where the potential for inability to have penis-vagina intercourse was not discussed by any provider either before or after surgery.

Reasons for this gender difference are not fully clear, and the evident discrepancy is likely multifactorial. Potential factors include greater assertiveness of sexual problems in male survivors, differences in providers' communication behaviors, greater publicity given to treatment of male sexual dysfunction, and lack of clarity around treatments for female sexual dysfunction [24]. In terms of the overall limited communication about sexual dysfunction regardless of gender, potential contributors include provider's perceived lack of knowledge, concern for inadequate resources once an issue is identified, and time constraints [27,28], as well as potential prioritization of treatments focused solely on preservation of life [29].

However, cancer survivors have shared desire for providers to initiate discussion of sexual health, and to do so with direct and specific questions and terms rather than open ended queries on quality of life or the impact of cancer [25,30]. In a study that identified how 58% of cancer survivors wanted a provider to ask about sexual health issues, > 70% of these patients wanted both oncologists and primary care physicians to inquire about this common symptom [31]. Another study looking at women with gynecologic cancer demonstrated that women wanted informational services through written material as well as one-on-one encounters [32]. In lack of discussion with providers, patients are left to find information on their own, often from less evidence-based resources, as was the case for Mrs. A.

Despite these findings, providers may still fear that such open discussions will make patients uncomfortable, and embarrassment is cited as one of the main reasons a patient does not bring up concerns about sexual function [33]. However, providers normalizing this common side effect and making a safe environment for women to share their concerns may enable women to overcome any potential discomfort. As highlighted in the recent study by Reese et al. that analyzed clinic dialogue about sexual issues between oncology providers and female breast cancer patients, clinicians initiating discussions led women to more openly discuss their sexual symptoms, even when they did not report issues on screening questionnaire [34].

4. Screening tools and diagnosis

Screening tools can be useful in diagnosing sexual dysfunction, as patients may report symptoms on a list that they would not have previously or otherwise shared [35]. While no gold standard exists for the screening of sexual dysfunction among female cancer survivors, several screening questionnaires exist specifically for this population. A screening tool was first developed for female cancer survivors in 1951 for cervical cancer survivors [36,37]; subsequent screens have since been created, both for general cancer survivors and for specific cancer types [36]. Initially developed for the general population, the Female Sexual Function Index is a 19 question screen that has since been validated in cancer patients and is commonly used in studies of sexual dysfunction among female cancer survivors [22,27,36,38]. Another commonly used scale, the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ), has modules that were developed for each of 10 specific cancer types [36]; however, few items in the module address sexual function and normative values have not been published. A supplement to this questionnaire entitled the Sexual Function-Vaginal Changes Questionnaire (SVQ) was further developed and validated not only with testing from the Danish women but also with oncology clinicians' input [36,39]. In a similar process, the US further developed the PROMIS SexFS, which broadened its scope to populations with poor literacy and those identifying as lesbian, gay or bisexual [36,40,41].

While many of above screens were fashioned just for the assessment of sexual dysfunction, other screens that assess overall quality of life after cancer include portions on sexual functioning. In some of these tools, such as the Functional Assessment of Cancer Therapy (FACT-G) scale, the assessment says that the questions about sexual function are optional, specifically based on lack of partner or sexual inactivity [42]. This can be potentially problematic, as patients can choose to leave any questions blank, and by pointing out that these questions in particular are optional may suggest to the patient that there is something more taboo about this topic. This could ultimately make it harder for both patients to bring up concerns and providers to approach this subject

with their patients.

While screening tools are helpful, they cannot replace the importance of taking a sexual history, particularly as women may underreport sexual issues on a screen despite having symptoms [34]. Evaluation should focus on identifying sexual problems, examining factors that may be contributing to sexual dysfunction, and establishing goals of treatment [43]. Clear, direct and explicit language should be used during broad assessment of potential symptoms [34]. While asking about specific physical symptoms (such as vaginal dryness or pain) is key, clinicians should also investigate overall sexual activity and desire, body image concerns, and potential contributing factors to sexuality (such as relationship with partner, stress, low mood) [34]. We recommend asking about sexual health as a routine part of evaluation in women with cancer, continuing to assess this not only at time of diagnosis but throughout treatment and even into survivorship. One study participant suggested a routine screen at every visit: “How are things going in this area? Do you have any questions?” [44] Certain language can also be helpful, with women preferring terms that indicate a change or loss from baseline (for example, “less sexual desire”) over more medical terminology (for example, “low libido”) [33]. With frequent assessment using patient-centered language, sexual dysfunction may be better recognized in women with and surviving cancer.

5. Case B

Mrs. B is a 40 year old female with invasive ductal carcinoma of the right breast, clinically staged as IIB (T2 multifocal N1, ER positive, PR weakly positive, HER-2/neu negative). She subsequently underwent neoadjuvant chemotherapy, followed by skin-sparing right mastectomy with immediate autologous reconstruction. As final pathology revealed incomplete response, she subsequently completed post-mastectomy radiation. At time of initial psychiatric evaluation, Mrs. B was preparing to start hormonal therapy with Tamoxifen and was concerned about potential interaction with previously prescribed bupropion. She was diagnosed with major depressive disorder and adjustment disorder with anxiety, with initial plan to convert from bupropion to venlafaxine.

Mrs. B reported “sex went out the window with cancer.” She noted initially being disinterested due to extreme fatigue and nausea from chemotherapy, and then her large abdominal scar from mastectomy and reconstructive surgery made it uncomfortable to straighten her torso. Subsequent breast radiation led to significant burning with resultant chronic pain issues, followed by acute menopausal symptoms when she started hormonal treatment. She reported decreased sex drive, difficulty with excitement and lubrication, and inability to achieve orgasm, as well as significant feelings of shame and guilt towards her husband about her change in sexuality and physical features (for example, not having nipple on her reconstructed breast). She also shared distress in knowing that she was no longer able to reproduce should she want to, feeling that much of what made her a woman was now gone.

6. Presenting symptoms and etiologies

Symptoms of sexual dysfunction can occur in the setting of cancer alone, but are more often associated with cancer-related treatments. Similar to Mrs. B, many patients go through multiple cancer-related treatments, all of which can impact sexual function. These are reviewed in detail below:

6.1. Cancer diagnosis

Sexual dysfunction may occur due to the nature of the cancer altering structural mechanics or hormonal pathways, as well as psychologic factors from the diagnosis itself. Women have also expressed how the uncertainty associated with cancer diagnosis can negatively impact the pursuit of sexual partners/relationships, with concerns varying from recurrence/metastases, fertility issues, and financial strain [2].

6.2. Chemotherapy

Symptoms associated with sexual dysfunction after chemotherapy often are due to loss of ovarian function and subsequent early menopause. The risk of permanent ovarian failure increases with age, higher cumulative doses of chemotherapy, and certain chemotherapy treatments such as alkylating agents [21,45]. While most common among breast cancer patients, such ovarian dysfunction can occur from chemotherapy in all cancer types [45], with common menopausal symptoms of hot flashes, mood changes, cognitive effects, night sweats, sleep dysfunction, and joint pain [11,46]. Subsequent pain during sex, dyspareunia, is caused from thinning of the vaginal mucosa and subsequent dryness, and is the most common sexual complaint among female cancer survivors [47]. Other side effects of chemotherapy can further contribute to decreased sexual function and satisfaction, including debilitating fatigue, unwanted weight gain, hair loss (including pubic hair and eyelashes) and nausea and vomiting, as seen with Mrs. B [2,10].

6.3. Surgery

Surgery can cause both hormonal and anatomic changes that lead to sexual dysfunction. As with loss of ovarian function from chemotherapy, women undergoing bilateral oophorectomy surgery will develop menopausal symptoms with high rates of vaginal dryness, vaginal thinning, atrophy, and compromised elasticity [16,22]. Hysterectomy and other abdominal surgeries can lead to anatomic changes that impact sexual health, including vaginal shortening and fibrosis (as was the case with Mrs. A), decreased abdominal flexibility and scarring (as with Mrs. B) [16,39,48–50]. Surgical damage to nerves in the pelvic region can also occur in any abdominal cancers (i.e. bladder, rectal, gynecologic), leading to decreased lubrication, diminished genital sensitivity, and delayed or absent orgasm and dyspareunia [2,51], as well as associated bowel and bladder dysfunction [19]. Studies suggest that nerve sparing procedures in such surgical interventions are associated with improvement in women's sexual function and quality of life after surgery [2]. Finally, pain following surgery (whether from scarring or phantom limb pain) can have a significant impact on sexual function [2], as can opioid pain medications even in those with non-cancer pain [52].

Women can also be highly impacted by body image concerns from other sequelae from surgeries, such as stomas in gastrointestinal and rectal cancers, breast loss after mastectomy, and lymphedema from lymph node dissection [2,51]. Such body alterations can lead to lower perception of sexual attractiveness, and therefore contribute to higher rates of sexual dysfunction among women with these cancers [16,50]. Such body image issues have been challenging to address likely due to the multifactorial nature of their presentation, with studies often reporting conflicting findings. For example, while some earlier studies showed women with mastectomies have less body image satisfaction than women who had more breast-conserving surgeries [53–55], other studies show similar rates of reported negative impact on sex lives across surgical interventions [56,57]. Mrs. B's case further highlights the complexity of body image issues, as her feelings about her breast appearance was impacted by her perception of how her partner felt about one specific breast feature, as well as her views on sexual satisfaction for both her and her partner. Considerations of what constitutes a woman's sense of sexuality versus femininity may impact both her decision to pursue which treatment option and her experience of body changes after, as higher subjective importance of the breast on femininity is associated with decreased satisfaction with breast post-reconstruction [2,58].

6.4. Hormonal therapies

Studies have found that aromatase inhibitors, including anastrozole, exemestane, and letrozole, can affect sexual dysfunction due to estrogen suppression [22,45]. These symptoms have been described as severe and debilitating, and can include dyspareunia, vaginal dryness, vulvar atrophy and dryness, and loss of libido [2,22,45]. Tamoxifen has also demonstrated some of these side effects, although results are more varied. While some studies have reported increased vaginal discharge, decreased sexual interest, vaginal dryness and dyspareunia, others have not shown changes in desire, arousal or orgasm [45,59–62]. Correlation with dyspareunia in hormonal treatments may be related to venous congestion and decreased vaginal lubrication [62]. Sexual side effects of these medications are particularly concerning as these treatments are recommended for 5–10 years after primary treatment, meaning symptoms could persist throughout this treatment period and beyond [9].

6.5. Bone marrow transplants

After bone marrow transplant, women who develop systemic graft versus host disease can develop genital irritation and scarring on the vulva and the vagina, rendering sexual intercourse impossible due to partial or complete vaginal obstruction [22,45,47]. Patients who undergo bone marrow transplantation also have lower interest, pleasure and ability to have sex when compared to patients with intensive consolidation chemotherapy, and may also have higher rates of infertility [45,63].

6.6. Radiation therapy

Radiation therapy used to treat malignant cells can also affect healthy tissue in an area of treatment, leading to various sequelae [64]. Common side effects include skin changes (swelling, inflammation, redness and burning pain, as experienced by Mrs. B), lymphedema, fatigue, hair loss, and changes in range of motion, as well as reproductive specific changes of vaginal stenosis, infertility and poor pregnancy outcomes [45,62,65]. While many acute changes often improve within 2 months of treatment cessation, sexual symptoms can persist far longer [45]. Sexual desire and arousal are affected more in women receiving radiation compared to women getting only surgery for treatment [62,66]. Specifically, women with cervical cancer treated with radiation therapy were at higher risk of experiencing sexual dysfunction, including low to no sexual interest, decreased lubrication, dyspareunia, and difficulty completing sexual intercourse [45,67].

6.7. Psychosocial factors

Sexual dysfunction may additionally stem from the severe psychological trauma of living with a cancer diagnosis and experiencing treatment-associated physical changes, which can manifest as symptoms of grief, depression, or anxiety, lowered self-esteem and body image, and diminished sexual drive [68,69]. Many of these diagnoses are themselves associated with sexual symptoms, including decreased sexual interest, reduced levels of arousal and orgasm difficulties [70]. Moreover, common psychiatric medications used to treat depressive symptoms have also been associated with significant sexual side effects, with reported rates of sexual dysfunction > 70% for citalopram, paroxetine, sertraline and venlafaxine [71,72].

Whether stemming from body changes in setting of primary cancer, surgery or other treatment, a woman's struggle with body image issues can be profound and associated with symptoms of stress, depression, avoidance, denial, guilt, despair, fear, embarrassment, and the feeling of unattractiveness [65]. Such symptoms can further impact quality of life and decisions for further treatment, and has also been inversely related to sexual function and satisfaction [65,73]. Lastly, psychosocial factors that contribute to sexual dysfunction in these patients include perceived change in the partner's sexual interest, difficulty maintaining previous sexual roles, and emotional distancing from the partner, all of which can lead to impaired partner communication and relationship distress [13]. Associations have been made between partners' sexual function/satisfaction and cancer survivors' quality of sexual life, indicating the importance of considering couples-based interventions and assessments [51]. Overall, these psychological factors have a significant role for women with cancer, as studies of breast cancer survivors show that level of relationship distress, depression and age are more significant than hormonal levels in terms of impact on sexual arousal, orgasm, excitement, satisfaction and pain [2].

7. Case C

Mrs. C is a 36 year old female with infiltrating ductal carcinoma of left breast (staged T2 N0 M0, triple negative). She initially underwent neoadjuvant chemotherapy, followed by left lumpectomy and axillary node dissection, and then concomitant radiation with chemotherapy. She was referred to psychiatry for evaluation of depression and anxiety that worsened in her return to work after treatment of cancer. She was diagnosed with adjustment disorder with mixed anxiety and depression, with predominant symptoms of irritability, low frustration tolerance, and guilt.

Mrs. C was started on escitalopram for her symptoms related to mood and anxiety. At subsequent visits, she reported improvement in her symptoms of rage/irritability, but developed sexual side effects of difficulty achieving pleasure and orgasm. Mrs. C noted initial benefit from changing timing of her psychiatric medication (morning to bedtime), but later bupropion was added to mitigate sexual side effects. Mrs. C was able to manage her mood/anxiety and sexual symptoms with this regimen, as well as intermittent drug holidays from escitalopram on day prior to sexual activity.

8. Treatments

Treatment options for sexual dysfunction in cancer patient can be divided into mechanical, somatic and psycho- therapies, and are summarized in Table 1.

For symptoms of decreased sensation in sexual regions, treatment is directed at drawing blood flow and promoting circulation in the pelvic area. Potential interventions include pelvic floor exercises, self-stimulation, vibrators, and vacuum devices. These strategies are also useful in overall sexual health, as greater pelvic floor muscle strength is associated with better sexual functioning [27]. Vaginal dilators are also helpful in women who have changed vaginal elasticity or length or who have gone through pelvic radiation [47]. Their use helps overcome pelvic floor muscle responses by teaching women how to relax these muscles and may improve confidence and sense of control during sexual activity [9,27].

Table 1
Treatment options for sexual dysfunction in cancer survivors.

Mechanical therapies	Somatic therapies	Psychotherapies
Pelvic floor exercises	Vaginal lubricants	Cognitive behavioral therapy (CBT)
Self-stimulation	External and intra-vaginal moisturizers	Art therapy
Vibrators	Vitamin E	Peer support
Vacuum devices	Estrogen replacement therapy	Couples based therapy
Vaginal dilators	Newer estrogen receptor modulators	Mindfulness strategies
	Intravaginal testosterone	Integrated sexual health programs
	Dehydroepiandro-sterone (DHEA)	
	Aqueous lidocaine	
	Phosphodiesterase type-5 inhibitors	

Being a common side effect of surgery, radiation, chemotherapy and endocrine therapy, vaginal dryness has many treatment options related to vaginal lubricants, external moisturizers, and intra-vaginal moisturizers. Water- and silicone-based lubricants are used during sexual activity and can help to relieve dyspareunia caused by dryness thereby improving sexual response and ability to achieve orgasm [27]. Vaginal moisturizers are instead used consistently throughout the week to hydrate the mucosa, with some formulated to help maintain pH balance [27,47]. Some moisturizers also contain hyaluronic acid, which is found at higher concentrations in estrogenized tissues compared to non-estrogenized ones. Some formulations additionally include vitamin E, and anecdotally women have had positive response to vitamin E capsules administered vaginally [27], although overall data on efficacy is limited [16].

Use of estrogen replacement therapy may be considered for vaginal dryness but is often controversial, particularly in women on hormonal modulating therapy due to concern for treatment interference and cancer recurrence [9]. Alternatives to oral estrogen include vaginal estrogen tablets or creams, and small trials thus far have not shown an association between vaginal estrogen and higher recurrence risk [47]. Newer estrogen receptor modulators are also being developed, such as ospemifine that acts as estrogen agonist in the vagina without having a systemic effect [16]. Another alternative is intravaginal testosterone, although data is mixed with regard to efficacy in improving sexual function [9]. Dehydroepiandrosterone (DHEA) has also been studied as a vaginal preparation compounded in a vaginal moisturizer, with findings suggesting more improvement in DHEA formulation compared to moisturizer alone [74]. Finally, aqueous lidocaine can also be used to address dyspareunia as it numbs vulvar and vestibular tissues during sexual activity [9,27]. Phosphodiesterase type-5 inhibitors (such as sildenafil or vardenafil) have not been found to be effective for women with sexual issues after cancer [27].

Depression and anxiety can also be key factors in the development and experience of sexual issues after cancer, as sexual dysfunction can be both a feature of affective and anxiety disorders and a side effect from psychiatric medications. Mrs. C represents a case of someone who did not have sexual dysfunction in the midst of her cancer and cancer-related treatments, and only developed such symptoms after initiation of an antidepressant. If women should require pharmacotherapy for psychiatric conditions, medications that are less likely to cause or worsen sexual dysfunction should be considered. Whereas paroxetine, sertraline, venlafaxine and citalopram are considered to be the greatest offenders, bupropion and mirtazapine are less likely to lead to sexual side effects [62,72]. Bupropion can additionally be added as augmenting agent to a serotonergic agent/antidepressant to mitigate sexual side effects, as was effective for the case of Mrs. C.

In the setting of the complex phenomenon of sexuality involving physical, hormonal, emotional and relationship factors, there is increasing focus on psychotherapeutic interventions [27]. Interventions have included sexual counseling, art therapy, peer support and relationship interventions [12]. Mindfulness skills can be combined with education and elements of sex therapy to target sexual dysfunction [75]. CBT has also been found to be effective in improving sexual health among women reporting cancer-related sexual issues, with greater benefit seen when in combination with pelvic floor exercises [9]. Couple based treatment has also been proposed, with focus on education and therapy [29]. Such intervention has been found to improve sexual functioning, sexual self-image and sexual relationships, although are unlikely to affect physiologic issues (e.g. vaginal dryness) [76]. Therapeutic interventions have also been modified to web-based format, such as Internet-based self-help web pages that reviewed anatomy, common presentation and treatment options for sexual issues after cancer [29].

Given the propensity of sexual health issues among cancer patients, an increasing number of sexual health programs have been developed. In Canada, the SHARE (Sexual Health and Rehabilitation) Program focused on patient-led clinical encounters with brief counseling and psychoeducation by clinic nurses and provision of tailored resource packages and follow-up phone calls from clinic staff [77]. Feedback from participants in this program indicated high satisfaction, with needs being met in few number of visits [77]. Female Sexual Medicine and Women's Health Program (FSMWHP) developed in New York involved a combination of PhD clinical psychologist and nurse practitioner using a psychosexual education model. Interventions include providing information on changes to the body secondary to cancer treatment and assessment of vulvovaginal symptoms and sexual function with treatment recommendations addressing motivation, setting realistic expectations, and offering support. Significant changes were observed in women using treatment strategies, with improvement in vulvovaginal symptoms, a decrease in elevated vaginal pH and pain with exams, enhanced sexual function, and increased intimacy confidence [78].

9. Role of mental health and future directions

Once potential organic etiologies have been treated to the greatest extent, clinicians tend to classify these disorders as emotional or psychosexual in origin [33]. While other medical providers caring for women with sexual dysfunction may focus more on these organic contributing factors, mental health providers are more likely to consider the psychological and emotional contributions to these symptoms [33]. In addition, the nature of the relationship between mental health providers and their patients may engender more openness about these symptoms and subsequently enable more psychotherapeutic interventions, which make up the majority of the interventions reviewed above.

This review highlights the ongoing needs within the realm of sexual dysfunction in women after cancer. Likely more important than developing a gold standard for screening is promoting all providers who care for cancer patients to include sexual health as a routine component of their screens and evaluations to allow patients to feel more comfortable sharing their concerns. To our knowledge, no studies have been done to evaluate how psychiatrists specifically address sexual concerns with cancer survivors, indicating a potential direction for future research and intervention. Further work is also necessary to develop treatments for female sexual dysfunction after cancer, with potential for improvements in mechanical, somatic and psychotherapeutic interventions. While there are examples above of sexual health programs, finding ways to make these easily accessible to all survivors should also be a priority. Telemedicine and other computerized interventions may have a role in provision of such care, with the possibility of reaching patients that may previously had decreased access. Finally, finding effective ways to disseminate this information to all providers caring for cancer patients across fields is imperative, which may potentially be helped by the growing trend towards integrated care practices.

10. Conclusion

Despite its high prevalence and considerable impact on quality of life, sexual dysfunction after cancer diagnosis and treatment is still under recognized and undertreated. Studies suggest that cancer survivors want to talk about this issue with their providers, and oncologists, primary care providers and psychiatrists all have unique perspectives and opportunities to identify and address these issues. Improving awareness, communication and screening, as well as appropriate initiation of and referral to treatment, could have a profound impact on the increasing number of women surviving with cancer.

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