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Sexual Rehabilitation of Cancer Patients: A Less Noticed Domain in Cancer Care

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ABSTRACT

Background: Sexual problems are associated with almost all types of cancers, especially those of the genital regions. Sexual problems can occur due to cancer itself or due to its treatment (chemotherapy, radiotherapy, or surgery) across all the stages of cancer and its management.

Methods: The researcher reviewed the current research status of this less-discussed issue. 115 articles were identified using predefined keywords in Pubmed, Pubmed Central, Embase, and Google Scholar databases from January 1, 2000, to March 31, 2022. First, the articles were screened based on the abstracts followed by checking for the availability of their full-text versions. A total of 28 articles fulfilling the inclusion criteria were finally selected and analyzed.

Results: Common sexual problems found in men were erectile dysfunction, decreased libido, dry ejaculation, and performance anxiety. On the other hand, women usually complained of reduced intimacy, lack of sexual desire, vaginal dryness, pain during intercourse, lack of sexual sensation, and reduced self-esteem for sexual activities. There is a significant prevalence of sexual problems with effects on marital relationships in cancer patients. Psychiatric disorders were found to be associated with a higher prevalence of sexual dysfunction ranging from 70 to 90% compared to the general population. Up to 50% and 40% of female and male patients with depression (a common occurrence in cancer) respectively may have sexual dysfunctions.

Conclusions: Management of these problems is necessary, as it can be a contributing factor to the poor quality of life. Communication and discussion about sexual health from patients as well as the healthcare provider side are needed. The urgency of seeking a specialist's help such as a psychiatrist or a sex therapist is also discussed. The researcher reviewed common sexual problems, causes, and treatment modalities, and suggested a few recommendations for making sexual health a part of routine cancer check-ups.

INTRODUCTION

Almost all types of cancer, regardless the gender, can lead to sexual problems. However, research focusing on this aspect of cancer care is rare. Common cancers responsible for sexual problems are those of the genital regions such as breast cancer, head and neck cancers, lung and prostate cancers, etc. Studies showed that the estimate of sexual dysfunction after cancer treatment ranges from 40 to 100% [1]. Because of the advancement in cancer treatment, most patients' health improves and they live longer. This has resulted in acknowledging various problems in their survival period. 'Sexual-health related problems' are one of the common problems among them. Treatment of cancer including chemotherapy, hormonal therapy (selective Estrogen receptor modulators like Tamoxifen and Aromatase inhibitors) [2], and radiotherapy (RT) affects sexuality with effects on physical or psychological sexual well-being. General and specific adverse effects of RT and chemotherapeutic agents at the genital regions (e.g. in cancers of the ano-genital region) can also lead to effects on sexuality. Surgery leads to anatomical changes (e.g., mastectomy for breast cancer) or changes in the hormonal milieu as a result of treatment (e.g., oophorectomy), and body image disruption can affect sexual health as well [3]. Thus almost all the aspects of cancer and its treatment may lead to sexual dysfunctions in the course of illnesses or later. Sexual symptoms may differ depending upon the type of cancer, severity, and site of cancer. One community-based Indian study found that about 81% of men had

at least one sexual dysfunction. Multiple sexual problems were present in 14% of the participants with more prevalent loss of libido and premature ejaculation in participants aged > 30 years [4].

Among various lifestyle factors, consuming tobacco or smoking, alcohol use disorder, and use of opioids have been implicated in sexual problems [5–7]. These factors are considered risk factors for cancer, too. Medical co-morbidities like diabetes mellitus [8], coronary heart disease [9], and psychiatric disorders [10–12], are commonly associated with different sexual disorders. One study conducted in Northern India found that Erectile Dysfunction (ED) has been responsible for poor marital and sexual satisfaction [13]. Literature also mentions the presence of high distress and low relationship satisfaction in spouses of patients of cancer [14]. Thus, the presence of sexual dysfunction can further jeopardize the marital relationship which may have been already strained in cancer patients.

Around 30 to 40% of the patients diagnosed with cancer have psychiatric disorders as per one recent Indian study (depression, delirium, anxiety, adjustment disorders, sleep disorders, and sexual dysfunctions) [15]. The prevalence is still higher in patients with advanced cancer. On the other hand, sexual dysfunctions are reportedly more prevalent in patients with psychiatric disorders compared to the general population, with rates ranging between 40% and 96% [16–19]. Studies found the prevalence in the range of 40%to 90% in patients with schizophrenia [16,20]. In patients with depression, sexual dysfunctions were found in up to 50% of women and 40% of men [17]. This relationship can explain the higher prevalence of sexual health-related disorders in cancer patients.

Thus, it is important to study this aspect of cancer care during and after the cancer treatment as it may affect the physical and mental well-being of a patient, relationship with the spouse/partner, overall satisfaction with life, and cancer-related quality of life during, and after the recovery from cancer. In Indonesia, few studies conducted on cervical cancer survivors found a significant prevalence of sexual dysfunction and its effects on their marital relationships [21].

Psychological problems, cultural factors, priorities in the context of cancer treatment, and the approachability of the oncologist or a specialist are other factors that can influence the problems related to sexuality in cancer patients. Despite these facts, sexual health is usually considered secondary and not given attention in cancer settings even when it has a great impact on patients 'quality of life. Also, the majority of the studies in the literature are done in female cancer patients [22,23].

This background propelled the researcher to review this topic to study the current status of the magnitude and types of sexual dysfunctions in cancer patients, prominent sexual problems encountered by cancer patients, their causes and impact on patients' life, treatment options available, the role of treating doctor and to suggest few recommendations.

METHODS

Literature search

Articles like original research articles (qualitative studies, observational studies, retrospectives or prospective studies), review articles (systematic reviews, meta-analyses), case reports, and guidelines were searched on Pubmed, Embase, and Google Scholar electronic databases, with the keywords and phrases like sexual dysfunction, cancer, sexual rehabilitation in cancer, sexual health, and cancer, sexual problems due to cancer, chemotherapy-induced sexual side effects, etc. The search was done for those articles published during the period from January 1, 2000, to 31st March 2022. A total of 115 studies related to our topic were identified from different regions or countries.

Article screening

Studies on sexual problems in cancer patients (which are included in this review) were either in general or related to specific cancers. Firstly, articles were screened based on the abstracts, followed by checking for the availability of full-text versions. A total of 28 articles (full-text versions) were finally selected and analyzed. The remaining were excluded due to various reasons like duplication of the studies, non-availability of fulltext, very few sample sizes or poor methodology, and non-English articles. Only 'online' articles were considered. After a comprehensive review, the aspects relevant and related to our aims were elaborated.

Quality assessment

The quality of the studies/articles is evaluated by the following factors. First, the journal in which the article is published (whether the journal is ranked in Journal Quality List). Most of the articles utilized in this review are published in Pubmed indexed journals. The next consideration is the expertise of the authors who wrote the article. Then, most articles should be published in the last 10 years. The last factor is that most of the articles have good citation indexes and the authors who cited the article used them to support their methodology/ findings and not to criticize them. Thus, most of the articles cited in this review scored 'reasonable to good' on the aforementioned points.

RESULTS AND DISCUSSION

Common sexual issues

Though rarely discussed, there is a variety of sexual problems. The sexual issues in cancer patients are beyond what is usually described under disorders of

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desire, erection, or orgasm. Lack of intimacy, fear of having sex during cancer treatment, myths or misbeliefs related to sexual activities during cancer, and, problems or stigma leading to the lack of clear communication about sexual issues are usually the common problems faced by many patients or their carers.

Common physical difficulties include those about achieving and sustaining intercourse (e.g. erectile dysfunction in men [24], pain during intercourse in women [25], and loss of sexual sensations [26]. Patients' feelings of desirability may change with psychological effects [26,27] which are related to one of the most common sexual problems, loss of desire for sexual activity. These problems can be directly related to cancer or can occur because of the treatment (See **Table 1** and **Table 2**).

Table 1. Common sexual problems in men with cancer

Common sexual problems in men with cancer
Erectile dysfunction (ED)
Decreased libido/desire
Dry ejaculation
Delayed ejaculation
Performance anxiety
Reduced stamina (easy fatigability during sexual activity)

Table 2. Common sexual problems in women with cancer

Common sexual problems in women with cancer
Vaginal dryness
Dyspareunia /pain during intercourse
Lack of intimacy
Reduced sexual drive
Reduced sexual arousal
Loss of sexual sensations
Reduced vaginal elasticity
Vaginal thinning
Feeling sexually less attractive
Anorgasmia

Cancer-related sexual problems

Sexual problems can be directly related to cancer, especially with cancers of the genital regions (penile or testicular cancer in males and cervical or uterine cancer in females) as it directly limits sexual activities irrespective of sexual desire. Worries and other psychological disturbances may reduce sexual desire and libido because getting relief from cancer (symptoms) becomes the priority. Other cancers causing changes in sex hormones also have an impact on sexuality by effects on desire or orgasm (liver cancer in males, breast or ovarian cancer in females, and Central Nervous System (CNS) tumors affecting the functions of the pituitary or hypothalamus in both sexes).

Cancer treatment-related sexual issues

Across all the cancers, the most commonly discussed treatment-related (chemotherapy or radiotherapy) effects on sexual functioning and intimacy are fatigue, loss of hair (leading to body image issues), discoloration of the skin, weight gain/loss, and surgery-related effects like scarring, organ loss, breathing difficulties, effects on sexual hormones, etc.

RT and surgical procedures on/near the genitals (especially for colorectal, prostate, or gynecological malignancies) often compromise sexual functioning severely. The impact on body image and self-esteem after breast cancer surgery is a well-studied finding affecting sexual health. In females, cervical or uterine cancer surgeries have a direct impact on sexuality due to anatomic changes in the genitalia [28]. Ovarian removal may result in the depletion of estrogen and lead to an early onset of menopausal signs & symptoms like reduced vaginal elasticity, vaginal thinning, atrophy, or dryness. These changes can affect the experience of vaginal intercourse or orgasm [29]. Studies show that the incidence of sexual problems among women cancer survivors ranges from 30 to 100% [30].

Problems specific to men are erectile dysfunction, decreased libido, delayed ejaculation, or performance anxiety. While those specific to women are reduced self-image, lack of intimacy, reduced sexual arousal, pain during sex, vaginal dryness, fear of symptoms (cancer-related) aggravation, anorgasmia, etc. Sexual desire, fantasies, sexual attitudes/beliefs, sexual role, sexual perception, and satisfaction can be affected by chemotherapy in both sexes [31]. Chemotherapy may alter the testosterone level leading to decreased libido in men. Chemotherapy can also have a direct impact on body image, especially with drugs causing hair loss not only on the head but also loss of pubic hair [32]. The direct toxic effect of chemotherapy is also noted with certain drugs like liposomal doxorubicin which may cause vaginal erythrodysesthesia [33].

One study conducted on 113 breast cancer patients found a variable prevalence of sexual dysfunctions (reduced sexual drive at 20.4%, 9.7% of the respondents experienced depreciation of body image, 15% of the respondents reported dyspareunia due to vaginal dryness) as well as psychiatric disorders (depression at 18.6%, significant anxiety, and distress at 31%). About half of the participants reported the negative psychological impact of their cancer treatment [34].

Studies showed that for both men and women, during the active treatment phase, their sexual activity was less significant compared to issues of mortality, but it was still an important aspect of quality of life. Feeling sexually attractive was considered important by women whereas a decreased frequency of sexual activity was more worrisome for men [35]. Frank sexual disorders as classified in DSM 5 (Diagnostic and Statistical Manual

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of Mental Disorders, fifth edition) can also be present like hypoactive sexual desire disorder, orgasmic disorders, and sexual arousal disorder lasting for a minimum of 6 months period (as per the criteria) [36].

It is also important to understand that RT may damage the blood vessels or nerves leading to difficulty in getting or keeping an erection (erectile dysfunction) [37]. If the prostate is damaged, patients may have a dry orgasm (without ejaculation). Penile, testicular, or prostate surgery can have direct effects on the sexual functions of men. RT, in long term can cause fibrosis, vaginal stenosis, and even the obliteration of the vaginal canal [38].

Mental health-related issues like depression, adjustment disorder, anxiety, persistent nausea or vomiting along with other symptoms like irritability and frustration occurring due to cancer treatment also affect all the aspects of sexuality. The guilt of inability to perform, feelings of inadequacy, relationship problems, the presence of other stressors like financial problems, and lack of social or family support also influence the sexual health of many patients. Sexual dysfunction, on the other hand, can lead to mental health issues like reduced confidence, depression, or anxiety and substance (like alcohol and cannabis) use disorders [39]. The prevalence of psychiatric disorders in cancer settings is higher though variable. 38 to 53% of cancer patients may have psychiatric disorders [40]. Another large study on 903 Indian cancer patients found a prevalence of psychiatric disorders as 48%, with adjustment disorders, depression, sleep disorders, anxiety, etc as common disorders [41].

Thus, cancer patients are not only prone to sexual problems due to cancer or its treatment, but also to mental health problems, and psychiatric problems further increase the risk of sexual dysfunction and leading to the deterioration in the quality of life.

Other influencing factors are age at diagnosis (cancer at early reproductive age and that in old age may have different presentations of sexual problems), substance use disorders (like alcohol), gender identity, sexual preferences, social status, and co-morbid medical illnesses (like uncontrolled diabetes) affecting sexual performance.

There is no specific literature discussing when sexual problems occur most often because they may occur anytime during the course of the disease; 'at diagnosis' (due to extreme distress), 'during treatment' (radical surgery of genital regions, adverse effects of chemotherapy and radiotherapy, hormonal changes, especially in treatment of cancers like breast or testicular cancers), 'in post-treatment period' due to permanent surgical sequel or changes in genitalia, reduced self-esteem due to deformities and loss of body parts [42]. Timely assessment and intervention may decrease patients' suffering if the cause is treatable but it may remain persistent even after years of treatment, especially in cases of radical treatments, pelvic radiotherapy (like in cervical cancer), long-lasting psychiatric disorders, and if the patient is on medicines having sexual side effects (like psychotropic drugs) [43]. One study conducted on breast cancer survivors also found long-lasting sexual dysfunctions even after years of treatment (median time from diagnosis was 7 years ranging from 3 to 12 years) [44].

Management

Addressing this issue is important because being able to perform sexually can give a sense of normalcy to cancer patients and it is considered an important domain of quality of life. In many cases, sexual problems may get better with the progress of time even without treatment but a specialist's help is always available if it does not get better. One needs to discuss with the treating specialist whenever the problem appears. Males are usually more vocal about their problem and may seek help if they suffer from any sexual problems compared to females. Females should be encouraged to speak about their sexual problems.

Whenever possible, nerve-sparing surgery can be done to prevent the problems. Treatment of co-morbidities (hypertension, diabetes mellitus, heart disease, etc) and avoiding the medicines that affect sexual desire or orgasm should be considered. Managing cancer-treatment-related side effects is crucial to reduce sexual dysfunctions. Abstinence from the substance of abuse is recommended for all patients.

Free communication

Communication about sexual issues is usually associated with the stigma and taboos in the Indian context, even in the absence of cancer. Therefore, the healthcare provider is expected to enquire into the topic whenever possible and facilitate discussions on the sexual topic with patients and their spouses. Unless the oncologists are comfortable discussing and screening for sexual health, patients may not open up freely. Discussion can be started with open-ended questions like 'Is there anything that bothers you about your relationship? Such questions can then be followed with those specific to sexual health. Clinicians can incorporate questions related to sexual health in their routine review or follow-up of patients, both during and after the active treatment. This is important to do, especially in cases of cancers affecting sexual health though it may be difficult due to the time constraint. There should not be any assumptions like 'cancer treatment is more important for the patient' or cancer patients usually don't bother about their sexual health. Other assumptions are related to age, prognosis, and single status (older patients with poor prognosis and those who are single are not interested in sexual health) along with the lack of training in the context of sexual health [45]. It is

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necessary to get an idea about the sexual problems and their magnitude for cancer patients.

Patients should be encouraged to clarify their doubts and worries about sexual activities during or after the treatment, their expectations about their sexual health, changes occurring in their sexual life during the treatment procedures, and follow-ups without waiting for the healthcare provider to ask them.

Roles of partners

Partners need to talk with cancer patients freely about their sexual feelings. Emotional and physical intimacy, care, warmth, expression of love, etc are rewarding and necessary in a cancer patient's sexual life and are reassuring for the patient as well. Partners need to understand that enjoying being close to each other along with touching, holding hands, massaging, kissing, and stroking can be a pleasure besides having actual intercourse.

Interventions

Before any interventions, understanding sexual dysfunction on a biopsychosocial basis is important. Biological parts occur due to the effects of cancer and its treatment on genitalia and sexual hormones. Psychological occur due to mental health problems secondary to cancer or its treatment, pre-existing psychiatric disorders, and 'social' due to the impact of cultural factors, stigma, social status, etc. Treatment of sexual dysfunction is usually 'multi-disciplinary' including treating oncologists, psychiatrists, psychologists, urologists, gynecologists, and social workers,and depends on cancer patients' needs.

The first step to do is by exploring a comprehensive sexual history with details about sexual perceptions, orientation, habits and practices, evaluation for potential contributing factors, details about co-morbidities (e.g. diabetes, hypertension, hypothyroidism, etc), medications like β-blockers, antidepressants, and issues related to the partner (e.g. medical morbidities) and/or other stressors (related to work or finances). Psychiatric assessment is equally important because psychiatric disorders and their treatment may be associated with sexual dysfunctions [46].

There are numerous validated questionnaires including Female Sexual Function Index (FSFI) [47], Female Sexual Distress Scale [48], DAS (Dyadic Adjustment Scale) [49], Body Image Scale [50], etc to assess patients' sexual health. Clinicians should also conduct a local examination of genitals along with an overall pelvic examination to find any local causes of sexual dysfunction.

Therapeutic interventions

Even though the treatment should be selected according to the patient's or couple's choice, the focus is usually on promoting intimacy than sexual intercourse. Therefore, most cancer patients need therapeutic interventions. Treatment plans may have to be individualized and include referral to a psychiatrist, a sex therapist, and a psychologist for 'couple therapy'. Treatment of co-morbid medical illnesses contributing to sexual dysfunctions should be considered with priority. Broadly, interventions can be classified under endocrine and non-endocrine therapies.

Endocrine therapies

Vaginal dryness problems can be treated by lubrication with vaginal estrogen which is considered an effective treatment [51]. The treatment can be prescribed in the form of creams, rings, or tablets. Selective estrogen receptor modulators are approved treatments for treating vulvovaginal atrophy in postmenopausal women. Estrogen agonist, Ospemifene has specific actions in the vagina only and is a good option in some patients [52]. Transdermal testosterone is also effective in women with decreased libido and impaired sexual function due to oophorectomy [53]. Oral testosterone can be used in men with decreased libido especially if the serum testosterone level is low. However, it is important to find any psychological problems responsible for the decreased libido and intervene accordingly.

Non-endocrine therapies

In females, non-endocrine treatment mainly includes relief of vaginal symptoms with vaginal moisturizers and suppositories for vaginal dryness. Dilators can also be used to treat genito-pelvic pain or penetration syndrome. Some studies also mention the role of Vitamin A or E in vaginal suppositories though the data about their effectiveness is limited [54]. Vaginal dilators are made of silicon or medical-grade plastics and are available in different sizes. Women can use them as a part of their usual routine. Education of patients about the use of personal products like vibrators that enhances physical pleasure along with promoting physical rehabilitation can be done as needed [55].

In males, Phosphodiesterase inhibitors like Sildenafil and Tadalafil can be utilized in non-cancer patients for erectile dysfunctions. Paroxetine [56] or clomipramine in low doses can be prescribed for premature ejaculation even though it is not an approved drug for the condition. Dopamine agonists like Pramipexole can be used to increase sexual desire and drive in both sexes. Medicine should be prescribed by considering the possibility of drug interaction in mind. Penile implants can be suggested in selected patients based on their clinical profile while Masters and Johnson-style sensate focus exercises are effective for curing premature ejaculation. In addition, an intraurethral suppository (Alprostadil) has also been tried for erectile dysfunction in some

cancer patients with good results. Alprostadil (prostaglandin), Papaverine (smooth muscle vasodilator), and Phentolamine (vasodilator) are used for injection therapy directly into a penis (in its base or side) in cases of ED [57]. Vascular reconstruction can be planned in some patients who do not respond to pharmacotherapy. While low-intensity extracorporeal shock wave therapy is a newer non-invasive treatment option used in men with failed medical therapy [39]. The aforementioned treatment can be prescribed by physicians, psychiatrists, gynecologists, or sex therapists.

Treatment of mental health problems is of paramount importance. Mood disorders may cause decreased libido, reduced sexual arousal or orgasm, and erectile function. Whereas, anxiety may result in performance anxiety and reduced confidence. Treating depression or anxiety with antidepressant drugs (which can be selected based on sexual side effects profile) is sufficient to get rid of sexual problems if a psychiatric disorder is significantly contributing to sexual problems. Antidepressants with less or no sexual side effects are Bupropion, Mirtazapine, Agomelatine, Vortioxetine, and Moclobemide [58].

Lifestyle modifications like improving diet, regular exercise, enough sleep, cutting down the alcohol, and reducing stress may help improve sexual desire and performance. Practicing contraception is necessary for both sexes during active treatment because it is suggested to avoid pregnancy during chemotherapy or radiotherapy [59].

Counselor/Sex therapists' help-

This is of vital importance for patients having significant disturbances in sexual health. Appropriate assessment and therapies can be prescribed to patients whose quality of life is significantly affected due to sexual problems. The general measures are teaching and practicing relaxation techniques and sex education. The specific measures include pharmacological treatment, non-pharmacological measures, or combination therapy. Therapists can help patients learn to increase their engagement in non-intercourse-focused activities as well as explore other ways to experience physical and emotional closeness and affection. These are key components of rehabilitation and can help in preserving both relationship and individual well-being [60].

Among various non-pharmacological treatments, psychotherapies like interpersonal therapy, psychodynamic psychotherapy, systematic desensitization, rational emotive behavioral therapy, Master Johnson's behavioral therapy, skill training, and cognitive behavioral therapy are widely used. The selection of kind of therapies needs to be individualized [46].

Group therapy

Many patients may get sufficient help from the group sessions where the participants share their problems as well as solutions they utilized to cope with those problems. In such a group therapy, patients learn from others' experiences. These group sessions should be facilitated and supervised by expert healthcare workers. Group sessions help patients get the strength to express themselves and share their sexual thoughts which they cannot easily express to their treating oncologists. Clinicians also get a chance to motivate patients to speak about his/her sexual health issues. By doing so, cancer patients' right to sexual health can be honored. In some studies, psycho-educational group therapy is found to improve marital satisfaction and sexual functioning in couples [61].

Recommendations

Following are a few recommendations for promoting sexual health in the context of cancer: 1. There is a need for the development of comprehensive, flexible, and psychometrically robust self-reported measures of sexual functioning (e.g. unique assessment tools specific to the effects of chemotherapeutic agents or surgery); 2. Discussing/enquiring about sexual health should become a routine part of conversations between patients and doctors; before, during, and after cancer treatment; 3. Adequate training of the health care providers is necessary (especially in communication about sexual health); 4. Providing booklets with answers to frequently asked questions can be provided to cancer patients. The information included in the booklet can be about common sexual problems among patients receiving cancer treatment, sexual problems occurring during treatment, the stage at which these changes might occur, how long these problems may last, whether are there any permanent problems, how can these problems be prevented or treated, precautions to be taken during the treatment, any protective methods to be utilized to protect partners, types of contraception recommended to these patients, information about the support groups, and specialists to consult with. Some references can also be given to know more about the problems; 5. Sexual health should be covered under survivorship care planning in all cancer patients; 6. Regular gender-specific, professionally moderated group sessions can be conducted to facilitate free communication about patients' sexual problems to reduce the stigma related to the free discussion about sexuality. There is a need for extensive research into the prevalence, causes, types of sexual dysfunctions, and management policy in sexual problems occurring in the context of cancer.

CONCLUSIONS

Sexual problems can occur at any stage of cancer. The problems can be a direct effect of cancer or because of its management. Almost all types of cancers can lead to sexual dysfunction, but cancers of genital regions

and their treatment are the major contributors. Common sexual problems in men are erectile dysfunction, decreased libido, dry ejaculation, and performance anxiety. Whereas women usually complain of reduced intimacy, lack of sexual desire, vaginal dryness, pain during intercourse, lack of sexual sensation, and reduced self-esteem for their sexual activities. There is a bidirectional relationship between sexual problems and mental health problems. Adequate timely management and sexual health-related rehabilitation may enhance and improve the quality of life oriented-care for cancer patients. Recommendations about comprehensive assessment of sexual problems, free communication about sexual health, adequate training of the concerned health professionals, providing caregiver's guide, group sessions, and research in the specific area may be of great help to achieve this goal.

DECLARATIONS

Competing of Interest

The authors declare no competing interest in this study.

REFERENCES

1. PDQ Supportive and Palliative Care Editorial Board. Sexuality and Reproductive Issues (PDQ®): Health Professional Version. In: PDQ Cancer Information Summaries. Bethesda (MD): National Cancer Institute (US); September 4, 2013. PMID: 26389412
2. Baumgart J, Nilsson K, Evers AS, et al. Sexual dysfunction in women on adjuvant endocrine therapy after breast cancer. Menopause. 2013;20(2):162–168.
3. Dizon DS, Suzin D, McIlvenna S. Sexual health as a survivorship issue for female cancer survivors. Oncologist. 2014;19(2):202–210.
4. Singh AK, Kant S, Abdulkader RS, et al. Prevalence and correlates of sexual health disorders among adult men in a rural area of North India: An observational study. J Family Med Prim Care. 2018;7(3):515–521.
5. Kumar S, Murarka S, Mishra VV, Gautam AK. Environmental & lifestyle factors in deterioration of male reproductive health. Indian J Med Res. 2014;140(Suppl S1):29–35.
6. Pendharkar S, Mattoo SK, Grover S. Sexual dysfunctions in alcohol-dependent men: A study from North India. Indian J Med Res. 2016;144(3):393–9.
7. Venkatesh K, Mattoo SK, Grover S. Sexual dysfunction in men seeking treatment for opioid dependence: A study from India. J Sex Med. 2014;11(8):2055–64.
8. Dan A, Chakraborty K, Mondal M, et al. Erectile dysfunction in patients with diabetes mellitus: Its magnitude, predictors and their bio-psycho-social interaction: A study from a developing country. Asian J Psychiatr. 2014;7(1):58–65.
9. Kumar J, Bhatia T, Kapoor A, et al. Erectile dysfunction precedes and is associated with severity of coronary artery disease among Asian Indians. J Sex Med. 2013;10(5):1372–9.
10. Rajkumar RP, Kumaran AK. Depression and anxiety in men with sexual dysfunction: A retrospective study. Compr Psychiatry. 2015;60:114–8.
11. Grover S, Avasthi A, Gupta S, et al. Comorbidity in patients with Dhat syndrome: A nationwide multicentric study. J Sex Med. 2015;12(6):1398–401.
12. Grover S, Gupta S, Mehra A, Avasthi A. Comorbidity, knowledge and attitude towards sex among patients with Dhat syndrome: A retrospective study. Asian J Psychiatr. 2015;17:50–5.
13. Avasthi A, Grover S, Kaur R, et al. Impact of nonorganic erectile dysfunction on spouses: A study from India. J Sex Med. 2010;7(11):3666–74.
14. Li Q, Loke AY. The positive aspects of caregiving for cancer patients: a critical review of the literature and directions for future research. Psychooncology. 2013;22(11):2399–2407.
15. Venkataramu VN, Ghotra HK, Chaturvedi SK. Management of psychiatric disorders in patients with cancer. Indian J Psychiatry. 2022;64(2):S458–S472.
16. Hocaoglu C, Celik FH, Kandemir G, et al. Sexual dysfunction in outpatients with schizophrenia in Turkey: A cross-sectional study. Shanghai Arch Psychiatry. 2015;26(6):347–356.
17. Olisah VO, Sheikh TL, Abah ER, Ajeigbe AFM. Sociodemographic and clinical correlates of sexual dysfunction among psychiatric outpatients receiving common psychotropic medications in a Neuropsychiatric Hospital in Northern Nigeria. Niger J Clin Pract. 2016;19(6):799–806.
18. Fanta T, Haile K, Abebaw D, et al. Assessment of sexual dysfunction and associated factors among patients with schizophrenia in Ethiopia, 2017. BMC Psychiatry. 2018;18(1):1–9.
19. Hou CL, Zang Y, Rosen RC, et al. Sexual dysfunction and its impact on quality of life in Chinese patients with schizophrenia treated in primary care. Compr Psychiatry. 2016;65:116–121.
20. Oyekanmi A, Adelufosi A, Abayomi O, Adebowale T. Demographic and clinical correlates of sexual dysfunction among Nigerian male outpatients on conventional antipsychotic medications. BMC Res Notes. 2012;5:267.
21. Afiyanti Y, Rachmawati IN, Milanti A. Evaluating Sexual Nursing Care Intervention for Reducing Sexual Dysfunction in Indonesian Cervical Cancer Survivors. Asia Pac J Oncol Nurs. 2016;3(3):266–271.
22. Ye S, Yang J, Cao D, et al. A systematic review of quality of life and sexual function of patients with cervical cancer after treatment. Int J Gynecol Cancer. 2014;24(7):1146–57.

23. Fischer OJ, Marguerie M, Brotto LA. Sexual function, quality of life, and experiences of women with ovarian cancer: A mixed-methods study Sex Med. 2019;7(4): 530–539.
24. Bruner DW, Calvano T. The sexual impact of cancer and cancer treatments in men. Nurs Clin North Am. 2007;42(4):555–580.
25. Bukovic D, Silovski H, Silovski T, et al. Sexual functioning and body image of patients treated for ovarian cancer. Sex Disabil. 2008:1–11.
26. Wilmoth MC. The aftermath of breast cancer: an altered sexual self. Cancer Nurs. 2001;24(4):278–286.
27. Sheppard LA, Ely S. Breast cancer and sexuality. Breast J. 2008;14(2):176–181.
28. Burwell SR, Case LD, Kaelin C, Avis NE. Sexual problems in younger women after breast cancer surgery. J Clin Oncol. 2006;24(18):2815–21.
29. Wilmoth MC, Hatmaker-Flanigan E, LaLoggia V, Nixon T. Ovarian cancer survivors: Qualitative analysis of the symptom of sexuality. Oncol Nurs Forum. 2011;38(6):699–708.
30. DeSimone M, Spriggs E, Gass JS, et al. Sexual dysfunction in female cancer survivors. American journal of clinical oncology. 2014;37(1):101–6.
31. Jeffery DD, Tzeng JP, Keefe FJ, et al. Initial report of the cancer Patient-Reported Outcomes Measurement Information System (PROMIS) sexual function committee: review of sexual function measures and domains used in oncology. Cancer. 2009;115(6):1142–53.
32. Roe H. Chemotherapy-induced alopecia: Advice and support for hair loss. Br J Nurs. 2011;20(10):S4–11.
33. Krychman ML, Carter J, Aghajanian CA, et al. Chemotherapy-induced dyspareunia: A case study of vaginal mucositis and pegylated liposomal doxorubicin injection in advanced stage ovarian carcinoma. Gynecol Oncol. 2004;93(2):561–563.
34. Prajoko YW, Supit T. Sexual satisfaction of Indonesian women with breast cancer in Central Java, Indonesia. Bali Medical Journal. 2021;10(1):53–57.
35. Flynn KE, Jeffery DD, Keefe FJ, et al. Sexual functioning along the cancer continuum: focus group results from the Patient-Reported Outcomes Measurement Information System (PROMIS®). Psychooncology. 2011;20(4):378–386.
36. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Arlington, VA: American Psychiatric Association; 2013.
37. Mahmood J, Shamah AA, Creed TM, et al. Radiation-induced erectile dysfunction: Recent advances and future directions. Adv Radiat Oncol. 2016;1(3):161–169.
38. Shankar A, Prasad N, Roy SH, et al. Sexual Dysfunction in Females after Cancer Treatment: an Unresolved Issue. Asian Pac J Cancer Prev. 2017;18(5):1177–82.
39. Madan R, Dracham CB, Khosla D, et al. Erectile dysfunction and cancer: current perspective. Radiat Oncol J. 2020;38(4):217–225.
40. Chaturvedi SK, Chandra P, Channabasavanna SM, et al. Detection of anxiety and depression in cancer patients. NIMHANS. 1994;12(2):141–4.
41. Chaturvedi SK. Report of the Terry Fox Project on Quality of Life of cancer patients. Bangalore: NIMHANS. 2003.
42. McKee AL, Jr., Schover LR. Sexuality rehabilitation. Cancer. 2001;92(4 suppl):1008–12.
43. Shankar A, Patil J, Luther A, et al. Sexual Dysfunction in Carcinoma Cervix: Assessment in Post Treated Cases by LENTSOMA Scale. Asian Pac J Cancer Prev. 2020;21(2):349–354.
44. Raggio GA, Butryn ML, Arigo D, et al. Prevalence and correlates of sexual morbidity in long-term breast cancer survivors. Psychol Health. 2014;29(6):632–650.
45. Hordern AJ, Street AF. Let's talk about sex: Risky business for cancer and palliative care clinicians. Contemp Nurse. 2007;27(1):49–60.
46. Avasthi A, Grover S, Sathyanarayana Rao TS. Clinical Practice Guidelines for Management of Sexual Dysfunction. Indian J Psychiatry. 2017;59(Suppl 1):S91–S115.
47. Rosen R, Brown C, Heiman J, et al. The female sexual function index (FSFI): a multidimensional self-report instrument for the assessment of female sexual function. Journal of Sex & Marital Therapy. 2000;26(2):191–208.
48. Derogatis L, Clayton A, Lewis-D'Agostino D, et al. Validation of the female sexual distress scale-revised for assessing distress in women with hypoactive sexual desire disorder. J Sex Med. 2008;5(2):357–364.
49. Spanier GB. The measurement of marital quality. J Sex Marital Ther. 1979;5(3):288–300.
50. Hopwood P, Fletcher I, Lee A, Al Ghazal S. A body image scale for use with cancer patients. Eur J Cancer. 2001;37(2):189–97.
51. Simunić V, Banović I, Ciglar S, et al. Local estrogen treatment in patients with urogenital symptoms. Int J Gynaecol Obstet. 2003;82(2):187–97.
52. Portman DJ, Bachmann GA, Simon JA; Ospemifene Study Group. Ospemifene, a novel selective estrogen receptor modulator for treating dyspareunia associated with postmenopausal vulvar and vaginal atrophy. Menopause. 2013;20(6):623–30.
53. Davis SR, Moreau M, Kroll R, et al. Testosterone for low libido in postmenopausal women not taking estrogen. N Engl J Med. 2008;359(19):2005–17.
54. Costantino D, Guaraldi C. Effectiveness and safety of vaginal suppositories for the treatment of the vaginal atrophy in postmenopausal women: An open, non-controlled clinical trial. Eur Rev Med Pharmacol Sci. 2008;12(6):411–16.

55. Leiblum SR. Arousal disorders in women: complaints and complexities. Med J Aust. 2003;178(12):638–640.
56. Zhang D, Cheng Y, Wu K, et al. Paroxetine in the treatment of premature ejaculation: a systematic review and meta-analysis. BMC Urol. 2019;19(1):2.
57. Voznesensky M, Annam K, Kreder KJ. Understanding and Managing Erectile Dysfunction in Patients Treated for Cancer [published correction appears in J Oncol Pract. 2016 Jun;12(6):596]. J Oncol Pract. 2016;12(4):297–304.
58. Waldinger MD. Psychiatric disorders and sexual dysfunction. Handb Clin Neurol. 2015;130:469–489.
59. Schwarz EB, Hess R, Trussell J. Contraception for cancer survivors. J Gen Intern Med. 2009;24(Suppl 2):S401–6.
60. NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) Survivorship. National Comprehensive Cancer Network, Inc.; 2017.
61. Tahan M, Saleem T, Moshtagh M, et al. Psychoeducational Group Therapy for sexual function and marital satisfaction in Iranian couples with sexual dysfunction disorder. Heliyon. 2020;6(7):e04586.