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Sexual Functioning Morbidity Among Cancer Survivors: Current Status and Future Research Directions

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Abstract

The current article reviews available data and considers methodologic issues for future research in which sexual functioning among adult cancer patients is an endpoint variable. Circumstances that may cause sexual disruption for any cancer patient are suggested, including mood disturbance, changed health status, somatization, and reprioritization of life concerns. Data on the incidence and magnitude of sexual functioning morbidity following the diagnosis and treatment of cancer at major organ sites, including breast, genital, colon, rectum, and bladder, are reviewed. Finally, strategies for continuing descriptive study of the sexual problems of cancer patients are suggested. Such data are necessary to eventually target preventive or therapeutic resources to patients in greatest need.

THE TERM "endpoint" in clinical trials research refers to the criterion by which patient benefit is measured, and in cancer research the most important endpoint variable is survival. As the prognosis for many cancer patients improves with other endpoints extended (*e.g.*, time in remission), we have focused on the quality of life for cancer patients after their diagnosis and treatment. Within this context, the American Cancer Society[1] has targeted sexual functioning morbidity as an important endpoint in psychosocial research.

Review of Existing Data

General Considerations

It might be logical to begin a review such as this with an analysis of the sexual outcomes for those with the leading cause of cancer; however, lung cancer patients have received little psychosocial study generally and no examination of sexual functioning deficits. Thus, the circumstances that may cause sexual disruption for any cancer patient will be considered, including mood disturbance, changed health status, somatization, and reprioritization of current concerns.

The two most prevalent affective disruptions among cancer patients are depressive and anxious states, which present major obstacles to satisfactory adjustment during diagnostic, treatment, or recovery periods and prevent return to previous life patterns. In addition to depressive symptoms, the vegetative signs of motor retardation, anorexia, sleep disturbance, and disruption of sexual desire are notable for some individuals. It has been estimated[2] that 17% to 25% of the hospitalized cancer population could be diagnosed as clinically depressed. Thus, for some cancer patients, sexual dysfunction, specifically disruption of sexual desire, may occur secondary to a major depressive episode. Anxiety among healthy individuals is a significant cause of sexual dysfunction, and is often central to excitement and orgasm phase dysfunctions.[3,4] Anxiety also occurs at critical periods (*e.g.*, diagnosis, anticipating treatment) for cancer patients. Thus, in contrast to the depressed cancer patient who may report little sexual

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desire, cancer patients experiencing general anxiety symptoms may report such resultant problems as inorgasmia or premature ejaculation.

Many cancer patients experience significant physical debilitation during treatment or even after complete recovery. Fatigue specific to surgery,[5] chemotherapy,[6] and radiotherapy[7,8] has been described. In addition, other illness signs or symptoms may be present. Lung cancer patients, for example, report shortness of breath and painful coughing. Patients requiring radical surgeries may continue to report significant debilitation such that social and sexual activities are severely restricted.[9] Such limitations could produce desire problems or reduced excitement or orgasm potential even when there is sufficient desire for sexual activity.

Related to the disruptive effects of physical debilitation are those due to somatization, or the cancer patient focusing on bodily sensations or changes. Most individuals learn of their disease by having experienced a particular sign or symptom, such as vaginal bleeding, breast tenderness, or fatigue. Patients often monitor bodily sensations (*e.g.*, nodes shrinking, pain alleviation, greater ease when swallowing) as an indicant of treatment effectiveness or disease recurrence.[10] The physiologic changes that accompany sexual activity provide an additional, and perhaps salient, collection of symptoms/signs to monitor. Cervical cancer patients treated with radiation therapy, for example, note during sexual activity the change in their lubrication or the appearance of a vaginal discharge. Prostate cancer patients concerned about their erectile abilities after surgery or radiotherapy may monitor erectile capabilities or note the sensations accompanying "dry" ejaculation. In addition, cancer patients may need to distract themselves from other bodily sensations, such as pain,[11] if their sexual arousal is to proceed unimpaired. When healthy individuals monitor ("spectator") their sexual responses, sexual dysfunction, particularly orgasmic difficulty, often results.[3] It would not be unexpected if such difficulties arose in cancer patients from their somatic monitoring or their inability to distract themselves from disruptive sensations.

Finally, to the extent that physical status is compromised or survival time is shortened, priorities in life may be reordered. Knowledge that one has a life-threatening illness may precipitate the cessation of all sexual activity. This attitude may be particularly common among those with a poor prognosis, such as lung cancer patients, even when the desire for physical closeness and the capacity for sexual responding remains.[12] Although many couples share a close and supportive relationship during a cancer crisis, this is not the circumstance for all, as was reported by Andersen and Hacker[9] and Wellisch *et al.*[13]. In these contexts, sexual dysfunction *per se* may not develop, but the need for sexual expression or the manner in which sexual needs are expressed may change.

Breast Cancer

Breast cancer patients have received extensive psychosocial study. With the exception of one survey,[14] estimates of general sexual disruption, reduced frequency of intercourse, or specific difficulties with orgasm range from 21% to 39% of the patients sampled retrospectively.[8,15–18] These studies were conducted by individuals previously unfamiliar to the women, and despite their differing assessment strategies (*i.e.*, interviews or mailed questionnaires) and treatment institutions, findings were convergent. The single investigation reporting a significantly lower level of sexual distress for patients was a questionnaire survey of 278 Mayo Clinic patients.[14] Only 7% of the women indicated that they faced major impairment of work, social, or sexual activities, with most noting sexual disruption. The discrepancy between this investigation and those cited previously may have been due to the hesitancy of the Mayo patients to acknowledge psychosocial difficulties to their primary care providers.

Two prospective investigations have been conducted.[19,20] Morris *et al.*[20] individually interviewed a consecutive series of 160 women admitted for breast tumor biopsy to King's

College Hospital in London. At operation, 69 patients were found to have breast cancer and were usually treated with a simple mastectomy, and 91 had benign breast disease requiring no further treatment. Two years postoperatively, marital adjustment (believed by many to be crucial to sexual adjustment) for 6% of the benign and 11% of the cancer patients had worsened; in contrast, 18% of the benign and 6% of the cancer patients reported relationship improvement. In terms of sexual disruption, at the 3-month follow-up, there was significantly greater deterioration in satisfaction for the cancer patients (with 6% of the benign and 18% of the cancer patients reporting dissatisfaction). However, there was comparable disturbance at the 2-year follow-up, with approximately 30% of the patients in each group reporting dissatisfaction. The other major investigation was conducted by Maguire *et al.*,[19] who studied 75 breast cancer patients treated with simple or modified radical mastectomy and 50 benign breast disease patients undergoing diagnostic biopsy in England. Symptoms of anxiety, depression, or both were more prevalent and severe among the cancer patients, with an incidence of mood disturbance of 25% for the cancer sample and 10% among the benign sample at the 12-month follow-up. At 4 months, the incidence of sexual problems did not differ between the groups, however the magnitude did, with 40% of the breast cancer sample having moderate or severe difficulties and only 12% of the benign sample having such distress. At 12 months, 33% of the cancer sample had sexual problems, whereas only 8% of the benign sample did. The rates of sexual difficulties reported in these two prospective investigations are in the midrange of those reported in the retrospective studies.

Body image disruption has been suggested as central to the sexual disruption that occurs for cancer patients generally[21] and for breast patients in particular.[22, 23] Polivy,[24] however, did not find significant differences in body image among breast cancer, benign breast disease, and general surgery patients surveyed before surgery and 6 to 10 months later. Whereas there was a decline in all patients' reported satisfaction with their bodies, there was no differential disruption due to mastectomy. These data as well as that of Ray[25] comparing body image among mastectomy and cholecystectomy patients and finding no significant differences between the groups suggest that body image, as currently conceptualized and measured, is not central and perhaps not contributory to the sexual dysfunction that develops for breast cancer patients.

Data comparing sexual morbidity among patients undergoing different treatments for malignant breast disease are preliminary. Estimates of sexual disruption during or following external radiation therapy have been reported by 75% of the breast patients[17] and by 13% to 40% of the adjuvant chemotherapy patients surveyed. [17, 26, 27] Investigations comparing treatment modalities report increased sexual disruption with the magnitude of intervention and disease severity. Halsted radical, modified radical, and lumpectomy patients have significantly differed in their report of affection received from their partners, and lumpectomy patients have reported significantly more frequent intercourse than either of the other groups.[28] Unfortunately, sexual distress data were not obtained, so it is not known if these outcomes reflect differential rates of dysfunction as well. Another investigation compared samples of lumpectomy and modified radical mastectomy patients matched on the variables of age and stage of disease.[28a] These data clearly favored the breast-preserving operation, with significantly less alteration in body image and sexual desire, greater comfort with nudity, and no change in the frequency of intercourse for the lumpectomy patients in contrast to the mastectomy patients.

Genital Cancer

Despite the likelihood of sexual disruption following genital cancer treatment, there have been few descriptive assessments. Among women, cervix cancer has received the greatest study. Two modes of therapy, radical hysterectomy and radiation therapy, are equally common for

early stage disease. Surgical treatment allows ovarian preservation for premenopausal women, but does cause vaginal shortening, which has contributed to coital discomfort.[29, 30] Radiation therapy destroys ovarian functioning and causes vaginal atrophy and stenosis. Dyspareunia from lack of lubrication, tenderness of the vagina, and postcoital bleeding have been resultant problems.[29, 31, 32] Although topical estrogen cream following radiation therapy improves the epithelium somewhat, many of the sexually disruptive symptoms remain.[33] In the retrospective investigations,[29, 30, 32, 34, 34a] estimates of diminished or completely disrupted sexuality ranged from 44% to 79% for the radiation therapy patients and from 6% to 19% for the radical hysterectomy patients. However, the most rigorous investigation, conducted by Vincent *et al*.,[35] found comparable outcome with 29% and 33% of radiation and hysterectomy patients, respectively, reporting subsequent sexual difficulties.

Pelvic exenteration is considered for some women with recurrent cervical cancer. It is a disfiguring operation, involving removal of the uterus, tubes, ovaries, urinary bladder, rectum, and vagina. Clinical reports have portrayed lengthy postoperative recovery, residual affective disruption, and significant disruption or, more likely, cessation of sexual activity.[36–39] Research with women who have undergone vaginal reconstruction points toward at least two outcomes.[9] One group of patients reported that vaginal reconstruction had gone well and they were able to maintain a satisfactory sexual life. The other group reported disruption in the frequency of sexual activity, dissatisfaction with the variety of the activities or their arousal, or problems with the neovagina (*e.g.*, it was too short, the cavity too large, there was a chronic vaginal discharge, dyspareunia). Some women could maintain their orgasmic ability, but for others it was lost or infrequently achieved. Pelvic exenteration patients may experience the greatest sexual distress of all gynecologic cancer patients, regardless of whether they undergo vaginal reconstruction.

There have been no studies of the sexual functioning of patients with endometrial or ovarian cancer. Sexual responses of those with early-stage disease may be similar to those of cervical patients since their treatments are comparable. In view of the different epidemiologic factors for these diseases, however, different adjustment patterns may be evident. For example, the factors of early intercourse (*i.e.*, before age 17) and numerous sexual partners implicated as relevant in cervix cancer[40] may result in different sexual behavior patterns posttreatment when comparison is made with either endometrial or ovarian cancer patients.

There has been only minimal study of the sexual outcomes for vulvar cancer patients. Primary surgical treatment is mutilating, typically including radical vulvectomy (removal of the clitoris and all labial tissue) and bilateral groin lymph node removal, with or without pelvic lymph node removal. A survey of 18 patients treated with wide local excision rather than vulvectomy for microinvasive disease indicated that all women continued to be orgasmic during sexual activity, in contrast to two radical vulvectomy patients who reported loss of orgasmic ability and dyspareunia.[41] Retrospective study of women who received radical surgery indicates discrepancies between the actual and the preferred frequency of sexual activities such as intercourse and a limited capacity for sexual arousal among these patients.[42, 42a] Interestingly, orgasmic responsiveness is reported by women who had and who had not undergone clitoral excision at the time of vulvectomy.

Among men with genital cancer, those with prostate disease have been the most widely studied. From studying patients with benign conditions, it appears that even diagnostic biopsy may result in sexual difficulties. Approximately 24% of open perineal biopsy[43–45] and 32% of the transurethral resection[45–49] patients report erectile failure. In addition, approximately 57% of the patients report a complete loss, or at least a reduced amount, of seminal fluid ejaculated during orgasm. Even though the sensations of orgasm may remain unchanged, the passing of semen retrograde into the bladder is disconcerting to some patients.

Radical surgical prostatectomy for cancer is performed by the perineal, retropubic, or transpubic route. Surveys of patients with Dukes' Stage A, B, or C disease undergoing either retropubic[50–52] or perineal prostatectomy[53–56] have reported comparable findings, with estimates of diminished erectile capabilities or complete erectile failure after surgery for 90% of the patients. The incidence of ejaculation difficulties with or without concomitant erectile failure is estimated as occurring for 78% of the retropubic[50] and 100% of the perineal prostatectomy patients.[56] If hormone therapy and/or orchiectomy is additionally used after either surgical procedure, virtually 100% of the patients experience erectile failure and ejaculation difficulties.[57, 58] These estimates are three to four times higher than those for patients treated for benign conditions with less extensive surgery.

On the basis of these data it is not surprising that some cancer patients with local disease refuse radical prostatectomy and opt for supervoltage irradiation. Radiotherapy is also selected for those patients with regional disease. When patients with both limited or extracapsular extension have been treated with definitive courses of treatment, approximately 37% of such patients experience significant erectile difficulties.[59–63] Although, again, the incidence of sexual difficulties is high, it is less than one half of the estimates obtained for radical surgery.

A treatment method currently under investigation for localized prostatic cancer is interstitial implantation (usually with a retropubic approach) of the prostate with iodine 125 (^{125}I) or gold 198 (^{198}Au) combined with pelvic lymphadenectomy. After ^{125}I treatment, erectile difficulties occurred for approximately 13% and retrograde ejaculation for approximately 28% of the patients from two institutions.[64,65] In patients treated with a combination of pelvic lymphadenectomy, ^{198}Au implantation, and external beam radiation, the incidence of erectile difficulties was 25%.[66] Although these are the lowest sexual morbidity rates, it remains to be determined whether this treatment will have cure rates comparable to those for radical surgery, external beam radiation, hormonal therapy, or treatment combinations.

Patients with metastatic disease or extensive regional spread are treated with endocrine therapy. Although the optimal form of therapy is still under consideration, bilateral orchiectomy, estrogen administration, or both, are currently used. The estimates of Ellis and Greyhack[67] of erectile difficulties for their patients were 47% for orchiectomy alone, 22% for estrogen alone, and 73% for combined treatment. Although 94% of the patients receiving estrogen developed gynecomastia, it appeared that the degree of breast change was not related to the occurrence of erectile difficulties. It is important to note that sexual difficulties may also have occurred secondary to the malaise, weight loss, anemia, and pain that patients with metastatic cancer experience.

Cancers of the penis or testis account for a small percentage of the male cancer patients diagnosed annually, but there is concern, as the treatments are disfiguring and may result in extreme sexual difficulties. For cancer of the penis confined to the organ, total penectomy can obviously leave patients significantly impaired; however, stimulation of the remaining genital tissue, including the mons pubis, the perineum, and the scrotum, can produce orgasm.[68] Ejaculation can occur through the perineal urethrostomy with the accompanying sensations of the bulbocavernosus and ischiocavernosus musculature. Patients with partial exisions can remain capable of erection, orgasm, and ejaculation.[69]

Cancer of the testicle is an uncommon neoplasm that occurs in approximately 2000 men annually. Treatment usually consists of a unilateral inguinal orchiectomy, which removes the testis, epididymis, and portions of the vas deferens and gonadal lymphatics, with the disease-free testicle preserved to maintain testosterone production. Patients undergoing orchiectomy and uni- or bi-lateral lymphadenectomy report disruption in sexual desire or reduced orgasm intensity for approximately 20% of the patients surveyed.[70, 71, 71a] Patients requiring complete

castration should experience a decrease in sexual desire and alteration in secondary sex characteristics; however, only the Ellis and Grayhack[67] data cited above are available to estimate the magnitude of such sexual disruption.

Colon and Rectal Cancer

Several retrospective studies of sexual functioning after excision of the rectum for cancer have been conducted. For men, estimates of sexual dysfunctions have ranged from 32% to 59% for sexual desire,[72,73] from 28% to 76% for erectile difficulties,[72,74–76] and from 66% to 86% for ejaculation disruption. Estimates for women come from one investigation reporting that 28% of the sample reported reduced desire and 21 % reported genital numbness or dyspareunia.[73]

An important investigation was conducted by Kuchenhoff *et al*.[77] More than 400 patients treated for bowel disease at the University of Heidelberg were surveyed. Groups included cancer patients with resection and colostomy formation (n = 214), cancer patients with resection and end-to-end anastomosis (n = 114), patients treated for ulcerative colitis with ileostomy (n = 24), and patients with Crohn's disease who had bowel resection (n = 57). Although the two benign disease groups provide control for bowel disease and stoma presence, the surgeries for the cancer patients would require wider excisions and, as such, this factor and the greater nerve damage that results remain uncontrolled. Comparison of patients with or without a stoma revealed no significant differences in the area of sexual functioning. However, comparison of cancer and benign disease patients revealed significant differences, with the cancer patients reporting a decrease in sexual activity after their operation. The reasons for such a decline were not attributed specifically to cancer, although age at the time of surgery might have contributed the difference, since the benign disease sample was younger. Analyses of the interaction of the two factors of cancer and stoma presence, important to determine the disruptive effects of the stoma, were not conducted. However, another report by the same research team provides useful information.[78] Cancer patients undergoing resection and anastomosis (46 men, 64 women) were compared with cancer patients undergoing rectal excision with colostomy (116 men, 98 women). All patient groups experienced a decrease in their sexual activity following their surgery, ranging from 38% to 75% of the patients in the four groups. However, men with colostomy had significantly greater disruption than their nonstoma counterparts, whereas there were no significant differences in the magnitude of sexual disruption for the women. In addition to less frequent intercourse, male rectal cancer patients with stomas also reported erectile difficulty and premature or dry ejaculation. Thus, it appears for this site, predictors of postoperative sexual functioning are the patient's age, gender, and tumor site.

Bladder Cancer

Superficial bladder tumors are treated by transurethral resection and fulguration and may result in minimal sexual disruption; however, documenting data are not available. For men, the potential sexual disruption would be similar to that for radical prostatectomy, with the inability to obtain full erections and the absence of ejaculation. In addition to any nerve damage, erectile problems can also result from vascular insufficiency. One report of cystectomy performed without prostatectomy and vesiculectomy left 30% of the sample patients with "changed" sexual functioning (*e.g.*, desire problems, erectile failure).[79] A more recent and comprehensive report[80] describing the outcome following the more current treatment of cystectomy and concomitant prostatectomy, vesiculectomy, and urethrectomy indicated that only 8% of the patients had erections of sufficient strength to permit intercourse. Those patients attempting to remain sexually active after treatment but finding intercourse impossible engaged in masturbation, although 38% of this group did not experience orgasm. For women the posttreatment outcome would be similar to that with an anterior exenteration (see previous discussion), but with the vagina being narrowed instead of removed. Sexual excitement and orgasm may thus be impaired due to difficult penetration.

Summary and Recommendations for Future Research

The incidence of sexual dissatisfaction and/or dysfunction among adult cancer patients ranges from 20% to 90% of those surveyed. Although such an estimate is useful, a more specific understanding of these patients' sexual difficulties is necessary for prevention or rehabilitative efforts. That is, we need to answer the question, "What disease/treatment contexts produce what kind of sexual difficulties for which subgroups of cancer patients over what time course, and what are the etiologic components?" Obviously, no single study can provide all of the data needed. However, the remainder of this article will summarize the current knowledge that addresses this question and recommend future research strategies.

What Disease or Treatment Context Will Negatively Influence Sexuality for Cancer Patients?

One source of variability in the incidence estimate is that due to site of disease. Data on the magnitude of sexual disruption for different cancer sites are important for targeting preventive or rehabilitative resources to patients in greatest need. Comparing data from different investigators using different research strategies provides a rough estimate of differential sexual morbidity between cancer patients. For example, the data here suggest that sexual dysfunction is more prevalent and of greater magnitude among gynecologic compared with breast patients. The limited data by investigators studying both samples also suggest that this is the case.[81–81] To gather additional information a systematic research strategy is necessary. Additional retrospective study of the majority of the sites reviewed here seems unnecessary, although such a rapid data collection strategy may be reasonable for sites about which we know little or nothing (*e.g.*, head and neck tumors, testicular tumors, Hodgkin's disease). For such sites as breast or genital, prospective comparative data from investigators using a similar assessment strategy would be useful.

Another source of variability in the incidence data is that due to cancer treatments producing differential sexual morbidity. Unlike studying disease sites, it may not be helpful to group patients on the basis of treatment alone to estimate the magnitude of sexual morbidity (*e.g.*, comparing surgical, medical, or radiation oncology patients, *per se*). A more useful strategy may be to study those treatment alternatives offering comparable cure rates (*e.g.*, modified radical mastectomy *versus* lumpectomy and radiation therapy). Only for breast, cervix, and prostate patients is preliminary retrospective data currently available.[28,35] In future prospective research comparing modes of therapy, treatment groups need to be equated for patient variables (discussed below) that may be predictive of future sexual functioning. In addition, comparison must be made between relatively pure groupings of treatment methods. For instance, whether ovarian functioning is preserved or replacement estrogen given would probably affect sexuality by influencing vaginal integrity among premenopausal cervix cancer patients. Or, as mentioned in reference to prostate patients, the type of surgical approach taken could be influential if "radical surgery" (without specifying or controlling for the type of surgical approach) were compared with radiotherapy.

What Sexual Difficulties or Dysfunctions Develop for Cancer Patients?

In the studies reviewed here investigators attempted to gather behavioral data such as the frequency of intercourse or orgasm. Such data are important in that reduction in the frequency of sexual activity plays a significant role in sexual distress among individuals[84] and couples.[85] We have suggested[86] that, in addition to the description of the sexual behavior repertoire and the frequency of sexual activities, assessment of other aspects of sexual responsiveness (*e.g.*, arousability, satisfaction) and identity (*e.g.*, body image) be included. Assessment of a range of sexual behaviors is particularly important in that some (such as intercourse) may undergo substantial disruption, whereas others (*e.g.*, kissing, body caressing) need not. Also, the specific difficulties that develop need to be described in detail so that subgroups of patients

are identified (*e.g.*, psychogenic diminution of sexual desire *versus* desire dysfunction secondary to surgical or radiation-induced dyspareunia) and individualized treatments devised.

With rare exceptions,[13] cancer patients' verbal reports have been the only source of data on sexual responsivity following treatment. Although essential, such data need corroboration. Although it is obviously difficult to gather data other than self-report on sexual behavior, researchers could benefit from using the psychometrically sound questionnaires developed to study sexual functioning (reviewed by Schiavi *et al.*[87]) or psychophysiologic techniques used to quantify sexual excitement (*e.g.*, vaginal photoplethsymography and penile volumetric plethsymography; however, see Beck *et al.*[88] for a discussion of technical difficulties). Another strategy is to obtain parallel self-report or questionnaire responses from a sexual partner. Information could also be obtained on the partner's sexual response to the patient's illness and treatment and, although never studied systematically, the importance of the partner's reactions (particularly male partners reacting to their female cancer patient partner) has been alluded to by researchers examining sexual responsiveness among healthy women[89] and women with cancer.[35, 38, 39]

What Are the Characteristics of Cancer Patients Who Are At Risk for Developing Sexual Difficulties?

To date there has been only modest examination of the demographic, personal, or sexual characteristics of individuals that may put them at risk for the development of sexual difficulties following the diagnosis and treatment of cancer. Although a repressive personality style has been suggested as characteristic of those cancer patients whose survival time is shorter,[90] an analogous typology has emerged neither for cancer patients nor for healthy individuals. In contrast, demographic variables such as age and marital status have been implicated, with younger or partnerless cancer patients at greater risk. A variety of data suggest that certain sexual variables (*e.g.*, presence of sexual dysfunction before diagnosis, previous sexual behavior repertoire, frequency of intercourse) should be good predictors of posttreatment sexual behavior and sexual responsiveness. For example, among healthy individuals, those with sexual dysfunction report a limited repertoire of sexual behaviors when compared with nondysfunctional individuals.[91] Analyses with prospective data sets could begin to identify predictive variables or, as an approximation, multiple regression analyses with large retrospective samples could be used to generate hypotheses.

When Will Sexual Problems Develop in Cancer Patients?

Knowing when sexual problems will develop in cancer patients facilitates preventive efforts or timely rehabilitative therapy. To provide such data, longitudinal designs or carefully controlled cross-sequential designs are necessary. The longitudinal studies by Maguire *et al.*[19] and Morris *et al.*,[20] for example, estimate the time course of sexual problem development among breast cancer patients. It appears that those who develop problems do so early, by the third or fourth month and, if left untreated, the sexual dysfunctions do not resolve for the majority of patients. Other breast cancer patients develop difficulties later during the first postoperative year, but by the second year the number of women developing sexual difficulties appears to stabilize. It is not known currently whether other cancer patients would report a similar time course for their difficulties. However, it is probable that patients undergoing treatments with progressive effects (*e.g.*, radiation therapy) experience increasing sexual difficulties with time until the long-term effects of the treatment have stabilized.

What Factors Contribute to the Etiology of Sexual Dysfunction Among Cancer Patients?

The research reviewed here suggests that the etiology of sexual difficulties for cancer patients is multiply determined, due to sexual factors and physical disruption following treatment. Analysis of the contribution of these variables is complicated by any overlay of other life

stressors (*e.g.*, financial, familial, occupational, marital). These latter difficulties could disrupt the range, frequency, enjoyment, or importance of sexual activity for cancer patients as they sometimes do for healthy individuals. Thus, researchers must distinguish cancer patients with sexual difficulties and concomitant psychosocial stressors from those without additional stressors, allowing more specific etiologic associations to be identified.

Finally, it is not known whether sex therapy techniques developed for healthy individuals would be applicable for sexual dysfunctions that would potentially have sexual psychogenic, organic, and psychosocial stressors as etiologic components. On the limited occasions when sexual information and counseling have been available to cancer patients,[92,93] sexual functioning and general adjustment have improved. Thus, with a detailing of the sexual morbidity following the diagnosis and treatment of cancer, future efforts can design, implement, and evaluate specific interventions to prevent or alleviate sexual distress and improve the quality of life for cancer survivors.

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