The Longitudinal Effects of Cancer Treatment on Sexuality in Individuals With Lung Cancer

Judith A. Shell, PhD, LMFT, RN, Marsha Carolan, PhD, LMFT, Ying Zhang, PhD, and Karen Dow Meneses, PhD, RN, FAAN

Purpose/Objectives: To examine changes in sexual functioning during treatment for lung cancer and the extent to which age, gender, social support, and mood status affect sexual dysfunction.

Design: Prospective, exploratory.

Setting: Outpatient cancer clinic.

Sample: 59 of 84 eligible patients diagnosed with small cell or non-small cell lung cancer.

Methods: The Derogatis Interview for Sexual Function, Self-Report, to measure sexual functioning; the Social Provisions Scale to measure social support; and the Derogatis Affects Balance Scale to measure mood status were administered at diagnosis and at two and four months during treatment.

Main Research Variables: Level of sexual function, treatment, age, gender, social support, and mood status.

Findings: Results indicate a decrease in sexual function but no significant change in sexual function between the two treatment groups. Age was a significant factor affecting sexual function. Gender significantly affected sexual function at time 2 only. Between times 1 and 2, mood status had a significant relationship with sexual function. Social support did not affect sexual function directly; social support was found to significantly affect mood status.

Conclusions: Most patients reported below-normal sexual function at baseline. Sexual function worsened over time. Further research is warranted to examine time, place, and type of intervention needed.

Implications for Nursing: New data encourage assessment, intervention, and research related to the sexual function of patients with lung cancer.

Key Points . . .

- ➤ Sexual function of patients with lung cancer over time has been understudied.
- ➤ Sexual function can worsen over time as patients with lung cancer undergo treatment, and some evidence suggests that sexual function may be less than optimal at baseline for many patients.
- ➤ A short, reliable, and valid instrument to assess sexual functioning is needed.
- ➤ Research to evaluate counseling and medication regimens to improve or maintain sexual functioning during and following treatment needs to be conducted.

Lung cancer ranks second in cancer incidence and first in cancer mortality for men and women (American Cancer Society, 2007). Although death often is the first fear, the potential exists for other stressors that may necessitate many lifestyle adjustments (Ryan, 1996; Schover, Montague, & Lakin, 1997), including multimodality treatments, potential for metastatic spread, psychosocial and emotional distress, and uncertain prognosis (Ginsburg, Quirt, Ginsburg, & MacKillop, 1995; Schwartz & Plawecki, 2002).

The crisis of lung cancer is intensified by its invasive nature, societal reactions, and the effects of treatment on the patients' sexuality and body image even when no outward change in appearance may be obvious or visible. Changes in role function caused by the inability to continue working or caring for family, fatigue, and a loss in physical sexual functioning can threaten patients with lung cancer with a loss of feelings of femininity or masculinity (Bernhard & Ganz, 1991a, 1991b; Schwartz & Plawecki, 2002; Thaler-DeMers, 2001).

Literature Review

Human sexuality underlies the complete range of human experience and contributes to people's lives in many ways. Changes in sexual functioning are among the multitudes of quality-of-life changes that can occur in response to a cancer diagnosis and treatment. Most psychosocial studies that examine sexuality exclusively, or as a variable, usually involve patients with genital cancers (e.g. breast, gynecologic, prostate, testicular) (Anderson, 1996; Andersen & Elliot, 1994; Fransson

Judith A. Shell, PhD, LMFT, RN, is a marriage and family therapist and a medical family therapist at Osceola Cancer Center in Kissimmee, FL; Marsha Carolan, PhD, LMFT, is an associate professor in the Department of Family and Child Ecology at Michigan State University in East Lansing; Ying Zhang, PhD, is an associate professor in the Department of Biostatistics at the University of Iowa in Aimes; and Karen Dow Meneses, PhD, RN, FAAN, is the Pegasus professor and Beat and Jill Kahli endowed chair in oncology nursing in the College of Nursing at the University of Central Florida in Orlando.
Funding for this study was provided by grants from Michigan State University (College of Human Ecology Dissertation Fellowship, Alice Thorpe Dissertation Fellowship, and the Beatrice Paolucci Memorial Scholarship), the American Cancer Society for Doctoral Studies and Dissertation Research Project, the Oncology Nursing Certification Corporation Nursing Outcomes, and the Puget Sound Chapter of the Oncology Nursing Society. (Submitted November 2004. Accepted for publication May 12, 2007.)

Digital Object Identifier: 10.1188/08.ONF.73-79

& Widmark, 1996; Meyerowitz, Desmond, Rowland, Wyatt, & Ganz, 1999; Smith & Reilly, 1994; Stanford et al., 2000; Wilmoth, 2006; Young-McCaughan, 1996). Far fewer studies on sexuality include patients with nongenital cancers (e.g., lung, head and neck, esophageal), which can lead to less than optimal assessment and intervention for such patients (Cella et al., 1987; Ginsburg et al., 1995; Siston & List, 1997).

Schover and Jensen (1988) provided an excellent overview of sexuality problems and cited specific cancer-related examples in their review. Low sexual desire, erectile dysfunction, female arousal-phase dysfunction, and male and female orgasmic dysfunction may result from fatigue, stress, chronic pain, nerve or vascular damage, neurotoxic chemotherapy, and hormonal effects. Body image disturbances and deficits in self-esteem may result from premature aging caused by decreased hormones, surgical disfigurement, weight loss, and other side effects of radiation and chemotherapy (Shell & Campbell-Norris, 2006). Relationships also may suffer during cancer treatment when couples lack the ability to show caring, share feelings, or negotiate disagreements; have role inflexibility, or do not share similar needs for intimacy. Age and gender also influence sexuality (Fransson & Widmark, 1996; Ganz, Rowland, Desmond, Meyerowitz, & Wyatt, 1998). Studies often reveal that age, gender, and treatment with chemotherapy or radiation therapy can negatively influence sexuality (Alfonso et al., 1997; Auchincloss, 1991; Fransson & Widmark; Ganz et al., 2000).

Physical Factors Influencing Sexuality

Physically and physiologically, reports of sexual dysfunction following cancer treatment with surgery, radiation therapy, or chemotherapy range widely from 10%–90% (Iwamoto, 2001; Lamb, 1995; Schover et al., 1997). Schwartz and Plawecki (2002) explained that many of the side effects from chemotherapy affect sexual desire and the physical ability to engage in sexual activity.

Chemotherapy agents can affect gonadal function. Those effects are classified as immediate, early, or late. Testicular atrophy along with oligospermia (decreased sperm) or aspermia (no sperm) can occur (Rieker, 1996). Women can experience amenorrhea and menopausal symptoms (e.g., hot flashes) and vaginal dryness and loss of elasticity. In addition, women may suffer from dyspareunia as a result of the dryness and irritation from chemotherapy-induced ovarian failure (Carpenter et al., 2004; Ganz et al., 2000; Lamb, 1995). Those problems can lead to deficiencies in the excitement phase, libido and orgasm, response to sexual stimulation, and sexual energy and erotic pleasure.

Psychosocial Factors Influencing Sexuality

Emotional distress rarely is discussed in the setting of lung cancer. Psychosocial research and intervention are infrequently described for patients with the disease. Moreover, limited research specifically pertains to sexual function during or after treatment for lung cancer.

Some studies discuss several sexuality consequences in patients with lung cancer, including indirect effect of distress on sexuality, loss of libido during treatment, and decrease in sexual activity in women (Sarna, 1993a). However, little is known about how treatment may affect sexual function specifically in patients with lung cancer and how aspects of gender, age, social support, and mood status are related.

Bernhard and Ganz (1991a, 1991b) reviewed the literature from 1975–1990 regarding psychosocial issues in patients with lung cancer and concluded that a number of areas needed further investigation. They emphasized that the multidimensional construct of quality of life included sexual function. Ginsburg et al. (1995) examined psychiatric illness and psychosocial concerns among 52 newly diagnosed patients with lung cancer. Of the 20 outcome measures, only one measure was related to patients' sexuality. Specifically, 25 (48%) acknowledged loss of libido that was rated severe by 27% of subjects.

Sarna (1993b) reported on a group of 69 women ($\bar{X}$ = 61 years of age) with lung cancer. She found greater disturbance in their quality of life compared to women with other cancers, particularly for those with recurrent lung disease. Subjects reported more problems, greater psychological distress, and greater marital dysfunction. Results showed a 38% decrease in sexual activity; many were no longer interested in sex, nor did they feel sexually attractive.

In a sample of 56 patients with lung cancer, Klemm (1994) explored the correlation of daily hassles, demands of illness, and social support with psychosocial adjustment. She found that demands of illness were predictive of decreased psychosocial adjustment. Subjects reported generally high social support, low daily hassles, and moderately low demands of illness. Finally, quality of life was assessed in adult survivors of lung, colon, and prostate cancer. The investigators reported significant physical, psychosocial, sexual, medical interaction, and marital problems in all three groups (Schag, Ganz, Wing, Sim, & Lee, 1994). Lung cancer survivors experienced more problems than other patients with cancer, and the authors determined that patients who survive cancer do not return to a state of normal health.

Purpose

The purpose of the present study was to explore the relationship between the type of lung cancer treatment and level of sexual function in people with lung cancer. The control variables included gender, age, perception of social support, and mood status. The study addressed the following questions: Does a significant relationship exist between sexual function within and between two lung cancer treatment groups (chemotherapy only versus chemotherapy and radiation therapy) at diagnosis, and at two and four months during treatment? Do significant relationships exist between the extent of variation in the level of sexual function in people with lung cancer and gender, age, perception of social support, and mood status?

Methods

Study Design

This exploratory study examined changes in sexual functioning as perceived by people with lung cancer during treatment (i.e., chemotherapy only versus chemotherapy and radiation therapy). The extent to which age, gender, social support, and mood status affected sexual function was measured with self-report survey questionnaires.

Sample and Setting

The sample for the present study was 59 patients newly diagnosed with lung cancer. The study was conducted primarily in an outpatient cancer center in the southern United

States. Some subjects were located via the Internet. Subjects were diagnosed by biopsy (n = 47), wedge resection (n = 1), or surgical removal of a lobe of the lung (n = 11). All subjects were fewer than four weeks into their treatment.

Instruments

The **Derogatis Interview for Sexual Functioning, Self-Report (DISF-SR),** (Derogatis, 1987) is a self-report tool (with versions for men and women) designed to measure the quality of current (i.e., within the previous 30 days) sexual functioning. The tool is composed of 25 questions in five separate domains that essentially parallel the sexual response cycle: sexual cognition and fantasy, sexual arousal, sexual behavior and experience, sexual orgasm, and sexual drive and relationships. Questions are asked on a Likert scale format. Gender-specific representative norms have been developed for the DISF-SR based on several hundred nonpatient community respondents (Derogatis, 1997). Scores below the 50th percentile are interpreted as relative deficiencies in important aspects of sexual functioning whereas scores above the 50th percentile are viewed as relative strengths. Internal consistency reliability coefficients tend to be high and well within an acceptable range of 0.74–0.80. Test-retest coefficients are based on a seven-day retest interval and range from 0.80–0.90; the stability coefficient for the DISF-SR is 0.86 (Derogatis, 1987).

The **Social Provisions Scale (SPS)** (Cutrona & Russell, 1987) assesses six different facets or provisions of social support (attachment, social integration, reassurance of worth, reliable alliance, guidance, and opportunity for nurturing). It has been used to examine adaptation to stress in different populations (Baron, Cutrona, Hicklin, Russell, & Lubaroff, 1990; Cutrona, 1989; Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; Russell & Cutrona, 1991). The scale consists of 24 items, with four items assessing each social provision subscale. Of the four items in each subscale, two are worded in a positive manner and two in a negative manner. High scores indicate that a patient is receiving that provision (Russell & Cutrona, 1984). Reported reliabilities for the six subscales proved adequate with coefficient alphas ranging from 0.65–0.76; reliability for the total SPS score was 0.91 (Cutrona & Russell).

The **Derogatis Affects Balance Scale (DABS)** (Derogatis, 1975) is a measure of mood or affect and provides a profile of four positive (joy, contentment, vigor, affection) and four negative (anxiety, depression, guilt, hostility) affects plus five global measures. Twenty adjectives describe the negative and positive affect dimensions for a total of 40 adjectives. The five global scores provide summary measures of affective status at a higher order and include a Positive Total Score, Negative Total Score, Affects Balance Index, Affects Expressiveness Index, and Positive Affects Ratio (Derogatis, 1996). Norms have been generated identical to the DISF-SR scores. Based on a sample of 355 psychiatric patients, coefficient alphas were 0.84–0.92 for positive affects and 0.79–0.85 for negative affects, indicating item homogeneity. Test-retest coefficients for positive and negative affects ranged from 0.78–0.84.

Procedures

The study proposal was reviewed and approved by the University Committee on Research Involving Human Subjects at Michigan State University. Newly diagnosed patients with lung cancer were identified. When eligibility was determined, the investigator explained the study to the prospective subject. Because of the sensitive nature of the DISF-SR, subjects were instructed to read over the surveys before providing informed consent. When written informed consent was obtained, subjects completed the instruments at baseline (i.e., either pretreatment or within four weeks of initiation of treatment), at two months, and at four months after baseline. Completion time for all three surveys was 15–20 minutes.

Data Analysis

Summary statistics described the sample. Multiple paired samples t test adjusted by the Bonferroni technique tested change in sexual function in the two treatment groups at the three points in time. Multiple paired samples t test was used rather than analysis of variance (ANOVA) because ANOVA is used to test the differences for more than two groups. The tests were conducted individually instead of collectively because the sample sizes at different times varied, so researchers believed that the t tests tend to be more powerful than the repeated measure ANOVA. Independent samples t test was used to test change in sexual function between the two treatment groups at the three test points. Correlation between treatment and lung cancer cell type was analyzed using chi square. Multiple linear step-wise regression determined the influence of mood status, social support, age, and gender on sexual functioning.

Results

Subjects

During a 19-month period, surveys from 59 of 84 eligible subjects were received; 78% of subjects had non-small cell lung cancer and 22% had small cell lung cancer. In the non-small cell category, more subjects had stage III or IV disease (70%) than stage I or II (30%).

Twenty-three (39%) patients received chemotherapy only whereas 36 (61%) received chemotherapy and radiation therapy. The sample was predominately Caucasian, with a high school or less education, and from a lower-middle class group. Slightly more women than men participated, and they ranged in age from 28–83 years ($\bar{X}$ = 60.6 years); 75% were married (see Table 1).

Forty-seven of the 59 subjects were diagnosed via biopsy, bronchial brushings, or fine needle aspiration and did not have to recover from major surgery. The 12 subjects who had surgery had lobectomies; this may have affected their baseline sexual function scores negatively because they were recovering from major surgery. Those patients started treatment with radiation and chemotherapy 20–70 days after surgery and completed their baseline assessments 14 days before to 20 days after radiation and chemotherapy were initiated. Baseline sexual function was assessed as close to treatment start date as possible so that pretreatment sexual function could be measured accurately and treatment with chemotherapy or chemotherapy and radiation therapy would not interfere with patients' actual sexual function or perception of how well they were functioning. Forty-five percent started the study within 20 days before and 55% started within 27 days after treatment commenced.

Sexual Functioning

Most subjects experienced problems with sexual functioning at all three test points. According to the DISF-SR, all but

Table 1. Demographic Characteristics

Characteristic	n	%
Race		
Caucasian	54	92
Hispanic	2	3
African American	2	3
Native American	1	2
Marital status		
Married	44	75
Divorced or separated	6	10
Widowed	6	10
Single	3	5
Education		
Less than high school	6	10
High school graduate	33	56
Some college	10	17
College graduate	9	15
Postgraduate work	1	2
Employment status		
Full-time	9	15
Part-time	3	5
Unemployed	14	24
Retired	33	56
Family income ($)		
Less than 40,000	40	68
40,000–70,000	12	20
More than 70,000	5	9
Unknown	2	3
Age (years)		
28–39	2	3
40–49	7	12
50–59	20	34
60–69	15	26
70–79	13	22
80–89	2	3
Gender		
Female	32	54
Male	27	46
Treatment		
Chemotherapy only	23	39
Chemotherapy and radiation	36	61
Diagnostic procedures		
Biopsy only	47	80
Surgery with removal of lobe	11	19
Wedge resection	1	1

N = 59

three of the subjects (95%) performed below the norm for sexual function (i.e., below the 50th percentile) at baseline. At the second test point, one subject, who had functioned below the norm at time one, scored above the 50th percentile at time two but then reverted to below the norm at the third test point. Two of the subjects (3%) functioned above the 50th percentile at all three test points.

The majority of subjects were below the norm on the Affects Balance Index of the DABS (measure of sense of well-being or depressed mood) at each test point, with 65% below the 50th percentile at baseline, 75% at time 2, and 62% at time 3 (see Table 2).

The Bonferroni technique was used to analyze the change in sexual function in the two treatment groups. Results showed that sexual function decreased between baseline and time two (month 2) of survey completion (confidence interval = –2.09–10.78) as well as between baseline and time three (month 4) of survey completion (confidence interval = –3.85–10.04). The score between test points 2 and 3 had very little difference (confidence interval = –5.71–5.81). Although a definite trend toward a decrease in sexual function existed over time, none of the sexual function score decreases was statistically significant.

At baseline and time 2, the chemotherapy and radiation therapy group scored higher on the DISF-SR than the chemotherapy-only group. At time 3, the chemotherapy-only group scored higher. No statistically significant differences in sexual functioning between the two treatment groups existed at the three test points.

Between baseline and time 2, scores on the Affects Balance Index decreased significantly just as they did between baseline and time 3. Interestingly, between times 2 and 3 the Affects Balance Index score increase slightly, although it was not statistically significant. No statistically significant change occurred in the subjects' perception of social support among any of the three time points.

To explore the extent to which age and gender affect sexual functioning, three multiple linear regression models were constructed on sexual functioning adjusted for treatment across the three test points. Regression analysis between the DISF-SR raw score and each predictor variable (treatment, age, gender, mood, and social support) was performed. At all three test points, age was a statistically significant factor affecting sexual function ($p < 0.001$, $p < 0.001$, and $p = 0.03$, respectively). Gender was not statistically significant at baseline or time 3; however, it was significant at time two ($p = 0.029$) (see Table 3), indicating that male subjects tended to have more normal sexual functioning than their female counterparts. Mood status was significantly related to the subjects' sexual function at baseline ($p = 0.004$) and time 2 ($p = 0.002$) but not at time 3. Social support had no significant effect on the patients' sexual function at any of the testing times; however, the possibility that it played some significant role relative to the patients' quality of life and, thereby, indirectly affected sexual function seemed logical. To examine that supposition, the investigator regressed mood status (Affects Balance Index score) on social support and adjusted for age, gender, and treatment. Social support positively affected mood status significantly ($p = 0.003$, $p < 0.001$, and $p < 0.001$, respectively) at all three test points (see Table 4).

Table 2. Mood and Social Support Scores Over Time

Score	$\bar{X}$	SD	Possible Range	Actual Range	Variance	N
Affects Balance Index						
Time 1	46.42	14.40	25–80	25–80	207.32	59
Time 2	43.08	13.80	25–80	25–78	190.45	49
Time 3	45.46	13.80	25–80	25–78	262.20	41
Social Provisions Scale						
Time 1	79.88	9.41	1–100	64–96	88.59	59
Time 2	78.23	12.55	1–100	38–96	157.46	48
Time 3	78.87	11.13	1–100	48–97	123.85	39

Table 3. Analysis of Sexual Functioning Factors Effect Over Time

Variable	Constant	Treatment	Patient Age	Gender	Affects Balance Index t score	Social Support
Time 1						
t	0.939	1.456	–4.096	1.625	3.047	0.029
p	0.352	0.151	0.000	0.110	0.004	0.822
Time 2						
t	1.234	–0.001	–3.830	2.261	3.356	–0.173
p	0.224	0.999	0.000	0.029	0.002	0.864
Time 3						
t	1.322	–0.058	–2.267	1.239	1.213	–0.013
p	0.195	0.716	0.030	0.224	0.234	0.990

Discussion

The present study is the first reported research study with a primary focus on the sexual function of individuals with lung cancer. The longitudinal design identified the key factors that affected sexual functioning in patients with lung cancer over time. As previously noted, sexual function frequently declines in people with cancer, especially as they experience treatment (Alfonso et al., 1997; Burbie & Polinsky, 1992; Schover, Montague, & Schain, 1993). The present study confirms a trend toward worsening sexual functioning over time as patients undergo treatment. However, most subjects entered the study with low sexual functioning according to their DISF-SR scores, which may be a result of a negative psychological response to the diagnosis itself.

No statistical difference existed between treatment groups (chemotherapy only versus chemotherapy and radiation therapy) relative to DISF-SR raw scores. The finding is similar to Sarna's (1993b) findings that symptom distress did not differ significantly based on treatment status or type of lung cancer.

According to the DISF-SR scores, men being treated for lung cancer tended to experience a more normal level of sexual functioning than women; the finding was significant at the two-month time period and may be the result of the shock of hair loss, weight loss, and potential skin changes, along with hot flashes, decreased libido, and vaginal atrophy experienced by women. At the four-month time period, women may have become acclimated to the changes and begun to adapt to a different body image. Speculation regarding female sexual dysfunction while receiving chemotherapy is tentative by necessity because, as Susman (2001) explained, research on the subject generally is 20 years behind that of men.

A significant decrease in mood status was observed between baseline and time 2 and baseline and time 3. Interestingly, mood status actually increased slightly between times 2 and 3. The finding may be because when people are diagnosed with lung cancer, they immediately contemplate their demise, have little hope, and plunge into despair. However, as treatment is introduced that has the potential to prolong life, hope is resurrected, and help is afforded to adjust to the cancer diagnosis (Bernhard & Ganz, 1991b).

Social support had no direct significant effect on the sexual function of patients with lung cancer; however, it did have a significantly positive effect on mood status at all three test points and particularly at the four-month period. The result supports findings from other studies that examined the effect of social support on perceptions of psychological distress, psychosocial adjustment, anxiety, and depression (Northouse, Dorris, & Charron-Moore, 1995; Quinn, Fontanna, & Reznikoff, 1987). A significant relationship between mood status and sexual functioning seems to suggest that a higher level of social support affects sexual function in an indirect manner.

One notable finding from the present study was that mood status did affect sexual function. The better the mood, the higher the patient tended to score on the DISF-SR. Because many patients report depression and anxiety when diagnosed with cancer, and those with more severe illness such as lung cancer report even higher depression rates, healthcare professionals need to assess carefully for it. If depression is treated proactively with therapy and antidepressants that tend not to produce sexual side effects such as bupropion or escitalopram, potential sexual dysfunction may be reduced and patients can have a more satisfactory quality of life as they journey through treatment.

Strengths and Limitations

The present study explored only the sexual function of people being treated for lung cancer without examining other psychosocial aspects (e.g., smoking behaviors, role activities such as work, parenting responsibilities, financial issues) and comorbidities. Consequently, more in-depth information was gained relative to sexual function and what factors had an effect on sexual function. Similar to previous reports in the literature, social support and mood status were relevant factors and were shown to affect sexual function directly and indirectly.

Sexual function, mood status, and social support were measured by self-report questionnaires, which are quite sensitive when used to measure various sexuality parameters (Fransson & Widmark, 1996). When given the opportunity for confidentiality, people may be more truthful with sensitive issues such as their sexual function and activity.

The study was not randomized and did not have a control group. However, it was an exploratory, descriptive study done to improve knowledge of sexual function in patients with lung cancer. The study sample, although adequate with power to detect changes, was small and is not generalizable to the total population of patients with lung cancer; however,

Table 4. Analysis of Mood Status Effect Over Time Using Affects Balance Index t Score[a]

Variable	Constant	Gender	Patient Age	Treatment	Social Support
Time 1					
t	–0.547	0.222	1.414	–1.209	3.165
p	0.587	0.825	0.163	0.232	0.003
Time 2					
t	–0.836	–1.254	2.159	0.146	4.027
p	0.408	0.216	0.036	0.884	0.000
Time 3					
t	–2.493	0.331	1.360	0.012	5.347
p	0.018	0.743	0.183	0.991	0.000

[a] Standarized score

no other specific sexuality study currently exists with which to compare the results.

Although almost an equal number of women and men participated, the recruitment of minority subjects was less than optimal. The study had no known gay or lesbian subjects. Participants included only two African Americans, two Hispanics, and one Native American; all others were Caucasian. Notably, then, the experiences of other cultures, races, and sexual orientation need further exploration.

The personal nature of the study could limit the strength of the findings because responses may have been biased by reluctance to report sexual activity, as has been noted by other investigators (Catania, Gibson, Chitwood, & Coates, 1990; Schover et al., 1995). The standardized instrument used to measure sexual function (DISF-SR) may not have been sensitive enough to capture particular sexual issues of people with cancer and, in particular, lung cancer. Those nuances could have been realized by including a qualitative approach such as interview, but that was beyond the scope of this study. Moreover, although the DISF-SR instrument has been used previously with patients with cancer, it does not have any questions relating to intimacy within the relationship. The DISF-SR asks how satisfied subjects are with their present relationships but does little to realize factors other than the physical aspects of sexual function.

Nursing Implications

Clinical

If nurses and therapists are aware that sexual functioning may be decreased in patients with lung cancer even before treatment begins, they can address and normalize possible feelings of inadequacy. After the cancer diagnosis, but before treatment begins, sexual desire may decrease as a result of anxiety about survival. Those anxious feelings can overpower patients or partners and lead to an emotional crisis. Nurses and therapists can provide encouragement by explaining that tumor response to chemotherapy and radiation therapy often can minimize symptoms and improve physical performance. Simply discussing sexuality, an important aspect of quality of life, may give patients with lung cancer hope and increase their sense of well-being. Future studies can examine the effect of treatment on sexual functioning in patients with lung cancer over a longer period of time.

Research

The efficacy of a structured counseling program intervention such as sexual rehabilitation counseling can be assessed through randomized, controlled studies. Medical family therapists or other healthcare providers can intervene at different points in time to provide patients and partners information regarding the effect of treatment on the phases of sexual functioning. Further research also may create interventions according to gender and age. Clearly, more research to develop empirically supported interventions can enrich our knowledge of which modes of psychosocial interventions are most effective and in which groups of patients.

Finally, the assessment of sexual functioning in people with lung cancer suffers from a lack of reliable and valid instruments appropriate for this particular population. This quantitative study used a short, reliable, and valid questionnaire to assess sexual functioning, but the instrument was not specific to individuals with lung cancer. Future studies could incorporate a qualitative section so patients and partners have a means to communicate their concerns and needs using their own words.

The authors gratefully acknowledge Nicolle Hartshorne for her diligence and assistance in the production of this article.

Author Contact: Judith A. Shell, PhD, LMFT, RN, can be reached at shelljashell@aol.com, with copy to editor at ONFEditor@ons.org.

References

Alfonso, C.A., Cohen, M.A., Levin, M., Simon, K., Abraham, N., & Metropolitan Hospital Center Psycho-Oncology Study Group. (1997). Sexual dysfunction in cancer patients: A collaborative psycho- oncology project. *International Journal of Mental Health, 26*(1), 90–98.

American Cancer Society. (2007). *Cancer facts and figures 2007.* Atlanta, GA: Author.

Andersen, B., & Elliot, M. (1994). Female cancer survivors: Appreciating their sexual concerns. *Canadian Journal of Human Sexuality, 3*, 107–122.

Anderson, B. (1996). Predicting and treating the sexual difficulties of gynecologic cancer survivors. *Cancer Control, 3*(2), 113–119.

Auchincloss, S. (1991). Sexual dysfunction after cancer treatment. *Journal of Psychosocial Oncology, 9(*1), 23–47.

Baron, R.S., Cutrona, C.E., Hicklin, D., Russell, D.W., & Lubaroff, D.M. (1990). Social support and immune function among spouses of cancer patients. *Journal of Personality and Social Psychology, 59*(2), 344–352.

Bernhard, J., & Ganz, P. (1991a). Psychosocial issues in lung cancer patients (Part 1). *Chest, 99*(1), 216–223.

Bernhard, J., & Ganz, P. (1991b). Psychosocial issues in lung cancer patients (Part 2). *Chest, 99*(2), 480–485.

Burbie, G.E., & Polinsky, M.L. (1992). Intimacy and sexuality after cancer treatment: Restoring a sense of wholeness. *Journal of Psychosocial Oncology, 10*(1), 19–33.

Carpenter, J.S., Elam, J.L., Ridner, S.H., Carney, P.H., Cherry, G.J., & Cucullu, H.L. (2004). Sleep, fatigue, and depressive symptoms in breast cancer survivors and matched healthy women experiencing hot flashes. *Oncology Nursing Forum, 31*(3), 591–598.

Catania, J.A., Gibson, D.R., Chitwood, D.D., & Coates, T.J. (1990). Methodological problems in AIDS behavioral research: Influences on measurement error and participation bias in studies of sexual behavior. *Psychological Bulletin, 108*(3), 339–362.

Cella, D.F., Orofiamma, B., Holland, J.C., Silberfarb, P.M., Tross, S., Feldstein, M., et al. (1987). The relationship of psychological distress, extent of disease, and performance status in patients with lung cancer. *Cancer, 60*(7), 1661–1667.

Cutrona, C.E. (1989). Ratings of social support by adolescents and adult informants: Degree of correspondence and prediction of depressive symptoms. *Journal of Personality and Social Psychology, 57*(4), 723–730.

Cutrona, C.E., Cole, V., Colangelo, N., Assouline, S.G., & Russell, D.W. (1994). Perceived parental social support and academic achievement: An attachment theory perspective. *Journal of Personality and Social Psychology, 66*(2), 369–378.

Cutrona, C.E., & Russell, D. (1987). The provisions of social relationships and adaptation to stress. In W.H. Jones & D. Periman (Eds.), *Advances in personal relationships* (vol. 1, pp. 37–67). Greenwich, CT: JAI Press.

Derogatis, L.R. (1975). *The Affects Balance Scale.* Baltimore: Clinical Psychometric Research.

Derogatis, L.R. (1987). *Derogatis Interview for Sexual Functioning (DISF/DISF-SR).* Riderwood, MD: Clinical Psychometric Research.

Derogatis, L.R. (1996). *Derogatis Affects Balance Scale: Administration,*

scoring, and procedures manual. Riverwood, MD: Clinical Psychometric Research.

Derogatis, L.R. (1997). The Derogatis Interview for Sexual Functioning (DISF/DISF-SR): An introductory report. *Journal of Sex and Marital Therapy, 23*(4), 291–304.

Fransson, P., & Widmark, A. (1996). Self-assessed sexual function after pelvic irradiation for prostate carcinoma: Comparison with an age-matched control group. *Cancer, 78*(5), 1066–1078.

Ganz, P.A., Greendale, G.A., Petersen, L., Zibecchi, L., Kahn, B., & Belin, T.R. (2000). Managing menopausal symptoms in breast cancer survivors: Results of a randomized controlled trial. *Journal of the National Cancer Institute, 92*(13), 1054–1064.

Ganz, P.A., Rowland, J.H., Desmond, K., Meyerowitz, B.E., & Wyatt, G.E. (1998). Life after breast cancer: Understanding women's health-related quality of life and sexual functioning. *Journal of Clinical Oncology, 16*(2), 501–514.

Ginsburg, M.L., Quirt, C., Ginsburg, A.D., & MacKillop, W.J. (1995). Psychiatric illness and psychosocial concerns of patients with newly diagnosed lung cancer. *Canadian Medical Association Journal, 152*(5), 701–708.

Iwamoto, R. (2001). Radiation therapy. In S. Otto (Ed.), *Oncology nursing* (4th ed., pp. 606–637). St. Louis, MO: Mosby.

Klemm, P.R. (1994). Variables influencing psychosocial adjustment in lung cancer: A preliminary study. *Oncology Nursing Forum, 21*(6), 1059–1062.

Lamb, M.A. (1995). Effects of cancer on the sexuality and fertility of women. *Seminars in Oncology Nursing, 11*(2), 120–127.

Meyerowitz, B.E., Desmond, K.A., Rowland, J.H., Wyatt, G.E., & Ganz, P.A. (1999). Sexuality following breast cancer. *Journal of Sex and Marital Therapy, 25*(3), 237–250.

Northouse, L., Dorris, G., & Charron-Moore, C. (1995). Factors affecting couples adjustment to recurrent breast cancer. *Social Science Medicine, 41*(1), 69–76.

Quinn, M., Fontanna, A.F., & Reznikoff, M. (1987). Psychological distress in reaction to lung cancer as a function of spousal support and coping strategy. *Journal of Psychosocial Oncology, 4*(4), 79–90.

Rieker, P.P. (1996). How should a man with testicular cancer be counseled and what information is available to him? *Seminars in Urologic Oncology, 14*(1), 17–23.

Russell, D.W., & Cutrona, C.E. (1984). *The provisions of social relationships and adaptation to stress.* Paper presented at the annual meeting of the American Psychological Association, Anaheim, CA.

Russell, D.W., & Cutrona, C.E. (1991). Social support, stress, and depressive symptoms among the elderly: Test of a process model. *Psychology and Aging, 6*(2), 190–201.

Ryan, L.S. (1996). Psychosocial issues and lung cancer: A behavioral approach. *Seminars in Oncology Nursing, 12*(4), 318–323.

Sarna, L. (1993a). Correlates of symptom distress in women with lung cancer. *Cancer Practice, 1*(1), 21–28.

Sarna, L. (1993b). Women with lung cancer: Impact on quality of life. *Quality of Life Research, 2*(1), 13–22.

Schag, C.A., Ganz, P.A., Wing, D.S., Sim, M.S., & Lee, J.J. (1994). Quality of life in adult survivors of lung, colon, and prostate cancer. *Quality of Life Research, 3*(2), 127–141.

Schover, L.R., & Jensen, S.B. (1988). *Sexuality and chronic illness: A comprehensive approach.* New York: Guilford Press.

Schover, L.R., Montague, D.K., & Lakin, M.M. (1997). Sexual problems. In V.T. DeVita, S. Hellman, & S.A. Rosenberg (Eds.), *Cancer: Principles and practices of oncology* (5th ed., pp. 2857–2871). Philadelphia: Lippincott-Raven.

Schover, L.R., Montague, D.K., & Schain, W.S. (1993). Psychologic aspects of patients with cancer: Sexual problems of patients with cancer. In V.T. DeVita, S. Hellman, & S.A. Rosenberg (Eds.), *Cancer: Principles and practices of oncology* (4th ed., pp. 2464–2480). Philadelphia: Lippincott Williams and Wilkins.

Schover, L.R., Yetman, R.J., Tuason, L.J., Meisler, E., Esselstyn, C.B., Herman, R.E., et al. (1995). Partial mastectomy and breast reconstruction. A comparison of their effects on psychosocial adjustment, body image, and sexuality. *Cancer, 75*(1), 54–64.

Schwartz, S., & Plawecki, H.M. (2002). Consequences of chemotherapy on the sexuality of patients with lung cancer. *Clinical Journal of Oncology Nursing, 6*(4), 212–216.

Shell, J., & Campbell-Norris, C. (2006). Body image disturbance. In R.M. Carroll-Johnson, L.M. Gorman, & N.J. Bush (Eds.), *Psychosocial nursing care along the cancer continuum* (2nd ed., pp. 183–196). Pittsburgh, PA: Oncology Nursing Society.

Siston, A.K., & List, M.A. (1997). Sexual functioning and head and neck cancer. *Journal of Psychosocial Oncology, 15*(3/4), 107–122.

Smith, N., & Reilly, G. (1994). Sexuality and body image: The challenges facing male and female cancer patients. *Canadian Journal of Human Sexuality, 3*, 145–149.

Stanford, J.L., Feng, Z., Hamilton, A.S., Gilliland, F.D., Stephenson, R.A., Eley, J.W., et al. (2000). Urinary and sexual function after radical prostatectomy for clinically localized prostate cancer: The Prostate Cancer Outcomes study. *JAMA, 283*(3), 354–360.

Susman, E. (2001, September). Recognizing female sexual dysfunction as a complication of chemotherapy. *Oncology Times, 23*(9), 27–28.

Thaler-DeMers, D. (2001). Intimacy issues: Sexuality, fertility, and relationships. *Seminars in Oncology Nursing, 17*(4), 255–262.

Wilmoth, M.C. (2006). Life after cancer: What does sexuality have to do with it? *Oncology Nursing Forum, 33*(5), 905–910.

Young-McCaughan, S. (1996). Sexual functioning in women with breast cancer after treatment with adjuvant therapy. *Cancer Nursing, 19*(4), 308–319.