

# Self-Care Strategies Used by Patients With Lung Cancer to Promote Quality of Life

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**L**ung cancer is the leading cause of cancer-related death for men and women (American Cancer Society [ACS], 2009). Although the five-year survival rate approaches 49% for lung cancers detected and treated at an early stage, only 16% are detected early and the overall five-year survival rate for all lung cancers is only 15% (ACS, 2009). Combined modality treatment regimens for lung cancer have improved patient survival; however, these regimens often have been accompanied by more severe early and late toxicities, potentially resulting in increased symptoms (ACS, 2009). The effect of these treatments on the quality of patients' lives has been reported only sporadically in the literature.

Quality of life (QOL) has been consistently identified by oncology nurses and researchers as a priority (Berger et al., 2005; Mooney, Ferrell, Nail, Benedict, & Haberman, 1991; Ropka et al., 2002; Stetz, Haberman, Holcombe, & Jones, 1995). Improved QOL also is one of the primary goals of *Healthy People 2010* (U.S. Department of Health and Human Services, 2000). Although the importance of QOL as a specific management objective in cancer treatment has been outlined (Bland, 1997), research on QOL in patients treated for lung cancer has been relatively limited. Most randomized controlled trials (RCTs) have traditionally focused on objective tumor response and survival as endpoints rather than the subjective outcomes reported by the patients treated (Pat, Dooms, & Vansteenkiste, 2008). In a review of RCTs including chemotherapy for lung cancer treatment from 1980–2005, only five RCTs that included QOL as a primary endpoint were found, although 40 RCTs did look at QOL as a secondary endpoint (Pat et al., 2008).

## Literature Review

Although QOL research in lung cancer has been limited, several studies have described QOL perceptions and examined their relationship to symptoms or health issues. In studies of women with lung cancer, Sarna (1993a, 1993b) found strong correlations between

**Purpose/Objectives:** To describe self-care strategies used by patients with lung cancer to promote quality of life (QOL).

**Research Approach:** Qualitative study using a phenomenologic approach.

**Setting:** Cancer clinics in central Texas.

**Participants:** Purposive sampling was used to enroll 10 adults with lung cancer who had completed primary treatment within the prior two years.

**Methodologic Approach:** One-on-one, semistructured, audiotaped interviews were conducted.

**Main Research Variables:** QOL and self-care strategies.

**Findings:** Participants identified family and social support, functional independence, physical well-being, and spirituality as important aspects of QOL. Participants identified fatigue as the factor most negatively affecting QOL. Self-care strategies identified to improve QOL were primarily related to fatigue management. Rest was the primary self-care strategy reportedly recommended by healthcare providers, but this strategy was ineffective. Helpful self-care strategies included budgeting time and energy, maintaining contact with family and friends for support, and prayer.

**Conclusions:** This study documents the negative effect of fatigue on QOL in patients with lung cancer. Use of rest to manage fatigue's pervasive negative effect on QOL is a common self-care strategy, reportedly recommended by healthcare providers, but is ineffective by itself to manage fatigue and improve QOL.

**Interpretation:** Healthcare providers should assess self-care strategies used by patients with lung cancer to promote improved QOL. Because fatigue has a documented negative effect on QOL in patients with lung cancer, providers should encourage the use of multidimensional strategies that have been supported by research evidence to manage fatigue and improve QOL.

decreased QOL and increased symptom distress. In a subsequent study, Sarna (1998) found that use of structured nursing assessment of symptom distress delayed the increased symptom distress. In a descriptive study of QOL in patients with non-small cell lung cancer (NSCLC) receiving curative radiation therapy, lung cancer treatment had a significant negative effect

on perceptions of QOL during treatment, but QOL improved following treatment (John, 2001). These QOL changes mirrored the significant changes found in physical and functional well-being (John, 2001). Montazeri, Milroy, Hole, McEwen, and Gillis (2003) studied QOL in patients newly diagnosed with lung cancer, 63% of whom underwent active treatment for their lung cancer. They found decreased functioning and global QOL in all areas measured, with significant changes in physical and role functioning. They also found more health issues in all areas, with significant issues related to physical mobility and energy. Bozcuk et al. (2006) found that patients with advanced NSCLC treated with chemotherapy experienced differing patterns of QOL related to their baseline QOL status. Patients with low baseline QOL scores reported improved QOL and physical functioning with decreased fatigue levels. In contrast, patients with higher baseline QOL scores reported decreased QOL and physical functioning with increased fatigue levels (Bozcuk et al., 2006).

Several studies have described symptoms experienced by patients with lung cancer during and after treatment. Cooley, Short, and Moriarty (2003) performed a secondary analysis of data obtained from 117 people who had received treatment for lung cancer. They found that fatigue and pain were the most distressing symptoms for people in all treatment groups. Gift, Jablonski, Stommel, and Given (2004) found that the symptoms of fatigue, nausea, weakness, appetite loss, weight loss, altered taste, and vomiting formed a symptom cluster in a study of 220 older adult patients who were being treated for newly diagnosed lung cancer. Significant predictors of symptoms and their severity in this study were tumor stage at diagnosis, number of comorbid conditions, and treatment with chemotherapy. Additional analysis of the data set revealed that the same seven symptoms comprising the symptom cluster at diagnosis persisted at three and six months after diagnosis (Gift, Stommel, Jablonski, & Given, 2003).

Tishelman, Degner, and Mueller (2000) explored the intensity and perceived importance of nine symptoms in a pilot study in Sweden of 26 patients with lung cancer identified as inoperable but not described in terms of stage or treatment. The nine symptoms explored in the study, using a Swedish version of the Symptom Distress Scale, were outlook, breathing, pain, insomnia, cough, bowel function, appetite, fatigue, and appearance. Tishelman et al. (2000) found that the symptom reported as most important near the time of diagnosis was outlook, but one month later, breathing was the symptom ranked as most important and outlook was second most important. Although fatigue was reported as the symptom with the highest intensity near the time of diagnosis, it was perceived to be the second lowest in importance (Tishelman et al., 2000). This contrasts with a study by Butt et al. (2008) to determine the relative importance of fatigue compared with other symptoms and

concerns. Participants in this study included 534 people with 1 of 11 advanced cancer types of an advanced stage (stages III or IV) who had been treated with at least two cycles of chemotherapy. Of the participants with advanced cancer in this study, 50 (9%) had lung cancer. Fatigue ranked as the most frequent and the most important symptom across the entire sample of patients with cancer and in patients with advanced lung cancer. Intensity of fatigue was not reported in this study. Although cultural differences between the study samples might account for some of the difference in ratings of importance of fatigue in patients with lung cancer, it is unclear from the information reported about these studies if the contradiction in findings also might be related to differences in stage or treatment of disease. Although these studies identified symptoms common to patients with lung cancer, the effect of these symptoms on overall QOL was not reported.

Ostlund, Wennman-Larsen, Gustavsson, and Wengström (2007) examined the effect of symptoms on QOL in patients with lung cancer in Sweden. In the study, 52 people, most with advanced-stage lung cancer, completed the Swedish version of the European Organisation for Research and Treatment of Cancer QOL Questionnaire (EORTC QLQ-C30) and the lung-cancer-specific module (LC-13). Ostlund et al. (2007) found that emotional functioning ( $r = 0.5$ ,  $p < 0.01$ ) and fatigue ( $r = -0.47$ ,  $p < 0.01$ ) were significantly associated with overall QOL and that the two factors were significant predictors of overall QOL. The effect of fatigue on QOL in patients with lung or breast cancer was explored in a study conducted in the Netherlands by Dagnelie et al. (2007). Twenty-nine people with lung cancer scheduled to receive high-dose radiation therapy, about 50% of whom had been pretreated with chemotherapy, were included in the study. QOL and fatigue were assessed using the EORTC QLQ-C30 and it was found that fatigue had the strongest correlation ( $r = -0.76$ ,  $p < 0.001$ ) with overall QOL compared with measures on functioning and other symptom subscales of the QLQ-C30. No other studies were found that examined the effect of fatigue on overall QOL in patients with lung cancer.

Despite the ongoing awareness of the importance of QOL research, little research has been reported regarding strategies that might improve QOL in patients with lung cancer. The purpose of this exploratory descriptive study was to describe self-care strategies used by patients with lung cancer to maintain or improve QOL. As part of the study, factors influencing QOL were explored, as were the strategies used to manage them.

## Methods

Because of the paucity of literature describing self-care strategies used by patients with lung cancer to promote QOL during treatment, this study was conducted using

an exploratory descriptive design. A phenomenologic qualitative approach was used to allow for an in-depth exploration of perceptions of QOL and self-care strategies used to promote QOL.

## Participants

After the study received approval from institutional protection committees, purposive sampling was used to enroll participants. Inclusion criteria for the study included that participants were aged 21 years or older, able to understand and speak English, and had completed primary treatment for lung cancer within the prior two years. The sample size for the study was not determined prior to the study; the plan was that interviews would continue until saturation of the data was achieved. The decisions about final sample size and saturation of the data were made after validation of the data analysis with the participants.

## Data Collection and Analysis

Participants for the study were recruited from cancer clinics in central Texas over a period of about nine months. Individuals meeting the study criteria were identified by nurses in the cancer clinics and given an information sheet describing the purpose of the study and contact information for the study investigator. Individuals reporting an interest in the study were given the option of leaving their contact information with the nurse for notification of the study investigator or of using the information on the sheet to contact the study investigator themselves. Interested individuals contacting or being contacted by the study investigator received a scripted verbal description of the study purpose and methods. Questions they had about the study and the nature of participation in the study were answered and verbal consent to participate was solicited. An interview date, time, and place were scheduled at the participants' convenience. The consistent use of scripted interactions and information sheets during the recruitment process ensured auditability in this study (Sandelowski, 1986).

A cover letter describing the study and nature of participation in the study was provided to each participant prior to beginning the interview. Participation in the interview was considered consent to take part in the study. Participants were interviewed by the study investigator at the location of the participant's choosing. Most of the interviews took place in participants' homes, with one taking place in the investigator's office. All interviews were tape recorded and lasted from 90–210 minutes. Demographic data and information related to the disease and treatment were elicited.

During the interviews, participants were encouraged to talk about their experiences during and after treatment for lung cancer and how their QOL was affected. The investigator used an interview guide to

elicit information about participants' perceptions of QOL, self-care strategies used to maintain or promote QOL, and sources of information for the self-care strategies. Figure 1 contains examples of prompts from the interview guide. The investigator ensured auditability in this study by using the interview guide during each interview (Sandelowski, 1986). Investigator observations made during the interview process were recorded as field notes immediately following each interview to assure credibility (Sandelowski, 1986).

All audiotaped interview data and field notes were transcribed verbatim. Accuracy of each transcription was verified by the investigator by comparison with the corresponding audiotape to ensure credibility of data for subsequent analysis. The primary investigator used content analysis to examine the transcribed interview data (Miles & Huberman, 1984). Analysis began with open coding that included extensive reading of the interview material, line-by-line analysis searching for similarities and differences, and identification and labeling of indicators from which themes were developed. As themes were developed, processes, experiences, expressed perceptions of stress, and the conditions under which they were expressed were noted. The investigator kept written memos of insights gained from the content of interview transcripts during data analysis. Categories were developed as they emerged from each theme. Decisions used to guide data categorization were recorded during the analysis process to further ensure auditability (Sandelowski, 1986).

To obtain credibility in the data analysis procedures, the themes and categories were identified and typewritten transcripts, field notes, and data analysis notes were re-examined for conditions under which the categories were developed and for the strategies used in categorization. To establish additional trustworthiness of the findings, the investigator validated the interpretation of interviews during follow-up telephone calls with participants. After describing to participants the themes that were identified during analysis of the interviews, the investigator elicited participant feedback on those themes and gave participants the opportunity to clarify or add to previous comments. Comments during this process affirmed the credibility of the themes and categories and further

- Tell me the story of how you came to be diagnosed with lung cancer and how you went through your treatment.
- When you hear the phrase "quality of life," what does that mean to you in your life?
- What made/makes your quality of life better?
- What made/makes your quality of life worse?
- What do/did you do to maintain or improve your quality of life or to handle problems you may have experienced?
- How did you come to use those strategies to help maintain/improve quality of life?

**Figure 1. Examples of Open-Ended Questions**



elaborated on them. After validation of study findings with the participants, the investigator determined that saturation of the data had been achieved; therefore, no additional participants were recruited for interviews.

## Results

### Sample

Ten participants were enrolled in the study sample, six men and four women. On average, participants were aged 60 years (range = 48–87), Caucasian (60%), married (70%), and had completed at least a high school education (80%). The average time since lung cancer diagnosis was 14 months, with a range from 8 months to 2 years. Six of the participants reported that they had stage III lung cancer at the time of diagnosis, and the remaining four were uncertain of their lung cancer stage. Most of the participants (90%) had received both chemotherapy and radiation therapy to treat their lung cancer, and two were receiving chemotherapy at the time of the interviews for what they identified as “maintenance.”

### Meaning of Quality of Life

Several categories were identified that reflected participants’ thoughts about the meaning of QOL. Participants were unanimous in their feelings that QOL is multidimensional. To address this point, one participant stated, “It’s more than just the physical stuff . . . it’s your family and your mental and your spiritual and your financial stuff.” Another said, “First you’ve got to be happy . . . second is to have my brain intact, to have mental acuity . . . the third is the physical part . . . and then the other one was financial.”

**Independent functioning:** All participants reported that being able to function independently was a significant contributor to good QOL. They spoke in various ways about the importance of, as one participant said, “Just being able to do the things you would like to do.” Another said, “If I can get up and do something every day. It doesn’t have to be much. Just something that I like to do. And it doesn’t even have to be for a long time. It can just be for a few hours. That’s QOL.” Another said, “It’s whether I could get up without help to dress and shower.”

**Physical well-being:** Although the entire sample reported that QOL is more than just physical, participants did not discount the importance of physical well-being when discussing QOL. One participant said,

Everybody needs to have a QOL as far as physical, you know? And we all go through changes in life sometimes that take us down and bring us up, you know? But, the physical things of life are important.

In speaking about the importance of physical well-being, another participant said, “. . . because if you’re wrung out or feeling bad, there’s no quality possible.”

**Connections with others:** Participants also spoke about the importance of family and social interaction to QOL. One participant related,

Well, when I think of QOL, I think of a few things. And that is family first. Because, you know, trying to make it on your own, it’s all right, but, I mean, it’s a lonesome, sad life. Not necessarily to be married. But to have family . . . it’s a great blessing to me.

Another said that QOL is “not having to stay away from family . . . from close friends who can support [you].” Yet another said, “Being with your family. The support, your friends, at home in familiar surroundings. That all goes into quality of life. It’s more than just the physical.”

**Emotional well-being:** Several participants specifically identified the importance of emotions in QOL. One participant simply said, “Just being in a good mood.” Another expanded on this idea.

QOL for me is you’ve got to be happy. You’ve got to be undepressed. You’ve got to be at least neutral. I can deal with the physical stuff a whole lot better than with the emotional.

**Spiritual well-being:** The spiritual aspects of QOL also were described by participants. One participant simply stated, “It’s more than just the physical, the spiritual is also important.” Another said,

The other part of QOL, I guess, is spiritual. And I’m not a churchgoer at all. But I’ve always had a real spiritual side. But you go through these ups and downs when you’re sick . . . going from “God, why did you do this to me?” or “Why did you let this happen?” to being so grateful to be alive and so I think I’ve developed my spiritual side a lot during all of this.

### Effect of Fatigue on Quality of Life

Fatigue was identified by all participants as the factor having the most distressing and overwhelming effect on QOL. Although participants reported experiencing other symptoms, such as nausea, constipation, difficulty with sleep, or pain, they did not feel that those symptoms had the significant effect that fatigue had on their lives. When asked more about these other symptoms, they consistently replied that they were “not a big deal” when compared with fatigue. Several themes emerged related to participants’ descriptions of their fatigue experiences, including physical feelings of fatigue, functional limitations on activities and thinking, and emotions related to fatigue.

**Physical feelings of fatigue:** Participants spoke frequently and at length about the physical effects associated with the fatigue experience. They used terms such as “weak,” “tired,” and “wiped out” to describe their fatigue. Regardless of how they articulated it, they were very expressive about their feelings. These feelings were exemplified by the comments of participants.

The biggest impact on my quality of life? Feeling wiped out. Tired. Shoot . . . just flat tired . . . absolutely no energy whatsoever. I was almost like a vegetable. I was really zapped . . . I was so weak and so . . . so worn out.

Just kind of left me wiped out . . . no energy. Feeling completely exhausted. . . . The uh, not feeling good. Not having any strength.

Another described the physical sensations associated with fatigue as, "Just tired all the way around. . . . Your whole body's just shot, you know?" Another said, "It was really hard. . . . I felt like I had heavy arms and legs.

Several of the participants had difficulty deciding what to call their feelings of fatigue. One said, "I don't know if you call it tired or if I was listless . . . just listless . . . lack of energy." Another described it as, "I guess you'd say I had no stamina. Yeah, I just flat run out of steam." Yet another said, "The fatiguedness. I mean, there [were] times where I just couldn't stand it. I'd run out of gas."

**Functional effect of fatigue:** Participants consistently reported the effect that fatigue had on their ability to function. These feelings were exemplified by the comments of one participant.

I just couldn't do much of anything . . . except sit around the house. The main thing was going to [town] taking my treatments was about all I ever did. I wasn't doing anything to exert myself. Not being able to do anything, you know, and sitting around the house all day. No energy. Just going to the kitchen table to eat . . . would seem to be a hassle. I'd rather just sit or something and then I didn't really want to sit either because I was tired of that.

The frustration of fatigue's effects on independent function were expressed by one participant.

Yeah, I mean, it was really hard . . . having to be wheeled around in the wheelchair, you know? You can't get up, you know, and don't want to get up and don't want to lay down and hey, just tired all the way around. Well, you know, for me the worst thing is having somebody to wait on me because I'm not used to people waiting on me. You know, I don't want you to wait on me, you know?

The difficulty of carrying on with routine activities was clear. For one it was simply walking. "Just trying to walk across the lobby . . . here I was with an old man shuffle, you know, spinning my feet. I guess, just weak as all get out." For another it was grocery shopping.

It had been a long time that I hadn't gone to the grocery store. So last week I thought well, I think I'll just try it. So I went to the grocery store. And I was exhausted the rest of the day. So I told [my daughter], "I'm not going to the store this week. I just can't do it."

Going to work was difficult for one participant. "I'd just as soon be working as laying at the house. . . . I don't care for that at all. . . . But some days I just can't make it . . . so I do stay at home and stay in bed."

Even the seemingly simplest activities were affected. "I couldn't even read . . . didn't even feel like holding [books] up and didn't want to sit up in the bed . . . because you're too tired. So I couldn't deal with it."

Mental activities became a challenge for several of individuals. In describing difficulties with thinking, one participant said,

My mind used to be able to just [snaps fingers]. Just one item after another . . . then I'm sitting here trying to think well, what would I want to think about. What am I trying to do? What do I want to think about?

Another described it as, "The mental energy was gone. My brain was in slow motion. Like molasses. It was too hard to even think."

**Affective sensations with fatigue:** Many of the participants described the effect of fatigue on their mood or outlook. Their lack of energy and the accompanying loss of ability to function led to negative feelings such as feeling down or anxious. One participant said,

I started really, you know, feeling down . . . just uh, depressed. Not being able to do anything, you know, and sitting around the house all day. All by yourself is not much fun. Bothers you, you know, to not be able to do what . . . what you want to do.

Another said, "I did worry a lot. I was concerned that I was just so weak. . . . It was horrible."

Participants expressed feelings of despair and a sense of hopelessness in the following ways.

I got to the point where I was so tired I didn't care . . . whether the apartment was clean or dirty . . . or whether I got up or not.

You can't get up, you know, and don't want to get up and don't want to lay down and hey, just tired all the way around. You know, I mean, if this is what it is then I don't want to go through this, you know.

The worry. The uh, not feeling good. . . . You will never be the same as you were.

I began to despair that [the fatigue] wouldn't ever get any better.

## Self-Care Strategies

When participants were asked what self-care strategies they used to improve QOL during and after treatment and how they came to use those strategies, they frequently related the strategies they used to combat fatigue. They reported that they had been advised by their healthcare providers to rest or sleep to manage

fatigue, but this was not effective. One participant summed up his experience.

I went to bed but felt just as tired when I got up. Nothing seemed to help. Just kind of go to bed or lay down . . . lay there and sleep it off for hours at a time. I mean, sleep four hours and get up and you're still tired and then go back to sleep for another two hours and get up and you're still tired, you know?

Another said,

Anything I tried didn't change anything. And really I didn't know what to try. Whenever I got weak I just didn't do much of anything. I told [the doctors] I was weak and they just told me to rest. But [resting] didn't make any difference at all.

The comment of one participant seemed to represent the common experience of all participants, "When I told the doctor about being so tired or wiped out, he said, 'Go to bed.'"

Several participants tried to balance periods of activity and rest to manage their fatigue, although they tried this strategy without being advised by anyone to do so. As one participant explained,

You might not do it like you used to. You just have to figure out another way to do it. And so, you know, then you have to ask yourself, well, I have to plan my day . . . and see what I have energy for today. I might want to do this but that's going to take all the energy I have so I'm not going to do that. You have to change your way of life altogether. Whereas you used to just get up and go and do something and now you can't do it.

Another said, "I just try to remember and I try not to overdo things that I, you know, would have done before."

Participants also spoke of the importance of social support in maintaining QOL. They found that having family and friends nearby helped their QOL. Although one participant reported the positive effect of the support of family and friends, he expressed the need to limit their visits to conserve his energy.

I told my wife to just tell them not to come. It's not that I didn't care for them. It's simply that I just couldn't tolerate the time. And I also learned if people came and, uh, stayed and I'd have people come and after about an hour and a half, I had to tell them it was time to go, like that, and I'd say, "Oh, I've run out of gas."

One participant said, "Being able to get all my treatment close to home [helped improve QOL]. I was close to my family and friends here." Another said, "We had lots of support . . . friends, Bible study group . . . that really helped. Staying here, I was able to work when I could and be with family. So support was very, very important." Yet another said, "I have this extended family of

friends that are close enough that are truly family. I had quite a support group of my own."

Several participants looked for lung cancer support groups as a strategy to improve QOL, but were unable to locate any. According to one,

One thing that would've helped is [the social worker] tried to find me a lung cancer support group and there wasn't one. I said, "Are there not enough of us or what?" And she said, "Well, don't you think a general group would help?" So I went to this general one a time or two. But, you know, there's something different about lung cancer and I really wanted that.

When discussing the lack of lung cancer support groups, another participant identified the additional problem of the stigma of lung cancer.

I got into a support group for people with cancer, but you know, when they ask you what kind of cancer you have, and you say it's lung cancer, the next question is always "Well, did you smoke?" Like it's your fault you have cancer or something. They don't even wait to hear that maybe you didn't even smoke. You can see the look on their faces. So I didn't go back after that. You wouldn't have to deal with that if there was a group for lung cancer.

The importance of prayer also was identified as a strategy to improve QOL. This is best exemplified by the following comments.

You know, you just keep trying and don't forget to pray. Yeah, I mean, prayer helped me a whole lot, you know, because whereas I didn't call myself a prayer warrior, I did try and pray three times a day.

A lot of praying was what I did [to improve QOL]. My wife was trying to bring in, you know, a lot of Christian books, you know? But I was too tired to bother with that. But just the praying helped me get through.

## Discussion

Because perception of QOL is a highly individual experience, self-care strategies were explored in this study within the context of the meaning of QOL for patients with lung cancer. The multidimensional characterization of QOL of the study participants was consistent with definitions of QOL found in the literature. The origin of the term QOL stems from the 1947 World Health Organization definition that equated health with physical, mental, and social well-being rather than freedom from disability and disease (Spitzer, 1987). Spitzer, an early proponent of the importance of QOL, concluded from an extensive literature review that QOL included the domains of physical and social function, emotional or mental status, burden of symptoms, and perception or sense of well-being. Similar multidimensional



conceptualizations of QOL were subsequently developed by others (Bowling, 1991; Cella & Tulskey, 1990; Fal-lowfield, 1990; Ferrell et al., 1992; Osoba, 1994; Padilla, Ferrell, Grant, & Rhiner, 1990; Schipper, Clinch, McMurray, & Levitt, 1984). Cooley (1998) defined QOL in lung cancer as the person's evaluation of the effect of disease or treatment on functional status, physical symptoms, affective state, and interpersonal relations. These definitions are congruent with descriptions of QOL by participants in this study as well-being in functional, physical, social, emotional, and spiritual dimensions.

Fatigue was consistently identified by participants in this study as having the most significant effect on QOL. This finding can be compared with other research. Studies have identified fatigue as the most distressing symptom associated with lung cancer and its treatment (Cooley et al., 2003; Gift et al., 2003; 2004). Butt et al. (2008) found not only that fatigue was the most commonly reported symptom, but also that people with advanced lung cancer found it to be the most important symptom. The symptom identified as most distressing and most important may be the factor identified as having the greatest effect on QOL in patients with lung cancer. The findings from this study also provide qualitative support for studies that have found strong correlations between fatigue and overall QOL in patients with lung cancer (Dagnelie et al., 2007; Ostlund et al., 2007).

Participants in the current study spoke at length about the pervasive effects of fatigue on every dimension of their lives. Definitions of fatigue that incorporate weakness, lack of concentration, and depression (Winningham et al., 1994) are consistent with the multi-dimensional nature of fatigue reported by participants in this study. Fatigue has been found to affect the whole person, physically, emotionally, and mentally (Ahlberg, Ekman, Gaston-Johansson, & Mock, 2003). The multi-dimensional effect of fatigue also has been supported by Butt et al.'s (2008) findings of fatigue's strong association with various aspects of function, including ability to work, meeting the needs of family, participating in leisure activities, and enjoying life.

Because participants in this study identified fatigue as the factor that had the greatest effect on their QOL, the self-care strategies most commonly reported to maintain or improve QOL were primarily related to handling the fatigue. The strategy reported most frequently by participants was rest and sleep to manage the fatigue that negatively affected their QOL; however, they also reported that this strategy was ineffective. Participants reported balancing rest and activity as a strategy they used with varying amounts of success to improve their QOL by managing fatigue. These findings are consistent with those of Borthwick, Knowles, McNamara, O'Dea, and Stroner (2003), who found that the most frequently used self-care strategy to manage fatigue in people with NSCLC was rest or sleep and that it was ineffective in

most cases. The study, however, did not address the effect of fatigue on QOL or the effect of strategies to manage fatigue on QOL.

The ineffectiveness of rest or sleep to manage fatigue with the aim of improving QOL is not surprising given the preponderance of evidence supporting a comprehensive approach to fatigue management. In the past, the typical approach of healthcare professionals to fatigue was to encourage patients with cancer to rest. Guidelines for fatigue management have since been developed and include assessment of patients with cancer for clinical conditions that could cause fatigue, treatment of those conditions if present, and, if those conditions are not present, a multidimensional approach to fatigue management (Mock et al., 2000). The multi-dimensional approach to fatigue management includes pharmacologic and nonpharmacologic interventions (i.e., exercise, energy conservation, rest and sleep, stress reduction, and nutrition) (Mock et al., 2000).

The effectiveness of exercise for treatment of fatigue has been further documented in analyses of evidence by Mitchell, Beck, Hood, Moore, and Tanner (2007) and by Cramp and Daniel (2008). Mitchell et al. (2007) found that exercise was the only intervention that could be recommended for practice based on a review of empirical studies. Cramp and Daniel (2008) concluded from their review that exercise is an effective intervention for cancer-related fatigue. The studies reviewed for these analyses used a wide variety of exercise types to manage cancer-related fatigue, including walking, cycling, swimming, resistance exercise, flexibility training, and combined exercise. Most of the studies in these reviews focused on exercise as an intervention for fatigue in patients with breast cancer, and none focused exclusively on patients with lung cancer or primarily on QOL as an outcome (Cramp & Daniel, 2008; Mitchell et al., 2007).

Pulmonary rehabilitation has been proposed as an intervention to promote QOL and decrease fatigue in patients with cancer. Although most of the research evidence supporting the benefits of pulmonary rehabilitation has been conducted in patients with chronic obstructive pulmonary disease (COPD) rather than lung cancer because most patients newly diagnosed with lung cancer have COPD, Benzo (2007) suggested that the findings related to pulmonary rehabilitation in COPD could be applied to lung cancer. Potential benefits of pulmonary rehabilitation for patients with lung cancer include improvement in fatigue and QOL, but Benzo (2007) stressed that little research evidence exists to document these benefits. Benzo (2007) also stressed the importance of tailoring any pulmonary rehabilitation to the specific needs and condition of the individual.

Although participants in the current study reported that rest and sleep were their healthcare professionals' recommendations for managing fatigue, the teaching

materials of the cancer clinics in which they received treatment included multidimensional strategies to manage fatigue (S. Baley, personal communication, May, 2005; P. Garza, personal communication, May, 2005). What emphasis, if any, was placed on exercise, energy conservation, stress reduction, or nutrition when this study's participants received instructions about symptom management or subsequently when they spoke with their healthcare providers about the fatigue experienced is unknown. Because rest and sleep are typically used to manage fatigue in healthy people, the participants may have remembered that intervention more vividly. In addition, because exercise may initially seem counterintuitive, individuals may possibly be less likely to recall that information.

Other self-care strategies used by participants in this study to improve QOL included seeking social support and using prayer. The strategies are consistent with the descriptions by the participants of the importance of the social and spiritual well-being aspects of QOL. The importance of social support for health and well-being of patients with cancer is well documented (Bloom, 2008). In a study of QOL, social networks, and social support in people with a variety of cancers, Courtens, Stevens, Crebolder, and Philipsen (1996) concluded that higher levels of social support may lead to better QOL. Other studies have supported an association between social support and improved QOL in breast cancer survivors (Sammarco, 2001, 2003). No studies of the role of social support in QOL in patients with lung cancer were found. Although spiritual well-being is commonly included in conceptualizations of QOL, very little research exists about the role of prayer or spirituality in the QOL of patients with lung cancer. Meraviglia (2004) found an association between prayer and psychological well-being in patients with lung cancer, but the association with overall QOL was not assessed. Although other studies addressed the spiritual needs of patients with lung cancer, mostly at the end of life, none was found that addressed the role of prayer or spirituality in promoting QOL in patients with lung cancer.

## Limitations

Several limitations exist in this study, foremost being the small sample size of participants. Although small sample sizes are consistent with qualitative research methodology, the small sample limits the ability to generalize beyond the sample data to the larger population of patients with lung cancer. Another limitation of the study is the variable amounts of time since diagnosis and treatment for lung cancer in the study participants. Participants were asked to recall events and feelings about those events that occurred anywhere from eight months to two years in the past. Recollections may have been influenced by these variable amounts of time and

the variety of events that very likely occurred in the interim. Another limitation is that, although most of the participants received a combination of chemotherapy and radiation therapy, the specific treatment regimens could have varied widely among the participants. Stage of lung cancer at the time of diagnosis as well as disease status at the time of the interviews also might have varied among participants. The information about disease and treatment was obtained by self-report of the participants rather than from review of medical records; therefore, an accurate determination of variation among participants was not possible.

## Conclusions and Implications for Practice and Research

This study documents the negative effect of fatigue on QOL during and after treatment for lung cancer and the suggestions that patients with lung cancer try multiple self-care strategies to improve QOL. Many of these strategies focus on managing the fatigue that has such a pervasive negative effect on QOL; however, these strategies often are ineffective. Healthcare providers should carefully assess symptoms such as fatigue that affect QOL of patients with lung cancer, determine what self-care strategies are being used to manage them, and evaluate the effectiveness of these strategies. These patients should be advised about evidence-based strategies that might be more effective to manage symptoms and improve their QOL, and these strategies should be tailored to fit the specific needs and condition of the individual.

Additional identification of factors negatively affecting QOL during treatment and self-care strategies used by patients with lung cancer to promote QOL will enhance nurses' efforts to promote successful adaptation and QOL. More research is needed to explore the effect of fatigue on QOL in patients with lung cancer and to test the effectiveness of interventions to improve QOL by managing fatigue. Research is needed about specific types of exercise that might be feasible and effective for patients with lung cancer and that can be successfully incorporated into a comprehensive plan to improve their QOL. Additional research also is needed about the roles of social support and spirituality in promoting QOL. Development and testing of teaching strategies that might be more effective to educate patients with lung cancer about symptom management and promotion of QOL also is needed.

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