Quality of Life in Female Lung Transplant Candidates and Recipients

Marjolaine M. Limbos, Charles K. Chan and Steven Kesten

Chest 1997;112;1165-1174
DOI 10.1378/chest.112.5.1165

The online version of this article, along with updated information and services can be found online on the World Wide Web at:
http://chestjournal.chestpubs.org/content/112/5/1165
Quality of Life in Female Lung Transplant Candidates and Recipients*

Marjolaine M. Limbos, MSW; Charles K. Chan, MD, FCCP; and Steven Kesten, MD, FCCP

Objective: Quality of life (QOL) studies of lung transplant recipients indicate that there are improvements following transplantation. More recently, there has been some suggestion that certain QOL issues are different for men and women. The purpose of the present study was to examine changes in QOL, body satisfaction, and sexual functioning in women lung transplant recipients.

Study population: Seven prelung transplant (PRE) and 34 postlung transplant (POST) women.

Main outcome measures: The RAND-36 Health Survey, Body Cathexis Scale, Derogatis Sexual Functioning Inventory, Hospital Depression and Anxiety Scale, Rosenberg Self-Esteem Scale, and an open-ended questionnaire.

Results: Higher scores were found in the POST group with respect to general health and role limitations due to physical health. We were unable to detect significant differences between the groups with respect to emotional well-being, role limitations due to emotional health, and social functioning. There were significant differences between the PRE and the POST body satisfaction scores. Although there was no significant difference in overall sexual functioning, recipients in the PRE group reported higher sex drive. Eleven of the POST recipients (52%) scored below the 10th percentile in overall sexual functioning.

Conclusions: Overall QOL improves following lung transplantation; however, the lack of differences in many domains of QOL raises the concern that women lung transplant recipients may continue to have significant impairments, including those regarding sexuality and body satisfaction.

(CHEST 1997; 112:1165-74)

Key words: lung transplantation; quality of life; sexual function; women

Abbreviations: ANOVA=analysis of variance; BC=body cathexis; CF=cystic fibrosis; DSFI=Derogatis Sexual Functioning Inventory; HAD=Hospital Anxiety and Depression Scale; MOS-20=Medical Outcome Study Health Survey; POST=posttransplant; PPH=primary pulmonary hypertension; PRE=pretransplant; QOL=quality of life; RAND-36=RAND 36-Item Health Survey; RSES=Rosenberg Self-Esteem Scale

End-stage lung disease is the common final pathway for a number of chronic pulmonary illnesses. Significant morbidity is experienced by individuals with end-stage lung disease as a result of symptoms of dyspnea, recurrent infections, limitation of activities, side effects of medication, and admissions to hospital.1-3 In recent years, lung transplantation has emerged as a therapeutic option for these individuals, with a resulting 1-year survival of approximately 70%.4,6 Accompanying the medical and physiologic burdens of end-stage lung disease are many psychological, psychiatric, and social impacts.5 These factors may include depression, anxiety, fear of dying, financial concerns, relocating, and coping with a disabling or life-threatening illness. Although there have been several observational and anecdotal reports of the psychosocial impact of lung transplant, research examining the quality of life (QOL) in lung transplant recipients has only begun to surface.

Studies thus far consistently indicate that QOL is enhanced following lung transplantation.3,7-12 However, there are a number of factors that may continue to impair an individual’s return to “normal” QOL. Side effects of immunosuppressive medications and complications of transplantation, such as bronchiolitis obliterans, are common and have the potential to influence QOL.13,14 Furthermore, QOL includes not only health-related factors such as physical activity and functional level, but also other factors such as satisfaction with life, happiness, employment, body satisfaction, and sexual functioning; these may or may not improve posttransplant.

*From The Toronto Lung Transplant Program (Ms. Limbos and Dr. Chan), Toronto, Ontario, Canada, and Rush-Presbyterian-St. Luke’s Medical Center (Dr. Kesten), Rush Medical College, Chicago. Manuscript received January 21, 1997; revision accepted May 23.
Studies of QOL in lung transplant recipients to date have primarily evaluated health status as a measure of QOL, with little examination of the various domains that contribute to overall QOL. Moreover, these have been on heterogeneous populations of lung transplant recipients; to our knowledge, none have specifically evaluated the QOL in women who have received or are awaiting transplantation. Women lung transplant candidates differ in several aspects from their male counterparts. For example, in a single center report, at a given FEV1, women with cystic fibrosis had a higher 2-year mortality rate than their male counterparts.\textsuperscript{15} Several of the factors that influence QOL for women are also likely to be different for men, and domains such as body satisfaction, role changes, and sexual functioning may be affected more for women than for men.\textsuperscript{3}

We therefore sought to examine specific domains of QOL, as well as general measures of health status, that may be of particular importance to women lung transplant recipients. Conceptualizing the various domains of QOL for women is important for both pretransplantation and posttransplantation counseling, as well as for improving one's ability to predict outcomes and to evaluate therapeutic interventions. It is becoming increasingly important to investigate the psychosocial impacts of lung transplantation to identify areas to target in the posttransplant period that may allow for an improved QOL.

**Materials and Methods**

**Study Population**

Between the months of July and September 1996, all women on the waiting list for lung transplantation and those having received lung transplantation at the Toronto Hospital were considered eligible for participation in the study. We excluded from the study those women who were \(<6\) months from the date of their transplantation, and those who were currently hospitalized or receiving IV medications for a medical illness or complication of their lung transplant. The study protocol was approved by the Toronto Hospital executive committee for research on human subjects.

**Procedures**

Following an information session in which the study protocol was introduced to women in the transplantation program, all eligible women were sequentially contacted by telephone by a research assistant to see if they would be interested in participation. Questionnaires were then mailed to all women agreeing to participate. All questionnaires were self-administered. All subjects received a cover letter explaining the study and addressing issues of confidentiality, a consent form, the six questionnaires, and a stamped return envelope. To improve return rate, a follow-up telephone call was made to answer any questions or concerns.

**Demographic Questionnaire**

This questionnaire inquired about specific demographic variables, including underlying disease leading to lung transplantation, age, marital status, weight, height, and time since transplantation.

**Measures of Quality of Life (QOL)**

For the purpose of this study, we defined QOL as a person's assessment of his or her satisfaction and functioning with respect to general health, as well as a variety of nonmedical factors such as psychological, social, and emotional factors. Because health status is one important component of QOL that has been measured in the past, we included a general measure of health status. However, to assess QOL in several dimensions, some of which might be of particular importance to women, we included measures to assess body satisfaction, self-esteem, sexual functioning, anxiety, and depression. Although it was not the primary focus of our study, we also included a subjective assessment of QOL in the form of an open-ended questionnaire.

**Open-Ended Questionnaire**

This questionnaire included two open-ended questions that asked women about concerns they had regarding their medical, psychological, and social lives, as well as concerns that they felt were specific to women lung transplant recipients and candidates. Women were also asked what their greatest concerns were at present, and were told that they may include both medical and nonmedical factors in their answers.

**RAND 36-Item Health Survey**

The RAND 36-Item Health Survey (RAND-36)\textsuperscript{16} assesses eight health concepts, including the following: (1) limitations in physical activities because of health problems; (2) limitations in social activities because of physical or emotional problems; (3) limitations in usual role activities because of physical health problems; (4) bodily pain; (5) general mental health because of emotional problems; (6) limitations in usual role activities because of emotional problems; (7) vitality (energy and fatigue); and (8) general health perceptions. An earlier version, the Medical Outcome Study Health Survey (MOS-20), was utilized in a study of QOL in lung transplant recipients.\textsuperscript{7} The newer version is more comprehensive and has improved validity.

**The Body Cathexis Scale**

The body cathexis (BC) scale\textsuperscript{17} contains 46 items that assess the degree of a person's satisfaction or dissatisfaction with the various parts or processes of the body. The patient is asked to rate his or her satisfaction with each of the body parts on a five-point Likert-like scale as follows: (1) have strong feelings and wish change could somehow be made; (2) don't like, but can put up with; (3) have no particular feelings one way or the other; (4) am satisfied; (5) consider myself fortunate. Thus, the higher the rating, the more satisfied the individual. This scale has been utilized to assess perceptions of body image in individuals with multiple sclerosis.\textsuperscript{18} It has also been used to measure psychosocial adjustment to a mastectomy and to a lumbar laminectomy.\textsuperscript{19,20} Split-half reliability coefficients were found to be satisfactory (\(r=0.83\)) for women.\textsuperscript{17}

**Derogatis Sexual Functioning Inventory**

The Derogatis Sexual Functioning Inventory\textsuperscript{21} (DSFI) is a self-report test of sexual functioning designed to assess and
quantify the nature of current sexual functioning. The DSFI is comprised of 10 subtests: information, experience, drive, attitude, psychological symptoms, affects, gender role definition, fantasy, body image, and sexual satisfaction. Scaled scores from each subtest are combined to develop an overall DSFI score. A higher score on the total DSFI or its subscales indicates better functioning in that area. There are gender-keyed norms available. This scale has been utilized to assess sexual dysfunction in female patients with gynecologic cancer, Hodgkin’s disease, and diabetes.22-24 The DSFI has also been used to assess consequences of hysterectomy in the lives of women.25

The Hospital Anxiety and Depression Scale

The Hospital Anxiety and Depression (HAD)26 scale contains 14 items and is an instrument that has been introduced specifically for use with physically ill patients. As opposed to other depression scales, the HAD focuses on psychological symptoms rather than somatic symptoms of depression. For this reason, it is more appropriate for use with individuals who have concurrent general medical illnesses. A total score on each scale of ≥11 has been reported to correspond with a clinical diagnosis of anxiety or depression; a score of 5 to 10 is a borderline, while one of ≤7 or less is considered normal. This self-assessment scale has been found to be a reliable instrument for detecting states of depression and anxiety in the setting of a hospital medical outpatient clinic.26

Rosenberg Self-Esteem Scale

The Rosenberg Self-Esteem Scale27 instrument is widely used and well researched in terms of validity and reliability. Rosenberg27 reported a coefficient of reproducibility of 0.92 in a sample of high school students and a correlation slightly higher with 560 British adolescents. Silber and Tippett28 found a test-retest coefficient of 0.85 for 28 college students over a 2-week period. The RSES demonstrates good convergent validity with other measures of self-esteem.29,30 This questionnaire has been used to assess self-esteem in several medical clinical populations, including diabetics with visual problems and patients with tuberculosis.30,31 The RSES has also been utilized to assess adjustment to illnesses specific to women. For instance, women with cancer, endometriosis, and osteoporosis have been assessed using this questionnaire.32-34 Sex differences in adjustment to coronary artery bypass surgery patients have been examined using this scale.35

Data Analysis

Results are expressed as absolute numbers, and as means ±SDs. Patients were divided into two groups based on their transplant status. Pearson product-moment correlation coefficients and Spearman rank correlation coefficients for interval and ordinal data, respectively, were calculated to determine the magnitude of the relationship between transplant status and the various measurements of quality of life. Multivariate analysis of variance (ANOVA) was conducted to determine differences between variables that had strong correlations coefficients. Comparisons between the two groups with respect to dependent variables (eg, sexual functioning scores, body satisfaction scores) were made using one-way ANOVA. Where appropriate, we controlled for factors (eg, age, depression) that were highly correlated with transplant status in order to avoid confounding of the results. χ² analysis was used when comparing proportional differences on a given variable. Results were considered statistically significant at p<0.05.

Results

Of the 66 women who were mailed questionnaires, 41 (63%) returned the completed questionnaires. Reasons for not participating were current hospitalization (n=1), not interested in participating (n=15), unable to contact patient (n=7), and inability to fill out questionnaire due to language difficulty (n=2). Of the respondents, seven women (17%) were on the waiting list for a transplant (PRE group) and 34 (83%) were posttransplant (POST group). All women responded to the RAND-36, BC, HAD, and RSES scales. Fewer women (6 in the PRE group and 19 to 27 in the POST group) responded to the various subscales of the DSFI.

Demographic Data and Underlying Disease

The characteristics of the POST and PRE groups are shown in Table 1. No significant differences on any of the demographic variables were detected. The mean age of the women was 46±11 years (range, 26 to 60 years) and 47±11 years (range, 19 to 65 years) for the PRE and POST groups, respectively (p>0.05). The indication for transplantation was similar for both groups. In the PRE group, the single largest group of women had emphysema, three (43%), followed by cystic fibrosis (CF), two (29%),

| Table 1—Characteristics of PRE (n=7) and POST (n=34) Groups* |
|-----------------|-------|-------|
| Characteristic   | PRE   | POST  |
| Age, yr         | 46±11 | 47±11 |
| Time since transplant, mo | —     | 47±33 |
| BMI, kg/m²  | 23±5  | 25±5  |
| Race            |       |       |
| White           | 5 (71%) | 32 (94%) |
| Black           | 0     | 1 (3%) |
| Other           | 2 (29%) | 1 (3%) |
| Marital status |       |       |
| Married         | 5 (71%) | 21 (62%) |
| Single          | 1 (14%) | 6 (18%) |
| Separated/divorced | 0     | 7 (21%) |
| Widow           | 1 (14%) | 0     |
| Underlying disease |     |       |
| Emphysema       | 3 (43%) | 14 (41%) |
| CF              | 2 (29%) | 4 (12%) |
| PPH             | 1 (14%) | 6 (18%) |
| Idiopathic pulmonary fibrosis | 0      | 2 (6%) |
| Congenital heart disease | 0   | 2 (6%) |
| Bronchiectasis  | 0     | 1 (3%) |
| Other¹ | 1 (14%) | 5 (16%) |

*Significant at p<0.05.

Other diagnoses included the following: PRE group: lymphangioleiomyomatosis (LAM) (1); POST group: scleroderma (1), LAM (1), eosinophilic granuloma (1), bronchiolitis (1), pulmonary emboli (1).
and primary pulmonary hypertension (PPH), one (14%). Likewise, in the POST group, 14 women (41%) had emphysema, 6 (18%) had PPH, and 4 (12%) had CF. There were no significant differences between the groups with respect to underlying disease. Moreover, there were no significant differences in the mean body mass index between the PRE and POST groups (23±5 vs 25±5 kg/m², respectively; p>0.05). The mean time since transplantation was 47±33 months (range, 7.5 to 119.8 months) for the POST group.

Correlations

Correlations were initially computed to examine relationships among transplant status, demographic variables, and scores on various measures of QOL. Significant positive correlations were found between transplant status and various subscales of the RAND-36, including the following: (1) general health (r=0.48; p=0.002); (2) limitations in physical activities (r=0.52; p=0.001); and (3) role limitations due to physical health (r=0.37; p=0.02). There were no significant correlations between transplant status and anxiety or depression (HAD scale), self-esteem (RSES), or sexual functioning (DSFI); a trend toward correlation between having a transplant and improved BC was apparent, but not statistically significant (r=0.28; p=0.08). Significant negative correlations, however, were noted between BC and age or depression; total scores on the DSFI also correlated negatively with age and scores on the HAD. As these variables were frequently significant correlates, age and depression were controlled for in all subsequent ANOVAs.

**RAND-36 Health Status Survey**

ANOVA was used to compare mean scores on each of the five subscales of the RAND-36, controlling for age and depression (Fig 1). Patients in the PRE group scored significantly lower than recipients in the POST group in several domains of health status, including the following: physical health (17±10 vs 63±29, respectively; p<0.0001), and general health (28±14 vs 66±26, respectively; p=0.001). Role limitations due to physical health were lower in PRE vs POST groups (11±28 vs 53±47, respectively; p=0.03); however, this was no longer significant after controlling for age and depression. No significant differences were detected between the PRE and POST groups with respect to

![Figure 1. Mean scores on RAND-36 Health Status Questionnaire subscales for PRE (n=7) and POST (n=34) groups.](image-url)
the following: (1) emotional well-being (74±11 vs 78±16; p=0.79); (2) role limitations due to emotional problems (67±47 vs 76±40, respectively; p=0.95); (3) energy/fatigue (43±16 vs 58±20, respectively; p=0.19); (4) social functioning (66±34 vs 75±29, respectively; p=0.92); and pain (57±31 vs 68±29; p=0.66).

Multivariate ANOVA was conducted using transplant status as the independent variable and scores on the RAND-36 general health and physical limitations subscales, and the BC scores as the dependent variables. The analysis demonstrated significant differences between the groups in all of these variables: BC (p=0.019), general health (p=0.001), and physical limitations (p<0.001). Women who had undergone transplantation scored higher in terms of body satisfaction (134.71 vs 162.10), general health (27.68 vs 66.57), and physical functioning (17.38 vs 64.03).

Derogatis Sexual Functioning Inventory

There were no significant differences between the groups with respect to the overall score on the DSFI (p=0.66) (Fig 2). On the majority of the subscales of sexual functioning, no differences were detected. However, significantly higher scores were noted in the PRE group with respect to sexual drive (p=0.02) and gender role definition (p=0.02). Although overall scores on the DSFI that fall below the 50th percentile of normal population scores are considered relative deficiencies in sexual functioning, we calculated the proportion of women in each group who fell below the 10th percentile, as all but two women in the entire sample scored below the 50th percentile. Four of the six PRE women (67%) and 11 of the 21 POST women (52%) who responded to all subscales of the DSFI scored at or below the 10th percentile in overall sexual functioning.

To obtain additional information that might indicate concern regarding sexual relationships, we examined responses on the BC scale, which asked patients to rate their satisfaction with their sexual activity, as well as the responses to the open-ended questionnaire, which was completed before all of the other scales. Seven women in the POST group (21%) identified on the BC scale that they had “strong feelings [about their sexual relationships] and wish change could somehow be made.” A further three women (9%) identified that they “Don’t like, but can put up with” their level of sexual activity. In the PRE group, only one woman (14%) identified the latter.
answer, and none said that they had strong feelings regarding their level of sexual activity. In the open-ended questionnaire, four women in the POST group (12%) spontaneously expressed concern regarding their sexual life, four indicated lack of drive or interest, one indicated vaginal dryness, and one noted resulting relationship problems from sexual difficulties. No women in the PRE group offered this information. \( \chi^2 \) analysis showed no significant differences in the proportion of women reporting concerns about sexual functioning on either the BC scale or the open-ended questionnaire (\( p > 0.1 \)).

**BC Scale**

Partial correlations indicated that there was a moderate positive relationship (\( r = 0.37; \ p = 0.02 \)) between body satisfaction and transplant status, after controlling for age and underlying disease. ANOVA revealed that women's satisfaction with various body parts was significantly improved in the POST group as compared to the PRE group (3.5±0.5 vs 2.9±1.0, respectively; \( p = 0.02 \)). Areas that were given a score of either 1="have strong feelings and wish change could somehow be made" or 2="don't like but can put up with it" are shown in Figure 3. \( \chi^2 \) analysis revealed no differences in the proportion of women in either group reporting dissatisfaction with a given body part (\( p > 0.05 \)). Women were most likely to identify dissatisfaction with bodily hair, waist, hips, and weight. Approximately one quarter of the POST group identified significant dissatisfaction with a number of other body parts, including chest, build, face, legs, back, neck, and complexion.

On examination of the open-ended questionnaire, we found that a number of women in the POST group identified issues of body satisfaction as being of particular concern to them. Fourteen women in the POST group (42%) spontaneously raised issues regarding body satisfaction. Most commonly identified issues included hair growth (n=6, 18%), weight gain (n=5, 15%), moon or swollen face (n=4, 12%), changes in breasts (n=3, 9%), and resulting emotional problems from bodily changes (n=3, 9%). Two women in the PRE group (29%) also identified body satisfaction concerns in the open-ended questionnaire, with weight gain and facial hair being mentioned. \( \chi^2 \) analysis showed no significant difference in the proportions in either group reporting these concerns (\( p > 0.1 \)).

**HAD Scale**

Recipients in the PRE group scored significantly higher in terms of anxiety, as compared to the POST group; however, this difference was no longer detected after controlling for age and depression (6.3±1.7 vs 5.9±3.7, respectively; \( p = 0.68 \)).

![](Figure 3. Proportion (percent) of women reporting significant dissatisfaction with various body parts in the PRE (n=7) and POST (n=34) groups.)

* Defined as a score of 1= "have strong feelings and wish change could somehow be made" or 2= "don't like but can put up with it" on the BC scale for a given body part.
was no significant difference in the level of depressive symptoms in the PRE and POST groups (3.9±2.0 vs. 2.6±2.3, respectively; p > 0.05).

Of recipients in the PRE group, two (29%) had borderline scores in anxiety and none had significant scores for depression. In the POST group, however, nine recipients (26%) scored in the borderline or high range on the anxiety subscale. Of these, two (6%) had high anxiety scores. Only two recipients (6%) in the POST group fell into the borderline range for depression.

Rosenberg Self-Esteem Scale

Reported self-esteem in the POST group was similar to that in the PRE group as measured by the RSES. The mean scores were 21±4 (R=15 to 26) for the PRE group, and 24±5 (R=14 to 30) for the POST group (p=0.47).

**DISCUSSION**

This descriptive study examined the QOL of women transplantation candidates and recipients, using a general measure of health status as well as measures of some previously unexamined domains of QOL, namely, sexual functioning and body satisfaction. We have corroborated the findings of several other studies demonstrating improved health status following transplantation.7-12 Significantly higher scores on the RAND-36 in the domains of physical health, general health, and role limitations due to physical health were found in the POST women. Large differences, however, were not noted between the groups on measures pertaining to social, emotional, and psychological variables. Similar scores in the PRE and POST groups were seen on anxiety and depression subscales of the HAD, with approximately one quarter of each group reporting borderline to high anxiety scores. Scores on a commonly used, valid measure of self-esteem failed to detect differences between the PRE and POST group. We also chose to report on domains of QOL that had not been investigated previously in lung transplant recipients. We found that body satisfaction was significantly higher in female transplant recipients as compared to candidates on the waiting list. Indeed, body satisfaction continued to be a concern in the POST period, as 42% of women spontaneously identified concern regarding their bodies on an open-ended questionnaire inquiring about particular concerns that they had in their lives. Finally, our measure of sexual functioning yielded no differences between the PRE and POST groups in overall sexual functioning. Yet, a trend toward worsened sexual functioning in the POST transplant group was suggested by the finding of significantly higher scores on sexual drive in the PRE group and the fact that more than half of the POST group fell below the 10th percentile for published norms in their overall sexual functioning scores. Similarly, a significant proportion of lung transplant recipients fell below the 50th percentile on self-reported measures of sexual functioning. These findings suggest that sexual dysfunction may be an area that influences QOL in women lung transplant recipients.

To date, most studies of QOL in lung transplant recipients have been optimistic, reporting quite excellent improvements in QOL.3,7-12 This demonstrated improvement is to be expected, given the excellent improvements in objective measures of lung function and exercise capacity following lung transplantation. Moreover, the recipient’s perception of overall health is expected to improve following transplantation. Some studies have shown that, when faced with near death situations, the postevent QOL improves dramatically.36 Others have noted that because QOL depends not only on “quality” per se, but also on duration of life, persons given an extension in the duration of life may show dramatic improvements in QOL.37 Perhaps the reason that QOL was high overall in the POST group is that, given the high rate of death on the waiting list,38 the alternative (eg, life with transplantation) is worth any level of QOL. Patients with terminal illnesses often describe their QOL as high even in the face of severe disabilities, presumably because any time alive is considered quality time.39

Prior to our study, the issues of body satisfaction and sexual functioning have not been discussed as major issues affecting the QOL of transplant patients. Although sexual functioning has been discussed briefly in reviews of psychological aspects of organ transplantation, only a few studies have included a measure of sexual functioning, and to our knowledge, none have included a comprehensive measure. Kinnear et al40 reported improvement in sexual functioning in 50% of 38 patients after renal transplant, with all patients younger than 30 years reporting a return to normal sexual activity. They reported that there was overall improvement in sexual functioning in approximately 50% of the patients, with all patients younger than 30 years reporting returning to normal sexual activity. Patients older than 50 years were more likely to report either no change or a worsening of sexual functioning following transplantation. That study suggested that there was potential for sexual dysfunction in the POST period; however, the measure of sexual functioning was not comprehensive, limiting the interpretation of their findings. Other studies have noted the disturbing problem of impotence in men follow-
ing transplantation, which is possibly associated with the use of immunosuppressive medications. \textsuperscript{41,42} Salvatierra et al.\textsuperscript{43} however, demonstrated an 84% return to sexual function in men who underwent renal transplantation. No studies to date (and to our knowledge) have examined sexual functioning in a comprehensive manner, with attention to aspects of functioning such as drive, interest, and personal satisfaction, all of which may not be captured using a simple questionnaire.

Other studies of QOL in lung transplant recipients have used the Nottingham Health Profile, which does include a subsection including sexual functioning.\textsuperscript{9,10} In a study by Caine et al.\textsuperscript{10} the proportion of patients reporting that their health was significantly affecting their sex life decreased from 65 to 18%, in the PRE and POST groups, respectively. O’Brien and colleagues\textsuperscript{9} showed a similar decrease from 65.9 to 28.6% following transplantation. Neither of these groups of authors looked at sexual functioning specifically in women; 67% of the patients in the study by O’Brien et al\textsuperscript{9} were women. Our study is in contrast to these studies, as we found ongoing concerns regarding sexual functioning in the POST women. No differences in total DSFI scores were detected between the PRE and POST group, but the PRE group had significantly higher scores on the sexual drive subscale. Because the goal of transplantation is to render the lives of patients with end-stage lung disease as “normal” as possible, it is also important to compare the POST group to population norms on the DSFI. We found evidence that the POST group had significant sexual dysfunction compared to a normal population, as more than half of the recipients scored below the 10th percentile on the DSFI; scores below the 50th percentile are indicative of relative sexual dysfunction.

Added support for ongoing concern regarding sexual functioning in the POST group came from other measures in our study. The fact that 12% of the POST group identified sexual functioning (particularly lack of interest in sexual activity) spontaneously on our open-ended portion of the questionnaire suggests that this concern is significant. Furthermore, just under one third of the POST group identified significant dissatisfaction with their sexual activity on a question in the BC scale. These findings support our findings on the DSFI that sexual dysfunction continues to be a problem in the POST period.

Another aspect of QOL that may be of particular concern to women is body satisfaction. It is well known that there is potential for changes in the bodies of transplant recipients, as a result of side effects from immunosuppressive medications, including hair growth, obesity, and moon face. Research was conducted examining body image in other organ transplant recipients. It has been shown that few liver transplant recipients have impairment in body image, and that renal transplant recipients are more likely than liver transplant recipients to have body image concerns.\textsuperscript{44,45} Our study demonstrated that body satisfaction was significantly higher in the POST transplant group. The mean score on the BC scale in the POST group (3.5±0.5) was similar to that reported in the normal population of college women (3.46±0.40).\textsuperscript{19} The BC scores in the PRE group, however, were considerably lower (2.9±1.0). Similar proportions of patients in the PRE and POST groups, however, identified significant dissatisfaction with body hair, waist, hips, and weight. Although body satisfaction was improved in the POST group, body image, as assessed in a subscale of the DSFI, did not change after transplantation. Moreover, although our objective scale showed more body satisfaction in the POST group, just under half of these women subjectively raised concerns regarding their satisfaction with their bodies on the open-ended questionnaire.

Our study has several potential weaknesses. The sample size in the PRE group is relatively small and may not be sufficient to prevent a type II error. We did not attempt to correlate pulmonary function with the QOL measures. Although some authors have suggested that QOL is associated with pulmonary function test results in patients with CF,\textsuperscript{46} others have shown that the correlation is far from perfect.\textsuperscript{47-49} Another limitation of the present study is the absence of a male comparison group. Nevertheless, because it revealed some previously unstudied domains of QOL for women, the descriptive information may be useful for hypothesis generation for future studies of QOL. Finally, although we attempted to obtain subjective appraisal of QOL by asking patients to identify issues of concern to them, recent literature in the field of QOL has emphasized the importance of including a global measure of QOL, and of asking patients to rate the importance of various domains that are tested in determining their overall QOL.\textsuperscript{50} Future research should attempt to include a subjective rating of the importance of the various items that researchers set out as being important contributors to QOL.

The study of QOL in lung transplant recipients has implications to the efficacy of this surgical procedure. Although transplantation has the potential to extend life in individuals with end-stage pulmonary disease, lung transplantation is not inconsequential, with an inherent risk of death of approximately 30% within the first year.\textsuperscript{2} Furthermore, there is a significant level of responsibility placed on recipients to undergo constant, strict medical surveillance and to
adhere to a strict and complex medical regimen. Knowledge of the impact on QOL following transplantation might be important for inclusion in PRE counseling of recipients, as many recipients have difficulty coping with the ongoing burdens following transplantation; they may be surprised when they realize that transplantation will not return them to a normal life.3

As this descriptive study has identified that body satisfaction and sexual functioning are of concern to women following lung transplantation, knowledge of this aspect of life quality may be used to help recipients with coping both in the PRE and POST period. Support groups that often rely on patients to initiate discussion may rarely have issues of sexuality and body satisfaction brought to the forefront because of the sensitive and intimate nature of these problems.3 Because our study showed such a significant prevalence of sexual dysfunction and a moderate degree of body dissatisfaction, it may be necessary for social workers and psychologists who run support groups to initiate discussion around these areas. Awareness of specific areas that are potentially influenced by gender should lead to more focused discussion of concerns and perhaps to improvements in overall QOL.

REFERENCES

1 Fishman DB, Petty TL. Physical, symptomatic and psychological improvement in patients receiving comprehensive care for chronic airway obstruction. J Chron Dis 1971; 24:775-85


16 Ware JE, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36). Med Care 1992; 30:473-83

17 Secord PF, Jouard SM. The appraisal of body cathesix: body-cathexis and the self. J Consult Psychol 1953; 17:343-47


19 Jones DN, Reznikoff M. Psychosocial adjustment to a mastectomy. J Nerv Ment Dis 1989; 177:624-31


21 Derogatis LR. Derogatis Sexual Functioning Inventory (DSFI). Baltimore: Clinical Psychometric Research, 1975


Quality of Life in Female Lung Transplant Candidates and Recipients

Marjolaine M. Limbos, Charles K. Chan and Steven Kesten

_Chest_ 1997;112; 1165-1174
DOI 10.1378/chest.112.5.1165

This information is current as of November 4, 2009