ONLINE EXCLUSIVE

Quality of Life After Radical Prostatectomy

LouAnn M. Rondorf-Klym, PhD, RN, and Joyce Colling, PhD, RN, FAAN

Purpose/Objectives: To examine physical and psychosocial factors that affect the quality of life (QOL) for men 12–24 months after radical prostatectomy treatment for prostate cancer.

Design: Cross-sectional survey.

Setting: An entire population from one tumor registry.

Sample: Of the 132 men meeting inclusion criteria, 97 men responded, with 91 meeting analysis requirements. Analysis was completed on the Caucasian sample (n = 88) with a mean age of 66 years. Most men were married, lived with a spouse or partner, and had a high level of education.

Methods: A survey was developed to assess men 12–24 months prostatectomy. The tumor registry mailed the survey, which was completed at home, and participants returned it in a prestamped, addressed envelope.

Main Research Variables: Major hypotheses in the causal model were that age, sexual function, urinary function, and sexual appraisal would only have indirect effects on QOL, whereas urinary function appraisal, self-esteem, anger suppression, perceived social support, depression, and health locus of control would directly affect QOL.

Findings: As analyzed by path analytic techniques, the hypothesized causal model explained 72% variance in the QOL variable. Perceived social support, self-esteem, and health locus of control were significant predictors of QOL. Urinary function appraisal contributed indirectly through health locus of control. Contrary to the hypotheses, anger suppression and depression were not significant predictors of QOL.

Conclusions: After radical prostatectomy for prostate cancer, perceived social support, self-esteem, and health locus of control may influence men's QOL. Future research is needed to increase understanding about the adaptation trajectory of men's response to the impact of prostate cancer.

Implications for Nursing: Nurses can help patients by providing a thorough assessment of each patient's values that may affect QOL before any intervention begins, using research-based evidence regarding potential side effects of interventions, clear and concise information from a variety of sources that addresses the possible concerns of men and their spouses, and focused counseling that addresses patient-specific problems.

Key Points . . .

➤ Sexual and urinary function and their appraisal are shown to have negative effects on psychosocial variables and, subsequently, on quality of life (QOL) after radical prostatectomy.

➤ Rather than focusing on the disease symptoms alone, clinicians must make an assessment of patients' values that may affect their QOL before intervention begins.

➤ After presenting evidence-based information regarding the risks and benefits of interventions, patients may consider selecting a treatment option that balances a long life with a quality life.

➤ Men may choose a treatment option that will minimize the probability of loss of sexual function or normal urinary function if the options are equally efficacious.

Caucasian or Asian men. An estimated 30,200 men in the United States die of the disease every year (American Cancer Society, 2002). Beyond these stark statistics lie a number of profound quality-of-life (QOL) issues for the millions of men who are living with this disease and the sequelae of treatment.

Considerable descriptive research has been conducted regarding prostate cancer survivors in the area of health-related QOL; however, findings have been inconsistent. Litwin et al. (1995) found no differences in health-related QOL among three prostate cancer treatment groups and a comparison group. Two other studies found that health-related QOL was similar in two post-treatment groups. One group received only prostatectomy, and another group was treated with only radiotherapy (Lim et al., 1995; Shrader-Bogen, Kjellberg, McPherson, & Murray, 1997). Disparate results were found by Rieker et al. (1993), with a prostatectomy group having better physical functioning

C ancer touches the lives of many people every year. One man in six will be diagnosed with prostate cancer in his lifetime. Prostate cancer is the second leading cause of cancer death in men in the United States. About 189,000 new cases of prostate cancer are diagnosed in the United States every year. African American men are more likely to have prostate cancer and die from the disease than are

and general health perception scores on health-related QOL than the radiotherapy group. Four studies have examined postprostatectomy health-related QOL. Prostatectomy incontinence was found to have adverse effects on General Health Index and Mental Health Index scores (Fowler et al., 1995). Braslis, Santa-Cruz, Brickman, and Solloway (1994) reported that although tension did diminish after surgery, participants experienced worsened sexual and continence dysfunction, hardship, and symptom severity in feelings about sex and sexual problems. Other studies have reported that men have suffered from severe overall distress and activity limitations after prostatectomy (Herr, 1994; Pedersen, Carlsson, Rahmquist, & Varenhorst, 1993).

Studies completed in the 1990s have revealed that treatments have affected health-related QOL for those with prostate cancer and disease-specific conditions such as sexual and urinary dysfunction (Bacon, Giovannucci, Testa, & Kawachi, 2001; Davis, Kuban, Lynch, & Schellhammer, 2001; Fowler et al., 1995; Heyman & Rosner, 1996; Kornblith, Herr, Ofman, Scher, & Holland, 1994; Krongrad et al., 1997; Krupski, Petroni, Bissonette, & Theodorescu, 2000; Lim et al., 1995; Litwin et al., 1995; Rossetti & Terrone, 1996; Shrader-Bogen et al., 1997; Steineck et al., 2002; Wei et al., 2002). Unlike the broader concept of QOL, these health-related QOL studies have focused on only one domain of life quality, such as health.

The broad concept of QOL may include descriptors such as well-being, life satisfaction, and happiness. For most people, QOL represents life priorities. These priorities generate thoughts of value and cross many domains within the broader definition of life quality, such as physical and material well-being; relations with others; social, community, and civic activities; personal development and fulfillment; and recreation (Flanagan, 1978; Patrick & Erickson, 1993). The present study included a number of QOL domains. Specifically, this study examined the relative contribution of age, several disease-specific factors (e.g., sexual and urinary function, sexual and urinary appraisal), and several psychosocial factors (e.g., self-esteem, anger, perceived social support, depression, health locus of control) to QOL in a group of postprostatectomy patients 12–24 months after treatment. Causal modeling was used to clarify and explain these complex relationships by testing the hypothesized causal pathways. Model variables were selected from one of two sources: Empirical findings from qualitative and quantitative findings were used, or theoretical views were chosen when no empirical findings were available.

Although a radical prostatectomy may provide effective control of cancer (Walsh & Partin, 1994), other factors may impede sexual function and continence recovery after surgery. Some studies indicate that age is associated with potency or sexual function (Braslis et al., 1994; Catalona & Bigg, 1990; Walsh & Donker, 1982). Other studies have found no relationship between age and recovery of continence or urinary function (Walsh, Partin, & Epstein, 1994). Although men younger than 60 years of age may recover potency or continence faster, studies have found at one-year postprostatectomy that no difference existed across age groups (Leandri, Rossignol, Gautier, & Ramon, 1992; Rossignol et al., 1991; Steiner, Morton, & Walsh, 1991). Psychosocial factors, such as social support and depression, may change during the aging process (Conn, Taylor, & Abele, 1991; Goodwin, Hunt, &

Samet, 1991). The current study's researchers posited that age affects QOL indirectly through its relationship with perceived social support and depression.

Sexual and urinary appraisals are each patient's judgment of whether sexual or urinary function has been problematic or bothersome, and patients' previous sexual function influences their appraisal of problems after treatment (Fowler et al., 1995). Increased sexual symptom severity also has been associated with an increase in sexual problems (Braslis et al., 1994; Pedersen et al., 1993). Many men have reported deterioration of sexual function postprostatectomy (Braslis et al.; Fowler et al.; Heyman & Rosner, 1996; Kornblith et al., 1994; Pedersen et al.). Two studies found that prostatectomy patients exhibited poorer sexual function than radiotherapy patients (Lim et al., 1995; Rieker et al., 1993), whereas two other studies found no differences (Gburek, Harmon, & Chodak, 1992; Litwin et al., 1995). Both the prostatectomy and radiotherapy patients displayed worse sexual function than comparison patients without prostate cancer. About 25% of the men in the radiation and prostatectomy treatment groups with poor or very poor sexual function expressed that they were moderately bothered by this diminished function (Litwin et al.).

Several studies have found that urinary function diminishes in prostatectomy patients (Braslis et al., 1994; Herr, 1994; Heyman & Rosner, 1996; Pedersen et al., 1993). However, Fowler et al. (1995) determined that dripping urine had a more negative effect on men than did diminished sexual function. Prostatectomy patients displayed poorer urinary function than three other groups (i.e., radiotherapy, only observations, and patients without prostate cancer) (Litwin et al., 1995). Compared with radiotherapy patients, prostatectomy patients have demonstrated poorer urinary function (Gburek et al., 1992; Lim et al., 1995; Rieker et al., 1993). In Litwin et al.'s study, a difference existed in the level of function between prostatectomy and radiotherapy patients, but incontinence equally bothered these two groups. Herr found similar results between incontinence and distress. The current study's researchers posited that the sexual and urinary functional changes would result in alterations in sexual and urinary appraisal.

Self-esteem was a predictor of life satisfaction in an American national sample, in college students, and in adult Australians (Campbell, Converse, & Rodgers, 1976; Diener, 1984; Diener & Diener, 1995; Hong & Giannakopoulos, 1994). Self-esteem also has been linked to life satisfaction and QOL in a number of disabled and chronically ill populations (Anderson, 1995; Burckhardt, 1985; Kinney & Coyle, 1992; Lewis, 1982; Wingate, 1995). Only qualitative research, which indicates that the side effects of impotence and incontinence may cause a loss of self-worth (Heyman & Rosner, 1996), is available regarding post-treatment of localized prostate cancer. The current study's researchers posited that self-esteem would be a positive mediating factor in predicting QOL.

Health-related QOL studies of prostate cancer indicate that anger suppression is a pertinent variable in this population. Studies in other populations indicate that more symptoms were predictive of patients experiencing more anger (Lane, 1991). Likewise, treatment side effects, specifically incontinence, have been associated with anger in patients with prostate cancer (Braslis et al., 1994; Lim et al., 1995). Qualitative interviews with patients after prostate cancer treatment indicated early-phase issues included feelings of anger and early-phase coping strategies involved feelings of anger when

expectations were not met (Heyman & Rosner, 1996). In the present study, anger suppression was posited as a negative mediating factor in predicting QOL.

Social support is a predictor of well-being in the community-dwelling elderly and in those with chronic illnesses (Anderson, 1995; Burckhardt, 1985; Levitt, Clark, Rotton, & Finley, 1987), as well as an influence on QOL for those encountering life-threatening illness (Guillory, 1996; Wingate, 1995). In their research, Kornblith et al. (1994) studied men with prostate cancer and their partners and found that the social support system may be altered by prostate cancer treatment as evidenced by the perception that sexual problems differed among couples and by partners having had more psychological distress and intrusion from the disease. Heyman and Rosner (1996) determined that the intimacy relationship changed, yet couples learned new ways to express intimacy. The current study's researchers posited that perceived social support would be a positive mediating factor in predicting QOL.

In a large sample of Australian adults, Hong and Giannakopoulos (1994) concluded that depression affects life satisfaction. Research also has identified that depression may affect QOL after diagnosis and treatment of chronic illnesses (Anderson, 1995; Godding, McAnulty, Wittrock, Britt, & Khansur, 1995; Strauss et al., 1992). In the prostatectomy population, depression has been associated with incontinence and decreased sexual function (Braslis et al., 1994; Lim et al., 1995). Therefore, in the present study, depression was posited as a negative mediating factor in predicting QOL.

The concept of locus of control focuses on an individual's perception of relationships between behavior and events that follow a behavior. Those with internal locus of control believe that their actions control their lives, whereas those with external control believe that exterior forces, such as fate, control their lives (Hong & Giannakopoulos, 1994; Rotter, 1966; Seligman, 1973). Several studies have shown that locus of control is associated with life satisfaction (Hickson, Housley, & Boyle, 1988; Hong & Giannakopoulos; Levitt et al., 1987) and that internal control over health is related to life satisfaction in those with chronic illnesses (Burckhardt, 1985; Laborde & Powers, 1985), whereas other studies have found no relationship (Lewis, 1982; Wingate, 1995). The qualitative work conducted by Heyman and Rosner (1996) indicated that a reaction to treatment side effects was loss related to a sense of control. In the current study, the researchers posited that health locus of control would be a positive mediating factor in predicting QOL.

Methods

The current study used a correlational design to examine the individual study hypotheses. This study assumed a moderate effect size, cumulative power from 0.63–0.92, and an alpha of 0.05. An a priori power analysis indicated that the study needed about 80 responses. Because response rates for mailed questionnaires tend to be low, the population was oversampled to secure the 80 questionnaires for analysis. The study was reviewed and approved by an institutional review board. Eligible participants received an introductory letter about the study and a participant information sheet, which complied with informed consent requirements. Informed consent was inferred from the participant's return of the completed questionnaire.

An entire population of men 12–24 months after radical prostatectomy for localized prostate cancer from one tumor registry was given the opportunity to participate. The tumor registry searched its records to select possible participants according to the inclusion criteria: (a) primary cancer site was the prostate, (b) the SEER Summary Staging Guide included either in situ classification (i.e., neoplasm that fulfilled all microscopic criteria for malignance except invasion) or localized classification (i.e., neoplasm that appears entirely confined to the organ), (c) the TNM Classification System included either stage I or stage II groups, and (d) the treatment type was the cancer-directed surgical code of C61.9, indicating prostate cancer surgery. Patients were excluded if (a) they had surgery less than 12 or greater than 24 months before, (b) they currently were institutionalized in a long-term care facility, or (c) their tumor registry information revealed that other prostate cancer treatments, such as radiation therapy, had been administered.

The recursive causal model was unidirectional and without feedback loops. Temporal relationships were presented in the model, which contained three types of variables: exogenous variables that are determined by factors outside the model, endogenous variables that are determined by variables in the model, and mediating variables that link two variables in the model together. Negative and positive relationships are indicated by minus (–) and plus (+) symbols. Path analysis techniques were applied to test the model using multiple regression to isolate the effects on the dependent variable made by the set of independent variables (Polit, 1996).

Based on the literature review, the current study's researchers hypothesized that the principle bodily functions affected by radical prostatectomy treatment were sexual and urinary function. Further, these functional changes were posited to lead to alterations in sexual and urinary appraisal; subsequently, this appraisal was expected to influence psychosocial responses. In the path analytic model, the researchers hypothesized that urinary appraisal, self-esteem, anger suppression, perceived social support, depression, and health locus of control would have direct effects on QOL.

Path analysis was used to examine the patterns of causation among the variables in a nonexperimental context to test whether the hypothesized pathway from the causes to the effect was consistent with the data (Pedhazur, 1982; Polit & Hungler, 1995). Hierarchical multiple regression with 10 independent variables was used to test the hypotheses. The total covariance, direct, indirect, total, and noncausal effects between independent and dependent variables were used to construct the model.

Instruments

Standardized instruments were combined to form a single questionnaire containing 90 items that took participants approximately one hour to complete. A summary of the items related to the scale characteristics of number of items, previous psychometric evaluations, and Cronbach's alpha coefficients were constructed (see Table 1).

Four variables (i.e., sexual function, urinary function, sexual appraisal, and urinary appraisal) represented the endogenous variables. Sexual and urinary function and appraisal were assessed with subscales of the University of California, Los Angeles, **Prostate Cancer Index** (Litwin et al., 1995). Sexual function was assessed with eight items, and sexual appraisal was assessed with one item. Urinary function was assessed with five items, and urinary appraisal was assessed with one

Table 1. Summary of Scales

Scale	Number of Items	Validity	Reliability	Cronbach's Alpha
Prostate Cancer Index	15	Face validity, factor analysis	Sexual function alpha coefficients = 0.93, test-retest = 0.92; urinary function alpha coefficients = 0.87, test-retest = 0.93; sexual appraisal test-retest = 0.70; urinary appraisal test-retest = 0.66	Sexual function = 0.9 Urinary function = 0.87
Rosenberg Self-Esteem Scale	10	Multitrait, multimethod study; convergent validity	Alpha coefficients = 0.74–0.87; test-retest = 0.85	0.88
Anger Expression-In Subscale	8	Discriminant validity	Alpha coefficients = 0.84	0.81
Personal Resource Questionnaire 85 Part 2	25	Content, construct, and predictive validity	Alpha coefficients = 0.79–0.88; test-retest = 0.72	0.94
Center for Epidemiologic Studies Depression 10 Scale	10	Convergent, discriminant, and predictive validity	Alpha coefficients = 0.85; test-retest = 0.71	0.81
Internal Health Locus of Control Subscale	6	Convergent and discriminant validity	Equivalent forms = 0.71–0.86	0.83
Quality-of-Life Scale	16	Content, convergent, and discriminant validity	Alpha coefficients = 0.82–0.92; test-retest = 0.76–0.84	0.93

item. Each scale had a possible score range of 0–100. Higher scores represent a high level of function and indicate that the function is not a problem.

Five variables (i.e., self-esteem, anger suppression, perceived social support, depression, and health locus of control) represented the mediating variables. Self-esteem was measured with the **Rosenberg Self-Esteem Scale** (Rosenberg, 1965). The scale consists of a 10-item, four-point, Likert-like scale ranging from "strongly agree" to "strongly disagree." Scale scores range from 10–40, with a lower scale score indicating lower self-esteem. Anger suppression was assessed by the Anger Expression-In Subscale of the 24-item **Anger Expression Scale** (Spielberger, 1996). The Anger Expression-In generally measures suppressed anger, with eight items of Likert-like scales ranging from 1 (almost never) to 4 (almost always). Scale scores range from 8–32, with higher scale scores indicating more suppressed anger. The **Personal Resource Questionnaire 85 Part 2** was used to measure perceived social support (Weinert, 1987; Weinert & Brandt, 1987). The scale has 25 items with a seven-point, Likert-like scale ranging from strongly agree (7) to strongly disagree (1). The items assess (a) provision for attachment or intimacy, (b) social integration, (c) opportunity for nurturing behavior, (d) reassurance of worth as an individual and in role accomplishments, and (e) the ability of informational, emotional, and material help. Higher scores indicate greater perceived social support. Depression was measured by the 10-item **Center for Epidemiologic Studies Depression 10 Scale** (Andresen, Carter, Malmgren, & Patrick, 1994). Scores range from 0–30, and high scores indicate the presence or persistence of depressive symptoms (Andresen et al.). Health locus of control was assessed with the Internal Health Locus of Control (IHLC) Subscale from the **Multidimensional Health Locus of Control** (Wallston, Wallston, & DeVillis, 1978). The IHLC measures health locus of control internality with six items on a six-point, Likert-like scale ranging from 1 (strongly disagree) to 6 (strongly agree). Scores range from 6–36, with higher scores indicating more internal health locus of control (Wallston et al.).

The researchers in the present study used the definition provided by Young and Longman (1983), who stated that QOL is "the degree of satisfaction with the perceived present life circumstances" (p. 220). One instrument, the **Quality-of-Life Scale** (Burckhardt, Woods, Schultz, & Ziebarth, 1989), was used to measure the outcome variable (i.e., overall QOL). Flanagan (1978) conceptualized QOL as having five domains: (a) physical and material well-being, (b) relations with others, (c) social, community, and civic activities, (d) personal development and fulfillment, and (e) recreation. Burckhardt et al. modified the Quality-of-Life Scale by adding independence as a domain and including a seven-point Delighted-Terrible Scale. The rating method was viewed as more sensitive and less negatively skewed; the seven available responses were delighted (7), pleased, mostly satisfied, mixed, mostly dissatisfied, unhappy, and terrible (1), allowing for a broader range of affective response than a five-point scale. With the addition of the independence domain, the modified Quality-of-Life Scale had a total of 16 items and ranged from 16–112, with a higher score indicating better QOL. Internal consistency reliabilities (Cronbach's alpha) were computed for all of the scales. All scales met the minimum criteria for internal consistency of 0.7, as suggested by Nunnally (1978).

Findings

Of the 132 questionnaires mailed to participants, 97 were returned for a 73% response rate. Analyses were completed on 88 of these respondents, after three subjects of African American origin and six with missing data were deleted. Prostate cancer is a problem for many African American men. The African American community in Oregon represents 1.6% of the total population, which is below the national average of 12.3% (U.S. Census Bureau, 2000). Therefore, the potential number of African Americans who could have responded to this survey was quite small. Given that only three African American men responded to the survey, the researchers decided to analyze only the Caucasian sample for this article. The mean age of the sample was 66 years. Most men were married, lived with a spouse or partner, and had a high level of education as compared to state and local census figures (see Table 2).

Table 2. Sample Characteristics

Variable	n	%
Marital status (n = 88)		
Single	2	2
Separated	1	1
Widowed	4	5
Divorced	7	8
Married	74	84
Living arrangements (n = 87)		
Living with spouse or partner	75	86
Living with family	2	2
Living with nonfamily	1	1
Living alone	9	11
Income (n = 82)		
< $20,000	9	14
$20,001–$30,000	14	17
$30,001–$40,000	8	10
$40,001–$50,000	17	20
> $50,001	34	39
Employment (n = 88)		
Retired	47	54
Full-time	29	33
Part-time	7	8
Unemployed or disabled	2	2
Volunteer	1	1
Laid off	1	1
Unable to find work	1	1
Occupation (n = 86)		
Mechanics or construction	29	34
Manager or professional	22	26
Sales or clerical	19	22
Protection, health, farming	9	10
Service (cleaning, food preparation)	4	5
Self-employed	3	3
Educational degree (n = 88)		
No degree	4	5
GED	7	8
High school	32	36
Vocational	4	5
Associates	5	5
Bachelor of arts/science	22	25
Master of arts/science	10	11
Doctoral	4	5

Univariate relationships among all of the independent variables, as well as the relationship between each independent variable and the dependent variable, were assessed. Six of the 10 independent variables had a significant ($p < 0.05$) zero-order correlation with the dependent variable QOL, indicating a significant univariate relationship with the dependent variable (see Table 3). The significant and nonsignificant path coefficients, the product of the dependent variable regressed on the independent variables, are depicted in Figure 1. The direct effects of an independent variable on the dependent variable appear in the path diagram as a direct line or path between the independent and dependent variables. Patients' rating of sexual appraisal may be confounded by other variables. Urinary incontinence is a frequent side effect of radical prostatectomy that may be related to avoidance of sexual activity (Perez, Skinner, & Meyerowitz, 2002).

The path analysis used to study the patterns of causation among the set of variables indicated that the model explained 72% of the total variance in QOL after radical prostatectomy (multiple r = 0.847, R^2 = 0.717, adjusted R^2 = 0.68). The following hypothesized direct effects were found: (a) Sexual function predicted sexual appraisal, (b) urinary function predicted urinary appraisal, (c) urinary appraisal predicted health locus of control and was a near-significant predictor of self-esteem and anger suppression, and (d) mediating variables (i.e., self-esteem, perceived social support, and health locus of control) predicted QOL. The following direct effects were found, but were not hypothesized: Age predicted sexual function, and urinary function predicted sexual appraisal (see Table 4).

The following hypothesized direct effects were not found. Age did not predict perceived social support and depression. Decreases in sexual appraisal did not predict decreases in self-esteem, perceived social support, or health locus of control. Decreases in sexual appraisal did not predict increases in anger suppression and depression. Decreases in urinary appraisal did not predict decreases in perceived social support or increases in depression. Urinary appraisal and anger suppression and depression did not predict QOL. Because the direct effects were equal to the total effects for the psychosocial-mediating variables, the three mediating variables of self-esteem, perceived social support, and health locus of control that were found to have significant direct effects also had significant total effects on QOL.

Other indirect effects, or the effects of another mediating variable on a dependent variable in the model (Polit, 1996), were studied. Age was not found to have an indirect effect through mediating variables on QOL. The direct effect of urinary appraisal on QOL was not statistically significant. However, the total effects, which is the sum of the direct and indirect effects, of this variable on QOL were significant, indicating that an indirect relationship was found via the urinary appraisal variable through the variable of health locus of control, with indirect effects on QOL.

Discussion

These findings reinforce previous research, indicating that sexual and urinary function are affected adversely by prostate surgery and that functional changes increase symptom severity (Braslis et al., 1994; Herr, 1994; Litwin et al., 1995; Pedersen et al., 1993). The current study, however, made three additions to the research in this subject area.

Research Implications

The research implications are (a) all the variables were incorporated in a causal model to predict QOL after radical prostatectomy, whereas previous studies had only incorporated some of these variables, (b) psychosocial variables in this study were measured in a quantitative manner to provide input in contrast to previous studies that provided only qualitative observations, and (c) a broad conceptual definition of QOL was used in this study rather than the more restrictive health-related QOL used in previous studies. Although health-related QOL with a focus on the level of physical independence cannot be discounted, the contribution of the more comprehensive QOL appraisal is meaningful.

Age was found to predict sexual function—a relationship that had not been hypothesized but supports previous research

Table 3. Zero-Order Correlation of Model Variables

Variable	X̄	Median	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Age	64.67	7.13	−0.392**	−0.035	−0.210*	−0.077	−0.094	−0.121	0.019	−0.066	−0.030	0.120
2. Sexual function	22.66	23.89	1.000	0.234*	0.436**	0.240*	0.037	0.101	0.140	−0.181*	0.156	−0.006
3. Urinary function	72.25	25.13		1.000	0.363**	0.852**	0.182*	−0.056	−0.027	−0.101	0.209*	0.114
4. Sexual appraisal	35.51	36.70			1.000	0.372**	0.083	−0.108	0.057	−0.172	0.087	0.070
5. Urinary appraisal	78.41	26.85				1.000	0.254**	−0.153	0.042	−0.160	0.286**	0.221*
6. Self-esteem	33.57	4.89					1.000	−0.271**	0.627**	−0.547**	0.076	0.669**
7. Anger suppression	13.80	3.75						1.000	−0.341**	0.492**	−0.075	−0.410**
8. Social support	138.25	21.27							1.000	−0.611**	0.061	0.765**
9. Depression	6.02	5.05								1.000	−0.176	−0.583**
10. Health locus of control	24.76	5.94									1.000	0.214*
11. Quality of life	84.90	13.65										1.000

* $p = 0.05$

** $p = 0.01$

noting that the aging process affects sexual function (Quinlan, Epstein, Carter, & Walsh, 1991; Smith, 1981; Wagner & Green, 1981; Walfisch, Maoz, & Antonovsky, 1984). In addition, both sexual function and urinary function were associated significantly and predicted appraisal, which is supportive of previous findings. The finding that urinary function was a predictor of sexual appraisal was not hypothesized.

Previous research has found that prostate cancer treatment side effects can provoke a loss of the feeling of control (Heyman & Rosner, 1996). Similar findings were identified in the present study where lower urinary appraisal or incontinence directly affected subjects' QOL in a negative manner. This study also demonstrated a near-significant relationship among urinary appraisal and anger suppression and self-esteem, which corroborated prior research findings that prostate cancer treatment side effects may arouse anger and self-worth

losses (Braslis et al., 1994; Heyman & Rosner; Lim et al., 1995). Thus, patients who had more physical side effects from surgery (e.g., impotence, incontinence) were more likely to experience anger and decreased self-esteem.

Perceived social support explained the most variance in QOL in the current study. These findings substantiate previous research in community-dwelling residents (Levitt et al., 1987), patients with prostate cancer (Heyman & Rosner, 1996), and patients with chronic illness (Anderson, 1995; Burckhardt, 1985).

Practice Implications

Several implications for practice can be derived from this research. Patients need the following from their clinicians: a thorough assessment of patients' values that may affect QOL before beginning an intervention, research-based evidence
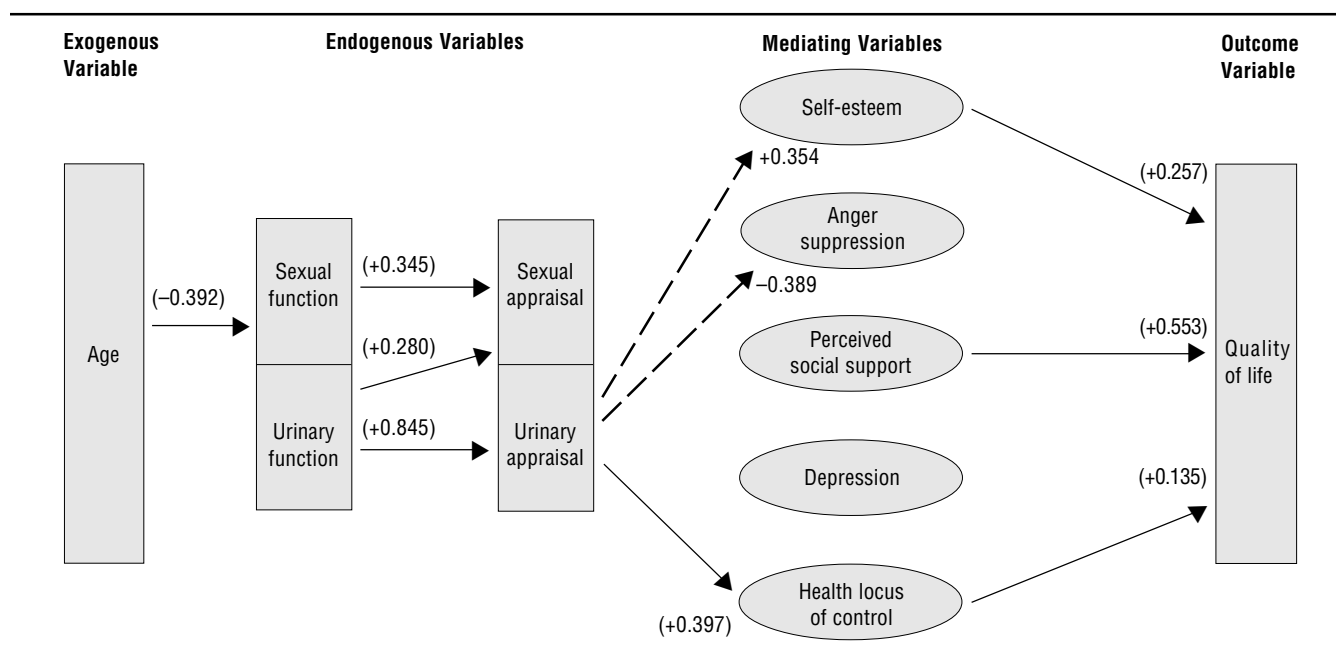
Figure 1. Path Analysis for Quality of Life of Men With Prostate Cancer After Prostatectomy

Note. Significant β values are shown with black lines and parentheses. Near-significant β values are shown with dashed lines and without parentheses.

Table 4. Results for Variables Entered at Each Path Analysis Step

Dependent Variable	Independent Variable	Significance and Regression Coefficients (ß)
Sexual function	Age	Significant (−0.392)
Urinary function	Age	Not significant (NS)
Sexual appraisal	Age	NS
	Sexual function	Significant (0.345)
	Urinary function	Significant (0.280)
Urinary appraisal	Age	NS
	Sexual function	NS
	Urinary function	Significant (0.845)
Self-esteem	Age	NS
	Sexual function	NS
	Urinary function	NS
	Sexual appraisal	NS
	Urinary appraisal	Near significant (0.354)
Anger suppression	Age	NS
	Sexual function	NS
	Urinary function	NS
	Sexual appraisal	NS
	Urinary appraisal	Near significant (−0.389)
Social support	Age	NS
	Sexual function	NS
	Urinary function	NS
	Sexual appraisal	NS
	Urinary appraisal	NS
Depression	Age	NS
	Sexual function	NS
	Urinary function	NS
	Sexual appraisal	NS
	Urinary appraisal	NS
Health locus of control	Age	NS
	Sexual function	NS
	Urinary function	NS
	Sexual appraisal	NS
	Urinary appraisal	Significant (0.397)
Quality of life	Age	NS
Quality of life	Age	NS
	Sexual function	NS
	Urinary function	NS
Quality of life	Age	NS
	Sexual function	NS
	Urinary function	NS
	Sexual appraisal	NS
	Urinary appraisal	NS
Quality of life	Age	NS
	Sexual function	NS
	Urinary function	NS
	Sexual appraisal	NS
	Urinary appraisal	NS
	Self-esteem	Significant (0.257)
	Anger suppression	NS
	Social support	Significant (0.553)
	Depression	NS
	Health locus of control	Significant (0.135)

regarding potential side effects of interventions, clear and concise information from a variety of sources that addresses the possible concerns of men and their spouses, and focused counseling that addresses patient-specific problems.

Prior to treatment, sufficient time must be taken to conduct a thorough assessment of patients' values. Clinicians need to recognize the different values held by patients. Every patient has different individual needs, as well as different levels of competence and different abilities to understand complex medical procedures. Assessing each patient and, if appropriate, the spouse's outlook, will provide clinicians with a better understanding of the patient's view. Sexual and urinary function and their appraisal are shown to have negative effects on psychosocial variables and, subsequently, on QOL after a radical prostatectomy. The results of this study underscore the need for clinicians to understand and use patients' views of the risks and benefits relating to the radical prostatectomy, rather than solely focusing on the disease symptoms (Howe, 1994; Kornblith et al., 1994), and to be more thorough in explaining the potential side effects of incontinence and impotence during the consenting process.

Presentation of research-based evidence regarding potential side effects of interventions can assist men in their decision-making process. Taking the time to present all of the treatments and their associated consequences will allow patients to fully weigh the risks and benefits relating to their treatment options. A full, informed assessment of what decisions patients need to make to fulfill their QOL desires will help to determine the options they may be interested in pursuing. After clinicians discuss the potential for or probability of losing sexual or normal urinary function with patients, patients then can more accurately evaluate the impact of the intervention on their QOL. They also should be more prepared to deal with these problems if indeed one or both become a reality after treatment. In addition, patients may consider selecting a treatment option that they believe will minimize the probability of loss of sexual function or normal urinary function if the data support that efficacy is equal among treatment options.

Clinicians must provide clear information that will assist patients in their decision making. Because of the increased stress during the decision-making process, information may need to be repeated. Helping patients gain access to information is just one example of the teaching role for nurses. However, the information must be appropriate for each individual patient. The multiple methods of providing information, such as with videos, written literature, Web sites, and formal and informal support groups (e.g., Man-to-Man), can help to tailor information to an individual's level of comprehension and understanding. Helping men gain access to information available from organizations, such as the American Cancer Society, can assist them in dealing with pertinent issues before, during, and after diagnosis and treatment for prostate cancer.

Counseling should focus on understanding prostate cancer and on four psychosocial domains: the context of men's lives, the assault on the sense of self, the impact on intimate relationships, and treatment options and subsequent psychosocial effects (Rieker, 1996). Supporting the use of behavioral therapy with perineal exercises, pelvic muscle electrical stimulation, or biofeedback interventions can provide subjective and objective control over incontinence (Engberg, 1998). Informal social support from family, friends, and relatives and formal

support groups are important factors in helping to relieve anxiety and provide reassurance (Gregoire, Kalogeropoulous, & Corcos, 1997; Guidry, Aday, Zhang, & Winn, 1997; Krause, 1990).

The search for a balance between a long life and QOL will continue. This must be an individual decision based on expert physical and psychological clinical care of patients who are fully informed of the risks and benefits of treatment. Patients often express the wish to balance a long life with a quality life. This goal has a greater possibility of occurring if patients are fully informed about the risks and benefits of treatment and clinicians are prepared to provide expert physiologic and psychological care of patients.

Author Contact: LouAnn M. Rondorf-Klym, PhD, RN, can be reached at rondorfK@ohsu.edu, with copy to editor at rose_mary@earthlink.net.

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