Published in final edited form as:

J Nurs Meas. 2014 ; 22(2): 241–254.

Factor Analysis of the Modified Sexual Adjustment Questionnaire-Male

Margaret C. Wilmoth, PhD, MSS, RN, FAAN,
Georgia State University

Alexandra L. Hanlon, PhD,
University of Pennsylvania

Lit Soo Ng, MSN, RN, and
University of Pennsylvania

Debra W. Bruner, PhD, RN, FAAN
Emory University, Atlanta, Georgia

Abstract

Background and Purpose—The Sexual Adjustment Questionnaire (SAQ) is used in National Cancer Institute–sponsored clinical trials as an outcome measure for sexual functioning. The tool was revised to meet the needs for a clinically useful, theory-based outcome measure for use in both research and clinical settings. This report describes the modifications and validity testing of the modified Sexual Adjustment Questionnaire-Male (mSAQ-Male).

Methods—This secondary analysis of data from a large Radiation Therapy Oncology Group trial employed principal axis factor analytic techniques in estimating validity of the revised tool. The sample size was 686; most subjects were White, older than the age 60 years, and with a high school education and a Karnofsky performance scale (KPS) score of greater than 90.

Results—A 16-item, 3-factor solution resulted from the factor analysis. The mSAQ-Male was also found to be sensitive to changes in physical sexual functioning as measured by the KPS.

Conclusion—The mSAQ-Male is a valid self-report measure of sexuality that can be used clinically to detect changes in male sexual functioning.

Keywords

factor analysis; Sexual Adjustment Questionnaire; quality of life; prostate cancer

The ability to function sexually has been identified as one component of quality of life (Wilmoth, 2010) and is an important outcome of cancer treatments. It is important for clinicians and researchers to have access to a clinically relevant, theoretically based, validated measure of sexual functioning when assessing patient sexual responses to cancer treatment. The Sexual Adjustment Questionnaire (SAQ) is a reliable and valid measure of

sexuality, but its original version was not clinically relevant or useful (Waterhouse & Metcalfe, 1986). This article describes the results of factor analysis of the SAQ as modified for use in National Cancer Institute–sponsored clinical trials conducted by the Radiation Therapy Oncology Group (RTOG). The focus of the clinical trial in which the modified SAQ was used and that forms the basis for this analysis was men with early-stage prostate cancer.

Prostate cancer is the most commonly diagnosed cancer in men with a high incidence of reports of sexual dysfunction reported after treatment. The experience of treatment-related sexual dysfunction has been the subject of a great deal of research over the past decade (Dalkin & Christopher, 2007; Howlett et al., 2010; Moinpour et al., 2007; Rosen, Althof, & Guiliano, 2006; Rosen et al., 1997). Efforts to develop effective prostate cancer therapies that minimize the impact on sexual functioning have been the focus of much work. The lack of clinically relevant, theoretically grounded, and valid measures of male sexual functioning to use in examining sexual outcomes of new treatments has been identified as a gap in measuring treatment outcomes.

BACKGROUND AND CONCEPTUAL FRAMEWORK

Sexuality is complex with sociologic, philosophic, and semantic issues that intersects with biopsychosocial aspects of the construct, and this complexity complicates measurement. To facilitate tool development and refinement, the scope of tool development was limited to sexual adjustment and function. The SAQ was developed in the early 1980s to address the dearth of theory-based, holistic, self-report sexuality measures that met even minimum psychometric standards at the time (Waterhouse & Metcalfe, 1986). The SAQ is not specific to any disease state, which enables it to be used in various populations where the outcome of interest is sexual adjustment and function. The SAQ was created before the formalized development of the construct of “quality of life” (QOL) and before there was general acceptance of sexuality as a critical component of QOL. The SAQ also predates by more than a decade the International Index of Erectile Function (IIEF; Rosen et al., 2006; Rosen et al., 1997), a self-report questionnaire designed to gauge men’s erectile response to treatment for erectile dysfunction. Using the 1979 (American Nurses Association) Oncology Nursing Society’s outcome standard on sexuality, the measure assessed sexual function in both males and females, with slightly different versions for each. Masters and Johnson’s (1966) definition of sexual function provided the theoretical basis for the tool. In that definition, sexual function includes the sexual response cycle (i.e., desire, arousal, orgasm) as well as the ability to engage in satisfying sexual activity and achieve satisfaction.

DESCRIPTION AND SCORING OF THE INSTRUMENT

The original version of the SAQ had 37 items and contained eight subscales: desire, relationship, activity, arousal, orgasm, technique, satisfaction, and miscellaneous (Metcalfe, 1990; Waterhouse & Metcalfe, 1986). Most items were scored on a 5-point Likert-type scale (range 1–5), and originally, negatively worded items were reverse coded so that higher scores reflected a higher level of sexual adjustment. Psychometric testing was initially conducted on 84 healthy patients and 8 patients with head and neck cancer, and the initial

test-retest reliability estimates ranged from .54 to .94 with an overall reliability score of .67. Construct validity estimates using the contrasted groups approach were generally nonsignificant given the small sample sizes in cancer studies. However, significant differences ($p < .05$) were found between healthy and cancer samples on the activity, relationship, and techniques subsections of the measure, suggesting the measure was sensitive to behavioral differences between populations (Metcalf, 1990; Waterhouse & Metcalfe, 1986).

METHODS

The SAQ has been used since the early 1990s in RTOG research, mainly in prostate cancer clinical trials. The RTOG modified the Sexual Adjustment Questionnaire-Male (SAQ-Male) from its original version to meet the needs for parsimony in large clinical trials. The modification deleted the techniques, relationship, and miscellaneous subscales from the original version because of their lack of direct relevance to the prostate clinical trials and because the length of the tool overburdened patients. The modification resulted in a 16-item patient self-assessment questionnaire, the modified SAQ-Male (mSAQ-Male), measured on a 5-point Likert-type scale. The mSAQ-Male consists of 16 items scored on a 5-point Likert-type scale (see Appendix). Total scores on the mSAQ-Male range from 16 to 80. Items 3, 9, 11, 12, and 16 are reverse coded so that lower scores consistently represent more positive sexual adjustment. The polarity is reversed from the original because lower scores in the modified version represent better sexual adjustment. This was done to reduce the number of items needing reverse coding to 5 from 11 in the original tool.

Data from a large international RTOG prostate cancer study were used to assess the factor analytic properties of the RTOG-modified SAQ in this analysis (Jones et al., 2011). RTOG 9408 was “A Phase III Trial of the Study of Endocrine Therapy Used as a Cytoreductive and Cytostatic Agent Prior to Radiation Therapy in Good Prognosis Locally Confined Adenocarcinoma of the Prostate.” All patients were treated with external beam radiation therapy (RT) ± neoadjuvant androgen deprivation therapy (ADT; Jones et al., 2011). Per trial protocol, the SAQ was administered every 3 months during Year 1 of the trial and every 4 months during Year 2. In addition, the Karnofsky performance scale (KPS) was administered pretreatment, at the start and end points of RT and at follow-up. The KPS is a validated, commonly used measure of ability to perform activities of daily living (Schag, Heinrich, & Ganz, 1984). Self-reports of sexual status (referring to erectile ability) were also assessed at these times. Men in Arm 1 of the study received total androgen suppression, whereas those in Arm 2 received RT only. The data used in this analysis were collected at the pretreatment point in time. Inclusion and exclusion criteria were relevant to admission to the study trial, and completing all study documents was a part of trial participation. Ethical considerations were monitored by the RTOG.

Sample

RTOG 9408 accrued 1,979 evaluable cases. Data were screened for outliers, and unanswered and nonapplicable responses were recoded as missing data. Pairwise deletion in factor analyses was used to minimize the potential loss of relationships between variables in

the analysis. Thus, from the 1,979 cases, 686 of patients responding to at least two SAQ items were included in the factor analysis. This number exceeded Tabachnick and Fidell's (2007) recommendation of at least 300 cases for reliability of correlation coefficient estimates during factor analysis.

Approaches to Factor Analysis

Exploratory factor analysis (EFA) rather than confirmatory factor analysis (CFA) was chosen to identify the constructs underlying the SAQ instrument because empirical work has indicated that CFA may be a less desirable technique for determining the number of factors measured by a data set. For instance, MacCallum and colleagues (MacCallum, 1986; MacCallum, Roznowski, & Necowitz, 1992) found that specification searches in covariance structure modeling often did not uncover the correct population model. Likewise, Gorsuch (2003) reported that although EFA results nearly always replicated during first-order CFAs, the reverse was not true when CFA was employed to uncover first-order factors and then used to replicate results with a second sample. Thus, EFA was employed because of the uncertainty surrounding the underlying structure of the SAQ (Browne, 2001) and the potential for stronger structural evidence to emerge in future CFA replications (Goldberg & Velicer, 2006).

An important measure in factor analysis is "communality," which represents the variance in the variables accounted for by the factors (Tabachnick & Fidell, 2007). Communalities were estimated through squared multiple correlations and were iterated to produce final communality estimates (Gorsuch, 2003). For both theoretical and empirical reasons, it was assumed that retained factors would be correlated, and thus, an oblique rotation method was used. Consequently, the commonly used Promax rotation was employed. The parameter used to create the rotation matrix was $k = 4$, an appropriate value to reduce error and bias (Tataryn, Wood, & Gorsuch, 1999).

One of the more critical decisions in an EFA is to determine the correct number of factors to retain and rotate (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Tabachnick & Fidell, 2007). The most common rule is to retain factors when eigenvalues are ≥ 1.0 . This criterion is the default procedure used in most statistical packages. Its shortcoming is that implementation of a solitary criterion tends to under- or overestimate the number of true latent dimensions (Gorsuch, 1983; Velicer, Eaton, & Fava, 2000; Zwick & Velicer, 1986). Accordingly, our model was evaluated based on the following four rules: (a) eigenvalues greater than 1.0 (Kaiser, 1960); (b) extension of parallel analysis (PA), in which a large number of random correlation matrices are generated to compare the number of eigenvalues that are significant by chance (Glorfeld, 1995); (c) high internal consistencies (an alpha coefficient of $\geq .70$) for unit-weighted factors (Gregory, 2007; Horn, 1965; Reynolds, Livingston, & Wilson, 2006); and (d) interpretability (Fabrigar et al., 1999; Gorsuch, 1983). Several investigations have found that PA is one of the two best methods for determining the correct number of factors to accept, with the scree test as a useful adjunct (Salvia, Ysseldyke, & Bolt, 2007; Velicer, Eaton, & Fava, 2000; Zwick & Velicer, 1986).

Bivariate correlations among the final factor scores were examined using Pearson correlation coefficients. Mean factor scores were compared based on sociodemographic

(age, race, education) and clinical characteristics of prostate-specific antigen (PSA), KPS, Gleason score, prior surgery, and tumor stage using two sample *t* tests and one-way analysis of variance models, as appropriate. Statistical significance was set at the .05 level for differences in mean scores by clinical subgroups.

RESULTS

The final sample for this psychometric analysis (Table 1) included 686 men; most were White, with a high school/general educational development (GED) or less than high school education, older than age 60 years (mean age = 69.97), and with a KPS score of greater than 90, indicating considerable independence in performance of activities of daily living. No data on relationship status or gender orientation/preference were available for the sample.

Stage of cancer in the sample ranged from Stage T1b to T2c (Table 2); most (97%, *n* = 664) had Stage I or II disease, indicating that their cancer was diagnosed early and contained within the prostate gland. Gleason scores and PSA levels also indicated that disease in this sample was relatively well-contained. Most of the sample had neither surgery (95%, *n* = 653) nor hormone therapy prior to study entry (90%, *n* = 674). These data indicate that the cancer would not have had a physiological effect on their ability to function sexually.

Table 3 presents sample sizes, means, and standard deviations for the 16 SAQ variables examined in the EFA. Results from Bartlett's test of sphericity (Bartlett, 1954) indicated that the correlation matrix was not random ($\chi^2 = 1981$, *df* = 120, *p* < .0001). The Kaiser-Meyer-Olkin (KMO; Kaiser, 1974) statistic was .85, well higher than the .60 minimum suggested by Kline (1994). Two-, three-, four-, and five-factor solutions were rotated. Kaiser's (1974) criterion suggested that four factors be retained, whereas a scree plot indicated a three-factor solution, and PA indicated the retention of two factors. The three-factor solution satisfied the requirements for a simple structure in that all variables showed appreciable factor loadings and only two variables loaded on more than one factor (Field, 2005; Tabachnick & Fidell, 2007). An alpha coefficient at .75 revealed substantial internal consistency for the first dimension, whereas the alpha coefficient for the second (.67) and third factors (.68) were just lower than the .70 criterion. Both statistical recommendations and content expert opinion were taken into consideration in selecting the final three-factor solution.

Table 4 presents the rotated pattern matrix for the three-factor solution. The three factors were interpreted based on the magnitude and meaning of their salient coefficients. All coefficients greater than .35 were considered appreciable (Tabachnick & Fidell, 2007). The first factor was characterized by variables describing the value placed on sexual engagement. Consequently, the first factor was named Sexual Interest. The second factor was defined by appreciable loadings from items evaluating difficulty in becoming erect and having an orgasm; it was titled Sexual Function. The third factor was typified by items evaluating the frequency of sexual engagement and pleasure and was therefore labeled Sexual Satisfaction.

Bivariate correlations among the three factors were .31, .36, and .56 for Sexual Function and Sexual Interest, Sexual Satisfaction and Sexual Interest, and Sexual Satisfaction and Sexual

Function, respectively. The highest bivariate correlation, between Sexual Satisfaction and Sexual Function, was moderate, with $r = .558$. The other two bivariate correlations (Sexual Function and Sexual Interest and Sexual Satisfaction and Sexual Interest) demonstrated higher proportions of variance and shared less than 15% of the common variance (e.g., $.364^2 = 13.2\%$ common shared variance), suggesting that the factors were essentially independent (Briggs & MacCallum, 2003; Browne, 2001; Cudeck, 2000; Fabrigar et al., 1999; Goldberg & Velicer, 2006) in contributing to sexual adjustment.

Table 5 compares the three-factor scores according to sociodemographic and clinical characteristics. Factor scores were based on unit weighting, with total factor scores based on the sum total of item responses within the factor. With missing data at the item level, factor scores were not computed. Statistically significant differences in Sexual Interest and Sexual Function were observed based on KPS levels, with higher sexual adjustment observed in patients with perfect KPS scores (100). Post hoc Fisher's least significant difference (LSD) tests indicated significant differences between a KPS score of 90 and a score of 100.

DISCUSSION

Findings from this study provide evidence that the modified SAQ is both a valid and reliable outcome measure of sexual functioning in a clinical trial composed of men with newly diagnosed early-stage prostate cancer. Factor analysis resulted in a 16-item, three-factor solution: Sexual Interest, Sexual Function, and Sexual Satisfaction. Sexual Interest includes items on desire and ability to climax and addresses the importance of activity in the respondent's life. The Sexual Function factor includes items that refer to the physiological aspects of arousal, erectile ability, and energy level necessary for sexual functioning. The final factor, Sexual Satisfaction, addresses the frequency of sexual activity, the degree of tenseness following sexual activity, and the ability to enjoy sexual activity. These three factors support the theoretical definition of sexual function on which this tool was based, that is, that sexual function includes the sexual response cycle and the ability to engage in sexual activity and to achieve sexual satisfaction.

Men in this sample were on average close to 70 years of age, with high functional status; about 40% reported having problems with erection prior to treatment for their cancer. The literature suggests that as men age, they typically experience a decline in sexual functioning, even if they are otherwise healthy (DeLamater & Karraker, 2009). Thus, at entry into the study, the sample was not that different from the generally healthy male population without prostate cancer.

Alpha coefficients for the three-factor solution were adequate in demonstrating internal consistency of each of the factors. The alpha for Sexual Interest was .75, and alphas for the other factors were just lower than the .70 criterion at .67 for Sexual Function and .68 for Sexual Satisfaction. This may not reflect inadequate unidimensionality of the items on these factors (Schmitt, 1996) but should be further examined.

The approach chosen for factor analysis yielded a satisfactory three-factor solution that supported the theoretical model used in instrument development. However, another possible

approach to factor analysis would be to split the sample in half, with half the data subjected to an EFA and the other half followed by a CFA for validation. For a credible factor analysis, at least 300 subjects are required. The current data set had complete data for 395 subjects and would not support file splitting using complete data. To make full use of the data, we opted to use pairwise deletion and the full data set, resulting in $N = 686$, so that we could capture as many associations as possible. Validation of our findings using an external data set is needed.

In addition to demonstrating validity and underlying reliability, the SAQ was found to be sensitive to even small changes in physical functioning as measured by the KPS. These small changes in physical functioning were reflected in poorer sexual adjustment. The significant differences between SAQ scores in patients with KPS scores of 90 (able to carry on normal activity and reporting minor signs or symptoms of disease) and SAQ scores of those with KPS scores of 100 (normal physical functioning with no complaints and no evidence of disease) suggest that the SAQ is able to detect changes in sexual functioning when even minor decrements in physical status occur. This unexpected and important finding deserves additional exploration in future studies.

Although items in the three factors of the SAQ may be common to other measures of male sexuality, including the IIEF, the SAQ is broader in that it is not limited to physiological aspects of the sexual response cycle and achievement of satisfaction. In comparison, the 15-item, five-factor (erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall sexual satisfaction) IIEF (Rosen et al., 2006; Rosen et al., 1997) is more narrowly focused on erection and satisfaction. The IIEF has only one item related to a partner, whereas the SAQ has three items related to a partner. Because intimacy with a partner is a large component of sexual activity and in achieving sexual satisfaction, the SAQ increases the weight of this important dimension. In addition, although both the SAQ and the IIEF are sensitive to changes in male sexual function, only the SAQ has been shown to be sensitive to changes in physical functioning as related to the ability to engage in sexual activities. It is useful for clinicians to have access to a measure of sexual functioning that is sensitive to the changes in physical functioning caused by age and the comorbidities of aging.

This study was a preliminary evaluation of the psychometric properties of the mSAQ-Male. Limitations include the lack of data on which to conduct such as test-retest reliability estimates and by the lack of a prospective comparison to a newer, more “standard” measure such as the IIEF. The data set also did not include information on gender preference or on concurrent partner data. Some may argue that self-reporting of sexual functioning, like any self-report data, may include an inflation of sexual ability; however, one study of a brief three-item measure of patient and partner sexual function reported good levels of agreement between men and their partners in the areas of erectile frequency, firmness, and sexual satisfaction (Mathias et al., 1999). Finally, although the SAQ has been found to be valid in men with early-stage prostate cancer, its psychometric properties in men with later-stage cancer or other chronic conditions has yet to be evaluated.

CONCLUSION

This psychometric analysis of the mSAQ-Male indicated that it is a valid self-report measure of sexuality that can be used in the clinical setting to detect changes in male sexual functioning. The ability of the mSAQ-Male to detect even small changes in sexual functioning caused by minute decrements in physical functioning needs further evaluation. The mSAQ-Male can easily be administered prior to initiating treatment for a chronic condition in men and during the course of therapy to identify changes in sexual functioning. The mSAQ-Male offers a more holistic approach to the measurement of male sexual functioning than what may be found in other instruments measuring male sexuality in that sexual partners and interest are examined in addition to frequency and satisfaction. Future work should focus on the ability of the mSAQ-Male to measure changes in sexuality in older men and in men with diseases other than early-stage prostate cancer.

Acknowledgments

The authors thank Dr. Joseph Glutting, University of Delaware, for his advice and guidance on factor analytic issues.

References

- American Nurses Association. Outcome standards for cancer nursing practice. Kansas City, MO: Author; 1979.
- Bartlett MS. A further note on the multiplying factors for various c^2 approximations in factor analysis. *Journal of the Royal Statistical Society*. 1954; 16:296–298.
- Briggs NE, MacCallum RC. Recovery of weak common factors by maximum likelihood and ordinary least squares estimation. *Multivariate Behavioral Research*. 2003; 38:25–56.
- Browne MW. An overview of analytic rotation in exploratory factor analysis. *Multivariate Behavioral Research*. 2001; 36:111–150.
- Cudeck, R. Exploratory factor analysis. In: Tinsley, HEA.; Brown, SD., editors. *Handbook of applied multivariate statistics and mathematical modeling*. New York, NY: Academic Press; 2000. p. 265–296.
- Dalkin BL, Christopher BA. Potent men undergoing radical prostatectomy: A prospective study measuring sexual health outcomes and the impact of erectile dysfunction treatments. *Urologic Oncology*. 2007; 26:281–285. [PubMed: 18452820]
- DeLamater J, Karraker A. Sexual functioning in older adults. *Psychiatry Reports*. 2009; 11:6–11.
- Fabrigar LR, Wegener DT, MacCallum RC, Strahan EJ. Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*. 1999; 4:272–299.
- Field, A. *Discovering statistics using SPSS*. Thousand Oaks, CA: Sage; 2005.
- Glorfeld LW. An improvement on Horn's parallel analysis methodology for selecting the correct number of factors to retain. *Educational and Psychological Measurement*. 1995; 55:377–393.
- Goldberg, LR.; Velicer, WF. Principles of exploratory factor analysis. In: Strack, S., editor. *Differentiating normal and abnormal personality*. 2. New York, NY: Springer; 2006. p. 209–337.
- Gorsuch, RL. *Factor analysis*. 2. Hillsdale, NJ: Lawrence Erlbaum Associates; 1983.
- Gorsuch, RL. Factor analysis. In: Shinka, JA.; Velicer, F., editors. *Handbook of psychology: Research methods in psychology*. Vol. 2. Hoboken, NJ: Wiley; 2003. p. 143–164.
- Gregory, RJ. *Psychological testing: History, principles, and applications*. 5. Boston, MA: Allyn and Bacon; 2007.
- Horn J. A rational and test for the number of factors in factor analysis. *Psychometrika*. 1965; 30:179–185. [PubMed: 14306381]

- Howlett K, Koettters T, Edrington J, West C, Paul S, Lee K, Miaskowski C. Changes in sexual functioning on mood and quality of life in patients undergoing radiation therapy for prostate cancer. *Oncology Nursing Forum*. 2010; 37(1):E58–E66. <http://dx.doi.org/10.1188/10.ONF.E58-E66>. [PubMed: 20044333]
- Jones CU, Hunt D, McGowan DG, Amin MB, Chetner MP, Bruner DW, Shipley WU. Radiotherapy and short-term androgen deprivation for localized prostate cancer. *New England Journal of Medicine*. 2011; 365(2):107–118. [PubMed: 21751904]
- Kaiser HF. The application of electronic computers to factor analysis. *Educational and Psychological Measurement*. 1960; 20:141–151.
- Kaiser HF. An index of factorial simplicity. *Psychometrika*. 1974; 39:31–36.
- Kline, P. An easy guide to factor analysis. New York, NY: Routledge; 1994.
- MacCallum R. Specification searches in covariance structure modeling. *Psychological Bulletin*. 1986; 100:107–120.
- MacCallum R, Roznowski M, Necowitz LB. Model modifications in covariance structure analysis: The problem of capitalizations on chance. *Psychological Bulletin*. 1992; 111:490–504. [PubMed: 16250105]
- Masters, WH.; Johnson, VE. Human sexual response. Philadelphia, PA: Lippincott-Raven; 1966.
- Mathias SD, O'Leary MP, Henning JM, Pasta DJ, Fromm S, Rosen RC. A comparison of patient and partner responses to a brief sexual function questionnaire. *The Journal of Urology*. 1999; 162(6): 1999–2002. [PubMed: 10569555]
- Metcalfe, MC. Refinement of the Sexual Adjustment Questionnaire. In: Strickland, O.; Waltz, C., editors. *Measurement of nursing outcomes*. New York, NY: Springer Publishing; 1990. p. 286-319.
- Moinpour CM, Darke AK, Donaldson GW, Thompson IM, Langley C, Ankerst DP, Coltman CA Jr. Longitudinal analysis of sexual function reported by men in the prostate cancer prevention trial. *Journal of the National Cancer Institute*. 2007; 99:1025–1035. [PubMed: 17596576]
- Reynolds, CR.; Livingston, RB.; Wilson, V. *Measurement and assessment in education*. Boston, MA: Pearson; 2006.
- Rosen RC, Althof SE, Giuliano F. Research instruments for the diagnosis and treatment of patients with erectile dysfunction. *Urology*. 2006; 68(Suppl 3A):6–16. [PubMed: 17011371]
- Rosen RC, Riley A, Wagner G, Osterloh IH, Kirpatrick J, Mishra A. The International Index of Erectile Dysfunction (IIEF): A multidimensional scale for assessment of erectile dysfunction. *Urology*. 1997; 49(6):822–830. [PubMed: 9187685]
- Salvia, J.; Ysseldyke, JE.; Bolt, S. *Assessment in special and inclusive education*. 10. Boston, MA: Houghton Mifflin; 2007.
- Schag CC, Heinrich RL, Ganz PA. Karnofsky performance status revisited: Reliability, validity, and guidelines. *Journal of Clinical Oncology*. 1984; 2:187–193. [PubMed: 6699671]
- Schmitt N. Uses and abuses of coefficient alpha. *Psychological Assessment*. 1996; 8:350–353.
- Tabachnick, BG.; Fidell, LS. *Using multivariate statistics*. 5. Boston, MA: Pearson; 2007.
- Tataryn DJ, Wood JM, Gorsuch RL. Setting the value of k in Promax: A Monte Carlo study. *Educational and Psychological Measurement*. 1999; 59:384–391.
- Velicer, WF.; Eaton, CA.; Fava, JL. Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In: Goffin, RD.; Helms, E., editors. *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy*. New York, NY: Guilford Press; 2000. p. 41-71.
- Waterhouse J, Metcalfe MC. Development of Sexual Adjustment Questionnaire. *Oncology Nursing Forum*. 1986; 13(3):53–59. [PubMed: 3635138]
- Wilmoth, MC. Sexuality. In: Burke, C., editor. *Psychosocial nursing guidelines*. 2. Pittsburgh, PA: Oncology Nursing Society; 2010. p. 101-124.
- Zwick WR, Velicer WF. Comparison of five rules for determining the number of components to retain. *Psychological Bulletin*. 1986; 99:432–442.

APPENDIX

Modified Sexual Adjustment Questionnaire-Male

In the 6 months before you found out you had cancer:

Items	Labels	Question
1	Prior activity	How important was sexual activity in your life?
2	Often	How often was sexual activity enjoyable?
3 ^a	Tired	Were you too tired for sexual activity?
4	Desire	Do you have desire for sexual activity?
5	More activity	Did you desire sexual activity more than your partner(s)?
6	Sex partners	Were you having sexual relations with anyone?
7	Initiator	Were you the one to initiate (start) sexual activity with your partner(s)?
8	Frequency	How often did you have sexual activity (with or without a partner)?
9 ^a	Trouble aroused	Before you found out you had cancer, did you have trouble becoming sexually aroused or excited?
10	Erection	When sexually excited, were you able to get an erection?
11 ^a	Long time	Did you feel it took a long time for you to get a firm erection?
12 ^a	Ejaculation	Did you have problems in "coming" (ejaculating) or feel that you came too soon?
13	Climax	Was it important for you to reach a climax ("come")?
14	Satisfied	Before you found out you had cancer, did you feel satisfied after sexual activity?
15	Satisfied with frequency	Were you satisfied with the frequency of sexual activity in your life?
16 ^a	Tense	Did you feel tense or frustrated after a sexual experience?

^a Reverse coded.

TABLE 1Sociodemographic Characteristics (*N* = 686)

Characteristics	<i>N</i> = 686	%
Age (years) ^a		
60	60	9
61–69	234	34
70	392	57
Race		
White	533	78
Black or African American	125	18
Other	27	4
Unknown/Missing	1	<1
Education		
High School/GED or less than high school	383	56
Attended college/technical school	266	39
Prefers not to answer	16	2
Missing	21	3

Note. GED = general education development.

^a Age: median = 71, interquartile range (IQR) = 8.0, mean = 69.97, *SD* = 6.02.

TABLE 2Clinical Characteristics and Treatments ($N = 686$)

	<i>N</i>	%
PSA ^a		
0–4	55	8
4.01–10	296	43
> 10	198	29
Unknown	137	20
KPS		
70	17	3
80	34	5
90	248	36
100	387	56
Combined Gleason score (CGS) ^b		
2–6	420	61
7–10	231	34
Unknown	35	5
Prior surgery		
No	653	95
Yes	33	5
Hormone therapy		
No	674	98
Yes/unknown	12	2
Chemotherapy		
No	675	98
Unknown	11	2
Stage		
T1b	21	3
T1c	287	42
T2a	208	30
T2b	169	25
T2c	1	< 1
Group stage		
0	1	< 1
I	301	44
II	368	54
III	2	< 1
IV	1	< 1
Unknown	13	2

Note. PSA = prostate-specific antigen; KPS = Karnofsky performance scale.

^a PSA: median = 8.1 ng/ml, mean = 9.1 ng/ml, *SD* = 4.50, IQR 19.5. Unknowns were reported in alternative formats, that is, ngm, n/mg, u/l, mg/l, but all values were less than 20.

^b CGS: median and mean = 6, $SD = 1.0$, interquartile range (IQR) = 7.0.

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

TABLE 3

Descriptive Statistics for Baseline Sexual Adjustment Questionnaire Item Responses

Item	Label	<i>n</i>	Mean	Standard Deviation
1	Prior activity	676	3.56	1.086
2	Often	672	2.32	1.253
3	Tired	670	2.16	0.950
4	Desire	686	2.86	1.007
5	More activity	655	3.08	1.089
6	Sex partners	592	3.41	1.167
7	Initiator	611	2.63	0.990
8	Frequency	503	3.53	1.080
9	Trouble aroused	599	2.32	1.088
10	Erection	621	2.40	1.175
11	Long time	607	2.72	1.076
12	Ejaculation	596	2.53	1.100
13	Climax	656	2.36	1.239
14	Satisfied	575	1.87	0.903
15	Satisfied with frequency	664	2.25	1.233
16	Tense	599	1.66	0.861

Note. Reverse coding was conducted on Items 3, 9, 11, 12, and 16 to ensure all questions were unidirectional, where “1” represents *no importance/never* and “5” represents *extremely important/always* (i.e., a lower score represents better sexual functioning).

TABLE 4

Factor Analysis Pattern Matrix With Promax Rotation

Item	Labels	Rotated Factor Loadings		
		Sexual Interest	Sexual Function	Sexual Satisfaction
1	Prior activity	.660	-.035	.038
2	Often	.515	-.046	.427
3 ^a	Tired	-.068	.302	.039
4	Desire	.733	.016	-.063
5	More activity	.670	.031	-.258
6	Sex partners	.517	-.001	.121
7	Initiator	.594	.007	.046
8	Frequency	.189	.029	.341
9 ^a	Trouble aroused	.144	.690	-.136
10	Erection	.279	.425	.142
11 ^a	Long time	.059	.645	-.091
12 ^a	Ejaculation	-.154	.517	.154
13	Climax	.478	-.118	.240
14	Satisfied	.032	.135	.540
15	Satisfied with frequency	.004	-.064	.689
16 ^a	Tense	-.301	.362	.391
Eigenvalues		4.58	2.12	1.22
% of variance		28.60	13.23	7.60
<i>a</i>		.746	.672	.676

^aReverse coded.

TABLE 5

Mean Factor Scores (*SD*) by Sociodemographic and Clinical Characteristics

	Sexual Interest	Sexual Function	Sexual Satisfaction
Age (years)			
60	15.1 (3.2)	11.0 (3.9)	10.5 (3.3)
61–69	17.2 (4.2)	11.9 (3.7)	10.8 (3.1)
70	17.8 (4.2)	12.2 (3.1)	11.3 (3.0)
<i>F</i> -statistic <i>p</i> value ^a	< .001 ^b	.041 ^c	.127
Race			
White	17.7 (4.2)	11.9 (3.4)	11.0 (3.1)
Black or African American	16.5 (4.0)	12.1 (3.5)	11.2 (3.3)
Other	15.1 (4.1)	12.4 (3.6)	10.9 (3.2)
<i>F</i> -statistic <i>p</i> value ^a	.001 ^d	.794	.873
Education			
High school/GED or less than high school	17.8 (4.4)	12.2 (3.6)	11.0 (3.0)
Attended college/technical school	16.7 (3.9)	11.7 (3.1)	11.1 (3.2)
<i>t</i> -statistic <i>p</i> value ^e	.003	.092	.783
PSA			
0.00–4.00	16.5 (4.1)	11.7 (3.3)	11.2 (2.7)
4.01–10.00	17.2 (4.2)	12.0 (3.5)	11.0 (3.1)
> 10.00	17.4 (4.2)	12.2 (3.3)	11.2 (3.3)
<i>F</i> -statistic <i>p</i> value ^a	.466	.743	.776
KPS			
70–80	17.8 (4.6)	12.2 (4.2)	11.6 (3.9)
90	17.9 (4.4)	12.8 (3.4)	11.1 (3.0)
100	17.0 (4.0)	11.5 (3.2)	11.0 (3.1)
<i>F</i> -statistic <i>p</i> value ^a	.042 ^f	< .001 ^f	.524 ^f
Combined Gleason score			
2–6	17.3 (4.3)	11.9 (3.4)	11.1 (3.0)
7–10	17.5 (4.2)	12.0 (3.4)	11.1 (3.2)
<i>t</i> -statistic <i>p</i> value ^e	.657	.574	.930
Prior surgery			
Yes	17.4 (4.2)	12.0 (3.4)	11.1 (3.1)
No	17.0 (5.1)	11.5 (3.3)	10.1 (2.5)
<i>t</i> -statistic <i>p</i> value ^e	.689	.512	.140
Stage			
T1	17.2 (4.4)	12.1 (3.3)	11.2 (3.0)
T2a	17.3 (3.8)	12.0 (3.6)	11.0 (3.0)
T2b and T2c	17.7 (4.4)	11.9 (3.4)	10.9 (3.3)
<i>F</i> -statistic <i>p</i> value ^a	.463	.837	.726
Group stage			

	Sexual Interest	Sexual Function	Sexual Satisfaction
0–I	17.2 (4.4)	12.1 (3.3)	11.1 (3.0)
II–IV	17.5 (4.1)	11.9 (3.5)	11.0 (3.2)
<i>t</i> -statistic <i>p</i> value ^e	.363	.662	.893

Note. GED = general educational development; PSA = prostate-specific antigen; KPS = Karnofsky performance scale.

^aBased on one-way analysis of variance (ANOVA) model.

^bAge: 60 years significantly different than age 61–69 and 70 years based on post hoc least significant difference (LSD) test.

^cAge: 60 years significantly different than age 70 years based on post hoc LSD test.

^dRace: White significantly different than Black and other based on post hoc LSD test.

^eBased on two-sample *t* test.

^fKPS: 100 significantly different than KPS 90 based on post hoc LSD test.