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Development and Validation of the BREAST-Q Breast Conserving Therapy Module

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Abstract

Background: In breast cancer surgery, patient-reported outcome measures (PROMs) are needed to measure outcomes that are best reported by patients (e.g., psychosocial well-being). The purpose of this study was to develop and validate a new BREAST-Q module to address the unique concerns of patients undergoing breast-conserving therapy (BCT).

Methods: Phase I involved qualitative and cognitive interviews with women who had BCT and clinical expert input to establish content for the BCT module. A field-test (Phase II) was performed and Rasch Measurement Theory (RMT) analysis was used for item reduction and to examine reliability and validity. Validation of the item-reduced scales in a clinical sample (Phase III) was conducted to further assess their psychometric properties.

Results: Qualitative interviews with 24 women resulted in the addition of 15 new items across multiple existing BREAST-Q scales and the development of 2 new scales (adverse effects of radiation and satisfaction with information - radiation therapy). Feedback from patients (n=15) and clinical experts (n=5) were used to refine the instructions, response options, and item wording. RMT analysis of data from 3,497 women resulted in item reduction. The final set of scales evidenced ordered response option thresholds, good item fit, and good reliability, with the exception of the adverse effects of radiation scale. Validity and reliability were further supported by the Phase III data from 3,125 women.

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Conclusions: The BREAST-Q BCT module can be used in research and in clinical care to evaluate quality metrics and to compare surgical outcomes across all breast cancer surgery patients.

Background

Breast cancer is the most commonly diagnosed non-skin cancer among women with over 250,000 new cases estimated in the United States in 2017.[1,2] Treatment generally involves one of three surgical options: 1) breast-conserving therapy (BCT); 2) mastectomy alone; or 3) mastectomy with breast reconstruction.[3,4] Each of these procedures may have a unique impact on a woman's body image and health-related quality of life (HR-QOL).[5–12]

Patient-reported outcome measures (PROMs) are questionnaires specially designed to evaluate patient perceptions of outcomes. Historically, PROMs for breast cancer patients have offered only limited assessment of surgery-specific outcomes. such as patient satisfaction with breast appearance.[13,14]

The BREAST-Q was developed to address the unmet need for a breast-specific PROM and measures outcomes following different types of breast surgery.[15,16] Each module has the same conceptual framework, with independently functioning scales that evaluate HR-QOL (i.e., physical, psychosocial, and sexual wellbeing) and satisfaction (i.e., with breasts and experience of care).

A systematic review performed by our team determined that existing breast cancer PROMs fail to adequately address the surgery-specific concerns of BCT patients.[19] A BREAST-Q module specific for BCT patients was not developed at the same time as the mastectomy and reconstruction modules. Given that BCT is one of the three main treatment options for breast cancer patients, a BCT module is needed to facilitate comparisons of surgical outcomes across all breast cancer surgery patients. The objective of this study was to develop and validate a module of the BREAST-Q to address the unique concerns of BCT patients. We also sought to ensure that this new module would be calibrated to allow for valid comparison of surgery-specific outcomes across all breast cancer surgery patients (i.e., BCT, mastectomy alone, and mastectomy with reconstruction).

Methods

The study was conducted in three phases between October 2009 and December 2016: 1) qualitative interviews to establish content for the BCT module; 2) quantitative field-testing for item-reduction and psychometric analysis; and 3) further validation of the scales in an independent clinical sample.

Phase I: Qualitative Interviews

Qualitative interviews were performed between October 2009 to December 2010. We obtained Institutional Research Board (IRB) approval at Memorial Sloan-Kettering Cancer Center (MSKCC) (New York, USA) prior to starting our research. A purposive sample of BCT patients was recruited from the breast surgery service and the Department of Radiation

Oncology. Patients were interviewed if they were aged ≥18 years, able to participate in an interview conducted in English, and had undergone BCT within the past seven years. After obtaining informed consent, we conducted a series of interviews that had 2 parts. In part 1, participants completed the scales of the BREAST-Q Reconstruction Module using the 'think-aloud' technique.[20] This approach was used to identify the following: 1) items that reflected the experiences of BCT patients and maintained the intended meaning (these items were retained); 2) items that needed minor modifications in order to accurately reflect the experiences of BCT patients, e.g., changing the word "reconstruction" to "lumpectomy" (these items were revised); and 3) items that did not reflect the experiences of BCT patients (these items were removed). Subsequently, in part 2, semi-structured interviews were conducted to explore and understand participant outcomes and experiences in more detail. Interviews were recorded and transcribed verbatim. Transcripts were imported into QSR NVivo 8 software for coding.[21] Interviews were coded using a line-by-line approach to identify new concepts covering BCT-specific issues. Patient statements that reflected new concepts were developed into preliminary items and incorporated into existing or newly developed scales. New content was brought forward into subsequent patient interviews for feedback and further revision.

Experts in the field of BCT were invited to review the new BCT module and provide feedback. Cognitive patient interviews followed to determine acceptability, comprehensiveness, and comprehensibility. Readability was assessed using the Flesch-Kincaid grade level score.[22]

Phase II: Field-testing for item-reduction and psychometric analysis

Field-testing of the new BCT scales was performed in collaboration with Duke University Medical Center and the Love/AVON Army of Women (AOW) program.

Approval was obtained from the AOW Scientific Advisory Committee and the institutional review board at Duke University Medical Center. AOW members were sent an e-blast describing the study. Members who were interested and met the inclusion criteria (aged ≥ 18 years and had a history of BCT) followed the e-blast to complete the BCT module. Details regarding study design and data collection have previously been published.[23–26] In addition to the BCT module, participants completed the *Impact of Cancer-version 2.0,* and the *PTSD Checklist-Civilian Version* (PTSD-CL) followed by clinical and demographics questions. Surveys were administered electronically using Qualtrics software (www.qualtrics.com; Provo, UT).

Rasch measurement theory (RMT) analysis was used for the psychometric analysis and to develop the scoring algorithm for each new scale.[27] Scores were anchored across the other BREAST-Q breast cancer surgery modules to ensure that the BCT module would be calibrated to allow for valid comparison of surgery-specific outcomes across all surgery patients (i.e., BCT, mastectomy alone, and mastectomy with reconstruction). Further supportive analysis was conducted using Classic Test Theory (CTT) analyses. Details of the CTT and convergent and discriminant validity analyses were previously published.[25] Best practice guidelines, including published criteria were followed where applicable.[28]

Phase III Further Validation in an Independent Clinical Sample

The item reduced BCT module was incorporated into routine clinical care at MSKCC. Patient responses to the questionnaire were analyzed to further evaluate the psychometric performance of the new scales.

All patients scheduled to undergo BCT, and those who had already completed BCT and who were still in active clinical care at MSKCC, were sent an email with a link to complete the questionnaire. Patients were excluded if they were unable to read English or to receive emails. Surveys were administered electronically using WebCore software, a program developed internally at MSKCC. IRB approval was obtained prior to the analysis of the questionnaire data collected as a component of routine clinical care. The following scales were not tested in the MSKCC sample: adverse effects of radiation and satisfaction with information – radiation oncologist.

RMT and CTT methods were used as described above and in our previous publications.[15] Construct validity was examined by known group differences. Specifically, we hypothesized that women's scores on the satisfaction with breasts scale will decrease over time, whereas their scores on the physical well-being scale will increase.

Results

Phase I: Qualitative Results

Twenty-four BCT patients were recruited. Mean age was 56 (SD 12) years and 88% were Caucasian. From the qualitative analysis, four scales were deemed not relevant to BCT patients and were removed. Table 1 shows the remaining scales and items of the BREAST-Q Reconstruction module that were retained, revised, and removed from the BCT module. From the participant interviews, 15 new items were developed and inserted into four of the original BREAST-Q scales. In addition, two new scales were developed and are described below:

1. *Adverse effects of radiation:* The impact of radiation therapy on a woman's lumpectomy breast skin and tissue was an important concern for BCT patients. Women described being bothered by changes to their skin ("*My skin … now it's really dark and brown*"), nipple ("*It's darker than the other breast definitely*"), and scar tissue ("*I don't like to touch it because it's hard*") following radiation. To address these concerns, we developed a new scale to measure breast-related adverse effects following radiation therapy.

2. *Satisfaction with information - radiation oncologist:* Some participants expressed concerns relating to the information provided by their radiation oncologist. For example, one participant explained: "*I think I would have liked to have heard what the other options were under the circumstances, because I'm sitting here facing six weeks of radiation. Might I have said, look, I'll go ahead and have a mastectomy and I'll have reconstructive surgery and not have radiation? And I say this because I really don't like the idea of radiation.*" Other participants conveyed that they were not provided with information about potential adverse

effects of radiation therapy. We developed a new scale to measure satisfaction with information received from the radiation oncologist.

Five clinicians (three surgeons and two radiation oncologist) reviewed the BCT module and suggested minor changes. Fifteen patients participated in cognitive interviews and also suggested minor changes to improve the instructions, response options, and item wording. Feedback from both sources was used to finalize the scales for field-testing.

Phase II: Results of Item-reduction and Psychometric Evaluation in AOW Sample

As part of a larger study[24], 9,289 women expressed an interest in participating, of which 7,619 (82%) consented and 6,748 (89%) women participated. Of these women, 3,497 (52%) had a history of BCT and completed the BCT module (see Table 2). Mean age of the sample was 59 years (SD 8.9) and most respondents were less than 10 years from surgery. Further details of this study population were previously published.[24,25]

RMT analysis of the BCT module scales resulted in some reduction of items. The number of items in the final scales are shown in Table 3. Validity was supported by the following findings: 1) response option thresholds were ordered for all items in all scales; 2) item locations in each subscale were spread out providing a good range of measurement (-3.70 to 4.86); and, 3) the vast majority of items in all scales had acceptable fit residuals and Chi-square values that were non-significant (Table 3). The minority of items falling outside recommended criteria had fit statistics marginally larger than expected. With the exception of the ‘adverse effects of radiation’ scale, reliability was supported by Person Separation Indices (PSI) that ranged from 0.62 to 0.90 with or without extremes. Rasch analysis thus provided evidence of reliability and validity of all scales with the exception of the adverse effects of radiation scale, which had a low PSI value. This set of 7 items, instead from a problem checklist rather than a scale.

Traditional psychometric analyses have been previously reported (Table 4).[25] The BCT module was supported by high Cronbach’s α coefficients (>0.95).[25] The Cronbach a coefficient for the adverse effects of radiation was 0.80.[25]

Phase III: Results of Further Validation in MSKCC Clinical Sample

Sample—Between March 2013 and December 2016, a total of 3,125 patients completed 7,649 BCT questionnaires at multiple time points (Table 5).

The BCT module was supported by high Cronbach’s α coefficients (>0.95) with the exception of the physical well-being: chest and upper body scale (Cronbach α coefficient 0.77; Table 6). Item-total correlations also exceeded criteria for adequacy (>0.30). Concurrent validity was assessed by comparing patient scores one year from surgery to those more than three years from surgery. As hypothesized, satisfaction with breast was lower for women further from treatment (80 vs 71, $p<0.001$) while physical well-being improved further from surgery (75 vs 81, $p<0.001$).

Discussion

The BCT module fills a gap in breast cancer care and research by providing clinicians and researchers a precise, reliable, and valid tool to use to evaluate patient-reported outcomes (PRO). This BREAST-Q module was developed with input from BCT patients and experts to ensure strong content validity, and the Phase II field-test study demonstrated strong psychometric properties and high acceptability.

To develop the BCT module, the existing BREAST-Q content was adapted to reflect traditional and emerging themes important to BCT patients. By maintaining the domains, direct comparisons of outcomes across different local therapy options is possible. Given the equivalent survival outcomes of surgical options for early-stage breast cancer, high-quality care is increasingly dependent on outcomes such as HR-QOL and body image. These new scales are particularly relevant for evaluating emerging technologies in breast surgery and radiation. As an example, while there are data to suggest that re-excisions do not worsen oncologic outcome after lumpectomy, there is limited data regarding the impact on cosmetic outcome.[31,32]

Recently, the BREAST-Q was endorsed by an international consensus panel for the measurement of oncoplastic BCT outcomes.[38] The breadth of the BCT module allows for more nuanced assessment of changes related to both surgery and radiation, enabling us to determine if novel techniques actually translate into improved patient-centered outcomes.[38]

The BCT module, in conjunction with the other BREAST-Q modules, provides PROs that specifically address local therapy for breast cancer. Patient input was integral to the development of these scales and, thus, they reflect outcomes felt to be most important to patients. There are a number of reliable and validated instruments that assess PROs following treatment for breast cancer, but few contain questions that measure outcomes related to the specific surgery performed.[19] Similarly, generic PROMs previously used in this population also lack appropriate content targeted to BCT surgery. The use of PROMs that lack content validity limits their ability to detect differences in outcomes across procedures, including mastectomy with or without reconstruction and breast-conserving surgery. Additionally, all BREAST-Q modules were developed using Rasch psychometric which provides meaningful measurement at the individual patient level. Unlike PROMs developed only for research purposes, the BREAST-Q was specifically designed for use in individual clinical care.

There are limitations to our study. Although the BCT module was carefully developed and validated, further validation in populations with different demographics would be valuable. In addition, the sexual well-being scale in the BCT module had the highest proportion of missing data in both phase II (29.3%) and phase III (40.3%) studies. This reflects the sensitive content of the scale and the fact that patients were given the option to opt out of responding to this scale. Also, the set of items measuring adverse effects of radiation did not function like a scale and should be used to identify problems. Physical well-being scale had low PSI values in Phase II analyses, indicating that this scale may have limited ability to discriminate among patients with different levels of the concept measured by the scales. The

Cronbach α coefficient, on the other hand, was high. Given the limited physical morbidity of BCT, these psychometric findings are not unexpected for the physical well-being scale. In addition, some MSKCC participants scored at the ceiling for all process of care measures (satisfaction with surgeon, medical team, office staff and information). These high levels of satisfaction likely reflect the fact that the sample was accrued at a large, specialized cancer center and may not be reflective of other environments. Finally, although we have enhanced the ability to assess and compare different breast surgeries, axillary surgery does impact quality of life, and available BREAST-Q scales do not specifically measure that impact.[39] To further enhance the assessment of HR-QOL following local therapy for breast cancer, we are developing new scales to assess the impact of axillary surgery and arm symptoms following treatment.

Conclusion

The addition of the BCT module to the BREAST-Q establishes an inclusive tool that can be used to evaluate breast cancer surgery outcomes and increase the impact of PROs data for breast cancer patients. The BCT module provides clinicians and researchers with a tool to further explore quality metrics in breast cancer surgery and allows for patient-centered comparative effectiveness research, as well as opportunities to enhance clinical care of breast cancer patients.

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Synopsis

This manuscript describes a 3-phased approach to develop and validate a BREAST-Q module for breast-conserving therapy (BCT) patients. Qualitative methods were used to establish content. Reliability and validity were assessed using Rasch Measurement Theory analysis.

Table 1:

Qualitative Results: Items removed, refined and retained from BREAST-Q Reconstruction Module

	Items in Reconstruction module	Items retained	Items refined	Items removed	New items added	Preliminary BCT module	Total items after item reduction
HR-QOL scales							
Psychosocial well-being	10	10	0	0	0	10	10
Sexual well-being	6	6	0	0	3	9	8
Physical well-being	16	5	7	4	2	14	14
Patient satisfaction scales							
Satisfaction with breasts	16	6	5	4	4	15	11
Satisfaction with information - breast surgeon	15	3	3	0	6	12	12
Satisfaction with surgeon	12	12	0	0	0	12	11
Satisfaction with medical team	7	7	0	0	0	7	7
Satisfaction with office staff	7	7	0	0	0	7	7
New scales							
Adverse effects of radiation	NA	NA	NA	NA	NA	14	7
Satisfaction with information - radiation oncologist	NA	NA	NA	NA	NA	19	11

Table 2.

Army of Women Patient Characteristics (n= 3497)

	n	%
Mean Age (SD)	59 (8.9)	
Type of Breast cancer *		
Ductal carcinoma IS	1409	40
Lobular carcinoma IS	152	4
Invasive ductal carcinoma	1534	44
Invasive lobular carcinoma	271	8
Atypical ductal hyperplasia	32	1
Inflammatory breast cancer	16	<1
Other	270	8
I don’t know	340	10
Recurrence		
Yes	62	2
No	3405	97
Missing	30	<1
Complications		
Yes	789	23
No	2708	77
Marital Status		
Married	2423	69
Living with significant other	194	6
Widowed	180	5
Separated	35	1
Divorced	385	11
Single, never married	272	8
Missing	8	<1
Level of Education		
Some high school	5	<1
High school diploma	168	5
Some college, trade or university	625	18
College, trade or university diploma	1253	36
Some Master/Doctoral degree	286	8
Master/Doctoral degree	1150	33
Missing	10	<1
Employment Status		
Employed full-time	1313	38
Employed part-time	504	14

	n	%
Voluntary work	158	5
Homemaker	243	7
Student	15	<1
Retired	920	26
Unable to work/disabled	72	2
Unemployed/seeking employment	70	2
Other	189	5
Missing	13	<1
Race		
White	3297	94
Black or African American	51	1
American Indian or Alaskan Native	2	<1
Asian or Pacific Islander	34	1
Other	113	3
Ethnicity		
Hispanic or Latino	63	2
Non-Hispanic or non-Latino	3388	97
Missing	46	1
Time from Surgery		
<5 years	1594	46
5–10 years	951	27
11–15 years	501	14
16–20 years	214	6
>20 years	99	3
Missing	138	4

*The larger sample is attributed to the fact that participants may have multiple types of breast cancers

Table 3.

Phase II: Psychometrics AOW Sample

		Rasch						
Scales	**No of Items***	**Sample within scale range (n/ 3497)**	**Item Threshold Location Logits (min/ max)**	**Disordered Thresholds**	**Fit Residuals Outside −2.5/+2.5**	**Items with Chi-Square Probability Significance**	**PSI with extm**	**PSI without extrm**
Satisfaction with breasts	11	2988	−2.48/3.35	0	10	3	0.90	0.90
Adverse effects of radiation	6	1300	−2.93/2.43	0	0	0	0.02	−0.50
Psychosocial well-being	10	2243	−2.76/4.86	0	9	0	0.84	0.89
Sexual well-being	6	2905	−2.95/3.28	0	5	0	0.86	0.83
Physical well-being	7	2607	−3.62/3.58	0	4	1	0.62	0.62
Satisfaction with information - breast surgeon	12	2675	−1.12/2.51	0	6	0	0.82	0.83
Satisfaction with information - radiation oncologist	11	2701	−2.22/3.55	0	6	0	0.81	0.81
Satisfaction with surgeon	12	1318	−3.70/3.15	0	7	1	0.71	0.89
Satisfaction with medical team	7	758	−3.46/4.07	0	3	0	0.46	0.84
Satisfaction with office staff	7	976	−3.65/4.50	0	6	1	0.64	0.85

*Following item reduction

Table 4.

Summary of classical test theory psychometrics

Module/scale	Items, no.	Cronbach's alpha coefficient	Item-total correlations, mean (range)	Inter-scale Spearman's coefficient, range	Missing data %, range of maximums	MEF %, range of maximums
BREAST-Q Breast Conserving Therapy module						
Satisfaction with breast	11	0.96	0.83 (0.75–0.89)	0.22–0.57	0.1–1.0	33–68
Adverse effects of radiation	7	0.80	0.67 (0.58–0.73)	0.25–0.39	0.5–1.2	72–83
Psychosocial well-being	10	0.95	0.85 (0.79–0.89)	0.32–0.64	0.3–0.7	46–76
Sexual well-being	8	0.93	0.83 (0.59–0.89)	0.30–0.64	0.5–1.7	20–38
Physical well-being	14	0.89	0.65 (0.41–0.74)	0.21–0.36	0.2–1.5	44–81
Satisfaction with information	12	0.93	0.76 (0.70–0.83)	0.21–0.49	0.2–1.9	41–76
BREAST-Q Mastectomy module						
Satisfaction with breast	4	0.82	0.81 (0.73–0.86)	0.44–0.67	0.2–4.9	31–41
Psychosocial well-being	10	0.95	0.85 (0.81–0.87)	0.44–0.69	0.1–0.8	32–62
Sexual well-being	6	0.94	0.72 (0.52–0.82)	0.34–0.69	0.3–1.5	26–49
Physical well-being	16	0.93	0.87 (0.78–0.93)	0.34–0.44	0.2–1.5	43–83
BREAST-Q Breast Reconstruction module						
Satisfaction with breast	16	0.96	0.78 (0.69–0.84)	0.33–0.68	0.4–2.3	33–59
Satisfaction with outcome	7	0.89	0.79 (0.75–0.84)	0.32–0.68	1.2–1.5	43–82
Psychosocial well-being	10	0.96	0.85 (0.78–0.89)	0.28–0.73	0.2–0.7	35–64
Sexual well-being	6	0.94	0.87 (0.75–0.93)	0.31–0.73	0.5–1.6	29–43
Physical well-being	16	0.92	0.69 (0.49–0.79)	0.22–0.53	0.3–1.5	44–83
Physical well-being (abdomen)	8	0.88	0.74 (0.61–0.84)	0.28–0.53	1.8–2.8	48–75
Satisfaction with abdomen	3	0.78	0.83 (0.82–0.85)	0.28–0.47	1.9–2.5	35–50
Satisfaction with information	15	0.95	0.76 (0.68–0.81)	0.22–0.33	0.2–1.7	33–77
Common scales						
Satisfaction with surgeon	12	0.97	0.87 (0.76–0.92)	-	0.2–0.7	72–88
Satisfaction with medical team	7	0.96	0.91 (0.87–0.93)	-	1.4–2.0	77–85
Satisfaction with office staff	7	0.96	0.91 (0.87–0.93)	-	1.3–1.8	77–84

MEF, maximum endorsement frequency.

*This table was reprinted from The Breast, Vol 33, Sarah Fuzesi, Stefan J. Cano, Anne F. Klassen, Dunya Atisha, Andrea L. Pusic, Validation of the electronic version of the BREAST-Q in the army of women study, Pages No. 44e49, Copyright (2017), with permission from Elsevier

Table 5.

MSKCC Patient Characteristics (n=3125)

	n	%
Mean Age (SD)	57.1(10.9)	
Mean Tumor Size cm (SD) (n=2799)	1.4 (1.05)	
Path Stage		
Stage 0	559	18
Stage 1	1805	58
Stage 2	653	21
Stage 3	93	3
Stage 4 or metastatic disease	15	<1
Type of treatment *		
Chemotherapy	1185	38
Radiation therapy	2679	86
Endocrine therapy	2275	73
Axillary Procedure		
None	628	20
Sentinel lymph node biopsy	2304	74
Axillary lymph node dissection	193	6
Type of Breast cancer		
Ductal carcinoma IS	546	16
Invasive ductal carcinoma	2269	73
Invasive lobular carcinoma	175	6
Mixed	85	3
Other invasive	50	2
Marital Status		
Married	2092	67
Living with significant other	21	1
Widowed	167	5
Separated	36	1
Divorced	286	9
Single, never married	523	17
Employment		
Employed	2435	78
Homemaker	34	1
Retired	167	5
Disabled	1	<1
Unknown	488	16

	n	%
Race/Ethnicity		
White, non-Hispanic	2438	78
Hispanic	131	4
Black or African American	213	7
Asian or Pacific Islander	177	6
Other	166	5

*The larger sample is attributed to the fact that participants could undergo multiple types of treatment

Table 6.

Phase III: RMT Psychometric Analysis MSKCC Sample

		Rasch							CTT			
Scales	**No of Items**	**Sample within scale range (n/N)**	**Item Threshold Location Logits (min/ max)**	**Disordered Thresholds**	**Fit Residuals Outside −2.5/+2.5**	**Items with Chi-Square Probability Significance**	**PSI with extm**	**PSI without extrm**	**Cronbach's α coefficient**	**Item-Total Correlations Mean (Range)**	**Missing data % (Scale)**	**Floor**
Satisfaction with breasts	11	3912/5628	−3.08/4.39	0	9	0	0.87	0.89	0.96	0.81 (0.73 – 0.85)	5.70	1.10
Psychosocial well-being	10	3128/5439	−2.21/4.17	3	9	0	0.79	0.86	0.96	0.82 (0.73 – 0.86)	7.50	0.50
Sexual well-being	6	3616/4734	3.14/3.59	0	5	0	0.84	0.82	0.95	0.84 (0.72 – 0.91)	40.3	0.70
Physical well-being	7	4784/7016	−2.42/2.47	0	1	3	0.41	0.39	0.77	0.49 (0.27– 0.60)	8.5	31.9
Satisfaction with information	12	1431/2774	−1.55/2.17	5	7	0	0.66	0.74	0.95	0.78 (0.71– 0.82)	13.6	1.6
Satisfaction with surgeon	11	550/2776	−1.91/3.25	3	4	4	0.07	0.79	0.96	0.81 (0.67– 0.86)	10.5	0.2
Satisfaction with medical team	7	277/2774	−4.29/3.91	0	3	1	−0.74	0.74	0.95	0.83 (0.79 – 0.89)	9.50	0.10
Satisfaction with office staff	7	352/3726	−5.06/3.85	0	4	3	0.08	0.82	0.96	0.87 (0.81 – 0.89)	11.5	0.30

*Only 11 of the 12 items in the Satisfaction with Surgeon scales were tested at MSKCC