Screening for Body Image Dissatisfaction in Patients with Advanced Cancer: A Pilot Study

Wadih Rhondali, MD, PhD,[1,2] Gary B. Chisholm, MS,[3] Marilene Filbet, MD,[2] Duck-Hee Kang, PhD, RN,[4] David Hui, MD,[1] Michelle Cororve Fingeret, PhD,[5] and Eduardo Bruera, MD[1]

Abstract

Background: Cancer and its treatment can significantly affect appearance and body integrity. A number of studies have explored the impact of cancer and its treatment on body image, primarily in head and neck and breast cancer. The aim of this pilot study was to examine the construct of body image dissatisfaction and its measurement using a single question in patients with advanced cancer.

Methods: Outpatients with advanced cancer were recruited ($n=81$). Assessments included Body Image Scale (BIS), Appearance Schema Inventory (ASI-R), Edmonton Symptom Assessment System (ESAS) with a total symptom distress score (TSDS) and two subscales scores (physical distress [PHS] and psychological distress [PSS]), Hospital Anxiety Depression Scale (HADS), and one question assessing the overall appearance satisfaction from the Multidimensional Body-Self Relations Questionnaire (MBSRQ). We also asked patients to rate the body image changes importance compared with five symptoms (pain, fatigue, depression, insomnia, lack of appetite).

Results: Forty-seven (58%) patients had a BIS score >10 (body image dissatisfaction) with a median of 11 (first–third quartiles, Q1–Q3; 5–16) and a median ASI-R of 3.1 (Q1–Q3; 2.8–3.5). Sensitivity and specificity of ≤ 3 for body image dissatisfaction in the single overall appearance question using the BIS as a standard was 0.70 and 0.71, respectively. BIS score was significantly correlated with ASI-R ($r=0.248$; $p=0.025$), age ($r=-0.225$; $p=0.043$), HADS-A ($r=0.522$, $p<0.001$), HADS-D ($r=0.422$, $p<0.001$), PSS score ($r=0.371$, $p=0.001$), PHS score ($r=0.356$, $p=0.001$), TSDS score ($r=0.416$, $p<0.001$), and the overall appearance question (MBSRQ; $r=-0.449$, $p<0.001$).

Conclusion: Body image dissatisfaction was frequent and associated with symptom burden. A single item ≤ 3 has a sensitivity of 70% for body image satisfaction screening.

Introduction

BODY IMAGE is a multidimensional construct that includes objective and subjective elements, such as perceptions, feelings, and attitudes toward the body.[1,2] Two distinct components of body image have been described: body image satisfaction (the way the person actually looks) and body image investment (the importance or value a person places on appearance).[3,4] These two components are influenced by person, societal, and environmental factors (gender, society, socioeconomic status, food intake) and ultimately shape this multidimensional construct that is one's body image.[5–7]

Patients with cancer may develop body image concerns because of the cancer itself (presence of tumors, weight loss) as well as from cancer treatments (surgery, chemotherapy, corticosteroids, androgen-deprivation therapy, etc.) that impact patient's appearance and body integrity (the absence of damage to one's body).[5,8–11] We found a significant association between body image dissatisfaction and patients' weight loss among patients with advanced cancer.[7] The multidimensional model of body image in oncology developed by White and colleagues[3,4] have provided clinicians and researchers a better understanding of body image issues in this population, specifying that patients should be asked about appearance concerns because patients with cancer with higher levels of investment in body parts are more likely to experience distress related to appearance change.[5]

---

[1]Department of Palliative Care and Rehabilitation Medicine, [3]Department of Biostatistics, [5]Department of Behavioral Science, The University of Texas MD Anderson Cancer Center, Houston, Texas.
[2]Department of Palliative Care, Centre Hospitalier de Lyon-Sud, Hospices Civils de Lyon, Lyon, France.
[4]School of Nursing, The University of Texas Health Science Center at Houston, Houston, Texas.

A number of studies have explored the impact of cancer and its treatment on body image, primarily in head and neck and breast cancer.[12–22] However, much of the literature regarding the impact of cancer on body image is observational.[4,11]

We are not aware of studies assessing body image dissatisfaction and appearance investment in patients with advanced cancer. Furthermore, except for one 10-item scale (Body Image Scale [BIS]), we did not find validated tools among this population allowing an efficient screening.[3]

We conducted a pilot study aimed at examining associations between body mass index (BMI), weight loss, symptom distress, and body image in patients with advanced cancer and we found a significant association between body image dissatisfaction and patients' weight loss.[23] This secondary analysis aimed to examine the construct of body image dissatisfaction and its measurement using a single question in patients with advanced cancer.

Methods

The Institutional Review Board at The University of Texas MD Anderson Cancer Center approved this study and all patients gave written informed consent.

Patients

Patients attending the Supportive Care Clinic at The University of Texas MD Anderson Cancer Center for a consultation between July 2011 and August 2011 were screened and approached if deemed eligible for this study. Inclusion criteria included being 18 years of age or older and a diagnosis of advanced cancer defined as locally advanced, recurrent, or metastatic disease.

Supportive care clinic

In our supportive care clinic, the types of clinic visits are new consultations, follow-up visits, and walk-in visits for symptom management for patients with advanced cancer. The majority of patients had already undergone chemotherapy, surgery, or radiation, if this was required for the management of their cancer.

Measures

The following patient data were collected from medical records: age, gender, ethnicity, marital status, education level, and cancer diagnosis. Body image satisfaction was assessed using the BIS.[24] The BIS is a 10-item scale designed to assess satisfaction with changes in appearance resulting from cancer and its treatment.[5,20,24–26] Higher BIS scores indicate greater dissatisfaction with appearance with a suggested BIS score of 10 of 30 as a clinical cutoff for body image dissatisfaction.[27,28]

We used one question from the Multidimensional Body-Self Relations Questionnaire (MBSRQ). The MBSRQ is a 69-item validated self-report inventory.[23] This tool has not been validated in patients with cancer. The question we chose is assessing the patients' overall appearance satisfaction using a 5-point Likert scale from 1 (very dissatisfied), to 5 (very satisfied).

We also assessed investment in appearance using the Appearance Schemas Inventory–Revised (ASI-R) with higher scores corresponding to higher investment in body image. The ASI-R is a 20-item scale designed to capture the critical element of body image investment. It also evaluates the importance, meaning, and influence of appearance in one's life.[1]

We asked patients to rate the body image changes importance compared with five symptoms (pain, fatigue, depression, insomnia, and lack of appetite) using a 5-point Likert scale ranging from 1 (much more important) to 5 (much less important).

We documented symptom burden using the Edmonton Symptom Assessment System (ESAS).[29,30] The ESAS yields a total score and two subscale scores. The total symptom distress score (TSDS) is the sum of the scores for the 10 symptoms for a total score of 0–100.[31] The physical distress subscore (PHS) was the sum of scores for 7 symptoms (pain, nausea, fatigue, sedation, appetite, dyspnea, and sleep), and the psychological distress subscore (PSS) was the sum of scores for 3 symptoms (depression, anxiety, and feeling of well-being).[32]

The Hospital Anxiety Depression Scale (HADS) was used to assess emotional distress. This is a 14-item scale with two subscales: one for anxiety (HADS-A) and one for depression (HADS-D). Scores ≥ 8 are suggestive of anxiety or depression.

Statistical analyses

We reported categorical variables with frequencies and percentages and continuous variables by their mean and standard deviation (SD) if they were normally distributed; if they were not normally distributed, we reported the median and first and third quartiles (Q1–Q3).

The prognostic value of the single question for measuring body image to detect subject with a BIS score ≥ 10 was determine using sensitivity, specificity, positive and negative predictive value. Cronbach α coefficient was used to estimate the internal consistency of the BIS scale.[33]

We calculated Pearson correlation coefficients for the continuous variables if they were normally distributed or Spearman correlation coefficients if they were not. Differences in the demographic variables and the outcome measures by body image dissatisfaction category or investment in appearance category (i.e., patients with a BIS < 10 versus patients with BIS ≥ 10) were tested using Mann-Whitney tests, χ^2 tests, and Fisher's exact test.

Association between BIS score and variables of interest as psychological distress (PHS, HADS-D, HADS-A) were tested using multiple linear regressions.

The sample size was calculated based on our primary outcome of association with patients' BMI and body image satisfaction. This sample size was 81 and it was achieved. p values less than 0.05 were considered statistically significant.

Results

Ninety-two patients were approached for the study and 81 were included; 11 patients refused to participate. Forty-seven patients were female and the mean age was 54 (SD: 14). The most common type of cancer was gastrointestinal and lung. The median time from cancer diagnosis to the completion of the survey was 2.4 years (Q1–Q3; 1.2–4.8) and the median time from cancer diagnosis to referral to our supportive care clinic was 52 months (Q1–Q3; 21–123). Patients' characteristics are described in Table 1.

TABLE 1. PATIENT CHARACTERISTICS

Characteristic	Patients (n=81) N (%)
Age, years, median (Q1–Q3)	55 (44–64)
Female gender	47 (58)
Married	50 (62)
Ethnicity	
White non-Hispanic	49 (61)
Hispanic	9 (11)
African American	21 (26)
Other	2 (2)
Highest education level	
Any college undergraduate education	28 (35)
Any advanced postgraduate education	12 (15)
Cancer diagnosis	
Breast	8 (10)
Gastrointestinal	18 (22)
Genitourinary	4 (5)
Gynecologic	7 (8)
Head and neck	11 (14)
Hematologic	3 (4)
Respiratory	18 (22)
Other	12 (15)
Median time from cancer diagnosis in month (Q1–Q3)	29 (14–58)
Median time between cancer diagnosis and referral to the supportive care clinic in month (Q1–Q3)	52 (21–123)
Body image outcome; median (Q1–Q3)	
BIS score	11 (5–16)
ASR-I score	3.1 (2.8–3.5)
Median overall satisfaction	3.0 (2.3–4.0)
Median ESAS and HADS symptom burden (Q1–Q3)	
Pain	4 (2–6)
Fatigue	5 (3–7)
Nausea	0 (0–4)
Drowsiness	3 (0–5)
Shortness of breath	3 (0–5)
Lack of appetite	4 (1–6)
Sleep	4 (2–6)
Feeling of well-being	4 (2–6)
PSS	6 (3–12)
PHS	24 (15–34)
TSDS	29 (19–47)
HADS-A	7 (4–10)
HADS-D	6 (4–11)

SD, standard deviation; Q1-Q3; first and third quartiles, BIS, Body Image Scale; ASR-I, Appearance Schema inventory Revised; ESAS, Edmonton Symptom Assessment System; PSS, psychological distress subscore; PHS, physical distress subscore; TSDS, total symptom distress score; HADS-A, Hospital Anxiety and Depression Scale-Anxiety subscale; HADS-D, Hospital Anxiety and Depression Scale–Depression subscale.

The median BIS score was 11 (Q1–Q3; 5–16) and the median ASR-I was 3.1 (Q1–Q3; 2.8–3.5). Patients' median overall satisfaction regarding their appearance was 3 (Q1–Q3; 2–4). The internal consistency of the BIS in our sample reached acceptable levels with a Cronbach α of 0.881.

The psychometric characteristics of the single question are reported for different cutoffs in Table 2. For a score ≤3, the

TABLE 2. SENSITIVITY AND SPECIFICITY OF CUTOFF POINTS FOR THE SINGLE-ITEM SCALE "INDICATE HOW SATISFIED YOU ARE WITH YOUR OVERALL APPEARANCE?" COMPARED TO BODY IMAGE SCALE

Different cutoff of the single item scale	Sensitivity	Specificity	PPV	NPV
≤4 (mostly satisfied)	0.96	0.15	0.60	0.71
≤3 (neither satisfied nor dissatisfied)	0.70	0.71	0.76	0.63
≤2 (mostly dissatisfied)	0.39	0.94	0.90	0.53
=1 (very dissatisfied)	0.07	0.97	0.75	0.43

PPV, positive predictive value; NPV, negative predictive value, BIS score ≥10 indicate dissatisfaction with body image.

single item was found to have a sensitivity of 0.70, a specificity of 0.71, a positive predictive value of 0.76, and a negative predictive value of 0.63.

BIS score was significantly associated with ASI-R score ($r=0.248$, $p=0.025$), age ($r=-0.225$, $p=0.043$), HADS-A ($r=0.522$, $p<0.001$), HADS-D ($r=0.422$, $p<0.001$), PSS score ($r=0.371$, $p=0.001$), PHS score ($r=0.356$, $p=0.001$), TSDS score ($r=0.416$, $p<0.001$), and the overall appearance question (MBSRQ; $r=-0.449$, $p<0.001$). Patients with BIS score ≥10 were more likely to rank changes in their body image as equally or more important than fatigue ($p=0.035$; Table 3). ASI-R score was significantly associated with HADS-A ($r=0.236$, $p=0.034$), PHS ($r=-0.229$, $p=0.045$), and there was a trend toward age ($r=-0.209$, $p=0.061$).

On multivariate logistic regression analysis, ASI-R ($p=0.004$), HADS-D ($p=0.017$), and age ($p=0.046$) were found to be significantly and independently associated with BIS score even after adjustment for age, PHS, and HADS-A (Table 4).

Discussion

In our sample, body image dissatisfaction was frequent and was higher (median, 11) than what have been described in patients with head and neck,[5,10,20,26] prostate,[25] and breast cancer.[12,13,16–18,24] The scores in these studies ranged from 2.5 to 7.8.

Most patients rated their body image changes as less important than other symptoms such as pain, reporting body image dissatisfaction as a low priority symptom. However, we found a significant association between patients' body image dissatisfaction and symptom burden. The two main possible explanations for this association are that body image dissatisfaction can increase the expression of other symptoms or that physical and emotional distress can increase body image dissatisfaction. More research is necessary to better characterize if appropriate management of emotional distress can improve body image dissatisfaction. Our findings suggest that both should be managed simultaneously.

Our results confirm that cancer and its treatment had a higher impact on body image dissatisfaction among patients with higher level investment in appearance as suggested by others.[1,4] These results confirm the distinction proposed by Cash[1] for body image with trait dimensions related to personal dispositions versus contextual dimensions that in our case are cancer-related outcomes that can change over time. Patients with previous high investment in appearance should

TABLE 3. COMPARISON OF PATIENTS WHO HAD A POSITIVE SCORE FOR BODY IMAGE SCALE (≥10)
AND PATIENTS WHO HAD A NEGATIVE SCORE (<10)

	BIS < 10, n = 34	BIS ≥ 10, n = 47	p value
Patients characteristics			
Female, n (%)	16 (47)	31 (66)	0.091[a]
Age (median, Q1–Q3)	60 (49–70)	53 (44–63)	0.043[b]
Married, n (%)	25 (74)	25 (53)	0.672[a]
ASI-R score (median, Q1–Q3)	2.9 (2.4–3.4)	3.3 (2.9–3.6)	0.025[b]
Time from cancer diagnosis (median, Q1–Q3)	24 (14–52)	31 (14–64)	0.373[b]
Time between cancer diagnosis and referral to the supportive care clinic (median, Q1–Q3)	46 (14–121)	64 (22–150)	0.237[b]
Symptom burden (median, Q1–Q3)			
HADS-A	6 (3–8)	8 (6–13)	<0.001[b]
HADS-D	4 (2–7)	8 (5–11)	<0.001[b]
PSS	5 (2–11)	8 (5–16)	0.001[b]
PHS	18 (12–28)	28 (18–39)	0.004[b]
TSDS	23 (14–33)	40 (25–53)	0.003[b]
Indicated how satisfied you are with your overall appearance? n (%)			
Very dissatisfied	1 (3)	3 (6)	0.001[c]
Mostly dissatisfied	1 (3)	15 (32)	
Neither satisfied nor dissatisfied	8 (24)	14 (30)	
Mostly satisfied	19 (60)	12 (26)	
Very satisfied	5 (15)	3 (6)	
The changes in my body image are equally or more important than			
Pain	6 (18)	18 (38)	0.136[c]
Fatigue	8 (24)	23 (49)	0.035[c]
Depression	10 (29)	18 (38)	0.708[c]
Insomnia	7 (21)	19 (40)	0.211[c]
Lack of appetite	7 (21)	22 (47)	0.055[c]

[a]χ^2 square test.
[b]Mann-Whitney test.
[c]Fischer's exact test.

SD, standard deviation; Q1–Q3; first and third quartiles test; Body Image Scale; ASR-I, Appearance Schema Inventory Revised; HADS-A, Hospital Anxiety and Depression Scale-Anxiety subscale; HADS-D, Hospital Anxiety and Depression Scale–Depression subscale; PHS, physical distress subscore; TSDS, total symptom distress score; PSS, psychological distress subscore.

undergo more in-depth assessment of body image dissatisfaction. Our findings suggest that body image dissatisfaction should be regularly screened among these patients and those patients with body image dissatisfaction should receive appropriate counseling.[7,34]

TABLE 4. ASSOCIATION BETWEEN BODY IMAGE SCALE SCORE AND OTHER VARIABLES

Variables	B[a]	SEB[b]	β[c]	p
Intercept	−3.437	5.015	−0.685	0.495
HADS-A	0.386	0.196	1.974	0.052
PHS	0.094	0.059	1.600	0.114
ASI-R	3.527	1.177	2.995	0.004
HADS-D	0.530	0.217	2.449	0.017
Age	−0.094	0.046	−2.033	0.046
R^2	.460	Sum squared resid.	0.031	
Adjusted R^2	.422	F-statistic	4.133	
SE of regression	5.462	Prob (F-statistic)	0.046	

[a]B, unstandardized regression coefficient.
[b]SEB, standard error of B.
[c]β, standardized regression coefficient.

HADS-A, Hospital Anxiety and Depression Scale-Anxiety subscale; PHS, physical distress subscore; ASR-I, Appearance Schema Inventory Revised; HADS-D, Hospital Anxiety and Depression Scale–Depression subscale SE, standard error.

We found that ASI-R, HADS-D, and age were found to be significantly and independently associated with BIS score. Factors associated with body image satisfaction should assist future researchers in characterizing body image and also in the development of interventions for this clinical problem.

Recommendations regarding the use of a single tool for screening should consider not only sensitivity but also specificity, predictive value, potential for harm, and the availability of treatment. Our study with a small sample size does not allow us to address these issues. More research is necessary for a better characterization of single item screening for body image in patients with cancer, however, this preliminary study shows that exploring this issue was well accepted among this population.

This study has several limitations. Our sample was heterogeneous, small, and from a single clinical site of care with different types of cancer, probably resulting in different body image concerns (breast cancer, mastectomy; lymphedema, head and neck with facial scars; gastric, feeding tube). However, disturbed body image may be an important clinical phenomenon related to advanced cancer, and for this reason, we think that this was important for this pilot study to collect these information across disease types. There were considerable variations in time from cancer diagnosis time (Q1–Q3; 1.2–4.8) suggesting that patients were at different point of cancer treatment and subsequent changes in their body image. However, we did not find any significant differences

regarding time from diagnosis or regarding time between patients with BIS <10 and patients with a BIS ≥10. This study was a cross-sectional study not providing data regarding the evolution of body image dissatisfaction over time. Our findings regarding the limited value of a single-item assessment need to be completed by a more robust evaluation of the single-item measure in larger sample sizes with longitudinal follow-up.

We conclude that body image dissatisfaction was frequent, severe, and associated with symptom burden among patients with advanced cancer referred to a supportive care center. A single item ≤3 and ≤4 has a sensitivity of 70% and 96% for body image satisfaction screening, respectively. More research is necessary to better characterize and diagnose body image concerns among patients with advanced cancer.

Acknowledgments

Author Disclosure Statement

No competing financial interests exist.

References

1. Cash TF, Melnyk SE, Hrabosky JI: The assessment of body image investment: An extensive revision of the appearance schemas inventory. Int J Eat Disord 2004;35:305–316.
2. Cash TF, Szymanski ML: The development and validation of the Body-Image Ideals Questionnaire. J Pers Assess 1995;64:466–477.
3. White CA: Body image dimensions and cancer: A heuristic cognitive behavioural model. Psychooncology, 2000;9:183–192.
4. White CA, Brody HC: Body images issues in oncology. In: Cash TF, Pruzinsky T (eds): *Body Image: A Handbook of Theory, Research, and Clinical Practice*. New York: Guilford Press, 2002, pp. 333–341.
5. Fingeret MC: Body image and disfigurement. In: Duffy JD, Valentine AD (eds): *MD Anderson Manual of Psychosocial Oncology*. New York: McGraw-Hill Professional Publishing, 2010, pp. 271–288.
6. Price B: A model for body-image care. J Adv Nurs 1990; 15:585–593.
7. Larry JL, Cash T: Cognitive-behavioral approaches to body image change. In: Cash TF, Pruzinsky T (eds): *Body Image: A Handbook of Theory, Research, and Clinical Practice*. New York: Guilford Press, 2002, pp. 415–423.
8. Hormes JM, Lytle LA, Gross CR, Ahmed RL, Troxel AB, Schmitz KH: The body image and relationships scale: Development and validation of a measure of body image in female breast cancer survivors. J Clin Oncol 2008;26: 1269–1274.
9. Anderson MS, Johnson J: Restoration of body image and self-esteem for women after cancer treatment: A rehabilitative strategy. Cancer Pract 1994;2:345–349.
10. Fingeret MC, Hutcheson KA, Jensen K, Yuan Y, Urbauer D, Lewin JS: Associations among speech, eating, and body image concerns for surgical patients with head and neck cancer. Head Neck 2013;35:354–360.
11. Sharpe L, Patel D, Clarke S: The relationship between body image disturbance and distress in colorectal cancer patients with and without stomas. J Psychosom Res 2011;70:395–402.
12. Ganz PA, Schag AC, Lee JJ, Polinsky ML, Tan SJ: Breast conservation versus mastectomy. Is there a difference in psychological adjustment or quality of life in the year after surgery? Cancer 1992;69:1729–1738.
13. Lasry JC, Margolese RG, Poisson R, Shibata H, Fleischer D, Lafleur D, Legault S, Taillefer S: Depression and body image following mastectomy and lumpectomy. J Chronic Dis 1987;40:529–534.
14. Maguire P: Breast conservation versus mastectomy: Psychological considerations. Semin Surg Oncol 1989;5:137–144.
15. Schover LR: The impact of breast cancer on sexuality, body image, and intimate relationships. CA Cancer J Clin 1991;41:112–120.
16. Warnet S: [Impact of breast cancer on body image and sexuality]. Rev Infirm 2008;Apr:23.
17. Carver CS, Pozo-Kaderman C, Price AA, Noriega V, Harris SD, Derhagopian RP, Robinson DS, Moffat FL Jr: Concern about aspects of body image and adjustment to early stage breast cancer. Psychosom Med 1998;60:168–174.
18. Cohen MZ, Kahn DL, Steeves RH: Beyond body image: the experience of breast cancer. Oncol Nurs Forum 1998; 25:835–841.
19. Gamba A, Romano M, Grosso IM, Tamburini M, Cantú G, Molinari R, Ventafridda V: Psychosocial adjustment of patients surgically treated for head and neck cancer. Head Neck 1992;14:218–223.
20. Fingeret MC, Vidrine DJ, Reece GP, Gillenwater AM, Gritz ER: Multidimensional analysis of body image concerns among newly diagnosed patients with oral cavity cancer. Head Neck 2010;32:301–309.
21. Jenks JM, Morin KH, Tomaselli N: The influence of ostomy surgery on body image in patients with cancer. Appl Nurs Res 1997;10:174–180.
22. Lichtenthal WG, Cruess DG, Clark VL, Ming ME: Investment in body image among patients diagnosed with or at risk for malignant melanoma. Body Image 2005;2:41–51.
23. Rhondali W, Chisholm GB, Daneshmand M, Allo J, Kang DH, Filbet M, Hui D, Fingeret MC, Bruera E: Association Between Body Image Dissatisfaction and Weight Loss Among Patients With Advanced Cancer and Their Caregivers: A Preliminary Report. J Pain Symptom Manage 2013;45:1039–1049.
24. Hopwood P, Fletcher I, Lee A, Al Ghazal S: A body image scale for use with cancer patients. Eur J Cancer 2001;37:189–197.
25. Harrington JM, Jones EG, Badger T: Body image perceptions in men with prostate cancer. Oncol Nurs Forum 2009; 36:167–172.
26. Fingeret MC, Yuan Y, Urbauer D, Weston J, Nipomnick S, Weber R: The nature and extent of body image concerns among surgically treated patients with head and neck cancer. Psychooncology (in press).
27. Harrington JM, Jones EG, Badger T: Body image perceptions in men with prostate cancer. Oncol Nurs Forum 2009;36:167–172.
28. Hopwood P, Lee A, Shenton A, Baildam A, Brain A, Lalloo F, Evans G, Howell A: Clinical follow-up after bilateral risk reducing ('prophylactic') mastectomy: Mental health and body image outcomes. Psychooncology 2000;9:462–472.

29. Bruera E, MacMillan K, Hanson J, MacDonald RN: The Edmonton staging system for cancer pain: preliminary report. Pain 1989;37:203–209.
30. Richardson LA, Jones GW: A review of the reliability and validity of the Edmonton Symptom Assessment System. Curr Oncol 2009;16:55.
31. Bruera E, Kuehn N, Miller MJ, Selmser P, Macmillan K: The Edmonton Symptom Assessment System (ESAS): A simple method for the assessment of palliative care patients. J Palliat Care 1991;7:6–9.
32. Cheung WY, Barmala N, Zarinehbaf S, Rodin G, Le LW, Zimmermann C: The association of physical and psychological symptom burden with time to death among palliative cancer outpatients. J Pain Symptom Manage 2009;37:297–304.
33. Nunnally JC, Bernstein IH: *Psychometric Theory.* New York: McGraw-Hill Humanities, 1994.
34. Cash T, Lavallee D: Cognitive-behavioral body-image therapy: Extended evidence of the efficacy of a self-directed program. J Ration Emot Cogn Behav Ther 1997;15:281–294.

Address correspondence to:
Eduardo Bruera, MD
Department of Palliative Care and Rehabilitation Medicine
Unit 1414
The University of Texas MD Anderson Cancer Center
1515 Holcombe Boulevard
Houston, TX 77030

E-mail: ebruera@mdanderson.org