

Distress in Older Patients With Cancer

Arti Hurria, Daneng Li, Kurt Hansen, Sujata Patil, Ravi Gupta, Christian Nelson, Stuart M. Lichtman, William P. Tew, Paul Hamlin, Enid Zuckerman, Jonathan Gardes, Sewanti Limaye, Mark Lachs, and Eva Kelly

A B S T R A C T

Purpose

To determine the predictors of distress in older patients with cancer.

Patients and Methods

Patients age ≥ 65 years with a solid tumor or lymphoma completed a questionnaire that addressed these geriatric assessment domains: functional status, comorbidity, psychological state, nutritional status, and social support. Patients self-rated their level of distress on a scale of zero to 10 using a validated screening tool called the Distress Thermometer. The relationship between distress and geriatric assessment scores was examined.

Results

The geriatric assessment questionnaire was completed by 245 patients (mean age, 76 years; standard deviation [SD], 7 years; range, 65 to 95 years) with cancer (36% stage IV; 71% female). Of these, 87% also completed the Distress Thermometer, with 41% ($n = 87$) reporting a distress score of ≥ 4 on a scale of zero to 10 (mean score, 3; SD, 3; range, zero to 10). Bivariate analyses demonstrated an association between higher distress (≥ 4) and poorer physical function, increased comorbid medical conditions, poor eyesight, inability to complete the questionnaire alone, and requiring more time to complete the questionnaire. In a multivariate regression model based on the significant bivariate findings, poorer physical function (increased need for assistance with instrumental activities of daily living [$P = .015$] and lower physical function score on the Medical Outcomes Survey [$P = .018$]) correlated significantly with a higher distress score.

Conclusion

Significant distress was identified in 41% of older patients with cancer. Poorer physical function was the best predictor of distress. Further studies are needed to determine whether interventions that improve or assist with physical functioning can help to decrease distress in older adults with cancer.

J Clin Oncol 27:4346-4351. © 2009 by American Society of Clinical Oncology

From the City of Hope, Duarte, CA; Weill Medical College of Cornell University; Memorial Sloan-Kettering Cancer Center, New York; Long Island Jewish Hospital, Long Island, NY; and Case Western Reserve University, Cleveland, OH.

Submitted September 19, 2008; accepted March 30, 2009; published online ahead of print at www.jco.org on August 3, 2009.

Supported by a Paul Beeson Career Development Award in Aging Research (K23 AG026749-01; A.H.) and the American Society of Clinical Oncology Association of Specialty Professors Junior Development Award in Geriatric Oncology.

Authors' disclosures of potential conflicts of interest and author contributions are found at the end of this article.

Corresponding author: Arti Hurria, MD, Cancer and Aging Research Program, City of Hope, 1500 E Duarte Rd, Duarte, CA 91001; ahurria@coh.org.

© 2009 by American Society of Clinical Oncology

0732-183X/09/2726-4346/\$20.00

DOI: 10.1200/JCO.2008.19.9463

INTRODUCTION

Psychological distress is common among patients with cancer; however, it often goes unrecognized.¹ The National Comprehensive Cancer Network defines distress as a “multifactorial, unpleasant emotional experience of a psychological (cognitive, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms, and its treatment.”² Despite the fact that approximately 60% of cancer diagnoses and 70% of cancer mortality occur in patients age ≥ 65 years,³ few studies have specifically focused on the prevalence or causes of distress in older adults with this disease.

Studies have reported that 27% to 48% of older adults who live in the community experience psychological distress.⁴⁻⁶ Sociodemographic, clinical, and psychosocial variables have been identified as risk factors for distress, including sex (females more

likely than males), age (younger and older more likely than middle age), lower education, lower perceived social support, functional dependence, comorbid conditions, and use of escape/avoidance coping strategies.^{4,7,8} On the basis of these prior studies, there are several potential reasons why older adults with cancer are at risk for psychological distress. First, they are more likely to require assistance with their daily functions than are older adults without cancer.⁹ Furthermore, this increased need for assistance persists in cancer survivors.¹⁰ Second, changes in the social support structure that often accompany aging, such as the death of a spouse or friends or the loss of a job, can lead to social isolation in older adults, isolation that can be exacerbated by a serious illness. Third, treatment-related short- and long-term toxicity is common in older adults because of age-related declines in physiologic function.¹¹ Fourth, comorbid medical conditions increase with age, may have an impact on tolerance

to cancer therapy, or may be acquired as adverse effects to therapy.¹²⁻¹⁴ All of these factors can contribute to psychological distress in older adults with cancer.

The National Comprehensive Cancer Network (NCCN) recommends that all patients with cancer should be evaluated regularly for psychosocial distress as a part of routine care.² The NCCN guidelines for distress management recommend using the Distress Thermometer as a screening tool.² This is a single-item, zero- to 10-point scale with a threshold score of 4 indicating significant distress that warrants further evaluation. The Distress Thermometer has been suggested as a quick and valid alternative to other psychometric instruments for use in busy outpatient cancer clinics. However, once a distressed older adult is identified, there is little research to guide oncologists in determining which of the risk factors is most likely to cause distress. An understanding of the predictors of distress would help streamline the evaluation and guide interventions for decreasing the level of distress.

The goal of this study was to determine the prevalence of distress in a cohort of older adults with cancer by using the Distress Thermometer. In addition, we sought to determine whether predictors of distress could be identified using a brief, comprehensive geriatric assessment that captured information regarding the individual's functional status, comorbid medical conditions, psychological state, social support, and nutritional status.

PATIENTS AND METHODS

Patients age ≥ 65 years were recruited from Memorial Sloan-Kettering Cancer Center's (New York, NY) main campus and satellite community clinics situated in the New York City area. Patients received the geriatric assessment questionnaire either by mail or when they checked in for their oncology appointments.

Domains evaluated in the geriatric assessment include functional status, comorbid medical conditions, psychological state, social support, and nutritional status (Table 1). These measures were chosen on the basis of their ability to predict morbidity and/or mortality in geriatric patients as well as on their reliability, validity, and brevity. Most of these measures had been included in a prior study aimed at developing a cancer-specific geriatric assessment.²⁴ The feasibility of someone completing this mailed geriatric assessment has been previously reported.²⁵ The questionnaire was designed to be self-

administered; however, if the patient required assistance, a family member or staff member could help. After the patient completed the questionnaire, a member of the health care team scored the assessment and reviewed the results with the treating physician. A medical record review was performed to record whether patients received chemotherapy, endocrine therapy, immunotherapy, or radiation; however, the timing between receipt of cancer therapy and completion of this questionnaire was not captured.

Patient distress was measured by the Distress Thermometer, which is a self-report questionnaire consisting of one item. On a scale of zero to 10, patients were asked to circle the number that best described how distressed they had been in the past week, with zero indicating "no distress" and 10 indicating "extreme distress." Prior studies have reported on the efficacy of the Distress Thermometer as a screening aid.^{26,27} Roth et al¹⁹ performed a study of patients with prostate cancer and found a high concordance between scores on the Distress Thermometer and the Hospital Anxiety and Depression Scale. Ransom et al²⁸ evaluated 491 patients scheduled to undergo a bone marrow transplantation and found that a cutoff score of 4 had the greatest sensitivity and specificity when compared with the Center for Epidemiological Studies Depression scale. Jacobsen et al²⁹ studied 380 patients with cancer and reported that patients who scored ≥ 4 on the Distress Thermometer were more likely to also report physical, emotional, practical, and family problems. On the basis of this review of the literature, a cutoff score of ≥ 4 on the Distress Thermometer was used to analyze these data.

Raw scores from the Distress Thermometer were divided into two categories, < 4 and ≥ 4 , and were analyzed as a bivariate variable. The associations between the bivariate distress score and important patient characteristics, as well as other measures from the geriatric assessment questionnaire, were assessed using a two-sample *t* test or χ^2 test. On the basis of significant findings, a multivariate logistic regression was fit to the data to identify which geriatric assessment or patient characteristic variables were independent predictors of distress. Institutional review board approval was obtained to review and report on these data.

RESULTS

The geriatric assessment questionnaire was given to 250 patients age ≥ 65 years. Of these, five patients (2%) did not complete the questionnaire, leaving 245 evaluable patients (mean age, 76 years; standard deviation [SD], 7 years; range, 65 to 95 years). Of these, 214 patients (87%) also completed the Distress Thermometer. The patient characteristics are summarized in Table 2. Patients with all stages of cancer were included: stage I (31%), stage II (22%), stage

Table 1. Domains and Measures in the Geriatric Assessment Questionnaire

Domain	Measure	Description
Functional status	Activities of Daily Living (subscale of MOS Physical Health) ¹⁵	Ten items measuring the limitations in a wide range of physical function (from bathing/dressing to vigorous activities such as running)
	Instrumental Activities of Daily Living (subscale of the OARS) ¹⁶	Seven items measuring the ability to complete activities required to maintain independence in the community (such as shopping, meal preparation, making telephone calls, money management)
	Karnofsky self-reported performance rating scale ¹⁷	One item global indicator of patient function determined by patient self-report ranging from "normal" to "severely disabled"
	Number of falls in the last 6 months ¹⁸	One item indicating number of times fallen in the last 6 months
Comorbidity	Physical Health Section (subscale of the OARS) ¹⁶	List of 13 comorbid illnesses and the degree to which they impair daily activities, as well as a rating of eyesight and hearing
Psychological	Distress Thermometer ¹⁹	One item measuring level of distress on a scale of 0 to 10
Social support	MOS Social Support Survey: Emotional/Information and Tangible Subscales ²⁰	Twelve items measuring the perceived availability of social support
Nutrition	Body mass index ²¹	One item: weight/(height) ²
	Percent unintentional weight loss in last 6 months ^{22,23}	One item: (unintentional weight lost in last 6 months/baseline body weight) \times 100

Abbreviations: MOS, Medical Outcomes Study; OARS, Older American Resources and Services.

Table 2. Patient Characteristics (N = 245)		
Characteristic	Patients	
	No.	%
Age, years		
65-75	115	47
76-85	110	45
86-95	20	8
Sex		
Female	175	71
Male	70	29
Cancer type		
Breast	100	41
Lymphoma	21	9
Gynecologic or genitourinary	42	17
GI	46	19
Other	36	14
Cancer stage		
Localized	157	64
Metastatic	88	36
Educational level		
< High school	21	8
High school graduate	112	46
Bachelor's degree	52	21
Advanced degree	51	21
Other	9	4
Marital status		
Married	127	52
Widowed	77	31
Single	24	10
Separated, divorced, other	17	7
Employment status		
Full or part time	22	9
Retired, homemaker, unemployed	220	90
Other	3	1
Household composition		
Lives alone	81	33
Lives with spouse, partner, or child	164	67
Ethnicity		
White	232	95
Black, Asian	13	5

III (10%), and stage IV (36%). The most common tumor types were breast (41%), GI (19%), and gynecologic or genitourinary (17%). Seventy-one percent of participants were female, 95% were white, 52% were married, 9% were working full-time, and 46% had completed a college degree or higher education.

Figure 1 summarizes the distribution of Distress Thermometer scores. The mean score was 3 (SD, 3) and the median score was 2, with a range of scores from zero to 10. Sixty-seven percent of the patients reported a distress score of ≥ 1 , whereas 41% scored ≥ 4 on the Distress Thermometer. Participants were asked to circle the number that best described the distress they experienced in the last week. Four patients (1.9%) indicated that their level of distress was between two numbers on the scale (three patients specified a distress level of 0.5 and one patient specified a distress level of 1.5), and their responses were included in the analysis.

The association between patient characteristics and distress levels is shown in Table 3. The following categorical variables were significantly associated with increased distress scores: requiring assistance

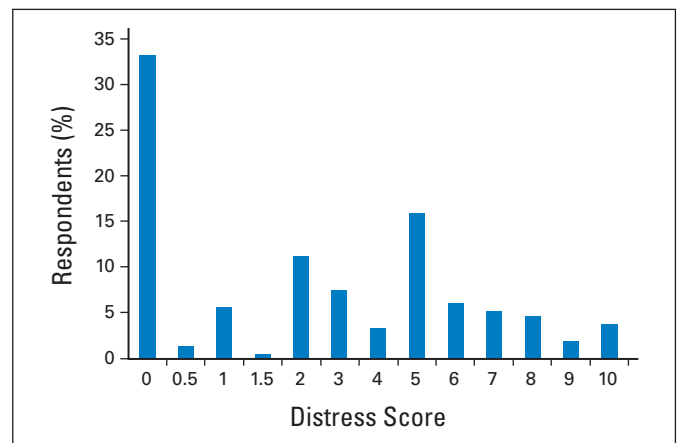


Fig 1. Distribution of Distress Thermometer responses (N = 214).

with instrumental activities of daily living ($P < .0001$), a Karnofsky performance score of < 70 ($P = .001$), having three or more comorbid medical conditions ($P = .047$), poor eyesight ($P = .002$), requiring services at home ($P = .052$), and needing assistance to complete the geriatric questionnaire ($P = .003$). The following continuous variables were associated with increased distress scores: requiring more time to complete the questionnaire ($P = .01$), requiring increased assistance with instrumental activities of daily living ($P < .0001$), and a lower Medical Outcomes Survey Physical Function score ($P < .0001$). A multivariate regression model based on the significant bivariate findings was then applied, and it revealed that requiring assistance with instrumental activities of daily living ($P = .015$) and a lower score on the Medical Outcomes Survey Physical Function scale ($P = .018$) remained significantly correlated with distress. Patients who required assistance with instrumental activities of daily living had a 2.7 times increased odds of having a distress score of ≥ 4 compared with those who did not require assistance. In addition, each 10-point decrease in the Medical Outcomes Survey Physical Function score (on a scale of zero to 100) was associated with a 1.2 times increased odds of having a distress score ≥ 4 . There was no association between the type of therapy received (chemotherapy, endocrine therapy, immunotherapy, or radiation) and a distress score of more than 4.

DISCUSSION

Across the age spectrum, various factors contribute to distress. However, few studies have specifically evaluated the factors contributing to distress in older adults with cancer. In our study cohort of older adults with cancer, significant distress (score ≥ 4 on the Distress Thermometer) was identified in 41% of patients. By using a brief, comprehensive, self-administered geriatric assessment questionnaire, we were able to explore the relationship between distress and several variables that independently predict morbidity and mortality in older adults, such as functional status, comorbid medical condition, nutritional state, and social support. The following variables were significantly associated with increased distress scores by bivariate analysis: poor physical functioning, having more than three comorbid medical conditions, poor eyesight, requiring services at home, and needing more time or requiring assistance to complete the geriatric questionnaire. A

Distress in Older Adults With Cancer

Table 3. Predictors of Distress

Variable	No. of Patients	Distress Score ≥ 4		<i>P</i>
		No.	%	
Sex				
Female	155	67	43	.215
Male	59	20	34	
Age, years				
65-80	157	65	41	.712
≥ 81	57	22	39	
Cancer stage				
Localized	135	55	41	.968
Metastatic	78	32	41	
Education				
\leq High school	121	54	45	.242
Postsecondary school	85	31	36	
Marital status				
Not married	101	45	45	.296
Married	112	42	38	
Living companion				
Lives alone	144	62	43	.305
Lives with spouse, partner, or child	70	25	36	
Employment				
Employed	19	4	21	.063
Not employed	193	83	43	
Use of services				
Used no services	182	69	37	.052
Used services	32	18	56	
Eyesight				
Excellent, good, or fair	206	80	39	.002
Poor	7	7	100	
Hearing health				
Excellent, good, or fair	192	77	40	.414
Poor	18	9	50	
OARS IADL score				
< 14	98	59	60	$< .0001$
14	108	25	23	
Falls in previous 6 months				
No falls	168	64	38	.120
Experienced falls	43	22	51	
Ability to complete questionnaire alone				
No	47	28	60	.003
Yes	163	58	36	
No. of comorbid illnesses				
≤ 2	105	35	33	.047
≥ 3	107	50	47	
Unintentional weight loss in previous 6 months				
None	132	49	38	.097
Experienced weight loss	69	34	49	
KPS				
40, 50, 60	37	24	65	.001
70, 80, 90, 100	176	62	35	
Continuous Variable	No. of Patients	Mean Values for Distress Scores 0-4	Mean Values for Distress Score ≥ 4	<i>P</i>
Age, years	214	75.83	76.12	.75
Body mass index	210	26.67	27.51	.30
OARS IADL (scale 0-14)	206	13.20	11.35	$< .0001$
MOS Physical (scale 0-100)	214	73.30	49.91	$< .0001$
MOS Tangible (scale 0-100)	212	70.58	72.80	.61
MOS Emotional (scale 0-100)	211	80.80	78.45	.55
MOS Social Support (scale 0-100)	211	77.39	76.55	.82
Time to complete questionnaire (minutes)	197	13.31	17.56	.01
No. of medications	210	4.77	5.28	.33

NOTE. Only patients with a reported distress score were included in this analysis.

Abbreviations: OARS, Older American Resources and Services; IADL, Instrumental Activities of Daily Living; KPS, Karnofsky performance score; MOS, Medical Outcomes Study.

multivariate regression model based on the significant bivariate findings revealed that poor physical function correlated significantly with distress.

Previous studies that used the distress thermometer reported distress scores of ≥ 4 in 42.5% to 66.6% of patients with cancer.^{26,28-33} These studies were performed in patients of all ages. Risk factors for distress included younger age³³; female sex^{29,31,34}; poor performance status^{27,29}; and physical,^{28,29,32,33} emotional,^{27-29,32-34} family,^{28,29} and cognitive³³ problems. Our finding of distress in 41% of older adults with cancer is slightly lower than the prevalence reported in other studies, reinforcing the findings in previous reports that demonstrate that younger age is a risk for distress and therefore older age may be protective.

The study results also help to pinpoint the unique causes of distress that face older adults with cancer. In particular, loss of independence is a key risk factor contributing to distress. This finding is consistent with the risk factors for distress reported in the geriatric literature for patients without cancer^{4,6-8} but are particularly relevant for patients with cancer, given that the burden of cancer or cancer therapy can further jeopardize an older adult's physical independence. The impact of therapy on a patient's ability to maintain independence plays a key role in the decision about whether a patient will proceed with treatment. This was illustrated in a survey of older adults in which the majority reported that they would refuse potentially life sustaining therapy if that therapy would cause functional or cognitive decline.³⁵ Functional decline is often associated with feeling that one is a burden to others.³⁶ This is especially true among patients who are terminally ill.^{36,37} In a report of 43 patients (median age, 70 years) who requested physician-assisted suicide in Oregon, the most frequent underlying illness was cancer (72%), and the most common end-of-life concerns were loss of autonomy (79%) and the inability to participate in activities that make life enjoyable (77%).³⁸

In daily oncology practice, functional status is reported as a Karnofsky performance score³⁹ or Eastern Cooperative Oncology Group⁴⁰ performance status. These brief scales of functional status predict overall survival and treatment morbidity, but they do not evaluate a patient's ability to complete specific daily activities, nor do they provide information about the impact of functional decline on someone's mental health. This study highlights the importance of asking these questions in daily practice. Studies of interventions aimed at improving or assisting with physical function in order to decrease distress in older patients with cancer need to be conducted. In addition, research into the longitudinal impact of cancer and cancer therapy on an older patient's physical function is warranted for patients and physicians to weigh the risks and benefits of cancer therapies.

We recognize the limitations of this study. First, the study consisted of a convenience sample of patients seen in an outpatient oncology practice and the majority of study participants were female (71%), white (95%), diagnosed with breast cancer (41%), and treated at a

tertiary care cancer center. This may limit the ability to generalize these results to all adults with cancer. Second, the time from initial diagnosis and the timing since initiation of specific cancer therapies were not captured. The current or recent receipt of chemotherapy may influence the distress level. Third, these data were obtained by self-report, and it is possible that patients may have over- or underestimated their own abilities on certain self-report measures. In addition, there may be domains other than those evaluated in the geriatric assessment questionnaire that are predictors of distress. We did not capture a problem list, which is often used in association with the Distress Thermometer, and this might have provided further insight into causes of patient distress. Finally, we do not know whether distress or declines in physical function are directly due to cancer or another specific comorbid medical condition.

Despite these limitations, this study has important strengths. Few studies have specifically evaluated predictors of distress in older adults with cancer, a population that is expected to grow rapidly in the next 25 years. Our study demonstrates that a significant proportion of patients (41%) score above the threshold for psychological distress and that poorer physical function is associated with increased distress levels. From these results, we conclude that screening tools to evaluate an individual's distress level and physical function should be incorporated into daily oncology practice, and interventions should be put in place to maintain or assist with physical functioning. Ultimately, further research is needed to determine whether these interventions would decrease the distress and suffering that accompanies a cancer diagnosis in older adults.

AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

The author(s) indicated no potential conflicts of interest.

AUTHOR CONTRIBUTIONS

Conception and design: Arti Hurria, Enid Zuckerman, Mark Lachs

Financial support: Arti Hurria

Administrative support: Arti Hurria, Mark Lachs

Provision of study materials or patients: Arti Hurria, Stuart M.

Lichtman, Paul Hamlin, William P. Tew, Enid Zuckerman

Collection and assembly of data: Arti Hurria, Daneng Li, Kurt Hansen, Ravi Gupta, Stuart M. Lichtman, William P. Tew, Enid Zuckerman, Jonathan Gardes, Sewanti Limaye, Eva Kelly

Data analysis and interpretation: Arti Hurria, Daneng Li, Sujata Patil, Ravi Gupta, Christian Nelson, Jonathan Gardes

Manuscript writing: Arti Hurria, Daneng Li, Sujata Patil, William P. Tew

Final approval of manuscript: Arti Hurria, Daneng Li, Kurt Hansen, Sujata Patil, Christian Nelson, Stuart M. Lichtman, William P. Tew, Paul Hamlin, Enid Zuckerman, Jonathan Gardes, Mark Lachs

REFERENCES

- Söllner W, DeVries A, Steixner E, et al: How successful are oncologists in identifying patient distress, perceived social support, and need for psychosocial counselling? *Br J Cancer* 84:179-185, 2001
- Holland JC, Bultz BD: The NCCN guideline for distress management: A case for making distress

the sixth vital sign. *J Natl Compr Cancer Netw* 5:3-7, 2007

3. Ries LAG, Harkins D, Krapcho M, et al: SEER Cancer Statistics Review, 1975-2003. Bethesda, MD, National Cancer Institute, 2006

4. Couture M, Larivière N, Lefrancois R: Psychological distress in older adults with low functional independence: A multidimensional perspective. *Arch Gerontol Geriatr* 41:101-111, 2005

5. Blazer D, Hughes DC, George LK: The epidemiology of depression in an elderly community population. *Gerontologist* 27:281-287, 1987

6. Preville M, Hebert R, Bravo G, et al: Predisposing and facilitating factors of severe psychological distress among frail elderly adults. *Can J Aging* 21:195-204, 2002

7. Reich JW, Zautra AJ, Guarnaccia CA: Effects of disability and bereavement on the mental health and recovery of older adults. *Psychol Aging* 4:57-65, 1989

8. Penninx BW, Beekman AT, Ormel J, et al: Psychological status among elderly people with chronic diseases: Does type of disease play a part? *J Psychosom Res* 40:521-534, 1996
9. Stafford RS, Cyr PL: The impact of cancer on the physical function of the elderly and their utilization of health care. *Cancer* 80:1973-1980, 1997
10. Keating NL, Norredam M, Landrum MB, et al: Physical and mental health status of older long-term cancer survivors. *J Am Geriatr Soc* 53:2145-2152, 2005
11. Muss HB, Berry DA, Cirincione C, et al: Toxicity of older and younger patients treated with adjuvant chemotherapy for node-positive breast cancer: The Cancer and Leukemia Group B Experience. *J Clin Oncol* 25:3699-3704, 2007
12. Yancik R, Ries LA: Aging and cancer in America: Demographic and epidemiologic perspectives. *Hematol Oncol Clin North Am* 14:17-23, 2000
13. Frasci G, Lorusso V, Panza N, et al: Gemcitabine plus vinorelbine versus vinorelbine alone in elderly patients with advanced non-small-cell lung cancer. *J Clin Oncol* 18:2529-2536, 2000
14. Welch HG, Albertsen PC, Nease RF, et al: Estimating treatment benefits for the elderly: The effect of competing risks. *Ann Intern Med* 124:577-584, 1996
15. Stewart AL, Ware JE: Measuring functioning and well-being: The Medical Outcomes Study approach. Durham, NC, Duke University Press, 1992
16. Fillenbaum GG, Smyer MA: The development, validity, and reliability of the OARS multidimensional functional assessment questionnaire. *J Gerontol* 36:428-434, 1981
17. Loprinzi CL, Laurie JA, Wieand HS, et al: Prospective evaluation of prognostic variables from patient-completed questionnaires: North Central Cancer Treatment Group. *J Clin Oncol* 12:601-607, 1994
18. Naeim A, Reuben D: Geriatric syndromes and assessment in older cancer patients. *Oncology (Wiliston Park)* 15:1567-1577, 1580, 2001; discussion 1581, 1586, 1591
19. Roth AJ, Kornblith AB, Batel-Copel L, et al: Rapid screening for psychologic distress in men with prostate carcinoma: A pilot study. *Cancer* 82:1904-1908, 1998
20. Sherbourne CD, Stewart AL: The MOS social support survey. *Soc Sci Med* 32:705-714, 1991
21. Landi F, Onder G, Gambassi G, et al: Body mass index and mortality among hospitalized patients. *Arch Intern Med* 160:2641-2644, 2000
22. Dewys WD, Begg C, Lavin PT, et al: Prognostic effect of weight loss prior to chemotherapy in cancer patients: Eastern Cooperative Oncology Group. *Am J Med* 69:491-497, 1980
23. Newman AB, Yanez D, Harris T, et al: Weight change in old age and its association with mortality. *J Am Geriatr Soc* 49:1309-1318, 2001
24. Hurria A, Gupta S, Zauderer M, et al: Developing a cancer-specific geriatric assessment: A feasibility study. *Cancer* 104:1998-2005, 2005
25. Hurria A, Lichtman SM, Gardes J, et al: Identifying vulnerable older adults with cancer: Integrating geriatric assessment into oncology practice. *J Am Geriatr Soc* 55:1604-1608, 2007
26. Hoffman BM, Zevon MA, D'Arrigo MC, et al: Screening for distress in cancer patients: The NCCN rapid-screening measure. *Psychooncology* 13:792-799, 2004
27. Akizuki N, Akechi T, Nakanishi T, et al: Development of a brief screening interview for adjustment disorders and major depression in patients with cancer. *Cancer* 97:2605-2613, 2003
28. Ransom S, Jacobsen PB, Booth-Jones M: Validation of the Distress Thermometer with bone marrow transplant patients. *Psychooncology* 15:604-612, 2006
29. Jacobsen PB, Donovan KA, Trask PC, et al: Screening for psychological distress in ambulatory cancer patients. *Cancer* 103:1494-1502, 2005
30. Bulli F, Miccinesi G, Maruelli A, et al: The measure of psychological distress in cancer patients: The use of Distress Thermometer in the Oncological Rehabilitation Center of Florence. *Support Care Cancer* [epub ahead of print on December 3, 2008]
31. Bauwens S, Baillon C, Distelmans W, et al: The 'Distress Barometer': Validation of method of combining the Distress Thermometer with a rated complaint scale. *Psychooncology* 18:534-542, 2009
32. Tuinman MA, Gazendam-Donofrio SM, Hoekstra-Weebers JE: Screening and referral for psychosocial distress in oncologic practice: Use of the Distress Thermometer. *Cancer* 113:870-878, 2008
33. Graves KD, Arnold SM, Love CL, et al: Distress screening in a multidisciplinary lung cancer clinic: Prevalence and predictors of clinically significant distress. *Lung Cancer* 55:215-224, 2007
34. Keir ST, Calhoun-Eagan RD, Swartz JJ, et al: Screening for distress in patients with brain cancer using the NCCN's rapid screening measure. *Psychooncology* 17:621-625, 2008
35. Fried TR, Bradley EH, Towle VR, et al: Understanding the treatment preferences of seriously ill patients. *N Engl J Med* 346:1061-1066, 2002
36. McPherson CJ, Wilson KG, Murray MA: Feeling like a burden to others: A systematic review focusing on the end of life. *Palliat Med* 21:115-128, 2007
37. Wilson KG, Curran D, McPherson CJ: A burden to others: A common source of distress for the terminally ill. *Cogn Behav Ther* 34:115-123, 2005
38. Sullivan AD, Hedberg K, Fleming DW: Legalized physician-assisted suicide in Oregon—the second year. *N Engl J Med* 342:598-604, 2000
39. Karnofsky D, Burchenal J: The clinical evaluation of chemotherapeutic agents in cancer, in MacLeod CM (ed): *Evaluation of Chemotherapeutic Agents*. New York, NY, Columbia University Press, 1949, pp 191-205
40. Zubrod C, Schneiderman M, Frei E: Appraisal of methods for the study of chemotherapy of cancer in man: Comparative therapeutic trial of nitrogen mustard and triethylene thiophosphoramide. *J Chronic Dis* 11:7-33, 1960