

Symptom prevalence, characteristics and distress in a cancer population

R. K. Portenoy,* H. T. Thaler, A. B. Kornblith, J. McCarthy Lepore, H. Friedlander-Klar, N. Coyle, T. Smart-Curley, N. Kemeny, L. Norton, W. Hoskins and H. Scher

From the Pain Service, Department of Neurology, Memorial Hospital, 1275 York Avenue, New York, NY 10021; Tel: (+1) 212 639-8702; Fax: (+1) 212 717-3081 (R. K. Portenoy, J. McCarthy Lepore, N. Coyle); Division of Biostatistics, Department of Epidemiology and Biostatistics (H. T. Thaler, H. Friedlander-Klar); Psychiatry Service, Department of Neurology (A. B. Kornblith); Department of Medicine (T. Smart-Curley, N. Kemeny, L. Norton, H. Scher) and Gynecology Service, Department of Surgery (W. Hoskins) Memorial Sloan Cancer Center, New York, NY, USA

Despite the importance of symptom control in the cancer population, few studies have systematically assessed the prevalence and characteristics of symptoms or the interactions between various symptom characteristics and other factors related to quality of life (QOL). As part of a validation study of a new symptom assessment instrument, inpatients and outpatients with prostate, colon, breast or ovarian cancer were evaluated using the Memorial Symptom Assessment Scale and other measures of psychological condition, performance status, symptom distress and overall quality of life. The mean age of the 243 evaluable patients was 55.5 years (range 23-86 years); over 60% were women and almost two-thirds had metastatic disease. The Karnofsky Performance Status (KPS) score was ≤ 80 in 49.8% and 123 were inpatients at the time of assessment. Across tumour types, 40-80% experienced lack of energy, pain, feeling drowsy, dry mouth, insomnia, or symptoms indicative of psychological distress. Although symptom characteristics were variable, the proportion of patients who described a symptom as relatively intense or frequent always exceeded the proportion who reported it as highly distressing. The mean (\pm SD, range) number of symptoms per patient was 11.5 ± 6.0 (0-25); inpatients had more symptoms than outpatients (13.5 ± 5.4 vs. 9.7 ± 6.0 , $p < 0.002$) and those with KPS ≤ 80 had more symptoms than those with KPS > 80 (14.8 ± 5.5 vs. 9.2 ± 4.9 , $p < 0.0001$). The number of symptoms was highly associated with heightened psychological distress and poorer quality of life (for example, $r = 0.67$ for the relationship with the Functional Living Index-Cancer, a QOL measure). These data clarify the prevalence and characteristics of cancer-related symptoms and sug-

gest that the number of symptoms per patient may be a useful quality of life indicator.

Keywords: Symptoms, Quality of life, Cancer, Colon cancer, Ovarian cancer, Prostate cancer, Breast cancer.

Introduction

Quality of life (QOL) is a multidimensional construct that encompasses perceptions related to physical condition, psychological state, social status, and other factors.^{1,2} Physical and psychological symptoms are fundamental components of the more global experience. Studies of patients with cancer have affirmed the importance of symptom assessment³⁻⁵ and have suggested that the cancer population is a useful model for the study of symptom distress and its relationship to health-related QOL.

A number of prospective surveys have evaluated the characteristics and consequences of the diverse symptoms experienced by cancer patients.³⁻¹⁶ Surveys have generally focused on selected patient populations and provide limited information about the broad range of physical and psychological symptoms experienced by patients at varying stages of disease. Although valid symptom assessment scales are available^{17,18} these instruments do not illuminate the multidimensional phenomenology of symptoms and have rarely been used to investigate the complex relationships among symptoms and other factors that contribute to health-related QOL.

Supported by American Cancer Society Grant PRB-78 and by NIH-CA52477.

* To whom correspondence should be addressed.

The present study, which was undertaken to evaluate the validity of the newly developed Memorial Symptom Assessment Scale (MSAS), acquired detailed information about symptom characteristics and QOL from a heterogeneous population of cancer patients. The MSAS is a comprehensive symptom measure that records the prevalence of a full range of physical and psychological symptoms commonly experienced by cancer patients and characterizes these symptoms according to dimensions of severity, frequency, and distress. Data pertaining to the reliability and validity of the instrument are reported separately.¹⁹ Here we describe the characteristics and impact of symptoms in this population, and clarify the relationships among patient characteristics, symptom distress, and other aspects of health-related QOL.

Materials and methods

Patient selection

Following approval by the Institutional Review Board of Memorial Sloan-Kettering Cancer Center, patients with cancer of the breast, colon, prostate or ovary were prospectively recruited from four inpatient units and three outpatient clinics of the hospital. Data were collected during a 14-month period (1990–1992).

A convenience sample was recruited using a method developed to reduce the likelihood of systematic selection bias. Each week, a research nurse visited two inpatient units and two clinics that had been randomly selected from the seven potential recruitment sites. When a selected inpatient unit was visited, all of the available charts were screened for eligibility. A patient was excluded only if he or she lacked fluency in English or had evidence of encephalopathy or psychiatric disease severe enough to preclude data collection. The study candidates identified in this fashion were then randomly ordered and approached in turn for participation in the study. Recruitment continued until all eligible patients had been approached or the time allotted to this activity elapsed. At each visit to an outpatient clinic the nurse similarly screened all available charts for eligibility criteria. Given the time constraints in the outpatient setting, each identified study candidate was approached when he or she became available to the research nurse.

Patients who consented to the study were given

a packet of questionnaires. Inpatients who were unable to complete the packet were allowed to finish the items during the subsequent 24 h. They were visited a second time by the research nurse during this period. Outpatients who could not complete the packet at the initial visit were permitted to take it home and return it by mail; compliance was encouraged through the use of a telephone contact. The research nurse interviewed the patient if he or she was too ill or unable (e.g., poor eyesight, illiterate) to complete the questionnaires.

Instruments

The following questionnaires were presented to the patient in randomized order.

MSAS: The original version of the MSAS evaluated 33 physical and psychological symptoms in terms of severity, frequency, and distress. Thirty-two of these symptoms provided meaningful data. Following item analysis, two symptoms (urinary accidents and nightmares) were deleted due to low frequency and duplication by other symptoms. Two symptoms, sweating and changes in skin, were added following content analysis of the other symptom category. A small number of patients with prostate cancer ($n = 25$), who were recruited after the content analysis, completed the latter version of the MSAS.

The MSAS evaluates each symptom with two or three Likert scales that separately assess each dimension (severity, frequency, or distress). Most symptoms are evaluated in terms of all three dimensions; seven cannot be meaningfully assessed using a frequency scale (e.g. hair loss) and are evaluated in terms of severity and distress alone. There are three valid subscales: the Global Distress Index (MSAS-GDI) is a 10-item measure of global symptom distress. A psychological symptom subscale (PSYCH) includes six items and measures global psychological distress and a physical symptom subscale (PHYS) has 12 items and reflects global physical symptomatology.

Memorial Pain Assessment Card: The Memorial Pain Assessment Card includes 100 mm visual analogue scales (VAS) for pain intensity, pain relief and mood, and an 8-point categorical pain intensity scale. The mood VAS is a valid measure of global psychological status²⁰ and was evaluated in the present study.

Rand Mental Health Inventory (MHI): The MHI is a valid measure of psychological state²¹⁻³³ that has been used effectively in the cancer population.²⁴ Two subscale scores were analysed in the present study, one that measures global psychological distress (MHI Distress) and one that reflects positive affect (MHI Well-Being).

Functional Living Index—Cancer (FLIC): The FLIC is a multidimensional instrument that has been validated in the cancer population²⁵ and provides a global measure of QOL.

Symptom Distress Scale (SDS): The SDS is a 13-item scale that assesses 11 symptoms and provides a valid measure of global symptom distress.^{17,26}

Karnofsky Performance Status Scale (KPS): The KPS is a health professional-rated measure of performance status.²⁷

Data analysis

Frequency distributions were tabulated for all relevant items. Pearson correlation coefficients were used to clarify the univariate relationships between quality of life measures and indicators of symptom distress. Analysis of covariance was used to evaluate the relationships between these measures or indicators and clinical or demographic factors (such as tumour type, KPS score, site of interview, age and gender).

Results

Of the 297 patients who initially consented to the study, 246 (82.8%) returned the survey packet. Twenty-eight of these patients (11.4%) were subsequently excluded from the analysis because of failure to complete the MSAS (23 patients) or discovery of an inappropriate diagnosis (five patients). The remaining 218 patients (73.4% of those recruited into the study) were supplemented by 25 additional patients with prostate cancer who completed the revised version of the MSAS, as described previously. The total number of patients for whom responses were subjected to analysis was thus 243. This sample comprised 60 patients with colon cancer, 63 patients with prostate

cancer, 70 patients with breast cancer, and 50 patients with ovarian cancer (Table 1). The mean age was 55.5 years (range 23–86 years) and 60.5% were women. Almost two-thirds had metastatic disease and 49.8% had a KPS score \leq 80. Half of the sample (50.6%) was evaluated during an inpatient stay.

Symptom prevalence and characteristics

A small number of symptoms were highly prevalent across tumour types (Table 2). Within each group, 40–80% experienced lack of energy, pain, feeling drowsy, dry mouth, insomnia, or symptoms indicative of psychological distress (worrying, feeling sad, feeling nervous, and feeling irritable). These commonalities in symptom prevalence rates were far more striking than the relatively small differences in disease-specific prevalences that could be discerned in such heterogeneous patient samples.

The mean (\pm S.D.) number of symptoms per patient was 11.5 ± 6.0 and the median (range) was 11 (0–25). There were no significant differences in this overall symptom prevalence by age or gender,

Table 1. Demographics and disease-related factors in 243 patients. Numbers in parentheses are %.

Age (years)	
Mean	55.5
Range	23–86
Sex	
Male	96 (39.5)
Female	147 (60.5)
Tumour	
Colon	60 (24.7)
Prostate	63 (25.9)
Breast	70 (28.8)
Ovary	50 (20.6)
Extent of disease	
No evidence of active cancer	19 (7.8)
Local or locoregional disease	61 (25.1)
Metastatic disease	152 (62.6)
Unknown	11 (4.5)
Karnofsky Performance Status Score	
< 50–60	20 (8.2)
61–70	37 (15.2)
71–80	64 (26.3)
81–90	71 (29.2)
91–100	51 (21.0)
Site of evaluation	
Inpatient	123 (50.6)
Outpatient	120 (49.4)

Table 2. Symptom prevalence (%) in four tumour types ($n = 243$)

Symptom	Prevalence				
	Overall	Colon	Prostate	Breast	Ovary
Lack of energy	73.7	78.3	66.7	80.0	68.0
Worrying	70.7	81.0	55.6	75.0	72.0
Feeling sad	65.0	70.0	52.4	68.6	70.0
Pain	64.0	61.7	68.3	60.0	67.3
Feeling nervous	61.3	64.4	50.8	68.6	60.4
Feeling drowsy	59.8	61.0	54.0	68.1	54.0
Dry mouth	54.4	49.2	55.7	62.9	46.9
Difficulty sleeping	52.3	51.7	50.8	48.6	60.0
Feeling irritable	46.9	41.7	41.3	48.6	58.0
Lack of appetite	44.4	51.7	38.1	51.4	34.0
Nausea	44.2	43.3	33.3	44.9	58.0
Difficulty concentrating	40.5	42.4	34.9	44.3	40.0
Numbness/tingling in hands/feet	37.2	30.5	43.5	33.8	42.0
Feeling bloated	37.2	35.0	33.3	43.5	36.0
Change in taste	35.4	38.3	33.3	37.1	32.0
Constipation	34.7	40.0	42.9	30.0	24.5
Cough	28.6	22.0	25.8	37.1	28.0
'I don't look like myself'	28.2	26.7	20.6	36.8	28.0
Itching	27.1	30.0	24.2	26.5	28.0
Weight loss	27.1	26.7	25.4	30.9	24.5
Swelling of arms or legs	26.9	15.0	30.6	32.9	28.0
Problems with sexual interest or activity	23.8	31.0	27.4	20.3	16.0
Dizziness	23.6	21.7	17.5	31.9	22.0
Diarrhea	23.5	23.3	20.6	25.7	24.0
Shortness of breath	23.5	28.3	25.4	25.7	12.0
Vomiting	20.6	28.3	11.1	27.1	14.0
Problems with urination	17.4	18.3	24.2	15.7	10.0
Hair loss	16.9	16.7	11.1	23.2	16.0
Mouth sores	12.4	11.9	4.8	20.0	12.0
Urinary accidents ^a	12.4	18.3	13.2	8.6	10.0
Nightmares ^a	11.9	11.7	18.4	10.0	10.0
Difficulty swallowing	10.8	10.0	9.7	14.5	8.0
Sweating ^b	—	—	40.0	—	—
Change in skin ^b	—	—	8.0	—	—

^aEvaluated in the initial sample of 218 patients.

^bEvaluated in the sample of 25 patients with prostate cancer only.

tumour type, or extent of disease (local, loco-regional, or metastatic).

Other measures of clinical status were highly associated with symptom prevalence. Inpatients reported a mean of 13.5 ± 5.4 symptoms, whereas outpatients noted a mean of 9.7 ± 6.0 ($p < 0.002$). The mean number of symptoms per patient for those with KPS scores ≤ 80 was 14.8 ± 5.5 ,

proportion of patients who described the symptom as relatively severe (described as moderate, severe or very severe) or relatively frequent (described as frequently or almost constantly) (Figure 1).

Symptom distress and quality of life

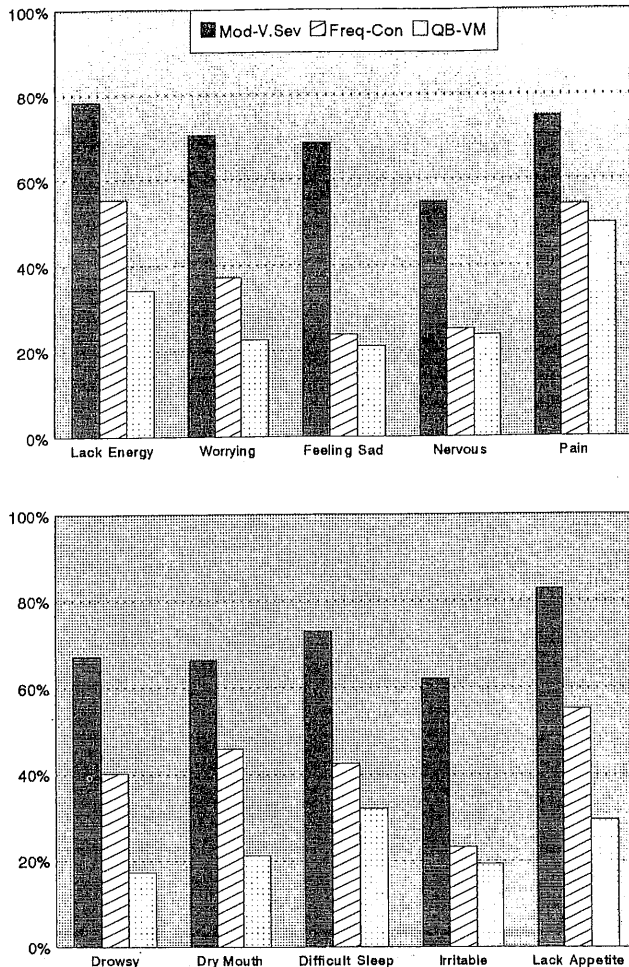


Figure 1. Characteristics of the 10 most prevalent symptoms in 243 patients with cancer of the colon, prostate, breast or ovary. The solid bar indicates the proportion of patients with the symptom who described its severity as moderate, severe, or very severe. The hatched bar indicates the proportion who described the frequency of the symptom as frequent or almost constant. The open bar indicates the proportion who described the distress associated with the symptom as quite a bit or very much.

cantly worse scores than those with KPS scores > 80 (Table 3). There were no significant differences in any of these scores by tumour type, age or gender when adjusted for KPS and site of evaluation (inpatient *vs.* outpatient).

The number of symptoms per patient was strongly associated with heightened psychological distress and poorer quality of life. There were highly significant correlations between the number of symptoms per patient and mood VAS ($r = -0.37$, $p < 0.0001$), MHI Distress scale ($r = 0.57$, $p < 0.0001$), MHI Well-Being ($r = -0.54$, $p = 0.0001$), and FLIC ($r = -0.67$, $p < 0.0001$).

Discussion

These data confirm the high prevalence and adverse impact of physical and psychological symptoms in the cancer population. Most patients experienced multiple symptoms (median 11, range 0–25), and the number of symptoms was significantly related to impairment in performance status, psychological distress, and overall QOL.

The most prevalent symptoms were fatigue (lack of energy), pain and psychological distress (worrying, feeling sad and feeling nervous). Each of these symptoms was experienced by more than 60% of the patients. Other prevalent symptoms (experienced by > 40%) included drowsiness, dry mouth, insomnia, lack of appetite, nausea, and difficulty concentrating. These findings overlap those of previous studies, but are difficult to compare directly because of variability in both patient populations and assessment methodology. For example, a survey of 100 patients with advanced cancer used a face valid symptom checklist that assessed 38 symptoms, only two of which related specifically to psychological distress, and observed prevalence rates > 40% for pain, weight loss, anorexia, dyspnoea, constipation, early satiety, fatigue, and dry mouth.³

The prevalence and characteristics of symptoms were remarkably similar across tumour types, age and gender. Although these findings might be expected given the importance of common medical factors as determinants of symptoms, it must also be noted that the heterogeneous sample selected for this study was likely to obscure any disease-specific differences that do exist. The systematic evaluation of such differences would require the evaluation of a much larger sample, stratified in terms of clinically significant variables that influence symptoms, such as performance status and site of evaluation (inpatient *vs.* outpatient). The sample assessed in this study can provide an overview of symptom epidemiology and an understanding of the relationships among clinical status, symptoms, and other aspects of health-related QOL.

It is obvious that the prevalence of a symptom will always exceed the proportion of patients who describe it as highly intense, frequent, or distressing. This observation underscores the need to acquire descriptive information beyond mere prevalence for either research purposes or clinical practice. The multidimensional assessment incorporated into the MSAS permits a separate analysis for each of the three fundamental characteristics of

Table 3. Scores on measures of symptom distress, psychological distress and quality of life (mean \pm SD) in a population of patients with cancer of the colon, prostate, breast or ovary

	All patients	Inpatients	Outpatients	KPS \leq 80	KPS $>$ 80
Symptoms/patient (<i>n</i> = 243)	11.5 \pm 6.0	13.5 \pm 5.4	9.7 \pm 6.0	14.8 \pm 5.5	9.2 \pm 4.9
MSAS (<i>n</i> = 243) ^a					
GDI	1.3 \pm 0.8	1.6 \pm 0.9	1.0 \pm 0.7	1.7 \pm 0.9	0.9 \pm 0.6
PSYCH	1.1 \pm 0.8	1.4 \pm 0.9	0.9 \pm 0.7	1.4 \pm 0.9	1.0 \pm 0.8
PHYS	0.9 \pm 0.8	1.2 \pm 0.8	0.7 \pm 0.6	1.4 \pm 0.8	0.6 \pm 0.5
SDS (<i>n</i> = 210)	25.6 \pm 8.8	28.5 \pm 9.0	22.5 \pm 2.1	30.1 \pm 8.8	22.4 \pm 7.0
WBS (<i>n</i> = 226)					
Distress	56.0 \pm 18.6	63.5 \pm 20.1	49.0 \pm 13.9	64.5 \pm 20.9	50.6 \pm 14.9
Well-being	55.0 \pm 12.4	50.7 \pm 11.9	59.2 \pm 11.3	50.0 \pm 11.8	58.6 \pm 11.7
Mood VAS	69.3 \pm 26.3	62.4 \pm 27.5	76.4 \pm 23.8	63.5 \pm 26.1	75.0 \pm 25.6
FLIC (<i>n</i> = 233)	100.2 \pm 22.4	89.3 \pm 19.7	109.5 \pm 20.2	85.9 \pm 20.4	110.3 \pm 17.1

The differences between inpatients and outpatients, and between low and high KPS scores are significant ($p < 0.0001$) for all measures. See text for all abbreviations.

^aMSAS scores are measured on scales of 0–4, with the higher number reflecting greater degrees of symptom distress.

symptoms. For all symptoms, the proportion of patients who rated intensity as moderate, severe, or very severe, or who rated frequency as frequently or almost constantly, was higher than the proportion who described the distress associated with the symptom as quite a bit or very much (Figure 1). Additional analyses of these data demonstrated that the distress scores yield more information about symptom-related impact on QOL than either severity or frequency scores, but that the combination of distress and one of these other dimensions provided significantly more information than the distress dimension alone.¹⁹

Thus, the use of a single distress scale is probably the most efficient method for capturing the clinical impact of a symptom. This approach, however, could potentially underestimate the prevalence of some symptoms or minimize their other characteristics. Although some surveys have incorporated distress scales,^{12,28} other characteristics are often considered to be clinically relevant, and both severity scales^{3,5,13} and frequency scales⁶ have been used in previous research. The present study suggests that the need for detailed symptom-related information would be best fulfilled with an instrument that provides prevalence data about a broad range of physical and psychological symptoms, includes a distress scale and, if desirable, also incorporates a measure of intensity or frequency.

The number of symptoms was strongly associated with measures of psychological distress, performance status, and overall QOL. Symptom

prevalence, therefore, could be conceptualized as an important outcome in studies of health-related QOL. It should be recognized, however, that the MSAS evaluates only a selected group of important symptoms. Thus, the proper interpretation of this finding is that the number of these selected symptoms, and not symptoms *per se*, is a predictor of QOL. Nonetheless, this observation suggests that the evolving methodology for the assessment of health-related QOL could potentially be strengthened by the use of measures such as the MSAS, that are capable of recording a large number of physical and psychological symptoms.

The ability of the MSAS to differentiate various clinical populations and changes in disease status over time is currently under investigation. The present results suggest that systematic symptom assessment, perhaps through the use of a comprehensive patient-rated instrument, is highly informative and may, therefore, be useful in many types of clinical investigations. Such an assessment must also be pursued in the clinical setting, where strategies for palliative care already emphasize the management of multiple diverse symptoms.

Acknowledgements

The authors would like to thank Elizabeth Kiyasu, Kenneth Sobel and Shahana Koslovsky for their invaluable help with this study.

References

1. Cella DF. Quality of life: the concept. *J Palliative Care* 1992; 8: 8-13.
2. Calman KC. Definitions and dimensions of quality of life. In: Aaronson NK, Beckmann J, eds. *The Quality of Life of Cancer Patients*. New York: Raven Press, 1987: 1-10.
3. Curtis EB, Kretch R, Walsh TD. Common symptoms in patients with advanced cancer. *J Palliative Care* 1991; 7: 25-29.
4. Dunphy KP, Amesbury BDW. A comparison of hospice and homecare patients: patterns of referral, patient characteristics and predictors of place of death. *Palliative Med* 1990; 4: 105-11.
5. Reuben DB, Mor V, Hiris J. Clinical symptoms and length of survival in patients with terminal cancer. *Arch Intern Med* 1988; 148: 1586-1591.
6. Dunlop GM. A study of the relative frequency and importance of gastrointestinal symptoms and weakness in patients with far-advanced cancer: student paper. *Palliative Med* 1989; 4: 37-43.
7. Derogatis LR, Morrow GR, Fetting J *et al.* The prevalence of psychiatric disorders among cancer patients. *JAMA* 1983; 249: 751-757.
8. Craig TJ, Abeloff MD. Psychiatric symptomatology among hospitalized cancer patients. *Am J Psych* 1974; 131: 1323-1336.
9. Levine PM, Silberfarb PM, Lipowski ZJ. Mental disorders in cancer patients: a study of 100 psychiatric referrals. *Cancer* 1978; 42: 1386-1391.
10. Massie MJ, Holland JC. Overview of normal reactions and prevalence of psychiatric disorders. In: Holland JC, Rowland JH, eds. *Handbook of Psycho-oncology*. New York: Oxford University Press, 1989: 273-282.
11. Richardson JL, Marks G, Levine A. The influence of symptoms of disease and side effects of treatment on compliance with cancer therapy. *J Clin Oncol* 1988; 6: 1746-1752.
12. Ventafridda V, De Conno F, Ripamonti C, *et al.* Quality of life assessment during a palliative care programme. *Ann Oncol* 1990; 1: 415-420.
13. Hockley JM, Dunlop R, Davies RJ. Survey of distressing symptoms in dying patients and their families in hospital and the response to a symptom control team. *Br Med J* 1988; 296: 1715-1717.
14. Coyle N, Adelhardt J, Foley KM *et al.* Character of terminal illness in the advanced cancer patient: pain and other symptoms during the last four weeks of life. *J Pain Symptom Management* 1990; 5: 83-93.
15. Brescia FJ, Adler D, Gray G, *et al.* Hospitalized advanced cancer patients: a profile. *J Pain Symptom Management* 1990; 5: 221-227.
16. Baines M. Nausea and vomiting in the patient with advanced cancer. *J Pain Symptom Management* 1988; 3: 81-85.
17. McCorkle R, Young K. Development of a symptom distress scale. *Cancer Nurs* 1978; 1: 373-378.
18. de Haes JCJM, van Knippenberg FCE, Neijt JP. Measuring psychological and physical distress in cancer patients: structure and application of the Rotterdam Symptom Checklist. *Br J Cancer* 1990; 62: 1034-1038.
19. Portenoy RK, Thaler HT, Kornblith AB, *et al.* The Memorial Symptom Assessment Scale: an instrument for the evaluation of symptom prevalence, characteristics and distress. *Eur J Cancer*, in press.
20. Fishman B, Pasternak S, Wallenstein S, *et al.* The Memorial Pain Assessment Care: a valid instrument for the assessment of cancer pain. *Cancer* 1987; 60: 1151-1157.
21. Brook RH, Ware JE, Davies-Avery A, *et al.* Conceptualization and measurement of health for adults. In: *The Health Insurance Study, Vol VIII: Overview*. Santa Monica: Rand, 1979.
22. Ware JE, Johnston SA, Davies-Avery A, *et al.* Conceptualization and measurement of health for adults. In: *The Health Insurance Study, Vol III: Mental Health*. Santa Monica: Rand, 1979.
23. Veit CT, Ware JE. The structure of psychological distress and well-being in general populations. *J Consult Clin Psychol* 1983; 51: 730-742.
24. Kornblith AB, Hollis D, Phillips CA, *et al.* Dose-related effect of megestrol acetate upon quality of life in advanced breast cancer patients. *Proc ASCO* 1992; 11: 1305.
25. Schipper H, Clinch J, McMurray A, *et al.* Measuring the quality of life of cancer patients: the Functional Living Index-Cancer: development and validation. *J Clin Oncol* 1984; 2: 472-483.
26. Kukull WA, McCorkle R, Driever M. Symptom distress, psychosocial variables and survival from lung cancer. *J Psychosoc Oncol* 1986; 4: 91-104.
27. Yates JW, Chalmer B, McKeegney FP. Evaluation of patients with advanced cancer using Karnofsky Performance Status. *Cancer* 1980; 40: 2220-2224.
28. Welch JM, Barlow D, Richardson PH. Symptoms of HIV disease. *Palliative Med* 1991; 5: 46-51.

(Received 19 February 1994;
accepted with revision 18 March 1994)