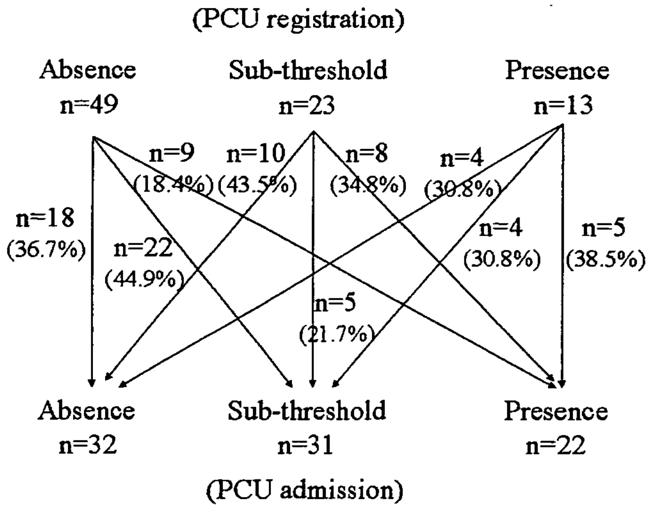

Figure 1. Longitudinal change of sleep disturbance in advanced cancer patients

Table 1. Associated factors for sleep disturbance in advanced cancer patients—univariate analysis

Associated factors	Sleep disturbance Present (*n* = 32)	 Absent (*n* = 177)	Analysis		
	Mean (S.D.)	Mean (S.D.)	t	df	*p*
Age	57.5 (9.8)	61.7 (10.2)	2.19	207	0.03
Performance status[a]	69 (14)	74 (15)	1.92	207	0.06
Psychological distress[b]	15.2 (6.8)	10.9 (6.5)	−3.41	205	0.001
	Mean (S.D.)	Mean (S.D.)	z		*p*
Pain[c]	2.4 (1.0)	1.8 (0.9)	−3.19		0.001
Dyspnea[c]	2.0 (0.9)	1.9 (1.0)	−1.20		0.23
Fatigue[c]	2.4 (1.0)	2.1 (1.1)	−1.50		0.13
Constipation[c]	2.2 (1.3)	1.7 (1.1)	−1.87		0.06
Diarrhea[c]	1.5 (0.9)	1.1 (0.4)	−3.48		0.001
	N (%)	*N* (%)	Chi-square	df	*p*
Sex (male)	19 (59)	118 (67)	0.64	1	0.43
Marital status (married)	24 (75)	157 (89)	4.38	1	0.04
Education (⩾12 years)	22 (69)	125 (71)	0.05	1	0.83
Employment (full/part)	11 (34)	52 (29)	0.32	1	0.57
Living alone	5 (16)	7 (4)	6.82	1	0.009
Brain metastasis	1 (3)	22 (12)	—[d]	—[d]	0.22
Use of opioids or anticonvulsants	15 (47)	71 (40)	0.51	1	0.47
Use of corticosteroids psycho-stimulants, bronchodilators or antihypertensives	11 (34)	47 (27)	0.83	1	0.36

[a] Defined by Karnofsky criteria.
[b] Total score of the Hospital Anxiety and Depression Scale (HADS).
[c] Coded as 1 = absent; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme.
[d] Chi-square values were not calculated, because Fisher's exact tests were performed.

sleep disturbance at follow-up (Table 3). On the other hand, investigation of the longitudinal changes between baseline and follow-up factors demonstrated that the increase in psychological distress was a significant predictive factor for the development of sleep disturbance at follow-up, while worsening of physical symptoms, declining physical functioning, and new use of drugs were not (Table 4). Very similar findings were obtained after adjustment for the interval between the baseline and follow-up investigation regarding these analyses (data not shown).

Discussion

This is a preliminary and, to the best of our knowledge, the first prospective investigation of associated and predictive factors for sleep disturbance among advanced cancer patients.

Factors associated with sleep disturbance

Several factors were shown as associated to sleep disturbance among advanced cancer patients. The finding that younger age is one of the significantly associated factors for sleep disturbance is consistent with previous studies [18,19] As suggested by these studies, possible explanation of this association may be younger cancer patients being with increased level of psychosocial burden.

Regarding physical symptoms, diarrhea was the only significant associated factor in the study. To the best of our knowledge, there have been no studies investigating the association of diarrhea with sleep disturbance among advanced cancer patients. This finding suggests the importance of appropriate management of bowel habits, and that diarrhea should not be neglected among patients with sleep disturbance. While pain was of borderline significance in the current study, our finding regarding the possible association between pain and sleep disturbance would appear to be consistent with previous studies and appropriate pain management is essential for advanced cancer patients to maintain their QOL [3,4,6].

Living alone was also shown to be an independent associated factor for sleep disturbance. Several factors can be identified as underlying the 'living alone' status, such as loneliness, lack of social support, concerns about the future, and so on. On the other hand, living alone was not predictive for subsequent sleep disturbance. The latter finding may be due to the small sample size. Nevertheless, these findings suggest that there is a complicated mechanism connecting living alone and sleep disturbance. More studies are needed to clarify the actual influence of living alone on sleep disturbance and the underlying mechanism.

Table 2. Associated factors for sleep disturbance in advanced cancer patients—multivariate logistic regression analysis

	Beta	SE	Odds	95% CI[a]	p
Age	−0.05	0.02	0.95	0.91–0.999	0.046
Performance status[b]	−0.03	0.02	0.97	0.94–1.004	0.08
Psychological distress[c]	0.07	0.04	1.07	0.998–1.15	0.06
Pain[d]	0.46	0.23	1.58	0.998–2.49	0.051
Constipation[d]	0.05	0.19	1.05	0.73–1.51	0.80
Diarrhea[d]	0.97	0.35	2.65	1.33–5.26	0.006
Living alone	2.20	0.77	9.03	1.99–40.92	0.004

[a] Confidence interval.
[b] Defined by Karnofsky criteria.
[c] Total HADS score.
[d] Coded as 1 = absent; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme.

Longitudinal changes in sleep disturbance

The clinical course of the sleep disturbance seems to have been variable. In fact, more than two-thirds of the patients showed some change in their sleep status, suggesting that the occurrence of sleep disturbance is state dependent and continuous monitoring of sleep disturbance is required in advanced cancer patients to maintain their QOL.

Table 3. Baseline predictive factors for sleep disturbance at admission to the palliative care unit in advanced cancer patients—univariate analysis

Associated factors	Sleep disturbance		Analysis		
	Present (n = 17)	Absent (n = 55)			
	Mean (S.D.)	Mean (S.D.)	t	df	p
Age	59.7 (9.5)	61.0 (9.8)	0.50	70	0.62
Performance status[a]	72 (16)	75 (14)	0.85	70	0.40
Psychological distress[b]	13.0 (5.8)	11.5 (6.3)	−0.90	70	0.37
	Mean (S.D.)	Mean (S.D.)	z		p
Pain[c]	1.6 (0.8)	1.9 (0.9)	−1.26		0.21
Dyspnea[c]	2.0 (1.3)	1.8 (0.8)	−0.07		0.94
Fatigue[c]	2.2 (0.9)	2.2 (1.1)	−0.38		0.70
Constipation[c]	1.8 (1.2)	1.8 (1.2)	−0.33		0.74
Diarrhea[c]	1.0 (0.0)	1.2 (0.5)	−1.49		0.14
	N (%)	N (%)	Chi-square	df	p
Sex (male)	8 (47)	32 (58)	0.65	1	0.42
Marital status (married)	17 (100)	49 (89)	—[d]	—[d]	0.33
Education (≥12 years)	13 (77)	37 (67)	—[d]	—[d]	0.56
Employment (full/part)	6 (35)	15 (27)	0.40	1	0.53
Living alone	0 (0)	1 (2)	—[d]	—[d]	1.00
Brain metastasis	1 (6)	8 (15)	—[d]	—[d]	0.68
Use of opioids or anticonvulsants	4 (24)	25 (46)	—[d]	—[d]	0.16
Use of corticosteroids, psycho-stimulants, bronchodilators or antihypertensives	3 (18)	14 (26)	—[d]	—[d]	0.38

[a] Defined by Karnofsky criteria.
[b] Total HADS score.
[c] Coded as 1 = absent; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme.
[d] Chi-square values were not calculated, because Fisher's exact tests were performed.

Table 4. Longitudinal change between baseline and follow-up as predictive factors for sleep disturbance at admission to the palliative care unit in advanced cancer patients—univariate analysis

Associated factors	**Sleep disturbance**		**Analysis**		
	Present ($n = 17$)	**Absent ($n = 55$)**			
	Mean (S.D.)	**Mean (S.D.)**	**t**	**df**	**p**
Performance status[a]	−27.1 (16)	−21.8 (18)	1.08	70	0.29
Psychological distress[b]	6.5 (6.9)	1.3 (5.7)	−2.98	65	0.004
	Mean (S.D.)	**Mean (S.D.)**	**z**		**p**
Pain[c]	0.5 (1.0)	0.2 (1.2)	−1.06		0.29
Dyspnea[c]	0.3 (1.6)	0.1 (1.0)	−0.39		0.70
Fatigue[c]	0.7 (1.2)	0.4 (1.0)	−0.61		0.54
Constipation[c]	0.4 (1.6)	0.3 (1.8)	−0.74		0.46
Diarrhea[c]	0.1 (0.3)	0.4 (1.0)	−0.85		0.40
New use of drugs	**N (%)**	**N (%)**	**Chi-square**	**df**	**p**
Use of opioids or anticonvulsants	3 (18)	5 (9)	—[d]	—[d]	0.38
Use of corticosteroids psycho-stimulants, bronchodilators or antihypertensives	7 (41)	27 (49)	0.33	1	0.57

[a] Defined by Karnofsky criteria.

[b] Total HADS score. There were some missing values.

[c] Coded as 1 = absent; 2 = mild; 3 = moderate; 4 = severe; 5 = extreme.

[d] Chi-square values were not calculated, because Fisher's exact tests were performed.

On the other hand, because the intervals between the baseline and follow-up investigation were not short (median 58 days) and variable (ranging from 7 to 622 days) and there the possibility exists of the occurrence of many events and changes regarding physical and psychosocial aspects, these factors may partly explain the variable clinical course of the sleep disturbance.

Predictive factors for sleep disturbance

Our findings suggest that an increase in psychological distress was the only predictive factor for development of sleep disturbance among advanced cancer patients. This finding is consistent with previous studies indicating that many forms of psychological distress, including anxiety, depression, and concerns, are significantly associated with sleep disturbance among cancer patients [3–6,18]. In addition, many studies investigating sleep disturbance experienced by the general population have demonstrated the significant association between sleep disturbance and psychological distress such as depression and anxiety [19–22]. These findings support a consistent association between sleep disturbance and psychological distress even in different populations.

There are discrepancies in the results obtained in the cross-sectional and longitudinal analyses regarding psychological distress. Because it is obvious that the findings obtained from a longitudinal analysis are more relevant than those from a cross-sectional analysis, psychological distress is one of the possible causes of sleep disturbance among advanced cancer patients. In addition, the disappearance of any significant association between psychological distress and sleep disturbance in the cross-sectional multivariate analysis may be due to a statistical phenomenon resulting from over-adjustment for other variables. Actually, we conducted a similar multivariate analysis excluding age and living alone from independent variables, and psychological distress was found to be a significant associated factor (beta = 0.09, SE = 0.03, odds = 1.09 [95%CI = 1.02–1.16], $p = 0.01$).

Thus these findings indicate an even greater necessity for the management of psychological distress in the palliative care setting, and this approach may be one of the promising strategies for the prevention of sleep disturbance among advanced cancer patients.

Conclusion

The present finding indicated that the course of sleep disturbance in the palliative care setting is variable. Younger patients and those living alone may be at risk for sleep disturbance, and appropriate bowel symptom management may be important to manage sleep disturbance among advanced cancer patients. In addition, the management of psychological distress may be one promising strategy for prevention of sleep disturbance among advanced cancer patients.

Study limitations

The present study has several limitations. First, although sleep disturbance is a heterogeneous complaint that may involve several different types of sleep problems (e.g. difficulties falling asleep, a complaint of nonrestorative sleep, insomnia, hypersomnia, etc.), in this study the interview assessing sleep disturbance may be nonspecific. We could not identify the exact types of sleep disturbance, nor did we use any diagnostic criteria of sleep disturbance [1]. In particular, two different types of sleep disturbance, namely insomnia and hypersomnia, were not analyzed separately. This may be one of the limitations of the present study because these two types of sleeping difficulty may vary in terms of etiological factors. Second, since only 27.4% (209/764) of the subjects at baseline and 11.1% (85/764) of the subjects at follow-up could be included in the analysis, generalizing the results may be impossible, and the sample size of the follow-up group was too small. These limitations may have resulted in underestimation of the sleep disturbance and distortion of the associated and predictive factors. Third, the fact that the baseline investigation was cross-sectional in design precludes drawing any conclusions about causality. Fourth, because the assessment of the physical symptoms and patients' concerns was conducted by an *ad hoc* method and the validity and reliability of the measures were not well established, this may have resulted in measurement errors. Fifth, the timing of the follow-up assessment (admission) may also have produced distortions, because the reasons for admission may have differed. Sixth, there may be other factors, such as the hyperarousability trait, cognitive impairment (e.g. delirium), and maladaptive sleep behaviors that can be associated with or predict sleep disturbance [1]. These factors should be addressed in the future studies. Finally, because this study focused on advanced cancer patients receiving palliative care, the results may not be applicable to patients with cancer at various stages or in other settings.

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Multifaceted psychosocial intervention program for breast cancer patients after first recurrence: Feasibility study

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Abstract

We developed a novel multifaceted psychosocial intervention program which involves screening for psychological distress and comprehensive support including individually tailored psychotherapy and pharmacotherapy provided by mental health professionals. The purpose of the present study was to investigate the feasibility of the intervention program and its preliminary usefulness for reducing clinical psychological distress experienced by patients with recurrent breast cancer. The subjects who participated in the 3 months intervention program completed psychiatric diagnostic interview and several self-reported measures regarding psychological distress, traumatic stress, and quality of life. The assessments were conducted before the intervention (T1), after the intervention (T2), and 3 months after the intervention (T3). A total of 50 patients participated in the study. The rates of participation in and adherence to the intervention program were 85 and 86%, respectively. While the proportion of psychiatric disorders at T2 (11.6%) was not significantly different from that at T1 (22.0%) ($p = 0.15$), the proportion of that at T3 (7.7%) had significantly decreased compared with that at T1 ($p = 0.005$). The novel intervention program is feasible, is a promising strategy for reducing clinically manifested psychological distress and further controlled studies are warranted.

Keywords: psychological distress; recurrence; breast cancer; screening; psychosocial intervention

Introduction

Because cancer is a life-threatening disease, its psychological impact on patients has been an important aspect of clinical oncology. Derogatis *et al.* found that almost half of all cancer patients had been diagnosed as having a psychiatric disorder, and that most of them had an adjustment disorder and/or major depression [1]. Other studies have consistently indicated that adjustment disorders and major depression are common psychiatric disorders among cancer patients [2–4] and are more common in patients with advanced cancer [2,5]. All the previously cited studies have indicated that more than 40% of the breast cancer patients who experienced first recurrence suffer from an adjustment disorder and/or major depression [3,6] and these findings as well as other previous results [7,8] suggest that the impact of cancer recurrence on psychological well-being is serious.

Several studies have indicated that psychological distress can lead to serious and far-reaching negative consequences in patients with advanced cancer, including reducing their quality of life [9] and causing severe suffering [10], a desire for early death, requests for physician-assisted suicide and/or euthanasia [11,12], suicide [13], as well as psychological distress in family members [14]. Maintaining psychological well-being is thus an important issue especially among advanced cancer patients. On the other hand, there are several issues to be overcome in order to reduce psychological distress among cancer patients. For example, under-recognition of the psychological distress, especially depression, experienced by cancer patients is repeatedly reported [15,16]. In addition, a previous study demonstrated that even when screening for psychological distress was coupled with feedback the results of the screening alone did not seem to contribute to improving the patient's outcome in the oncology setting [17]. Similarly it was reported that the psychosocial intervention by a social worker in combination with screening for psychological distress failed to reduce psychological distress among newly diagnosed breast cancer patients [18]. Lastly recent systematic reviews have suggested that psychotherapy alone does not appear to be sufficiently effective for reducing psychological distress among advanced cancer patients [19,20].

Several recent reports have suggested promising strategies, such as integrated screening programs. These consist of an intervention program that provides pharmacotherapy by oncologists based on antidepressant algorithms [21,22] or psychological intervention delivered by the cancer nurse under the supervision from a consultant psychiatrist, for those patients who have screened positive [23]. In any event, interventions for advanced cancer patients should require a powerful strategy and the previous findings suggest that an integrated program that combines screening for psychological distress with subsequent provision of appropriate treatment and/or intervention seems to be one of the promising strategies.

Based on these findings, we developed a multifaceted psychosocial intervention program which involves screening, psychiatric evaluation, and comprehensive support including individually tailored psychotherapy and pharmacotherapy provided by mental health professionals for cancer patients [24]. The purpose of the present study were: (1) to investigate the feasibility of this novel intervention program and (2) to examine its preliminary usefulness for reducing clinical psychological distress among breast cancer patients who have experienced first recurrence.

Methods

Patients

The subjects were consecutively recruited from outpatient populations of the Oncology-Hematology Division of the National Cancer Center Hospital East (NCCHE) in Japan from January 2001 to January 2002. The eligibility criteria for the study were as follows: (1) histologically, cytologically or clinically proven first recurrence of breast cancer; (2) female, age 20 years or older; (3) informed of recurrent diagnosis; (4) one to six months after the disclosure of recurrence; (5) an estimated life expectancy exceeding six months; (6) follow-up at the Oncology-Hematology Division of the NCCHE; (7) a performance status (PS) of from 0 to 3 according to the Eastern Cooperative Oncology Group criteria. The exclusion criteria were: (1) cognitive impairment; (2) too ill to participate; (3) being treated for any psychiatric disorder by mental health professionals; (4) unable to speak and understand Japanese.

This study was approved by the Institutional Review Board and the Ethics Committee of the National Cancer Center of Japan and was conducted in accordance with the Helsinki Declaration. Written informed consent was obtained from each subject before enrollment into this study.

Study procedures

After written consent was obtained from eligible patients, a psychiatric diagnosis for study outcome (see the outcome measures) was made and sociodemographic data were obtained in a structured interview by a research fellow who was trained for this study (*T*1). The subjects also completed several self-reported questionnaires (see the outcome measures). After that, a multifaceted psychosocial intervention program was provided, including the screening, evaluation interview, and individually tailored intervention. The psychiatrists who provided the intervention were blinded to any subjects' baseline data, including the psychiatric diagnosis at baseline (*T*1). After the intervention, the follow-up assessment was conducted for study outcome at *T*2 and *T*3.

Intervention—multifaceted psychosocial intervention program

The intervention program included multifaceted components (Table 1) and several steps (Figure 1). The program is described in detail elsewhere [25]. Briefly, intervention components consisted of provision of the information material (booklet) for cancer patients, a self-reported brief instrument for screening clinically manifested psychological distress [26], an interview for assessing the patient's physical, psychiatric and psychosocial issues, pharmacotherapy algorithm for major depression [27], and a pharmacotherapy and psychotherapy manual for managing psychological distress for cancer patients. Physical distress items evaluated in the interview were extracted from the MD Anderson Symptom Inventory [28]. Regarding psychiatric diagnosis, the Structured Clinical Interview for DSM- IV (SCID) was included in the interview to evaluate the subjects for major depressive disorder, post traumatic stress disorder (PTSD), and adjustment disorders [29]. The interview form and treatment manual are developed for psychiatrists in residency level. These manuals in Japanese are available from the authors upon request.

As shown in Figure 1, a participant was provided with a booklet and screened for his/her

Table 1. Components of the multifaceted psychosocial intervention

Component	Contents and purpose
Booklet	Medical and psychosocial information for psycho-education
Screening (Distress and Impact Thermometer)	2-item brief self-reported questionnaire for screening clinical psychological distress
Interview form	Semi-structured interview for assessing patient's background, physical symptoms, psychiatric diagnosis, and social support
Pharmacotherapy manual	General attention and practical issues (half-life, metabolism, adverse events, drug-drug interaction, adjuvant use for cancer pain, etc.) for psychotropic medication for cancer patients
Pharmacotherapy algorithm for major depression in advanced cancer patients	Algorithm in consideration of status of advanced cancer such as administration route, estimated prognosis, etc.
Psychotherapy manual	Communication skills and bed side manner for interviewing cancer patients Common psychotherapeutic techniques (psycho-education, crisis intervention, supportive psychotherapy, behavioral therapy, etc.) Special attention for caring for terminally ill cancer patients Defense mechanism frequently observed in cancer patients and management of patients in difficult situations

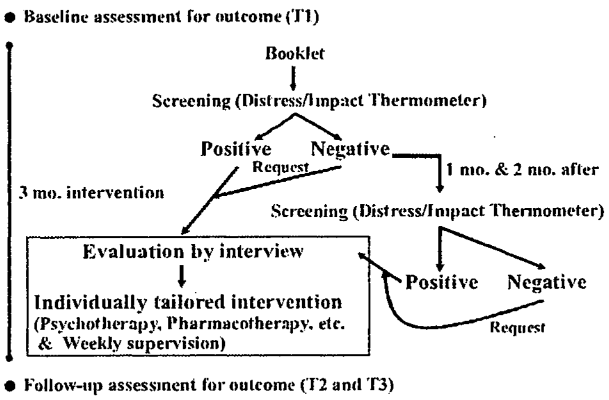

Figure 1. Procedure of the multifaceted psychosocial intervention program and outcome measurements

psychological distress on a monthly basis for a maximum of three times. A patient who screened positive or who screened negative but requested for the following interview was evaluated by the psychiatrist using the interview form. We provided the intervention with the subjects who screened negative but requested the follow-up because a patient's needs can be one of the important factors in determining the morbidity outcome of cancer [30]. After the interview, the patient status was summarized and individually tailored treatment based on the treatment manual was provided by the psychiatrist at residency level. The interview form was designed to be able to clarify patient's uncontrolled physical symptoms, psychosocial issues (e.g. concerns, lack of social support, relationship to medical staff, psychiatric diagnosis), and patient's needs regarding the problems and preferences as to the treatment. Then, just as in actual clinical practice, psychotherapy and/or pharmacotherapy were provided to each patient with flexibility. In most cases, each patient's preference and need for therapy was considered and an appropriate therapy was selected. Regarding psychotherapy, most patients were provided with brief supportive counseling and an additional technique, such as relaxation was also used depending on each patient's situation and preference. The intervention program also included the feedback of information on uncontrolled physical symptoms to patient's oncologists, and sometimes a family meeting was arranged to manage the family's distress. In addition, weekly supervision of treatment procedure was provided to the psychiatric resident by the faculty psychiatrists (T.A., Y.U.). If there was any necessity for continuous psychiatric follow-up at after the end of the intervention, this was provided by the clinical staff of the Psychiatry Division.

Outcome measures

Feasibility

Feasibility of the current program was evaluated in terms of rates of participation and of adherence to the intervention program. The participation rate

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was defined by the participation proportion of the eligible subjects who were informed of the purpose of the present study. We set over 50% of the participation rate as feasible. Adherence to the intervention program was defined by the proportion of the participants who completed the intervention at *T2*. We had set *a priori* that 50% or more of the participation rate and 80% or more of the completion rate would indicate good feasibility. In addition, the total amount of time and number of the interview sessions provided by psychiatrists at residency level and the amount of time of supervision by faculty psychiatrists were recorded. Furthermore, at the end of the study, unsolicited comments regarding the study were obtained from the participants by an interview.

Psychiatric diagnoses

Our primary outcome for this intervention was reduction in the prevalence of diagnosable psychiatric disorders. To evaluate this preliminary usefulness of the intervention program, the prevalence of psychiatric disorders commonly experienced by cancer patients (i.e. adjustment disorders, major depression, and PTSD) among all of the subjects was evaluated using the Structured Clinical Interview for DSM-IV (SCID) by a trained research fellow [29]. These assessment interviews were conducted before the intervention (baseline; *T1*), after the end of the intervention (4 months after the baseline interview; *T2*), and 3 months after the intervention (6 months after the baseline interview; *T3*). The trained research fellow was blinded to any intervention results such as screening and interview findings.

Psychological distress

Psychological distress was evaluated using the Profile of Mood States (POMS) and the Impact of Event Scale—Revised (IES-R). POMS is a 65-item self-rating scale measuring mood disturbance [31]. The POMS is a widely used, reliable measure of emotional distress that has been validated in cancer patients and demonstrated to be reliable for Japanese people [32]. The total mood disturbance (TMD) scale of the POMS, which is the sum of the emotional state subscales, was used. In addition, we measured the impact of being notified of the recurrence of the breast cancer on the patients by the IES-R, which is a 22-item self-rating questionnaire designed to assess the severity of three posttraumatic stress symptoms of intrusion, avoidance, and hyperarousal, and the Japanese version of the IES-R has been shown to be reliable [33,34]. These measures were completed at *T1*, *T2* and *T3*.

Quality of life

Patients' QOL was assessed using the European Organization for the Research and Treatment of Cancer (EORTC) QLQ-C30 and QLQ-BR23. The QLQ-C30 is a 30-item self-report questionnaire covering functional and symptom-related aspects of QOL for cancer patients [35]. The QLQ-BR23 is the breast cancer module, and consists of 23 questions assessing disease symptoms, adverse treatment events, body image, sexuality and future perspective [36]. The validity and reliability of the Japanese version of the EORTC QLQ-C30 and QLQ-BR23 have been confirmed [37,38]. These QOL measures were also completed at *T1*, *T2* and *T3*.

Statistical analysis

To test the preliminary usefulness of the intervention program, the McNemar test was conducted to investigate differences in the proportions of diagnosable psychiatric disorders between *T1* and *T2* and between *T1* and *T3*. As an additional analysis, changes of psychological distress and QOL assessed by POMS, IES-R, QLQ-C30 and QLQ-BR23 among the subjects with clinical psychiatric diagnosis at the baseline were investigated by repeated measures one-way ANOVAs because the important aims of this intervention program involve the early detection of those patients with clinical psychiatric disorders and to provide appropriate psychosocial intervention for them. When a statistical significance was observed, multiple comparisons were conducted using the Dunnett method to clarify which of the psychological distress at *T2* or *T3* differed from the psychological distress at *T1*.

All reported *P*-values are two-tailed. All statistical procedures were conducted using SPSS 12.0J software for Windows (SPSS Inc., 2003).

Results

Characteristics of the participants

During the study entry period, a total of 72 cases of recurrent breast cancer were newly diagnosed; 13 patients were found to be ineligible for enrollment in the study (receiving psychiatric consultation, $n = 4$; no plan of the follow-up, $n = 4$; too ill, $n = 2$; others, $n = 3$) among the remaining 59 eligible patients, 9 patients refused to participate in the study; thus, 50 patients ultimately participated in the study. The characteristics of the subjects are shown in Table 2. Regarding clinical psychiatric disorders, a total of 11 subjects (22%) met any psychiatric diagnoses ('Cases'). Regarding adjustment disorders, four subjects suffered from depressive mood, one from anxious mood, and five from both depressive and anxious moods.

Among the 50 subjects who participated in the study, 43 and 39 subjects completed the *T2* and *T3* follow-up, respectively. The reasons for drop out

Table 2. Baseline characteristics of the patients who participated in the study ($n = 50$)

		No. of patients (%)
Age (mean ± SD, range)		53 ± 10y, 32–72y
Education	> = 12y	40 (80)
Marital status	Married	42 (84)
Household size	Living alone	2 (4)
Children	Presence	43 (86)
Recurrence[a]	Bone	18 (36)
	Lymph node	15 (30)
	Lung	13 (26)
	Liver	10 (20)
	Skin	8 (16)
Current treatment[a]	Chemotherapy	31 (62)
	Hormone	24 (48)
	Radiation	1 (2)
Performance Status[b]	0	40 (80)
	1	8 (16)
	2	2 (4)
Psychiatric diagnoses[c]		
	Adjustment disorders	10 (20)
	Major depression	1 (2)
	PTSD[d]	1 (2)

[a] Multiple choice.
[b] As defined by Eastern Cooperative Oncology Group criteria.
[c] One subject had both adjustment disorder and PTSD.
[d] Posttraumatic stress disorder.

($n = 7$) from the study between *T1* and *T2* were as follows: Refusal, $n = 3$; Died, $n = 2$; Too ill, $n = 1$; Transferred to other hospital, $n = 1$. The reasons for drop out ($n = 4$) from the study between *T2* and *T3* were as follows: Died, $n = 3$; Refusal, $n = 1$.

Findings regarding the intervention

All of the subjects with psychiatric diagnoses were screened as positive at one of any 3 screening procedures. Three of 11 'Cases' did not receive psychiatric intervention because they said that they did not need any intervention. Among the 'Cases', 2 participants continued to be followed-up by the psychiatry department after the intervention. Among all subjects, a total of 23 subjects received some form of intervention (Psychotherapy, $n = 23$ [Supportive psychotherapy, $n = 23$; progressive muscle relaxation, $n = 5$; crisis intervention, $n = 3$; psycho-education, $n = 2$]; and Pharmacotherapy, $n = 4$ [Benzodiazepines, $n = 3$; antidepressant, $n = 1$]). Contents of intervention provided to the patients differed quite extensively depending on the patient's problems and preferences. For example, some patients received only one interview session because their needs were satisfied or problems were resolved (most of these patients did not have any diagnosable psychiatric disorder) while some others experienced 15 interviews session (see the feasibility). Most of these interventions were arranged and provided for the subjects when they visited the hospital for regular follow-up, medical examination, and anticancer treatment.

Feasibility

The participation rate and adherence of the intervention program were 85% (50/59) and 86% (43/50), respectively. Among the participants who had some form of psychiatric diagnosis at *T1* ('Cases'), no one dropped out from the study. The number of the interview sessions, the amount of time used for individually tailored intervention by the psychiatry residents, and the amount of time consumed by the supervision were 105 times (mean 5; median 4; range 1–15), 5025 min (approximately 84 h, corresponding with 1.7 h per patient on average), and 2645 min (approximately 44 hours, corresponding with 0.9 hours per patient), respectively. Most of the participants found the intervention program convenient, but a couple of the participants commented that an opportunity of group psychotherapy or a patient group meeting as well as the individual psychotherapy would better satisfy a participant's needs.

Change in prevalence of mental disorders and in psychological distress and QOL

Among the subjects who completed the follow-up, the proportion of psychiatric diagnosis at *T2* and *T3* were 11.6% (adjustment disorders, 9.3%; major depression, 2.3%) and 7.7% (adjustment disorders, 7.7%), respectively. While the proportion of *T2* was not significantly different from that of *T1* ($p = 0.15$), the proportion of *T3* was significantly less than that of *T1* ($p = 0.005$). Given that all of the subjects who dropped out from the study developed clinical psychiatric disorders at *T2* or *T3* (worst case scenario), p-values of these comparison were 1.00 (*T2* vs *T1*) and 0.65 (*T3* vs *T1*), respectively. Interestingly, the 3 'Cases' at *T1* who did not receive intervention did not meet any psychiatric diagnosis both at *T2* and *T3*.

The change of psychological distress evaluated by POMS among the 11 'Cases' was borderline significant ($p = 0.08$) while the total score of the IES-R was significantly reduced ($p = 0.04$) (Table 3). A multiple comparison showed that the total score of the IES-R at *T1* was significantly reduced at *T3* ($T1 > T3$, $P = 0.02$). Most other measure including QOL did not change significantly while appetite loss was significantly improved. A multiple comparison showed that appetite loss at *T1* was significantly reduced at *T3* ($T1 > T3$, $P = 0.03$).

The measures regarding the psychological distress and QOL among the 39 completed subjects were not statistically significant (data not shown). In addition, those among the 23 patients who had received any kind of treatment were not statistically significant (data not shown).

Table 3. Longitudinal course of psychological distress in patients with clinical psychiatric diagnosis at baseline ('Cases'; $n = 11$)

Psychological Distress	T1 Mean (SD)	T2 Mean (SD)	T3 Mean (SD)	*F*	*p*	Multiple comparison
Total mood disturbance (POMS)	45.9 (25.2)	40.8 (27.0)	30.1 (26.4)	2.88	0.08	—
Total score (IES-R)	24.7 (10.6)	19.8 (11.3)	17.3 (10.8)	3.93	0.04	T1 > T3
QLQ C-30						—
Global Health Status	60.6 (22.4)	63.6 (24.5)	56.1 (22.1)	0.79	0.43	—
Physical functioning	80.0 (16.6)	84.2 (14.1)	82.4 (14.7)	0.55	0.59	—
Role functioning	81.8 (21.7)	80.3 (20.8)	83.3 (16.7)	0.10	0.90	—
Emotional functioning	76.5 (12.8)	72.7 (24.5)	82.6 (16.0)	0.83	0.45	—
Cognitive functioning	71.2 (28.0)	75.8 (25.1)	78.8 (21.2)	0.19	0.18	—
Social functioning	83.3 (19.7)	78.8 (21.2)	84.9 (20.4)	0.80	0.46	—
Fatigue	40.4 (14.3)	34.3 (18.9)	38.4 (20.7)	0.70	0.51	—
Nausea and vomiting	21.2 (29.9)	7.6 (17.3)	4.6 (10.8)	1.93	0.17	—
Pain	21.2 (19.8)	18.2 (15.7)	27.3 (27.2)	1.31	0.29	—
Dyspnoea	27.3 (29.1)	18.2 (22.9)	24.2 (26.2)	0.76	0.48	—
Insomnia	12.1 (22.5)	15.2 (17.4)	21.2 (22.5)	0.86	0.44	—
Appetite loss	30.3 (23.4)	12.1 (22.5)	9.1 (21.6)	4.30	0.03	T1 > T3
Constipation	21.2 (22.5)	21.2 (27.0)	6.1 (20.1)	2.34	0.12	—
Diarrhoea	18.2 (22.9)	6.1 (13.5)	18.2 (31.1)	1.16	0.33	—
Financial difficulties	27.3 (32.7)	30.3 (37.9)	24.2 (36.8)	0.41	0.67	—
QLQ BR-23[a]						
Body image	44.7 (26.4)	59.9 (28.3)	59.1 (24.6)	2.29	0.13	—
Future perspective	24.2 (26.2)	39.4 (29.1)	24.2 (26.2)	0.76	0.48	—
Systematic therapy side effects	29.9 (18.9)	27.3 (21.0)	21.7 (17.6)	0.72	0.50	—
Breast symptoms	22.7 (22.1)	22.7 (20.4)	21.2 (16.8)	0.11	0.90	—
Arm symptoms	26.3 (20.7)	24.2 (26.2)	23.2 (24.1)	0.12	0.89	—

[a] Sexual functioning, Sexual enjoyment, and Upset by hair loss were deleted because only a small proportion of the subjects responded to these subscales (Responses, sexual functioning: $n = 2$, sexual enjoyment: $n = 2$, upset by hair loss; $n = 5$).

Discussion

This is the first study to investigate the feasibility of a novel psychosocial intervention program designed to overcome issues of under-recognition and under-treatment of clinically manifested psychological distress often experienced by cancer patients. In addition, for the first time the present study focused on the breast cancer patients after their first recurrence as subjects because of their potentially high and prevalent psychological distress.

In this study, more than 80% of the eligible subjects accepted and participated in the intervention program and also more than 80% of the enrolled participants completed the program. Regarding the participation rate of psychosocial intervention, one previous Japanese study investigating participation in psychosocial group intervention indicated that only 50 (33%) of 151 primary breast cancer patients after surgery actually participated in the group psychotherapy intervention and they suggested the level of participation is lower than in Western countries [39]. The authors suggest several possibilities for the lower level of Japanese psychosocial intervention program and one of them may be due to cross-cultural difference, namely that discussing personal problems with someone outside of the family may bring a deep sense of shame in Asian countries [39]. While we should understand that the difference rate of participation did not result from only the difference of intervention itself (e.g. difference of the subject, study design, etc.), nevertheless these findings suggest that the program, especially the individually tailored style, seems to be highly feasible for recurrent breast cancer patients in Japan. In addition, the adherence rate was also high, which also suggests the high clinical feasibility of the program. These findings suggest that the current modality of the intervention program is feasible and accessible for cancer patients.

The psychiatrists at residency level consumed approximately 84 hours and the faculty psychiatrists did 44 hours for the program, which means that the time taken covered and cared for 50 consecutive breast cancer patients after their recurrence. Concerning appropriate early detection of psychological distress, the brief and repeated screening procedure functioned well as all of the 'Cases' were screened as positive. Although it is not simple to judge cost effectiveness of this kind of intervention, the current findings about the amount of time consumed, including the actual treatment after the brief screening and the supervision for this study, suggest the cost effectiveness of the program.

While the current study design does not allow us to address the precise usefulness of the intervention program for psychological distress experienced by cancer patients, several informative findings were obtained. Among them all, the fact that the proportion of clinical psychiatric diagnoses, including mainly depressive disorders, and psychological distress measured by self-reported questionnaires, such as POMS and IES-R can be decreased in the longitudinal course may be promising because our previous findings and the meta-analytical study suggest that psychological distress, especially depression experienced by cancer patients does not improve spontaneously during at least 6 months or one year after cancer diagnosis [4,40,41]. In addition, when target symptoms focused on adjustment disorders and major depression, the previous study failed to show any effectiveness of an antidepressant treatment and there has been no other proven strategy for alleviating these common psychiatric disorders among cancer patients [42]. This multifaceted intervention program may be one promising approach to manage common psychiatric disorders experienced by cancer patients and the current findings warrant a further well-designed study, including randomized controlled clinical trials. On the other hand, most of the quality of life measures were not significantly changed in the present study. Because the current intervention program did not primarily aim at improving the quality of life itself, the findings obtained may not be unexpected. However, when the primary aim is the improvement of the overall quality of life among cancer patients, this multifaceted psychosocial intervention program may not be enough to accomplish the purpose. In that case, additional intervention, such as more powerful and variable intervention components provided by multidisciplinary medical staff and/or additional resources may be needed. It may be important to note that the interventions might help some probable cases or cases at risk other than 'Cases'. Because our previous study indicated that intensive management of a sub-clinical level of anxiety and depression can contribute to the prevention of subsequent clinically manifested psychological distress among advanced cancer patients [43], this procedure may play a role of prevention for developing clinical psychiatric disorders. These findings also warrant further well-designed controlled clinical trials.

The present study has several limitations. First, the small sample size may be one problem and we may have missed some substantive changes (type II error). Second, since the study was conducted in one institution, institutional bias may be another problem and generalizability of the current findings may thus be limited. Third, because the intervention program had a multi-component structure, we cannot know the specific role and/or effectiveness of each part of the intervention. Fourth, because the study lacked a controlled arm, we cannot precisely discern the actual effectiveness of the program from the regression towards the mean, natural course or placebo effect. Finally, because this study focused on patients with recurrent breast cancer, the results may not be applicable to patients with cancer in other foci.

Despite the several limitations of the study, the current findings suggest that this novel intervention program which involves screening for psychological distress and sequentially provided actual psychosocial support may be feasible and one promising intervention strategy for reducing clinical psychological distress experienced by cancer patients and further studies to investigate the effectiveness are warranted.

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Burnout and psychiatric morbidity among physicians engaged in end-of-life care for cancer patients: A cross-sectional nationwide survey in Japan

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Abstract

Purpose: **To determine the prevalence of burnout and psychiatric morbidity among physicians engaged in end-of-life care for cancer patients in Japan and to explore associated factors related to end-of-life care.**

Methods: **Questionnaires were mailed to 1436 Japanese clinical oncologists and palliative care physicians with a request to complete the Maslach Burnout Inventory (MBI), the General Health Questionnaire (GHQ-12), and to report on individual factors, including confidence in patient care. High levels of burnout and psychiatric morbidity were identified using cut-off scores of the MBI and GHQ-12.**

Results: **A total of 697 physicians returned the questionnaires (response rate, 49.6%). Twenty-two percent of the respondents had a high level of emotional exhaustion, 11% had a high level of depersonalization, 62% had a low level of personal accomplishment, and 20% had psychiatric morbidity. Clinical oncologists showed a significantly higher psychiatric morbidity than palliative care physicians. Confidence in having sufficient time to communicate with patients was significantly associated with all the burnout subscales.**

Conclusions: **A low level of personal accomplishment was relatively high among Japanese physicians compared with previous studies. Insufficient confidence in the psychological care of patients was associated with physician burnout rather than involvement in end-of-life care.**

Keywords: burnout; psychiatric morbidity; physician; end-of-life care; Japan

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Introduction

Burnout is a psychological state resulting from a prolonged period of high stress levels. Unlike a major depressive disorder, burnout is a distinct work-related stress syndrome and is often defined by the three components of emotional exhaustion, depersonalization, and diminished personal accomplishment [1,2]. Burnout occurs most frequently in those whose work requires an intensive involvement with people, including medical staff such as physicians.

Several studies have suggested that physicians engaged in end-of-life care are more likely to burnout because they may experience multiple stressors including a sense of failure or frustration when a patient's illness progresses [3,4], feelings of powerlessness against illness and its associated losses [3], role conflicts and ambiguity [5], and the failure to enable a good death [6]. According to the first report on burnout conducted via a random survey of 1000 American oncologists in 1991 [4], 56% of the 598 respondents reported having experienced burnout in their professional lives. To our knowledge, a few studies [7–13], including one nationwide study in the UK [12], have determined the prevalence of burnout among oncologists using the Maslach Burnout Inventory (MBI) [1], a standardized measure of burnout. According to these studies [7–13], oncologists or palliative care physicians were not at any greater risk of burnout, compared with other physicians, but approximately one third of them reported high levels of burnout and psychiatric morbidity. On the other hand, a nationwide study on the prevalence of burnout and psychiatric morbidity has never been conducted in Japan either among physicians or oncologists.

Physician burnout is a serious issue because of its crucial consequences for patient care: For example, depersonalization is associated with suboptimal patient care [14] and decision making in end-of-life care, such as physician-assisted suicide or euthanasia [15,16]. Moreover, oncologists with higher levels of emotional exhaustion were more likely to choose a deep-sedation treatment option in a hypothetical scenario presented to them than those with lower levels of emotional exhaustion [17]. In addition, oncologists have reported that patient care such as being involved in emotional distress or physical suffering is often a source of job stress [18,13]. Nevertheless, end-of-life care has a two-sided nature: it can be stressful if done badly, but rewarding if done well [19–21,13]. As described above, end-of-life patient care is estimated to be closely related with oncologist burnout and psychiatric morbidity, however, little is known about the association between them. Therefore, to develop strategies to alleviate physician burnout and psychiatric morbidity, we attempted in the present study to investigate physicians' involvement and confidence in patient care as factors associated with the prevalence of physician burnout and psychiatric morbidity.

The purpose of this study was to determine the prevalence of burnout and psychiatric morbidity among physicians engaged in end-of-life care for cancer patients in Japan and to explore associated factors related to end-of-life care.

Methods

Respondents and Procedure

This is a secondary analysis of our previous study [17] on the practices and attitudes of Japanese physicians concerning terminal sedation. We enrolled physicians who were clinical oncologists or palliative care physicians such as those who were engaged in end-of-life care for cancer patients in Japan. One source was a list of physicians from the Japanese Association of Clinical Cancer Centers, as a sample of clinical oncologists. The other source was a list of physicians from the Japanese Association of Hospice and Palliative Care Units, as a sample of palliative care physicians. Twenty-six institutions from a total of 27 hospitals that belonged to the Japanese Association of Clinical Cancer Centers and the Japanese Association of Hospice and Palliative Care Units approved the study. In February 2000, we mailed the questionnaire to 1436 eligible physicians. The inclusion criteria were: (1) being an attending physician whose specialty was primarily responsible for the care of terminally ill cancer patients, (2) having actual experience in oncology or palliative care, and (3) being unaffiliated with this study project.

Questionnaire

Burnout: The Maslach Burnout Inventory (MBI) [1] is a self-administered questionnaire consisting of 22 items using a 7-point Likert-type scale (possible range, 0–6) that measures the three subscales of burnout syndrome: emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items). A high levels of burnout was defined as a high level of emotional exhaustion (upper third, score of 27 or higher), a high level of depersonalization (upper third, score of 10 or higher), and a low level of personal accomplishment (lower third, score of 33 or lower) based on normative data from a sample of American health professionals (physicians and nurses) [1]. We used these cut-off scores to compare the prevalence of burnout in this study with that of previous studies in oncologists [7–13]. The psychometric properties of the Japanese version of the MBI are controversial [22] and because of this we performed reliability and validity testing on our study data ourselves. The reliability of the Japanese version of the MBI [23] was evaluated by calculating the Cronbach's alpha coefficients: emotional exhaustion, depersonalization, and personal accomplishment were 0.87, 0.68, and 0.88, respectively. Discriminant validity was evaluated by calculating the Pearson's correlations coefficients of the inter-subscales of the MBI: emotional exhaustion and depersonalization ($r = 0.50$, $p < 0.01$), emotional exhaustion and personal accomplishment ($r = -0.04$, $p = 0.39$), and depersonalization and personal accomplishment ($r = -0.17$, $p < 0.01$). Convergent validity was evaluated by calculating the Pearson's correlations coefficients of the total score of GHQ-12 and emotional exhaustion ($r = 0.44$, $p < 0.01$), depersonalization ($r = 0.28$, $p < 0.01$), and personal accomplishment ($r = -0.18$, $p < 0.01$). We considered these results were satisfactory and allowed the MBI results to be included in further analyses.

Psychiatric morbidity: The General Health Questionnaire 12-item version (GHQ-12) [24] is a self-administered questionnaire designed to screen for non-psychotic psychiatric morbidity, it is well validated including the Japanese version [25–27] and has been widely used in samples of healthcare professionals. It measures 12 symptoms of psychiatric morbidity (e.g. depression, loss of confidence, sleep disturbance). Each item is scored as 0 (less or no more than usual) or 1 (rather or much more than usual), giving a maximum total score of 12. Scores above a threshold of 4 or more are regarded as indicating psychiatric morbidity. This approach has been recommended by the developer of this scale [28] and has been shown to be applicable to the Japanese version [29]. We used it to compare the prevalence of psychiatric morbidity in this study with that reported in previous studies for oncologists [8–13].

Individual factors: We included physician characteristics and other individual factors in the questionnaire (available from the authors) that was developed for our previous study [17] to identify physicians' attitudes toward terminal sedation for cancer patients: the questionnaire was developed after a systematic literature review and discussions by an expert panel. Strength of religious belief was assessed by 3 items using a 5-point Likert-type scale (possible range, 1 to 5—with a higher score indicating greater strength). Involvement in end-of-life care during the past year was assessed by 3 items using a 4-point Likert-type scale (possible range, 1 to 4—with a higher score indicating greater involvement) Confidence in the physical or psychological care of patients were assessed by 5 items each using a 5-point Likert-type scale (possible range, 1 to 5—with a higher score indicating greater confidence).

Statistical Analysis

We first calculated the Cronbach's alpha coefficients for the subscales: strength of religious belief (0.89), involvement in end-of-life care (0.88), confidence in the physical care of patients (0.77), and confidence in the psychological care of patients (0.75). Because of its excellent internal consistency, we used these as a single subscale to compare physician characteristics between two practice settings (clinical oncologists versus palliative care physicians). To compare the prevalence of burnout and psychiatric morbidity between two practice settings, we performed chi-square tests. To examine the association between high levels of burnout and psychiatric morbidity, high levels of burnout were entered as independent variables into a multivariate logistic regression analysis. To explore the association with total scores of MBI and GHQ-12, all individual factors were entered as independent variables into a multivariate linear regression analysis using forced entry.

In all statistical evaluations, p values of 0.05 or less were considered significant; all reported p values were two-tailed. SPSS ver.12.0J statistical software for Windows (SPSS Japan Institute Inc, Tokyo, Japan) was used to perform all statistical analyses.

Results

Physician characteristics

Of the 1436 physicians to whom questionnaires were mailed, 550 physicians responded within 1 month and 179 responded after a reminder. Thirty-two responses did not meet the eligibility criteria, so 697 responses were finally analyzed (49.6% effective response rate, 697 of 1404). The responses were obtained from 560 (43%) of the 1306 physicians working at medical centers for cancer and adult disease and from 87 (67%) of the 130 physicians working at hospices or palliative care units. The data on 50 missing values indicated the data on physicians whose practice settings were unknown. The physician characteristics are summarized in Table 1. The respondents were 28–69 years of age (mean ± S.D., 45 ± 8.2), with 0.5–40 years of oncology experience (mean ± S.D., 16 ± 8.1). When the two practice settings were compared, the clinical oncologists had a higher proportion of male physicians (95% versus 87%, $p<0.01$), more years of oncology experience (mean ± S.D., 16 ± 7.9 versus 12 ± 7.6, $p<0.01$), less religious beliefs (mean ± S.D., 2.8 ± 0.9 versus 3.6 ± 1.0, $p<0.01$), less involvement in end-of-life care (mean ± S.D., 1.4 ± 0.4 versus 3.3 ± 0.9, $p<0.01$), less confidence in the physical care of patients (mean ± S.D., 3.0 ± 0.7 versus 3.5 ± 0.8, $p<0.01$), and less confidence in the psychological care of patients (mean ± S.D., 2.8 ± 0.6 versus 3.3 ± 0.7, $p<0.01$) than palliative care physicians.

Prevalence of burnout and psychiatric morbidity

The prevalence of burnout and psychiatric morbidity are shown in Table 2. Compared with American normative data, the proportions of physicians with high levels of emotional exhaustion (22 versus 33%) and depersonalization (11 versus 33%) were lower, while the proportion of physicians with a low level of personal accomplishment (62 versus 33%) was much higher. Psychiatric morbidity was 20% among all the physicians who responded. When we compared the data for the two practice settings, the clinical oncologists showed a significantly higher prevalence of psychiatric morbidity (21 versus 12%, $p = 0.05$), and a higher proportions of physicians with low levels of personal accomplishment (65 versus 53%, $p = 0.05$), compared with palliative care physicians.

We next examined the association between high levels of burnout and psychiatric morbidity, as shown in Table 3. A high level of emotional exhaustion ($p<0.01$) and a low level of personal accomplishment ($p<0.01$) were significantly associated with psychiatric morbidity. On the other hand, a high level of depersonalization ($p = 0.21$) was not significantly associated with psychiatric morbidity.

Factors associated with total scores of MBI and GHQ-12

The associations between individual factors and total scores of MBI and GHQ-12 , as determined using a multivariate linear regression analysis, are shown in Table 4. Among the items for physician confidence in the psychological care of patients, having sufficient time to communicate with patients

Table 1. Physician characteristics

	Total physicians ($n=697$) n (%)	Clinical oncologists ($n=560$) n (%)	Palliative care Physicians ($n=87$) n (%)
Age (years)			
Mean ± S.D.	45 ± 8.2	45 ± 8.2	43 ± 8.1
Range	28–69	28–68	31–69
Gender			
Male	639 (92)	531 (95)	76 (87)
Female	43 (6)	27 (5)	11 (13)
Religion			
None	521 (75)	441 (80)	49 (56)
Buddhism	108 (16)	87 (16)	9 (10)
Christianity	47 (7)	18 (3)	24 (28)
Others	13 (2)	3 (1)	4 (5)
Oncology experience (years)			
Mean ± S.D.	16 ± 8.1	16 ± 7.9	12 ± 7.6
Range	0.5–40	0.5–40	1.0–30
Involvement in end-of-life care during the past year			
Percentage of time used for palliative care			
<25	502 (72)	452 (81)	13 (15)
25–50	103 (15)	91 (16)	9 (10)
51–75	14 (2)	7 (1)	7 (8)
>75	67 (10)	9 (2)	58 (67)
Percentage of patients with an estimated survival time of less than 6 months			
<25	466 (67)	423 (76)	11 (13)
25–50	116 (17)	105 (19)	6 (7)
51–75	31 (4)	21 (4)	8 (9)
>75	70 (10)	8 (1)	61 (71)
Number of patients who died			
<5	222 (32)	196 (35)	3 (4)
5–25	374 (54)	344 (62)	16 (19)
26–50	42 (6)	16 (3)	24 (28)
>50	47 (7)	3 (1)	43 (50)

Note: We included 50 missing values among total physicians whose practice settings were unknown. S.D.: standard deviation.

Table 2. Prevalence of burnout and psychiatric morbidity

	Total physicians ($n=697$) (%)	Clinical oncologists ($n=560$) (%)	Palliative care physicians ($n=87$) (%)	$\chi 2$	P value
High level of Emotional Exhaustion	22	23	15	2.81	0.09
High level of Depersonalization	11	10	8	0.19	0.66
Low level of Personal Accomplishment	62	65	53	4.03	0.05
Psychiatric Morbidity	20	21	12	3.80	0.05

Note: We included 50 missing values among total physicians whose practice settings were unknown.

Table 3. Association between high levels of burnout and psychiatric morbidity: multivariate logistic regression analysis ($n=697$)

	Psychiatric morbidity		
	OR	95%CI	P value
High level of Emotional Exhaustion	4.41	2.70–7.20	<0.01
High level of Depersonalization	1.49	0.79–2.79	0.21
Low level of Personal Accomplishment	2.32	1.43–3.78	<0.01

OR: odds ratio; CI: confidence interval.

had the lowest score (mean ± S.D., 2.7 ± 1.0) and was significantly associated with all the total scores of MBI and GHQ-12: emotional exhaustion ($p<0.01$), depersonalization ($p<0.01$), personal accomplishment ($p<0.05$), and GHQ-12 ($p<0.01$). Though all the total adjusted R^2 values presented in Table 4 were very low, the best performing model is that for personal accomplishment (total adjusted $R^2=0.18$). Being male ($p<0.05$), being little involved in care for patients who died during the past year ($p<0.05$), having greater confidence in having adequate resources in physical care ($p<0.01$), having greater confidence in the assessment of patient anxiety and depression ($p<0.01$) and assessment of patient ability to make decisions ($p<0.05$) were significantly associated with higher personal accomplishment. Being a clinical oncologist was significantly associated with

Table 4. Factors associated with burnout and stress: multivariate linear regression analysis ($n = 697$)

	Emotional Exhaustion β	Depersonalization β	Personal Accomplishment β	GHQ-12 total scores β
Age (years)	−0.14	−0.11	−0.01	0.01
Gender[a]	0.05	0.00	−0.08[e]	0.04
Practice setting[b]	−0.13[e]	0.00	0.04	−0.13[e]
Strength of religious belief[c]	0.07	0.03	0.08	0.09[e]
Oncology experience (years)	0.08	0.03	0.07	−0.07
Involvement in End-of-life care during the past year[d]				
Percentage of time used for palliative care	0.01	−0.11	−0.02	−0.05
Percentage of patients with an estimated survival time of less than 6 months	0.02	−0.02	0.04	0.10
Number of patients who died	0.09	0.12	−0.13[e]	0.06
Confidence in the physical care of patients [c]				
Knowledge and skill (pain)	0.00	0.01	0.09	−0.04
Knowledge and skill (physical symptoms)	−0.03	−0.01	0.08	−0.01
Having trained (physical management)	0.03	−0.01	−0.03	−0.05
Having adequate resources	−0.03	0.09	0.16[f]	−0.03
Ability to make a prognosis	0.04	0.01	0.04	−0.04
Confidence in the psychological care of patients [c]				
Assessment (patient anxiety and depression)	−0.02	−0.02	0.17[f]	0.06
Knowledge and skill (psychotropics and psychotherapy)	0.06	−0.02	−0.06	−0.03
Having adequate resources	−0.06	−0.01	−0.10	0.01
Assessment (patient ability to make decisions)	−0.03	−0.05	0.13[e]	−0.09
Having sufficient time to communicate with patients	−0.16[f]	−0.23[f]	0.10[e]	−0.15[f]
Total R^2	0.07	0.09	0.21	0.09
Total adjusted R^2	0.04	0.07	0.18	0.06

β: standardized coefficient.

[a] Coded as: 0 = Male; 1 = Female.

[b] Coded as: 0 = Clinical Oncologists; 1 = Palliative Care Physicians.

[c] Possible range 1–5. Higher scores indicate greater strength or confidence.

[d] Possible range 1–4. Higher scores indicate greater involvement.

[e] Statistically significant variables ($p < 0.05$).

[f] Statistically significant variables ($p < 0.01$).

emotional exhaustion ($p < 0.05$) and total scores of GHQ-12 ($p < 0.05$).

Discussion

This is the first cross-sectional nationwide survey to determine the prevalence of burnout and psychiatric morbidity among physicians engaged in end-of-life care for cancer patients in Japan. Based on the results of present study, several findings emerged. First, 22% of the respondents had a high level of emotional exhaustion, 11% had a high level of depersonalization, 62% had a low level of personal accomplishment, and 20% had psychiatric morbidity. Second, clinical oncologists showed a significantly higher prevalence of psychiatric morbidity than palliative care physicians (21% versus 12%). Third, physician confidence in having sufficient time to communicate with patients was the factor most strongly associated with burnout.

Before proceeding any further with this Discussion section, we would like to present several critical limitations of this study to help the readers' understanding of our interpretation of the results. First, there was a sample bias. The response rate was relatively low (49.6%), so our prevalence may not be truly representative. Because the response rate of the clinical oncologists (43%) was lower than that of the palliative care physicians (67%) and the clinical oncologists showed a higher prevalence, physicians with high levels of burnout may not have responded to our study. Second, this study was a secondary analysis, so the number of factors included as independent variables was limited and neither the variance in burnout nor the relations among burnout, psychiatric morbidity and individual factors could be fully explained. Third, this was a cross-sectional study, so any causality between the prevalence and associated factors could not be determined.

In previous studies examining burnout in oncologists [7–13] and general physicians [30,31,14], high levels of emotional exhaustion (23–53% and 19–53%, respectively), high levels of depersonalization (13–31% and 22–64%, respectively), and low levels of personal accomplishment (21–48% and 13–31%, respectively) were observed. The present study showed a lower prevalence of depersonalization and a higher prevalence of diminished personal accomplishment, compared with the results of previous studies.

Depersonalization is associated with suboptimal patient care [14,16]; therefore, its lower level among the physicians in this study may not have a strong impact on end-of-life care.

On the other hand, the prevalence of a low level of personal accomplishment was relatively high and was significantly associated with psychiatric morbidity in the present study. Our results showing that personal accomplishment reduces the risk of psychiatric morbidity were consistent with a previous nationwide cross-sectional study [13,32]. The role of personal accomplishment is complicated: it is believed to prevent emotional exhaustion and depersonalization [1,33], whereas at a high level, it predicted higher levels of stress in a longitudinal study [34]. According to our results, improving physician confidence in assessing the mental state of patients (anxiety, depression, decision making ability) and having adequate resources for the physical care of patients may prevent a diminished sense of personal accomplishment. However, assessing a patient's mental state is difficult for oncologists because they receive little training on assessing psychological distress [35,36], so further education is needed. In addition, clarifying the physician role has been suggested as improving a diminished sense of personal accomplishment [5]. Therefore, we recommend that mental health professionals be consulted to provide education on psychological distress and to clarify the roles of physicians. In Japan, consultation teams for palliative care that include a palliative care specialist and a psychiatrist as essential members have started to receive expanded coverage under healthcare insurance since 2002; further studies are required to see whether this system will improve the confidence of physicians and prevent diminished personal accomplishment in Japan.

The overall psychiatric morbidity in this study was 20%. Since the prevalence of psychiatric morbidity in the general population of Japan is 16.5% [37], physicians engaged in end-of-life care for cancer patients were not considered to have a particularly high prevalence of psychiatric morbidity. Furthermore, psychiatric morbidity in this study was lower than that in previous studies on burnout in oncologists (25–32%) [9–13] and was nearly equal to recent data on UK doctors who were not oncologists (17–18%) [34] using the same GHQ-12 cut-off score. On the other hand, considering that the non-responders showed a higher psychiatric morbidity in a previous study [38], we might have underestimated the prevalence in the present study owing to our low response rate.

The palliative care physicians showed much lower levels of burnout and psychiatric morbidity than the clinical oncologists, and this result was similar to those of previous studies in which physicians and nurses working in hospices had lower stress levels than those working in oncology settings [39–41]. On the other hand, a previous study in the UK [12] showed nearly the same level of psychiatric morbidity in these two practice settings. As indicated in the limitations of this study, we could not investigate the job stress factors. Clinical oncologists reported feeling more overloaded and being involved with treatment toxicity, which factors were significantly associated with psychiatric morbidity [12]. Furthermore, situational factors such as workload, control, reward, community, fairness, and values have been said to be more importantly correlated with burnout than individual factors [2,42,43]. These job stress and situational factors may be more associated with the prevalence of burnout than involvement in end-of-life care, and these factors might be related to the Japanese palliative care system in 2000. In Japan, healthcare insurance has supported dissemination of specialized palliative care services since 1991, the number of palliative care units having dramatically increased from only 5 in 1991, to 123 in 2004 [44].

Burnout was associated with physician confidence, especially confidence in the psychological care of patients, rather than involvement in end-of-life care. Among the factors, confidence in having sufficient time to communicate with patients was the most strongly associated factor. To relieve physician burnout, ensuring sufficient time to communicate with patients or the development of clinical aids to help communication within a brief time are promising strategies. Communication skills training would not help physicians to have sufficient time but may help them acquire good communication skills, minimizing the need for more time. Physicians who felt insufficiently trained or who were not confident of their communication skills were more likely to have a low sense of personal accomplishment [7,12,13]. Despite the effectiveness of communication skills training in Western countries [45,46], our preliminary study showed that while oncologists became more confident of their communication skills, their level of emotional exhaustion also increased after training [47]; further studies on communication skills training are needed in Japan.

In conclusion, a low level of personal accomplishment was relatively high among Japanese physicians compared with previous studies. Insufficient confidence in the psychological care of patients was associated with physician burnout rather than involvement in end-of-life care.

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