

Review Article: Palliative Care

Importance of Rehabilitation in Cancer Treatment and Palliative Medicine

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Although rehabilitation for cancer patients is being practiced in clinical settings, it has not been very well recognized in cancer care. However, interest has been turning to cancer rehabilitation in recent years in association with advances in palliative care and the increasing numbers of patients who survive for long periods, while enduring symptoms caused by cancer or adverse effects associated with treatment. The fact that cancer patient rehabilitation fees were newly established in the 2010 revision of the Japanese medical service fees has propelled interest in this topic. Rehabilitation can be applied throughout the entire phase from the time of diagnosis to the terminal stage, and it is an approach that can involve psychosocial aspects as well as physical aspects. Although its effectiveness has not been adequately demonstrated, especially in the area of palliative medicine, rehabilitation for cancer patients is expected to be an important means of supporting the hopes of patients and their families, and attempting to maintain and improve patients' quality of life.

Key words: ADL – QOL – rehabilitation

INTRODUCTION

Advances in treatment techniques have been associated with increases in cancer patient survival rates, and the numbers of long-term cancer survivors have been rising. Nevertheless, many cancer patients experience impairments in everyday living as a result of adverse effects or sequelae associated with treatment or as they reach the terminal stage of their disease. Rehabilitation may play a role as one approach to maintaining and improving the quality of life (QOL) of such cancer patients.

Approaches to cancer patient rehabilitation that take both psychosocial aspects and physical aspects into consideration are important, based on 'adequately understanding the strong connections between the patients' physical, psychological and social aspects (1)'. Thus, the involvement of representatives of a variety of occupations, including psychologists, clinical psychologists and nurses, and not just such rehabilitation specialists such as physical therapists, occupational therapists or speech therapists is important for the

rehabilitation of cancer patients; thus, a multidisciplinary team care is required. However, not many reports on the rehabilitation of cancer patients have appeared since the comprehensive research reports on the need for rehabilitation were first published by Lehmann et al. (2) and by Harvey et al. (3) in 1982. One reason for this lack of research is that as rehabilitation was originally performed mainly for the purpose of improving and raising the level of activities of daily living (ADL), there has been little demand from either healthcare providers or patients for proactive intervention in cancer care with regard to rehabilitation, which has had a strong image of being intended to improve ADL and return patients to their former lives. In recent years, however, interest has turned to the association between cancer rehabilitation and the increasing numbers of patients who survive for long periods, while enduring symptoms caused by cancer or the adverse effects associated with treatment or the association with advances in palliative care.

Dietz (4) has classified cancer rehabilitation according to cancer patients' physical and individual needs into four

categories: preventive, restorative, supportive and palliative (Table 1). Based on these categories, the effectiveness of rehabilitation has been reported for each stage of cancer treatment, from physical rehabilitation during the acute stage of treatment (5–8) to the rehabilitation of physical aspects and psychological aspects during the terminal stage (9–12), but it remains difficult to claim that cancer rehabilitation is generally acknowledged adequately. In view of these situations, Dietz (13) has pointed out that it will be necessary to focus on a concept of care that asks, 'What is the best support that can be provided to enable cancer patients to readapt to society', and DeLisa (14) has stated that 'now that cancer patients' survival rate has increased, attention should be turned to maintaining cancer patients' QOL and prolonging it'. In other words, a shift to an approach that aims to maintain the QOL of patients at a high level and not just improve their function and prognosis has become necessary.

On the other hand, the recognition or practice of rehabilitation in the cancer area is not adequate. In this article, I will first outline the rehabilitation that is performed during each phase and the points to bear in mind while performing such rehabilitation. Next, I will report on rehabilitation needs, then on the current state of affairs with regard to cancer rehabilitation in Japan, including the results of our own research. Finally, I will describe the current problems and perspectives regarding rehabilitation for cancer patients.

REHABILITATION DURING EACH PHASE

The areas in which rehabilitation can be applied during the various phases of disease have been summarized in a table (Table 2) (15). Below, I have summarized the kinds of rehabilitation that are performed during each phase as well as some points to bear in mind.

REHABILITATION BEFORE AND AFTER SURGICAL TREATMENT

First, promoting early postoperative ambulation and improving physical functions so that patients can return as closely as possible to their lives before surgery is a goal common to rehabilitation for all diseases. During this phase, many patients have just started treatment, and rehabilitation should be conducted with sufficient consideration of the fact that many patients have a tendency to become psychologically depressed during this phase as a result of their 'cancer' diagnosis or changes in their body image as a result of surgery. When performing rehabilitation, it is important to first determine how a patient's disease has been explained to him or her and how the patient perceives his or her disease. In addition, determining what issues patients and their families are concerned about at present and with regard to their future makes it possible to provide them with information to allay their concerns.

Now that the length of hospital stays in Japan has been shortened, the time available to conduct inpatient rehabilitation has also been limited. Thus, some problems may arise, while the patients are going about their daily lives after their discharge from hospital that were not recognized, while the patients were hospitalized. Patients often spend the next several years being concerned about recurrence, and another role of rehabilitation is to provide patients with a place to go for consultation when they have concerns after being discharged.

REHABILITATION DURING CHEMOTHERAPY

Physical strength tends to diminish during chemotherapy as a result of the adverse effects, such as nausea/vomiting, myelosuppression or peripheral neuropathies. Rehabilitation aims to encourage ambulation consistent with the patient's condition even during chemotherapy and to prevent disuse

Table 1. Classification of cancer rehabilitation

(1) Preventive rehabilitation

Starts soon after cancer has been diagnosed. Performed before or immediately after surgery, radiotherapy or chemotherapy. No impairments of function present yet. Preventing impairments is the purpose of the rehabilitation measures

(2) Restorative rehabilitation

Aims for the maximal recovery of function in patients with remaining function and ability Attempts to achieve maximal functional recovery in patients who have impairments of function and decreased abilities

(3) Supportive rehabilitation

Increases self-care ability and mobility using methods that are effective (e.g. guidance with regard to self-help devices, self-care and more skillful ways of doing things) for patients whose cancer has been growing and whose impairments of function and declining abilities have been progressing. Also includes preventing disuse, such as contractures, muscle atrophy, loss of muscle strength and decubitus

(4) Palliative rehabilitation

Enables patients in the terminal stage to lead a high QOL physically, psychologically and socially, while respecting their wishes. Designed to relieve symptoms, such as pain, dyspnea and edema and to prevent contractures and decubitus using heat, low-frequency therapy, positioning, breathing assistance, relaxation or the use of assistive devices

Quoted from ref. no. 4.

Table 2. Possible contributions of rehabilitation in the various phases of the disease

Phase of disease	Possible contributions of rehabilitation
I. Treatment	<ol style="list-style-type: none"> 1. Evaluating the effects of treatments on function 2. Preserving and restoring function through exercise, edema management and increased activity 3. Controlling pain using heat, cold and transcutaneous electrical nerve stimulation
II. Posttreatment	<ol style="list-style-type: none"> 1. Developing and supporting a program to help restore daily routines and promote a healthy life-style 2. Educating the patient about what to self-monitor 3. Supervising a maintenance program of exercise, edema management, and mobility management and mobility
III. Recurrence	<ol style="list-style-type: none"> 1. Educating the patient about the impact of recurrence and its effect on function 2. Educating the patient about what to monitor in the context of the new clinical status 3. Supervising the patient in an appropriate program to restore function or prevent its decline
IV. End of life	<ol style="list-style-type: none"> 1. Educating patient/family regarding mobility training, good body mechanics and assistive devices 2. Pain management (non-pharmacologic treatment) and symptom control 3. Maintaining independence and quality of life

Quoted from ref. no. 15.

syndrome and maintain physical and muscle strength by performing mild exercise therapy and sedentary occupational therapy. Failure to resume ambulation during treatment and the development of severe disuse syndrome often occur, especially among infants and the elderly. It is important for the rehabilitation staff to visit the patient regularly and to make movement a habit, even if only a little at a time, by incorporating activities that the patients enjoy.

Moreover, many patients today receive outpatient chemotherapy as well as inpatient chemotherapy, and treatment is expected to shift even further toward an outpatient setting. Patients undergoing outpatient chemotherapy continue their daily lives at home while receiving treatment. Continuing to work and keep house, while experiencing the adverse effects of treatment often imposes a major burden on patients. The rehabilitation staff should determine which activities a patient considers to be important in his or her life so that the patient can recognize their own symptoms and acquire his or her desired ADL, with the rehabilitation staff proposing activities that will help the patient to do what he or she wants to do. Giving the patients the sense that they are able to control their own activities in this way is an important link to preserving their self-confidence.

REHABILITATION DURING THE RECURRENCE AND ADVANCED STAGES

Patients with recurrent and advanced cancer experience a variety of symptoms associated with cancer progression. Because patients also sometimes develop disuse syndrome and their general condition rapidly deteriorates when they are deprived of opportunities to move as a result of general malaise and feeling tired, it is desirable to maintain a minimum of self-care in their everyday lives, i.e. feeding, elimination and bathing, whenever possible.

As the disease progresses, patients are compelled to cope with physical symptoms that develop one after another. Faced with these circumstances, caution is required when dealing with patients during this phase, when they are also often confronted with situations that may make the cure of their disease difficult. Because many patients are trying to concentrate on treatment during the phase, with the aim of a cure, the improvement of physical functions is often ranked first among patient's hopes with regard to rehabilitation. However, when they approach the transition period, it becomes necessary to consider what it is that they really want to do in anticipation of the future deterioration of their physical condition. It takes time for this transition to occur, and the feelings of patients and their families may change markedly. It is important to recognize that fluctuating feelings are natural, and it may be necessary to listen closely to the patients and their families from time to time and await their choices. In terms of the goals of rehabilitation, the rehabilitation staff should interact with the patients and their families in a manner that will enable them to accept reality and to identify their goals. The rehabilitation approach should also take into consideration the environment surrounding the patient, including the patients' own remaining functional activities as well as the human support that is available, the utilization of healthcare devices, and the utilization of social resources, so that patients are able to achieve whatever they hope to do.

REHABILITATION DURING THE TERMINAL STAGE

Patients' and their families' needs are most important during the terminal stage. When patients express strong wishes, such as 'I want to go to the bathroom' and 'I want to walk', up until the very end, it is sometimes possible to satisfy their wishes by teaching family members how to assist them,

making adjustments to the environment around the bed and around the bathroom, and by making walking aids available, even when there is no prospect for improvement in the patients' functions. Communication with patients and their families also becomes important during this phase, and when communication becomes difficult for patients, providing support designed to achieve understanding among patients, their families and the staff by introducing communication aids or assisting with conversation is another important role of rehabilitation.

Moreover, even when a patient's general condition deteriorates, it is possible to perform rehabilitation until the very end by going to the patient's bedside and touching the patient's body through palliative interventions, such as range of motion (ROM) exercises for the patients' limbs, massage for swollen lower limbs or breathing assistance.

As stated earlier, rehabilitation can be applied throughout the entire phase of disease from the time of diagnosis until the terminal stage, and involvement with psychosocial aspects not just physical aspects can be included as one possible approach.

REHABILITATION NEEDS

Several studies have already been conducted regarding the needs of cancer patients in relation to rehabilitation. A survey of the rehabilitation needs during the initial stage of treatment in the USA revealed that 87% of the patients had rehabilitation needs, and recovery from deconditioning; improvement of impaired mobility, restricted ROM and impaired ADL, and a need for distraction were cited as rehabilitation needed (16). In the Netherlands, it was reported that 26% of the participants desired specialized support to strengthen physical functions, to deal with their physical and social situation, and to find new goals in their lives (17). In addition, broader needs were cited in relation to the lives of those living at home, including with respect to financial matters, the performance of housework and means of transportation (18). However, the results of interventions to meet such needs have never been elucidated.

Moreover, in a questionnaire survey of the families of patients who had died in a palliative care unit in Japan, pain, impaired mobility and ADL impairments were mentioned as problems during the hospital stay, and it was shown that even during the terminal stage 85% of the patients wanted to be able to walk or to move about in a wheelchair, and interventions with regard to these aspects were said to be effective and satisfactory (12). However, what patients themselves feel is effective and satisfactory has never been elucidated in proxy evaluations by bereaved families, and there have been no reports of investigations of the families' degree of satisfaction or changes in their emotions.

We therefore provided rehabilitation to 23 inpatients of a cancer hospital for 2 weeks and conducted a survey of the patients and their families to determine what changed before

and after the rehabilitation (19). The performance status (PS) of the patients was 3 in 12 cases (52.2%) and 4 in 8 cases (34.8%); thus, 87% of the patients had a PS of 3–4. The rehabilitation that was performed consisted mainly of standing training, gait training and upper limb function training. The results of the rehabilitation interventions included changes in several physical aspects and considerable changes in the emotional states of both the patients and their families (evaluated using a face scale). Thus, psychological suffering was alleviated by the rehabilitation efforts. When the patients and their families were surveyed separately with regard to how they felt about the effectiveness of the rehabilitation, the patients mentioned 'a feeling of relief as a result of receiving guidance' and 'psychological support', while the families mentioned content related to the impact of the rehabilitation on the psychological aspects of the patients, such as 'effective in terms of mental aspects', 'fun' and 'restoration of self-confidence'. Based on the earlier-mentioned findings, rehabilitation for cancer patients may be effective not only in terms of physical aspects, but also in terms of psychological aspects.

CURRENT STATUS OF CANCER REHABILITATION IN JAPAN

In March 2006, we conducted a survey on the current status of cancer rehabilitation by mailing questionnaires to 1693 nationwide healthcare institutions certified as general hospitals, long-term care hospitals or multi-unit hospitals according to evaluations performed by the Japan Council for Quality Health Care in December 2005. The survey asked whether the institutions had performed rehabilitation for cancer patients in 2005, and the institutions that had performed cancer rehabilitation were surveyed as to the nature of the rehabilitation that was performed, the stage of the cancer patients' disease, the type of cancer, the number of patients who received rehabilitation, the occupations of the personnel who provided the rehabilitation and whether the institution had a specialized cancer rehabilitation facility or equipment. In addition, the institutions where cancer rehabilitation was not being performed were asked about whether there was a need for cancer rehabilitation, the settings in which they felt that there was a need, the reason why rehabilitation was not being performed, and whether there were any plans to perform rehabilitation in the future (20).

Valid replies were received from 1045 (62.0%) of the healthcare institutions nationwide, and 864 (82.7%) of them were institutions that had performed rehabilitation for cancer patients in 2005. However, we could not clarify the exact number of cancer patients who received rehabilitation. In terms of the nature of the rehabilitation, large percentages replied that they had performed rehabilitation for physical functions: gait training in 92.1%, muscle strength training in 88.9% and joint ROM training in 85.6%. A large percentage of the institutions (73.6%) also provided training with regard

to ADL. Small percentages of the institutions performed specialized rehabilitation for lymphedema care, postoperative head and neck cancer care, colostomy care after colorectal cancer surgery, urostomy care after surgery for urinary tract cancer or rehabilitation that focused on mental and psychological aspects. Of the 181 institutions that had not performed rehabilitation for cancer patients, 171 (94.5%) replied that they felt a need for rehabilitation for cancer patients. The most common settings in which a need was felt were when 'patients would say that they wanted to stand up and walk again' and 'patients would say that they wish they could go to the bathroom without needing help from anyone'.

The above results indicated a large need for rehabilitation for cancer patients, but it was not concluded to what extent the current status met the needs of cancer rehabilitation. This survey also showed that the system for performing cancer rehabilitation is inadequate and that it is needed to assess strategies designed to develop and disseminate rehabilitation programs for cancer patients.

CURRENT PROBLEMS AND PERSPECTIVES

As stated already, although the need for the rehabilitation of cancer patients has been recognized, the degree of recognition in the field of oncology remains somewhat low. The fact that there have been few reports demonstrating its effectiveness can be cited as one of the reasons for this state of affairs. Recently, a systematic review regarding the health effects of exercise during cancer rehabilitation has been established (21). Ten studies were reviewed, and improvements in physical functioning, strength, physical activity levels, QOL, fatigue, immune function, hemoglobin concentrations, potential markers of recurrence and body composition were reported. However, all the studies were limited by incomplete reporting and methodological limitations.

We also systematically reviewed the effectiveness of cancer rehabilitation in palliative care using the keywords 'cancer' AND 'palliative care' AND 'rehabilitation' to search a medical literature database (PubMed) on 17 August 2009. We restricted the study design to intervention studies (retrospective studies and case reports were excluded, and music therapy was also excluded) and to studies that focused on physical functions and daily living functions. After conducting discussions twice a year (a total of four times), we performed a systematic review of the following survey items: lead author, name of the country, journal name, year of publication, number of subjects, cancer site, proportion of females, age, composition of the rehabilitation team, intervention (method, frequency and time per day), main outcomes and main results. As a result, only eight documents were retrieved, and three of them were randomized controlled trials (in submission). Thus, although rehabilitation is being practiced in the palliative care area, the evaluation of its outcome will be a future task.

We have not devoted much attention to the particulars of rehabilitation in this review because considerable variation exists in the interventions that are actually being performed for individual patients and because the interventions have been established as rehabilitation techniques and are not specifically performed only for cancer patients. Instead, the task from now on will be to determine how rehabilitation personnel may acquire knowledge about cancer and incorporate established techniques into cancer care.

CONCLUSION

Interest in cancer rehabilitation in Japan has increased since cancer patient rehabilitation fees were newly established in the 2010 revision of medical care service fees. However, it is still hard to say that the need for rehabilitation services has been adequately acknowledged in cancer care and that future research is needed because high-quality literature evidence is still lacking.

Rehabilitation is expected to become an important support that sustains the hopes of patients and their families, as it is said that 'Being able to maintain and improve ADL as much as possible, while skillfully using remaining physical strength is a great joy and is linked to the desire to live'.

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Conflict of interest statement

None declared.

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Relationships Between Roles and Mental States and Role Functional QOL in Breast Cancer Outpatients

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Objective: To evaluate the degrees of role accomplishment, the importance of and satisfaction with roles, and to assess their relationships with mental states and role functional quality of life, in breast cancer patients receiving treatment on an outpatient basis.

Methods: The study was designed as a cross-sectional study. Thirty patients with primary breast cancer were evaluated using the Self-Rating Frenchay Activities Index, the Role Checklist, the Profile of Mood States and the Medical Outcome Study Short-Form 36-Item Health Survey. Spearman's rank correlation coefficients were used to analyze the relationships between each role-related item and each Profile of Mood States and Short-Form 36 subscale.

Results: A higher number of roles played was positively associated with the score for Vigor but was negatively associated with the score for physical quality of life. A higher degree of the importance of roles was negatively correlated with the score for Confusion and positively correlated with the score for mental quality of life. A higher degree of satisfaction with roles was negatively correlated with depression, tension-anxiety, confusion and the total mood disturbances score, and was positively correlated with both the physical and negative quality of life scores. No significant correlations were apparent between the degrees of role accomplishment (Self-Rating Frenchay Activities Index scores) and the Profile of Mood States and Short-Form 36 scores.

Conclusions: The results indicated that qualitative and subjective factors (i.e. the degrees of importance of and satisfaction with roles) are associated more closely with emotional states and role functional quality of life in breast cancer outpatients than quantitative and objective factors (i.e. degree of role accomplishment and the number of roles).

Key words: ADL – APDL – breast cancer – emotional state – QOL

INTRODUCTION

Recent advances in healthcare have led to the establishment of evidence-based chemotherapy for breast cancer (1). The result has been a shift in the focus of postoperative care for breast cancer patients from being based primarily on hospitalization to a new emphasis on outpatient care, while maintaining the routine aspects of each patient's daily life to the maximum extent possible (2). Breast cancer patients may be required to play various roles, including the traditional feminine roles of wife and mother, as well as professional, care

provider and other roles. Such patients need to play various roles while living with anxiety as they undergo ambulatory treatment after discharge and must undergo treatment while preserving normality in their daily lives. According to one report, breast cancer patients often resume housework by 2 weeks after discharge while complaining of symptoms associated with mental stress, fatigue, reduced vigor and physical stress (postoperative arm function disorders, etc.) (3,4). The difficulties faced by breast cancer outpatients are related to housework, child care and so on, and these

difficulties have been shown to sometimes reduce the patients' quality of life (QOL) (5). Rehabilitation covers not only the activities of daily living (ADL), such as changing locations, dressing/undressing and having meals, but activities parallel to daily living (APDL) that provide more social and advanced ADL related to role function, such as cleaning, shopping and cooking. Such rehabilitation is provided, primarily by occupational and physical therapists, to prevent decreases in QOL arising from these difficulties. Thus, patients begin to receive ADL training, housework training, instructions upon hospital discharge, etc., soon after undergoing surgical treatment for their breast cancer (6–8). However, some investigators have found that the rehabilitation provided to such patients has been inadequate because of early discharge, the difficulty of visiting the hospital frequently or the lack of visiting rehabilitation efforts (9).

The term 'role' indicates social status as well as other issues. Since people assess their own value based on an understanding of their roles in the family and society, the absence of adequate roles can cause people to lose their self-identity or daily life objectives. Disturbances in role function are considered a cause of psychosocial disorders (10). Females, particularly middle-aged women, have been reported to tend to develop depressive disorder if they lose their roles (10). Thus, these roles are significant for females and can be viewed as being closely related to their mental states. Many women with breast cancer have been reported to tend to become aware of their mental instability when they imagine the outcome of their inability to satisfactorily play the diverse roles assigned to them because of limitations imposed by the treatment of their disease (11).

Thus, an increasing number of studies focusing on the difficulties in role function encountered by breast cancer patients and in the situations related to ADL and APDL that such patients face have been conducted recently. However, these studies have only recently begun to be performed in breast cancer outpatients, and very few reports have ever been published concerning the influence of role-related difficulties and role functional status on the mental states of such patients. The present study was undertaken to investigate the degree of role accomplishment, the number of roles (quantitative role factors) and the degrees of the importance of and satisfaction with roles (qualitative role factors), and to assess their relationships with mental states and role functional QOL in breast cancer outpatients. This study was expected to demonstrate the importance of roles to breast cancer patients, as well as to identify areas that require closer attention during the rehabilitation of surgically treated patients before their discharge and to facilitate effective follow-up care of such patients, which should lead to a better QOL after hospital discharge.

PATIENTS AND METHODS

SUBJECTS

Patients were recruited in the Outpatient Clinic of Hiroshima University Hospital. We consecutively requested the

cooperation of all the patients who were eligible to participate during the study period. The eligibility criteria were as follows: (i) women over the age of 18 years, (ii) current ambulatory treatment for breast cancer after confirmation of the diagnosis, (iii) at least 2 weeks after but no more than 6 months prior to discharge from a hospital (since breast cancer patients reportedly resume housework after 2 weeks while complaining of symptoms associated with mental or physical stress, but these symptoms may continue until about 6 months), (iv) the ability to understand the purpose of the study and the questions in the questionnaire and (v) the absence of severe physical symptoms.

ETHICAL CONSIDERATIONS

This study was conducted after receiving the approval of the ethics review committee of Hiroshima University.

MEASURES

BASIC INFORMATION

- (1) Sociodemographic variables
Inquiries about age, household composition/housemate, key person and occupation were made during an interview.
- (2) Medical variables

Medical data, including surgical history and cancer stage, current ambulatory therapy, disease history, presence/absence of rehabilitation, length of stay, time since surgery and time since hospital discharge, were collected from the medical records of each subject.

ROLES

- (1) Japanese version of Self-Rating Frenchay Activities Index (SR-FAI)

The FAI is a 15-item index developed by Holbrook (12) as a means of evaluating applied activity, social activity and role activity during daily life (for example, housework, shopping and working). The SR-FAI is the Japanese version of the FAI and was prepared by Hachisuka et al. (13) as an index tailored to situations in Japan. Each activity in the index is rated on a four-grade scale that ranges from 'done every day (score 3)' to 'never done (score 0)'. The scores for all the activities are totaled. Higher total scores indicate more complete accomplishment of the activities. The index is designed for disabled individuals who are living at home and free of dementia and/or severe aphasia, sick individuals and middle-aged and elderly individuals. Its reliability and validity have been established (12–16). In this study, the total scores for all the items were used as the degree of role accomplishment.

- (2) Role Checklist

The Role Checklist is a self-assessment instrument prepared by Oakley et al. (17) and consists of two parts. Part 1 is designed to assess the status of the individual's participation in 10 roles by having the subject choose one of three possible replies: 'participated in the past', 'participating currently' and 'will participate in the future'. Part 2 identifies the degree to which each of the same 10 roles is valued, and the subject chooses one of three possible replies: 'not at all valuable', 'somewhat valuable' and 'very valuable'. The validity and reliability of the Japanese version of the Role Checklist have been demonstrated (18). In the present study, only the 'participating currently' roles were assessed in both Parts 1 and 2.

In the Part 1 assessment, the total number of roles identified as 'participating currently' was used as the number of roles (0–10). In the Part 2 assessment, to enable a numerical analysis of the degree of each role's importance, the ratings for each of the 'participating currently' roles were scored according to a 3-point system ranging from zero (not at all valuable) to two (very valuable). In addition, the total score was divided by the number of selected roles to obtain the mean importance score.

Of the 10 roles covered in the Role Checklist, those identified as 'participating currently' were selected to assess the degree of satisfaction. The degree of satisfaction with each of the roles selected was rated using a four-grade Likert scale that ranged from one (not at all satisfied) to four (very satisfied), with higher scores indicating a higher degree of satisfaction with the role that was played. The total satisfaction score was divided by the number of selected roles to obtain the mean satisfaction score.

MOOD STATES: PROFILE OF MOOD STATES

The Profile of Mood States (POMS) is a self-assessment questionnaire composed of 65 items designed to evaluate temporary emotional states. It was developed by McNair et al. (19) and enables the assessment of emotional state on six scales: tension-anxiety, depression, anger-hostility, vigor, fatigue and confusion. The reliability and validity of the Japanese version have been established (20). The frequency of the mood corresponding to each item during the past week is rated on a five-grade scale that ranges from 'never (score 0)' to 'very often (score 4)'. The scores for all the items belonging to a scale are totaled (21). Higher total scores indicate a higher intensity of mood in that category.

ROLE FUNCTIONAL QOL: JAPANESE VERSION OF MOS SHORT-FORM 36-ITEM HEALTH SURVEY

The Medical Outcome Study (MOS) Short-Form 36-Item Health Survey (SF-36) is a comprehensive health evaluation scale that was developed in the MOS conducted in the USA in the 1980s (22). The reliability and validity of this scale have been confirmed (23), and it is now being used in research in more than 15 countries (24). The scale is

designed for individuals aged 16 years and over and is composed of eight subscales. Each item is rated on a five-grade scale that ranges from 'always' (score 1) to 'never' (score 5), and the total score for each subscale is calculated. The validity and reliability of the Japanese version of this scale have been established (25,26). Two of the eight subscales [i.e. 'everyday role function (physical)' and 'everyday role function (mental)', which are related to role functional QOL] were used in this study. The total possible scores for each of these subscales were 20 and 15, respectively. A lower score indicates a lower QOL.

ANALYSIS

After the normality of the data had been checked using the Shapiro–Wilks test, the relationships between the degree of role accomplishment assessed using the SR-FAI, the number of roles, the mean importance score and the mean satisfaction score assessed using the Role Checklist, and the emotional states assessed using the POMS and role functional QOL assessed using the SF-36 were analyzed using the Spearman's rank correlation coefficients.

In all the statistical tests, $P < 0.05$ (two-sided) was regarded as statistically significant. All the statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) 15.0J computer program.

RESULTS

SUBJECT CHARACTERISTICS

Of the 32 patients who were eligible to participate, the 30 who provided informed consent were enrolled in this study. The mean age of the subjects was 55.8 ± 11.9 years (range: 33–74 years). Many of the subjects had a spouse (27 subjects) and children (23 subjects). Twenty-five subjects lived with someone. Half (16 subjects) had an occupation. During their hospital stay, 17 subjects received rehabilitation, and the duration of the rehabilitation was 1.4 ± 1.4 days. The mean number of roles played by the subjects was 5.5 ± 2.0 (range: 2–9). The mean degree of the importance of the roles was 1.6 ± 0.3 , and the mean degree of satisfaction was 1.9 ± 0.4 . Table 1 shows the scores for each assessment. The mean score for each item assessed using the SF-36 and the mean score for each POMS subscale were lower than the national average for females.

RELATIONSHIPS BETWEEN ROLES AND POMS

The results of the analysis of the relationships between each role-related item and the score for each subscale showed a significant positive correlation between the number of roles and V (vigor) ($P < 0.001$), and significant negative correlations between the mean degree of satisfaction and D (depression-depressed mood) ($P = 0.002$), T-A (tension-anxiety) ($P < 0.001$), C (confusion) ($P = 0.001$)

Table 1. Subject demographics

	<i>n</i>	Mean ± SD
Age (year)		55.8 ± 11.9
Spouse		
Present	27	
Absent	3	
Child		
Present	23	
Absent	7	
Other family member		
Present	25	
Absent	5	
Key person		
Spouse	24	
Child	3	
Others	3	
Job		
Present	16	
Absent	14	
Tumor location		
Right lateral	10	
Left lateral	13	
Left medial	3	
Papilla	4	
Operation history		
Breast-preserving surgery + sentinel lymph node biopsy	17	
Breast-preserving surgery + axillary lymph node excision	7	
Mastectomy + sentinel lymph node biopsy	2	
Mastectomy + axillary lymph node excision	4	
Stage		
I	13	
IIA	11	
IIB	5	
IIIA	1	
Ambulatory treatment		
Radiotherapy	8	
Radiotherapy + hormone therapy	4	
Hormone therapy	10	
Chemotherapy	6	
Chemotherapy + hormone therapy	2	
Rehabilitation		
Present	17	1.4 ± 1.4
Absent	13	
Hospital stay (days)		9.6 ± 2.8

Continued

Table 1. *Continued*

	<i>n</i>	Mean ± SD
Time since surgery (days)		79.7 ± 47.5
Time since discharge (days)		74.3 ± 48.1
Number of roles		5.5 ± 2.0
Importance of roles		8.8 ± 3.3
Mean importance of role number		1.6 ± 0.3
Satisfaction with role		10.4 ± 3.3
Mean satisfaction with role		1.9 ± 0.4
SF-36 Everyday role functional QOL		
Mental		70.0 ± 20.6
Physical		58.9 ± 17.5
FAI		26.9 ± 5.5
POMS		
V		12.2 ± 5.8
D		10.9 ± 8.8
A-H		7.8 ± 7.4
F		9.2 ± 5.6
T-A		8.7 ± 4.8
C		7.9 ± 4.3
TMD		32.4 ± 29.3

V, vigor; D, depression; A-H, anger-hostility; F, fatigue; T-A, tension-anxiety; C, confusion; TMD, total mood disturbances; SF-36, Short-Form 36; QOL, quality of life; FAI, Frenchay Activities Index; POMS, Profile of Mood States.

Table 2. Correlations between roles and POMS

Factor	T-A	D	A-H	V	F	C	TMD
No. of roles							
rs	0.243	0.179	0.086	0.620	0.168	0.067	0.016
<i>P</i> value	0.196	0.345	0.678	<0.001	0.374	0.724	0.935
Total importance							
rs	0.064	0.079	-0.077	0.623	-0.013	-0.150	-0.170
<i>P</i> value	0.735	0.678	0.684	<0.001	0.947	0.429	0.370
Mean importance							
rs	-0.296	-0.105	-0.229	0.024	-0.334	-0.475	-0.317
<i>P</i> value	0.112	0.582	0.223	0.898	0.071	0.008	0.088
Total satisfaction							
rs	-0.236	-0.143	0.004	0.680	-0.019	-0.302	-0.262
<i>P</i> value	0.210	0.450	0.982	<0.001	0.920	0.105	0.161
Mean satisfaction							
rs	-0.739	-0.551	-0.189	-0.012	-0.329	-0.579	-0.446
<i>P</i> value	<0.001	0.002	0.318	0.950	0.076	0.001	0.013

T-A, tension-anxiety; D, depression; A-H, anger-hostility; V, vigor; F, fatigue; C, confusion; TMD, total mood disturbances; rs, Spearman's rank correlation coefficient.

Table 3. Correlations between roles and SF-36 scores

Factor	Role functional mental QOL		Role functional physical QOL	
	rs	P value	rs	P value
No. of roles	-0.252	0.179	-0.415	0.023
Total importance	-0.081	0.671	-0.347	0.060
Mean importance	0.366	0.047	0.091	0.631
Total satisfaction	0.031	0.871	-0.156	0.410
Mean satisfaction	0.525	0.003	0.509	0.004

and TMDs (total mood disturbances) ($P = 0.013$) as well as between the mean degree of importance and C (Confusion) ($P = 0.008$) were obtained (Table 2).

RELATIONSHIPS BETWEEN ROLES AND SF-36 SCORES

The mean SF-36 scores for everyday role functional QOL, i.e. for mental and physical, were 70.0 ± 20.6 (8–100) and 58.9 ± 17.5 (25–100), respectively. An analysis of the relationships between each role-related item and the score for each SF-36 subscale revealed a significant positive correlation between role functional mental QOL and both the mean importance ($P = 0.047$) and the mean satisfaction ($P = 0.003$), a significant negative correlation between the role functional physical QOL and the number of roles ($P = 0.023$), and a significant positive correlation between the role functional physical QOL and the mean satisfaction ($P = 0.004$) (Table 3).

RELATIONSHIP BETWEEN SR-FAI SCORES AND POMS AND SF-36 SCORES

An analysis of the relationships between the SR-FAI scores and the POMS and SF-36 scores revealed no significant correlations (Table 4).

DISCUSSION

RELATIONSHIP BETWEEN ROLES AND EMOTIONAL STATES

An analysis of the relationships between each role-related item and the POMS scores revealed several significant correlations. First, a strong positive correlation was found between the number of roles and Vigor. This means that patients tended to have greater vigor or positive emotions during their daily life as the number of roles they played increased. As stated above, roles support people's sense of identity. Playing roles means that the individual's existence is recognized or that the individual can live a unique life. It seems that playing many roles enables people to establish

Table 4. Relationship between SR-FAI scores and POMS and SF-36 scores

Factor	rs	P value
POMS		
V	0.286	0.124
D	0.205	0.276
A-H	0.154	0.418
F (fatigue)	0.036	0.856
T-A	-0.127	0.504
C	-0.136	0.475
TMD	-0.016	0.931
SF-36		
Role functional mental QOL	0.174	0.358
Role functional physical QOL	0.112	0.554

V, vigor; D, depression; A-H, anger-hostility; F, fatigue; T-A, tension-anxiety; C, confusion; TMD, total mood disturbances.

their identity, obtain a greater sense of achievement from their roles and achieve relief from anxiety about their existence, leading to greater mental vigor in daily life. However, some investigators have reported negative impacts of playing multiple roles, in contrast to the findings in the present study (27–29). Taken together, playing roles that are suited to the abilities of the individual may be associated with increases in vigor during daily life.

A strong negative correlation was found between the mean degree of importance and the score for confusion, and between the mean degree of satisfaction and the scores for depression, tension-anxiety and confusion. These findings indicate that a higher degree of satisfaction with roles and the value of the roles played by individuals are associated with lower negative emotions, such as depression and confusion. Oakley et al. (17) proposed the concept of 'role value'. Role value pertains to the degree of importance attached by individuals to a given role and is thought to affect decisions regarding behavior and the probability of satisfaction arising from such behaviors. People who play roles to which they attach great value reportedly tend to be satisfied with their daily lives (30). Therefore, the degree of satisfaction is closely related to the value of a given role. A previous study also showed that the magnitude of the sense of achievement or satisfaction was related to depression or anxiety (27,28). In addition, the loss of roles can sometimes trigger depression, and people who play roles rated as more important are better able to adapt to the loss of other roles (10). The present results suggest that the degree of satisfaction with given roles and the feeling that they are playing roles to which they can attach high value greatly affect the emotional states of breast cancer outpatients.

RELATIONSHIPS BETWEEN ROLES AND ROLE FUNCTIONAL QOL

The analysis of the relationships between each role-related item and the scores on the SF-36 also revealed several significant correlations. Everyday mental role function was found to be strongly positively correlated with the mean degree of satisfaction and with the mean degree of importance. Everyday physical role function was also strongly positively correlated with the mean degree of satisfaction. However, a negative correlation between the number of roles and the physical role function was observed. This relationship was the opposite of the above finding related to Vigor as assessed by the POMS. Thus, the results showed that an increase in the number of roles played increases vigor but can reduce physical QOL. Physical problems such as reduced physical strength, fatigue, and adverse reactions to treatment can cause patients considerable pain during ambulatory treatment as well (31,32). Playing many roles can result in additional vigor through a sense of achievement, but can also cause physical stress and reduce QOL in patients required to go about their daily lives while receiving ambulatory treatment. To maximize vigor through an increase in the number of roles, a support system that provides optimum environments for individual patients is needed. The spouses and children of breast cancer patients serve as their primary sources of support (27,33,34). However, in view of the report on the recent trend toward decreased familial support, future efforts to provide the support of healthcare professionals or communities may have greater significance than familial support efforts (35).

As shown above, the results of this study suggest that emotional states and QOL related to everyday role functions are affected more strongly by qualitative factors (degree of importance or satisfaction) than by quantitative factors (degree of role accomplishment or number of roles) in breast cancer outpatients. Therefore, rehabilitation approaches to enhance the degrees of importance of and satisfaction with roles may improve the emotional states or QOL of breast cancer patients.

LIMITATIONS AND PERSPECTIVES

The first limitation of this study is that it relied totally on Self-Rating scales and subjective assessments. A future study in which objective indicators are also used is needed. Second, only breast cancer outpatients receiving ambulatory treatment at one hospital were enrolled in this study, and all the patients were at least 30 years of age, making it difficult to extrapolate the results of this study to a wider population of breast cancer patients. Thus, additional systematic and random studies conducted using larger patient populations and multiple institutions are needed. Third, the questionnaire used for this study took about 15 min to complete, which may have caused fatigue or imposed other forms of stress on the outpatients. Thus, a shorter, simpler questionnaire should be designed.

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Conflict of interest statement

None declared.

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Usefulness of pharmacist-assisted screening and psychiatric referral program for outpatients with cancer undergoing chemotherapy

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Abstract

Objective: Major depressive disorder (MDD) and adjustment disorder (AD) are common psychiatric disorders in cancer patients but are often overlooked in clinical oncology settings. We introduced a clinical screening program utilizing the Distress and Impact Thermometer (DIT) to identify MDD and AD in cancer outpatients receiving chemotherapy. This study assessed the usefulness of the screening program.

Methods: Pharmacists administered the DIT to consecutive patients undergoing chemotherapy at an outpatient clinic. Psychiatric treatment was recommended to all the patients with positive screening results. The proportion of patients referred to the Psychiatric Service during the program period was then compared with that during a usual care period.

Results: Of the 520 patients who started chemotherapy during the 6-month program period, 5.0% (26/520) were referred to the Psychiatric Service and 2.7% (15/520) were diagnosed as having MDD or AD. No statistically significant difference in the referral rates was observed between the two periods (2.7 vs 1.0%, $p = 0.46$). However, the period from the first chemotherapy treatment until the visit to the Psychiatric Service was significantly shorter during the program period than during the period of usual care (12.9 ± 13.2 days vs 55.6 ± 17.6 days, $p < 0.001$).

Conclusions: The proportion of patients referred to the Psychiatric Service for the treatment of MDD or AD during the program period was not different from that during the usual care period. However, the program was useful for introducing psychiatric treatment at an earlier stage. Further modifications to the program to improve the referral rate are necessary. Copyright © 2011 John Wiley & Sons, Ltd.

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Introduction

Major depressive disorder (MDD) and adjustment disorder (AD) are the most distressing and prevalent psychiatric disorders in patients with cancer [1]. The prevalence of MDD in patients with cancer has been reported to be 3–7%, while that of AD has been reported to be 4–35% [2–7]. Several studies have indicated that MDD and AD have a serious negative impact on the quality of life of patients [8] and are related to severe suffering, poor adherence to treatment recommendations [9], requests for early death or euthanasia [10–13],

suicidal ideation [14], suicide [15] and the psychological distress of family members [16,17].

Evaluating the psychological distress of cancer patients is extremely difficult for oncology medical staff, and psychological distress is often under-recognized in clinical oncology settings [18–20]. Once recognized, it is often too late to introduce pharmacotherapy to improve the depressive symptoms of advanced cancer patients [21]. As psychotherapy [22] and pharmacotherapy [23] are known to be effective means of treating these disorders, a screening strategy to enable early detection and treatment for depression in cancer patients

seems like a reasonable step in treating this condition.

Previous studies have confirmed the efficacy of psychological screening strategies for depression in primary-care settings, with programs combining psychological screening with referrals to mental health specialists appearing to be the most powerful intervention [24,25]. In oncology settings, although less empirical evidence is available than for primary-care settings, cancer patients are known to have a high risk of depressive disorders (mainly MDD and ADs according to the *Diagnostic and Statistical Manual IV (DSM-IV)* criteria) [2–7]. Psychological screening can detect depressive disorders in cancer patients [26], and psychological interventions can alleviate the depressive disorders that are detected by psychological screening [27–29]. Together, this evidence suggests the efficacy of psychological screening for cancer patients, and guidelines such as those published by the National Comprehensive Cancer Network [30] and the National Institute for Health and Clinical Excellence have been recommended as clinically feasible practices for combining screening with interventions from mental health specialists for the treatment of psychological distress in cancer patients.

We previously examined the usefulness of psychological screening for cancer patients using the Distress and Impact Thermometer (DIT) [31]. Furthermore, we have developed and introduced a Nurse-Assisted Screening and Psychiatric Referral Program (NASPRP) for inpatients [26].

With the recent introduction of chemotherapy being performed in outpatient clinics, the amount of time that physicians and medical staffs spend with their outpatients has been drastically reduced compared with inpatients [32]. Thus, we must modify the NASPRP for use in outpatient clinics.

We have planned two types of screening program for ambulatory patients. One program, reported in the present study, targets patients undergoing chemotherapy by cooperating with pharmacists. The other program, which was reported in a previous article [33], is a general outpatient model involving a collaboration among nurses, primary oncologists, and Psychiatric Services.

The primary aim of the current study was to examine preliminarily the usefulness of our screening program modified for outpatients with cancer who are undergoing chemotherapy. We hypothesized that the use of this screening program in outpatient clinics would result in a higher rate of the referral of cancer patients to the Psychiatric Service and earlier psychiatric referral for the treatment of major depressive and ADs. The secondary aim was to evaluate the feasibility of administering the DIT in an outpatient clinic setting.

Materials and methods

Modification of the screening program for use in an outpatient clinic setting

First, we modified the NASPRP to suit an outpatient clinic setting. As the utility of the NASPRP was limited by the amount of time required for nurses to administer the DIT, the NASPRP was adjusted as explained below. First, pharmacists were asked to administer the screening program. Pharmacists routinely explain the effects and adverse effects of first or new chemotherapy regimens to cancer patients undergoing chemotherapy in an outpatient setting. Therefore, pharmacists are in close communication with cancer patients. Second, to shorten the explanation time, we prepared a brief pamphlet introducing the Psychiatric Service and screening program; a detailed pamphlet describing the self-management of mental health was also prepared.

Before implementing the screening program, all the pharmacists attended a 2-hour lecture given by a trained psychiatrist regarding the epidemiology, impact, risk factors, under-recognition, and appropriate management of psychiatric disorders in cancer patients. Additionally, the pharmacists underwent role-play training to learn how to implement the DIT and to give recommendations for psychiatric referral.

Distress and impact thermometer

The DIT uses a two-item, self-administered rating scale. Our group developed the DIT by adding the Impact Thermometer to the Distress Thermometer [31,34,35]. Each 'distress' and 'impact' question is scored using an 11-point Likert scale, with scores ranging from 0 to 10 and a high score indicating an unfavorable status.

Screening program procedure

The screening program was implemented between April and September 2007, at the outpatient treatment center of the National Cancer Center Hospital East (NCCH-E). Consecutive cancer patients beginning chemotherapy at the outpatient treatment center of the NCCH-E during this period were enrolled. Pharmacists routinely provide instructions regarding new chemotherapy regimens to patients beginning chemotherapy; on such occasions, the pharmacists also provided information regarding the Psychiatric Service using a brief pamphlet and invited the patients to complete the DIT. The pharmacist then completed the screening program sheet, which is a record of the patient's DIT scores, age, sex, cancer site, cancer stage, and Eastern Cooperative Oncology Group (ECOG) performance status. The screening questionnaires

were administered again during the second visit of each patient beginning a new chemotherapy regimen. If a patient scored equal to or more than each cut-off point (≥ 4 for distress and ≥ 3 for impact) the screening result was regarded as positive.

The pharmacist in charge recommended a consultation with the Psychiatric Service to all the patients with a positive screening result. If a patient accepted the recommendation, the patient visited the Psychiatric Service and was examined by trained psychiatrists using a clinical diagnostic interview based on the DSM-IV (published by the American Psychological Association) criteria. If a DIT-positive patient refused a consultation, the pharmacist gave them a detailed pamphlet regarding the self-management of mental health. However, if the patient was suspected of having severe psychological distress, the pharmacist discussed the case with the psychiatrists and monitored the patient carefully under their supervision. In addition, the pharmacist provided a brief feedback on the patient's medical chart regarding the screening results.

During the screening program, the pharmacists and psychiatrists held monthly meetings to discuss any issue that emerged.

Data collection

Clinical data were extracted from the patients' medical charts and the computerized database of the electronic medical record at NCCH-E.

Measures

The usefulness of the screening program was evaluated by calculating the proportion of patients referred to the Psychiatric Service, and treated for major depressive or AD among all the outpatients who had begun a new chemotherapy regimen within 3 months of their visit to the outpatient clinic. The number of days from the first chemotherapy treatment to the first visit to the Psychiatric Service was examined as an indicator of early detection and the early introduction of treatment. The number of patients referred to psychiatrists and the number of days from the first chemotherapy treatment to the first visit to the Psychiatric Service were confirmed using the computerized database of the electronic medical record at NCCH-E, which provides a definitive record of the dates of chemotherapy and psychiatry consultation. The feasibility of the DIT in a clinical oncology outpatient setting was evaluated by calculating the proportion of patients that underwent screening, which was the portion of patients who completed the DIT on their first or second visit to the outpatient clinic among all the outpatients who began a new chemotherapy regimen.

Sample size estimation

We estimated that the psychiatric referral rate (%) for the treatment of major depressive and ADs in patients with cancer was 1% during a usual care period (January 2005–December 2005) and that a 5% improvement after the implementation of the screening program would be reasonable. At a 5% significance level (two-sided Student *t*-test) and a 80% power, a sample size of 332 patients was needed for each period. In our hospital, approximately 70 patients began receiving chemotherapy at the outpatient treatment center every month. Thus, we concluded that a 6-month study period would be adequate for both the screening program and the period of usual care.

Patients treated during the screening program

All consecutive cancer patients who began chemotherapy at the outpatient treatment center of NCCH-E in Japan between April 1 and September 30, 2007 (program-period) were included in the screening program.

Patients during the usual care

All consecutive cancer patients who began chemotherapy at the outpatient treatment center of NCCH-E between April 1 and September 30, 2006 (usual care-period) received usual care.

Analysis

The current study was conducted using a retrospective cohort analysis comparing patients treated during the program-period with historical control data gathered during the usual care-period. The characteristics (age, sex, and cancer site) of the patients treated during the program-period and those treated during the usual care-period were compared using a chi-square test. The usefulness of the screening program was evaluated by comparing the proportion of patients referred to the Psychiatric Service for major depressive or AD during the program-period and the usual care-period using a chi-square test. As an index for early treatment introduction, we compared the number of days from the first chemotherapy treatment until the first visit to the Psychiatric Service for the treatment of major depressive or AD during the program-period and the usual care-period using a Student *t*-test. All tests were two-tailed. All analyses were performed using SPSS 14.0 J for Windows statistical software (SPSS Japan Institute, Tokyo, Japan).

The administration of the DIT and the recommendations for psychiatric referral were performed based on clinical need, and all other data were obtained as part of routine clinical assessments.

Therefore, the present study required very little deviation from standard clinical practice. As this study was a retrospective review of the program-period and the usual care-period for the purpose of comparing two types of clinical practices, the written consent of the patients was not obtained.

The medical record data used in this study were collected and analyzed after approval from the Institutional Review Board of the National Cancer Center, Japan. All data were de-identified and analyzed in aggregate form.

Results

Patient characteristics

During the program-period, 520 patients began receiving chemotherapy in an outpatient setting at the NCCHE; 478 patients started receiving chemotherapy in an outpatient setting during the usual care-period. As shown in Table 1, the age, sex, and cancer sites of the patients treated during each period were comparable.

Usefulness of the screening program

Of the 478 patients who started chemotherapy during the usual care-period, 9 patients were referred to the Psychiatric Service; the referral rate was 1.9% (9/478). Of the nine patients that were referred, five patients were diagnosed as having

MDD ($n = 3$) or ADs ($n = 2$) and began receiving treatment for these conditions. Two of the other four patients did not fulfill the DSM-IV diagnostic criteria for any psychiatric disorder, and the other two patients were diagnosed as having akathisia and sleep disorder, respectively. Thus, the proportion of patients referred for major depressive or ADs was 1.0% (5/478). The number of days from the first chemotherapy treatment to the first visit to the Psychiatric Service for the treatment of major depressive or AD was 55.6 days (SD = 17.6 days).

Figure 1 shows the process of the screening program. Of the 520 patients who started chemotherapy during the program-period, 26 patients were referred to the Psychiatric Service and were examined by psychiatrists; the referral rate was 5.0% (26/520). Of the 26 patients that were referred, 15 patients were diagnosed as having MDD ($n = 2$) or ADs ($n = 13$) and began receiving treatment for these conditions. Nine of the other eleven patients did not fulfill the DSM-IV diagnostic criteria for any psychiatric disorder, and the other two patients were diagnosed with delirium and sleep disorder, respectively. Thus, the proportion of patients referred for major depressive or ADs was 2.7% (15/520). The number of days from the first chemotherapy treatment to the first visit to the Psychiatric Service for the treatment of major depressive or AD was 12.9 days (SD = 13.2 days).

The proportion of patients referred to the Psychiatric Service and treated for a major

Table 1. Characteristics of outpatients who received chemotherapy between April 1, 2007 and September 30, 2007 (program-period; $n = 520$) or April 1, 2006 and September 30, 2006 (usual care-period; $n = 478$) at NCCHE

	No. of patients (%)		p-Value
	During program-period	During usual care-period	
Total patients	520 (100)	478 (100)	
Age (mean \pm SD)	61.4 \pm 10.8	62.8 \pm 10.9	0.66
Male (%)	281 (54.0)	271 (56.7)	0.40
Primary cancer site			0.18
Lung	114 (21.9)	86 (18.0)	
Colon, rectum	111 (21.4)	71 (14.9)	
Breast	82 (15.8)	56 (11.7)	
Hematopoietic and lymphatic tissue	56 (10.8)	72 (15.1)	
Stomach	39 (7.5)	40 (8.4)	
Pancreas	39 (7.5)	63 (13.2)	
Esophagus	24 (4.6)	31 (6.1)	
Liver, bile duct, gall bladder	16 (3.0)	30 (6.3)	
Head and neck	15 (2.9)	13 (2.7)	
Other	24 (4.6)	16 (3.3)	
Stage			
IV or recurrent	349 (67.1)		
III	108 (20.8)		
II	50 (9.6)		
I	13 (2.5)		
Performance status (ECOG)			
0	370 (71.1)		
1	136 (26.2)		
2	13 (2.5)		
3	1 (0.2)		
4	0 (0)		

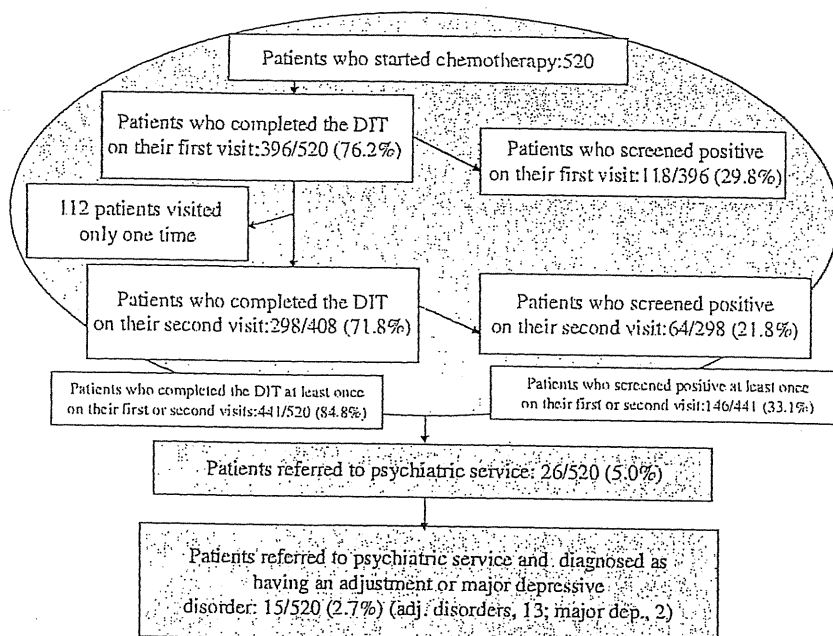


Figure 1. Number of patients screened and referred

depressive or AD was not significantly different between the two periods (2.7% during the program-period vs 1.0% during the usual care-period, $p = 0.46$). However, the number of days from the first chemotherapy treatment until the first visit to the Psychiatric Service was significantly shorter during the program-period than during the usual care-period (12.9 ± 13.2 days vs 55.6 ± 17.6 days, respectively; $p < 0.001$). In addition, the proportion of patients referred to the Psychiatric Service that did not fulfill the DSM-IV diagnostic criteria for any psychiatric disorder was not significantly different between the two periods (1.7% during the program-period vs 0.6% during the usual care-period, $p = 0.12$).

Feasibility of the screening program

During the program-period, 396 patients completed the DIT during their first visit to the outpatient clinic; thus, 76.2% of the patients participated in the screening. Of the 396 patients who were screened during their first visit to the outpatient clinic, the screening results were positive in 118 patients, yielding a positive screening rate of 29.8%. The mean levels of the distress and impact scores on the DIT were 3.5 (SD = 2.8) and 2.2 (SD = 2.5), respectively. Of the 520 patients treated during the program-period, 408 patients made a second visit to the outpatient clinic for chemotherapy. Of these 408 patients, 298 patients completed the DIT; thus, 71.8% of the patients participated in the screening. Of the 298 patients who were screened during their second visit to the outpatient clinic, the screening results were positive in 64 patients, yielding a positive screening rate of

21.8%. The mean levels of the distress and impact scores on the DIT were 2.4 (SD = 2.4) and 1.9 (SD = 2.3), respectively. Five to ten minutes were required for the pharmacists to provide information about the Psychiatric Service, invite the patient to complete the DIT, and recommend a consultation with the Psychiatric Service.

Discussion

This preliminary study examined the usefulness and feasibility of a modified psychological screening and intervention program administered by pharmacists to cancer patients receiving chemotherapy in an outpatient clinic. Unexpectedly, the proportion of patients referred to the Psychiatric Service and treated for major depressive or ADs was not significantly different between the program-period and the usual care-period. However, the number of days between the first chemotherapy treatment and the first visit to the Psychiatric Service for the treatment of a major depressive or AD was significantly shorter during the program-period than during the usual care-period.

A potential harm of the screening intervention is false-positive patients reaching the Psychiatric Service. However, the proportion of patients referred to the Psychiatric Service that did not fulfill the DSM-IV diagnostic criteria for any psychiatric disorder was not significantly different between the two periods.

We previously reported that our original program for screening cancer inpatients (NASPRP) achieved a higher referral rate than that obtained during usual care [26], but the presently reported

modified screening program for outpatients did not. One reason for this difference might be the study setting. Inpatients must remain in the hospital all day long, and if they accept a psychiatric referral, the psychiatric consultation occurs at their bedside. The presently reported screening program was intended for use in an outpatient clinic setting for patients who do not spend lengthy periods of time within a hospital. To receive psychiatric treatment in an outpatient clinic setting, the patient must quickly move to another room after completing their chemotherapy, and this burden might be a barrier to the acceptance of psychiatric referral. Second, adverse effects of chemotherapy such as fatigue and nausea on the day of treatment might make it difficult for patients to accept a psychiatric referral. Finally, the actual incidence of psychiatric disorders was relatively low, as the positive screening rate in this outpatient program was lower than that obtained using the NASPRP (29.8, 21.8 vs 49.6%).

The 'Distress Screening Program in Ambulatory Care' (DICPAC program) is a general outpatient screening model that has achieved a relatively high referral rate [33]. One difference between the DICPAC program and the presently reported screening program is the target population. The DISPAC program was used almost exclusively for female patients with breast or gynecological cancer. Female patients might be more likely to accept a referral to the Psychiatric Service than male patients [26]. Second, the attending oncologist provided the referrals to the Psychiatric service in the DISPAC program. The recommendations of physicians might have a larger impact on patients than the recommendations of pharmacists, regardless of the index disease [36]. Lastly, similar to the difference between the present screening program and the NASPRP, the positive screening rate obtained using this program was lower than that obtained using the DISPAC program (29.8, 21.8 vs 37.0%).

The positive screening rate was 29.8% at the time of the first visit and 21.8% at the time of the second visit, yet most of the positively screened patients did not accept the referral to the Psychiatric Service. Although we did not assess the prevalence of MDD and ADs in the targeted population, it is very likely that most of the patients with MDD and ADs would remain untreated, even if the screening program was introduced. In addition, patients who refused screening may contain the larger fraction of those in need of the Psychiatric Service. Thus, the presently reported screening program requires further improvement, and further study is needed to optimize the applicability of psychiatric consultations by addressing factors that promote the acceptance of psychiatric referral. Specifically, the communication skills of the pharmacists might

need to be further strengthened. The changes in staff involving mental health screening may have significant effect. And we may need flag for clinicians those who refused screening for further assessment using other tools. In addition, mental health specialists might need to attend the bedsides of patients during their treatment in the outpatient clinic to reduce distance barriers to psychiatric treatment.

An additional but important finding was the feasibility of administering the DIT to outpatients with cancer. The percentages of patients who completed the DIT during their first and second visits to the outpatient clinic were 76.2 and 71.8%, respectively. In our previous report, 86% of the inpatients completed the DIT in a clinical oncology setting. Another study has reported that the Hospital Anxiety and Depression Scale was administered to 70% of oncology patients [37]; thus, the completion rate in the present study was marginally higher. Compared with these previous reports, the current results suggest that the DIT might be useful as a brief screening tool for detecting psychological distress in cancer patients undergoing chemotherapy in busy outpatient settings. The reasons why some patients did not complete the DIT in this study are unknown.

This study has several limitations. First, this study was a retrospective analysis that compared available historical data and our experience with clinical intervention. The comparison group was not systematically controlled to ensure comparability, and some bias in patient selection might have occurred. Second, the results of this study must be considered provisional, as this study was performed at a single cancer center hospital. Our group must be careful in generalizing these results to other oncology settings. Third, although we made the clinical diagnoses according to the DSM-IV criteria, this method is less robust than a structured diagnostic interview. Some possibility of assessment bias also exists, since the four psychiatrists who diagnosed the referred patients were associated with this study. Furthermore, we were unable to assess the interrater reliability of the DSM-IV diagnosis. Fourth, although the screening program resulted in the earlier introduction of treatment for major depressive and ADs in outpatients with cancer, this result is a surrogate endpoint, and its clinical significance remains unclear. Further demonstration that these processes result in a better patient outcome, such as an improvement in the patients' quality of life or the successful treatment of major depressive and ADs, is needed.

In conclusion, a clinical screening program administered by pharmacists that uses the DIT to identify major depressive and ADs in cancer outpatients receiving chemotherapy and introduces them to psychiatric treatment was feasible and

useful for the early introduction of treatment, but the proportion of patients referred for the treatment of major depressive or ADs was not different from that obtained during usual care. Thus, further modification of the present program to overcome barriers to introducing patients with positive screening results to the Psychiatric Service, resulting in the alleviation of psychological distress and a better quality of life, is needed.

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