

## **Effects of Short-term Existential Group Therapy for Breast Cancer Patients**

**Chizu Nakamura, Masatoshi Kawase**

**Department of Psychology, Kyoto Notre Dame University.**

**Address Correspondence and reprint request to: Chizu Nakamura , Department of**

**Psychology, Kyoto Notre Dame University, 1 Minami Nonogami-cho, Shimogamo**

**Sakyo-ku, Kyoto, 606-0847, Japan. E-mail:nakchizu@notredame.ac.jp**

## **Effects of Short-term Existential Group Therapy for Breast Cancer Patients**

### **Abstract**

*Objectives:* Cancer patients who suffer from existential difficulties, including fear of death, isolation, or loss of human relationships, try to accept these fears by exploring the meaning of their life. In particular, earlier psychological intervention for patients prevents them from psychosocial maladjustment afterwards. Therefore we have developed the Short-term Existential Group therapy Program (Short-term EGP) for cancer patients focusing on relief of existential or spiritual suffering and/or pain. This study aims to statistically evaluate the effects of this program on breast cancer patients within the first year after cancer diagnosis.

*Methods:* 31 patients completed our research program. A ninety-minute therapeutic group session was held once a week for five weeks. We performed the above assessments three times: just before and after the intervention, as well as a month after the end of intervention. Outcome assessment included measures of spiritual well-being (SELT-M), Mental Adjustment to Cancer (MAC) and Profile of Mood States (POMS).

*Results:* The SELT-M “Overall QOL” scores were significantly increased after intervention, and these scores were maintained a month after intervention, particularly in those with high MAC “Hopelessness” scores. Subscales of the SELT-M scores were

significantly increased after intervention, and these scores were maintained up to a month after intervention

**Significance of Results:** We observed that the Short-term EGP intervention was effective in helping patients relieve their existential distresses. Some of the treatment effects were observed to be maintained a month after end of the intervention. In addition, Short-term EGP is particularly effective for those patients who feel hopelessness after cancer diagnosis.

*Trial registration*

The study protocol was approved by the ethics committee of the Department of Psychology of Kyoto Notre Dame University (H22-3,14-008).

**Keywords:** group therapy; spiritual well-being; existential; hopelessness; breast cancer;

## Introduction

When diagnosed with cancer, 30% of cancer patients experience psychiatric symptoms, such as anxiety and depression. Psychiatric symptoms are associated with physical, psychological, social, and existential pain, which affect patient quality of life (QOL). In particular, cancer patients who suffer from existential difficulties, including fear of death, isolation, or loss of human relationships, try to accept these fears by exploring the meaning of their life.

One intervention utilized for addressing the existential issues experienced by cancer patients is group therapy. Supportive-Expressive Group Therapy (SEGT) is a long-term, unstructured, group intervention for patients. Such group therapy has been shown to help patients learn to live their own lives as fully and authentically as possible, to improve their quality of life, to address issues related to their identity, fears and anxieties about death and dying, isolation, and to better understand the meaning of their lives [1,2]. Other studies have combined both cognitive-behavioral and existential approaches aimed at decreasing emotional distress in cancer patients [2,3]. In particular, Cognitive Existential Group Therapy (CEGT) has been shown to be effective for improving patient quality of life [2,4] and reducing fear of cancer recurrence [5]. Meaning-centered group psychotherapy (MCGP) has been demonstrated to be a

potentially beneficial intervention for patients' emotional and spiritual suffering [6,7]. Present research is focused on development of mindfulness-based stress-reduction (MBSR) intervention, which has been shown to benefit psychosocial adjustment including spirituality in cancer patients [8].

Only a few studies on psychosocial group therapy programs have been performed in Japan. Two studies in Japanese subjects have shown that group therapy improved emotional state, such as anxiety and depression, and skills for coping with cancer [9,10]. Problem-solving therapy (PST) based on cognitive-behavioral therapy has also been shown to be effective for alleviating psychological distress[11]. Recently, there is Mindfulness Cognitive Therapy[12]. However, these group therapy programs focused on psychological issues in the short-term, and did not particularly focus on the existential issues cancer patients may have.

Therefore, we have developed a short-term group therapy program for cancer patients focusing on relief of existential or spiritual suffering and/or pain, based on a needs assessment survey of two hundred and eighty-six Japanese cancer patients performed in 2007. This study aimed to statistically evaluate the effects of this program on breast cancer patients.

With early detection and treatment, breast cancer is a cancer with one of the highest

rates of curability. However, some breast cancer patients may experience recurrence or metastasis as late as ten years after achieving remission. Breast cancer evokes psychological and existential distress; therefore, breast cancer patients often have anxiety and depressive disorders. Such patients may be supported by medical staff, family members, and friends, whereas patients who are not diagnosed with anxiety disorder or adjustment disorder do not receive the same degree of attention. Although these patients are expected to perform social and family roles and to maintain an identity similar to that as before they were diagnosed, they often have difficulty in doing so. These patients may suffer from existential issues related to isolation, fear of recurrence and death, feelings of being a burden to others, or loss of meaning of their life. Thus, these patients require support concerning the psychological and existential aspects of their mental health.

## **Methods**

### **Participants and procedures**

Subjects were recruited from two clinics specialized in breast cancer in Shiga and Kyoto Prefectures, Japan.

Criteria for inclusion were: having been diagnosed with breast cancer within twelve months prior to enrolling in the study, having had breast surgery (conservative or

mastectomy), diagnosis of breast cancer at disease onset, 30-65 years old, and note of whether they had received adjuvant chemotherapy.

In addition, subjects were screened with the Hospital Anxiety and Depression Scale (HADS) [13]; those scoring under ten points on the depression scale (from 0 to 21) were included. Of the 34 eligible patients approached to participate in this study, 31 subjects were enrolled in the present study. All participants provided informed consent prior to the completion of the study.

This study was approved by the ethics committee of the Department of Psychology of Kyoto Notre Dame University.

## **Measures**

### **Socio-demographic and cancer-related information**

The patients provided their age, gender, marital status, and family constitution by self-report. We also requested information regarding the stage of cancer, treatment, and metastasis of each subject.

### **Profile of Mood States - brief form (POMS)**

The POMS[14] was used to evaluate patient mood state, and comprises 30 items and 6 subscales: “Tension-Anxiety”, “Anger-Hostility”, “Confusion”, “Fatigue”, “Depression”, and “Vigor”.

Each item is scored from 0 to 4 points, with a lower score indicating poorer health.

### **Skalen zur Erfassung von Lebensqualität bei Tumorkranken (SELT-M)**

The SELT-M [15] was used to evaluate subject spiritual well-being, and is a 15-item questionnaire employing a 4-point scale (1-4), with higher scores indicating greater spiritual well-being. A single-item sub-scale “Overall QOL” asked for self-evaluation of the subject’s present spiritual state by a numerical scale from ten (highest) to zero (lowest). Other subscales included were “Orientation (3 items)”, “Spirituality (8 items)”, and “Support (3 items)”.

### **Mental Adjustment to Cancer (MAC).**

The MAC[16] was used to evaluate patient coping with cancer.

The MAC employs a 4-point scale (1-4) and consists of 5 subscales: “Fighting spirit”, “Anxious preoccupation”, “Hopelessness”, “Fatalism”, and “Avoidance”.

### **Description of semi-structuring**

Questionnaire consisting of statements to be completed by describing [the meaning and purpose of life] based on one’s experience:

The questionnaire consisted of 8 statements, referring from Parts A and B of the Japanese-version Purpose in Life Test[17]: {Daily life (work, housekeeping) to me seems: }, {Life to me seems: }, {I am a: }, {In thinking of my life, I: }, {Every

day is: }, {Illness and distress are: }, {If I could choose, I would: }, and {My life goals are: }. The latter part of each statement is described by respondents to complete the statement.

### **Term of evaluation**

We performed the above assessments three times: just before and after the intervention, as well as a month after the end of intervention.

### **Short-term Existential Group Therapy program (Short-term EGP)**

We have developed the Short-term Existential Group Therapy Program (Short-term EGP) for cancer patients[18]. A ninety-minute therapeutic group session was held once a week for five weeks. Each session consisted of between five to seven subjects with a psychiatrist and clinical psychologist as facilitators, and with a specific subject of discussion, as described below (1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>)).

Subjects were encouraged to talk freely about themselves and any existential anxieties they may have, such as sense of helplessness or fear of losing a peaceful life, which were shared among the participants. The patients could benefit from the presence of professionals whose basic suggestions were based on the encouragement of the patients to find social support from others. While the patients spoke and listened to others during the sessions, they were prompted to self-reflect and encouraged to believe in

themselves.

1<sup>st</sup>) Talk freely about yourself.

2<sup>nd</sup>) Share your anxieties. Be conscious of the changes the illness may have on your mind and body, and be aware of your emotions and condition. Express anxieties that stem from confrontation and uncertainty of your illness, and share them.

3<sup>rd</sup>) Re-Construct human relationships. Consider how to communicate with your family, friends, and other people who you are in conflict with or you feel ambivalent about.

4<sup>th</sup>) Cope with the stresses. Talk concretely about how to face stresses so that you may cope with anxieties and things you may be worried about.

5<sup>th</sup>) Know who you are. Consider what is important, be aware things that are intimate consistently to you in terms of the past, present, and future, by finding meaning and purpose in your life.

### **Statistical analysis**

#### Quantitative analysis

Statistical analyses were performed using the IBM SPSS 22.0J package for Windows.

Effects of therapy were assessed under an open trial design.

For spiritual well-being and emotional distress, mixed two-way repeated measures ANOVA was used, with coping styles for cancer (MAC subscales, divided into low or high-scoring subjects) as the between-subject factors, and time as the within-subject

factor. *Post hoc* tests were used to compare scores obtained at the three time points, comparing pre-intervention and post-intervention scores, as well as post-intervention and 1-month follow up assessment scores.

## Results

Table 1 shows the characteristics of the 31 subjects who completed the therapy program. Mean age of the participants was 50.5 years (from 32 to 65 years), 100% of the subjects were women. Regarding marital status, 81% of subjects were married and 19% were unmarried or divorced. Twenty-three patients underwent breast-conserving surgery and the other eight underwent mastectomy. With regard to metastasis, 61% of participants had no metastasis, 26% showed spread to lymph nodes, and 6% showed spread to bone.

### Table 1 insertion

The mean and standard deviation (SD) of the subscale scores of the Mental Adjustment to Cancer (MAC) assessment, divided into low- and high-scoring groups (LG, HG) were shown. Mean MAC scores for “Fighting spirit (score range: 16-64)” were  $52.53 \pm 4.40$  (HG),  $39.14 \pm 4.67$  (LG), for “Hopelessness (score range: 6-24)” were  $12.77 \pm 1.78$  (HG),  $7.35 \pm 1.22$  (LG), for “Anxious preoccupation (score range: 9-36)” were  $28.07 \pm 2.89$  (HG),  $20.00 \pm 2.26$  (LG), for “Fatalism (score range: 8-32)” were  $23.08 \pm 3.30$

(HG),  $14.38 \pm 2.45$  (LG), and the mean score for “Avoidance (score range: 1-4)” were  $3.63 \pm .52$  (HG),  $1.48 \pm .51$  (LG).

Correlation coefficients among the assessment subscales are shown in Table 2.

#### Table 2 insertion

MAC-Hopelessness was significantly associated with Tension ( $r=.65$ ;  $p=0.000$ ), Depression ( $r=.50$ ;  $p=0.005$ ), Anger ( $r=.61$ ;  $p=0.000$ ), Fatigue ( $r=.66$ ;  $p=0.000$ ), and Confusion ( $r=.58$ ;  $p=0.001$ ) of the POMS assessment, and with Overall QOL ( $r=.72$ ;  $p=0.000$ ), Orientation ( $r=-.53$ ;  $p=0.003$ ), and Spirituality ( $r=-.56$ ;  $p=0.001$ ) of the SELT-M assessment. MAC-fighting spirit was significantly associated with Overall QOL ( $r=.60$ ;  $p=0.001$ ), Orientation ( $r=.61$ ;  $p=0.000$ ), and Spirituality ( $r=.64$ ;  $p=0.000$ ) of the SELT-M assessment.

Two-way analysis of variance (ANOVA)

Impact of intervention on spiritual well-being.

To analyze the impact of intervention on spiritual well-being (SELT-M subscale), a mixed, two-factor repeated measures ANOVA was performed, with coping style for cancer (MAC subscales divided into low- and high-scoring groups) as the between-subject factors, and time as the within-subject factor (Table 3).

## Table 3 insertion

Figure 1 MAC “hopelessness” and SELT-M “QOL”(Figure1 insertion)

For SELT-M “Overall QOL”, significant interaction was observed with the MAC “hopelessness” subscale ( $F(2, 48) = 3.94, p < .05$ ). As a result of the simple main effect, SELT-M “Overall QOL” scores were significantly increased after intervention, and these scores were maintained a month after intervention, particularly in those with high MAC “Hopelessness” scores ( $F(1, 24) = 6.14, p < .05$  (Figure 1)).

For SELT-M “Spirituality”, no significant interactions were identified among any of the factors. However, time was identified as a significant main effect on MAC subscale scores. The SELT-M “Spirituality” scores were significantly increased after intervention, and these scores were maintained up to a month after intervention. A similar pattern of findings was observed in the analysis of the “Support” and “Orientation” subscales of the SELT-M. No significant interactions were observed in either of the factors. However, except for the subscale “Avoidance”, time was identified as a significant main factor of the MAC subscale scores.

#### Impact of intervention on emotional distress

The means and SDs of the POMS subscale scores (score range: 0-20) are found that: the average intensity of “Tension-anxiety” was 7.83 ( $SD = 4.59$ ); the average intensity of

“Depression” was 5.00( $SD=4.40$ ); the average intensity of “Anger-Hostility” was 3.66( $SD=2.66$ ); the average intensity of “Vigor” was 6.03( $SD=3.32$ ); the average intensity of “Fatigue” was 6.86( $SD=5.01$ ); and the average intensity of “Confusion” was 5.52( $SD=2.81$ ).

To analyze the impact of intervention on emotional distress (POMS), a mixed, two-factor repeated measures ANOVA was performed, with coping style for cancer (MAC subscales divided into low- and high-scoring subjects) as the between-subject factors, and time as the within-subject factor.

No statistically significant effects due to intervention were observed on the POMS subscale scores.

#### Qualitative analysis

Factors relieving existential distress and increasing the QOL were examined using analyzable descriptions of [the meaning and purpose of life] based on the experiences of 25 respondents. The questionnaire consisted of 8 statements to clarify their perceptions of life, illness, and themselves, and attitudes toward life purposes. Descriptions for each questionnaire subscale at 3 points: before (P1), after (P2), and 1 month after (P3) intervention, were classified based on their content and categorized by 2 researchers, adopting the KJ method.

The associations among <category>, <hopelessness> (2 MAC-based groups: High- and Low-hopelessness), and <QOL> (2 SELT-M-based groups: High- and Low-QOL) were examined by performing multiple correspondence analysis for each questionnaire subscale. In correspondence analysis, the closer the distance between categories, the higher the similarity between the items. Through the analysis for the High-hopelessness group, two statements {Daily life to me seems: } and {The purpose of my life is: } yielded notable results.

Figure 2 Multiple correspondence analysis correspondence map(Figure2 insertion)

As shown in Figure 2, the following variables were identified at P1 and P3 through classification of descriptions for {Daily life to me seems: } adopting the KJ method: P1: <duty/routine>, <place to stay>, <own benefit>, <role>, <essential>, <difficulty>, and <pleasure>; and P3: <duty/routine>, <place to stay>, <role>, <essential>, <pleasure>, <communication with others>, and <others>.

The distances between the High-hopelessness (P1:  $x=-0.887$ ,  $y=0.105$ ; and P3:  $x=-0.815$ ,  $y=0.422$ ) and High-QOL ( $x=0.756$ ,  $y=-0.860$ ; and  $x=0.517$ ,  $y=-0.082$ ) groups, and between the High-hopelessness ( $x=-0.887$ ,  $y=0.105$ ; and  $x=-0.815$ ,  $y=0.422$ ) and

Low-QOL ( $x=-1.154$ ,  $y=-0.322$ ; and  $x=-1.707$ ,  $y=-1.251$ ) groups at P1 and P3 were 1.88: 0.58 and 1.42: 1.90, respectively. Thus, the distance between the High-hopelessness and High-QOL groups was shorter at 1 month after intervention, representing their closer association.

Related factors were examined, focusing on <essential> and <duty/routine>. At P1, <duty/routine> ( $x=-0.737$ ,  $y=-0.616$ , distance=0.74) was closer to the High-hopelessness group than <essential> ( $x=0.269$ ,  $y=0.550$ , distance=1.24). In contrast, at P3, <essential> ( $x=-0.285$ ,  $y=-0.650$ , distance=0.58) was more closely associated with the group than <duty/routine> ( $x=-0.902$ ,  $y=-1.01$ , distance=1.43). <Essential> also became closer to the High-QOL group at P3 (distance at P1 and P3: 1.49 and 1.23, respectively), suggesting that <essential> increased the QOL in the High-hopelessness group. <Difficulty>, which was associated with the High-hopelessness group at P1, did not appear after intervention.

Furthermore, by similarly analyzing descriptions for {My life goals are:    }, <smile> was also found to increase the QOL in the High-hopelessness group.

## Discussion

We developed the Short-term Existential Group Therapy Program (Short-term EGP) based on research demonstrating the importance of spiritual well-being, and the need for

brief intervention to address these issues at the onset of disease. This study aimed to determine whether the Short-term EGP is an acceptable approach for cancer patients. We observed that the Short-term EGP intervention was effective in helping patients relieve their existential distresses. In addition, some of the treatment effects were observed to be maintained a month after end of the intervention.

The relative risk of suicide among cancer patients was reported to be high[19,20], with the relative risk of suicide among patients receiving a cancer diagnosis 3.1-fold higher the first year after diagnosis compared with cancer-free persons [21]. This has also been reported in Japan, with the risk of suicide death the first year after a cancer diagnosis higher (suicide RR = 23.9) than in the cancer-free population[22]. Psychological morbidity, such as depression and anxiety, within the second year of a cancer diagnosis has been reported to be higher than in healthy controls [23]. Furthermore, it has been reported that individuals are at risk of anxiety and depression within the first year of cancer diagnosis, despite having normal levels of anxiety and depression at cancer diagnosis [24]. Thus, in the present study, we monitored the psychological distress of subjects after a cancer diagnosis, and performed psychological intervention starting in the early stage of the patient's course. We observed that Short-term EGP may be an acceptable treatment approach, and this program may become a useful means of

psychological intervention for cancer patients during the early stages.

Of note, hopelessness was observed to be significantly associated with emotional distress and spiritual well-being. Our results suggest that hopelessness is an important issue to be addressed in cancer patients. In the present study, patients identified with hopelessness showed significant increases in SELT-M “Overall QOL” scores after intervention, which were maintained a month after the end of intervention. Thus, these results suggest that Short-term EGP is particularly effective for those patients who feel hopelessness after cancer diagnosis.

A previous investigation of the associations among anxiety, depression, and mental adjustment to cancer among 69 patients showed a positive correlation between anxiety and depression as well as between anxious preoccupation and hopelessness, and negative correlation between anxiety or depression with fighting spirit [25]. Depression explained a high proportion of variance in the prediction of hopelessness in cancer patients by regression analysis [26]. Chochinov et al. reported that 17 (8.5%) of 200 terminally ill inpatients acknowledged a serious and pervasive desire to die, which was shown to be correlated with ratings of pain and low family support, and most significantly with measures of depression [27]. Furthermore, hopelessness was identified as a predictive factor of suicidal ideation, and hopelessness was shown to be correlated

more highly with suicidal ideation than level of depression[28]. Of 92 patients, 16 were classified as having a high desire for hastened death (DHD), and hopelessness was identified as an independent and unique predictor of a DHD [29]. Another study reported that 13.7% of 131 patients experienced a moderate DHD, and 1.7% experienced a high DHD [30]. In this study, the authors clarified that helplessness and anxiety were the strongest predictors of a DHD. Kelly et al. reported a high DHD in 14% of 256 patients, and that higher levels of depressive symptoms, such as being admitted to an in-patient hospice setting, a greater perception of being a burden on others, lower family cohesion, lower levels of social support, higher levels of anxiety, and greater impact of physical symptoms, were associated with a higher rate of DHD [31]. Watson et al also suggested the possibility of association between hopelessness and cancer prognosis. In a 10-year follow-up investigation of 486 breast cancer patients, there is a continuing effect of hopelessness (< 12 scores) on disease-free survival[32].

These previous studies have demonstrated that hopelessness can threaten psychological well-being and cancer prognosis, and incite DHD. In the present study, no statistically significant effects of the intervention on the POMS subscale scores were observed because patients had undergone psychological screening using the HADS scale prior to intervention. However, the present study demonstrated that Short-term

EGP improved the spiritual well-being of cancer patients, some of whom may feel a degree of hopelessness during the early stages of their course. To identify factors relieving existential distress and increasing the QOL, descriptions of [the meaning and purpose of life] based on experiences of the respondents were analyzed. The associations among <category>, <hopelessness> (high and low MAC scores), and <QOL> (high and low SELT-M scores) were examined by performing multiple correspondence analysis for each questionnaire subscale. Based on the results, perceiving daily life as <essential and precious time> rather than <duty/routine>, and achievable goals, such as frequently making a <smile>, may help improve the QOL. The program led to cognitive changes in daily life and life purposes. Such changes may help to improve the QOL. These improvement may help stabilize the emotional state of a patient as well avoid or relieve DHD.

In the present study, 31 of 34 cancer patients completed intervention. We believe that this drop-out rate was low, and the remaining participants of the Short-term EGP continued to meet irregularly after termination of intervention. This high completion rate suggested that subjects may have appreciated the benefits of the five-week group therapy intervention due to the support in existential distress relief and improvement of QOL in a relatively short period of time. Thus, Short-term EGP may benefit both

patients and clinicians in labor, time, and medical expenses.

Several limitations of the present study should be considered. First, the participants in our study did not have severe depression. The results of the present study suggest that SHORT-TERM EGP is particularly effective for those patients who feel a degree of hopelessness, warranting further study on the effects of Short-term EGP on cancer patients who feel hopelessness with a higher degree of depression. Second, the present study did not enroll a control group. Future studies are required for comparing Short-term EGP with control groups with patients who do not participate in such group therapy.

## Reference

1. Spiegel D, Spira J. Supportive-Expressive Group Therapy: A treatment manual of psychosocial intervention for women with recurrent breast cancer. Stanford, CA: Stanford University School of Medicine; 1991.
2. Cunningham AJ. Integrating spirituality into a group psychological therapy program for cancer patients. *Integrative Cancer Therapies*. 2005;4(2):178–86.
3. Kissane DW, Bloch S, Smith GC, Miach P, Clarke DM, Ikin J, Love A, Ranieri N, McKenzie D. Cognitive-existential group psychotherapy for women with primary breast cancer: a randomised controlled trial. *Psycho-oncology*. 2003 ;12:532-46.
4. Gagnon P, Fillion L, Robitaille MA, Girard M, Tardif F, Cochrane JP, Le Moignan Moreau J, Breitbart W. A cognitive–existential intervention to improve existential and global quality of life in cancer patients: A pilot study. *Palliative and Supportive Care*. 2015;13:981-40.
5. Lebel S, Maheu C, Lefebvre M, Secord S, Courbasson C, Singh M, Jolicoeur L, Benea, A, Harris C, Fung MF, Rosberger Z, Catton P. Addressing fear of cancer recurrence among women with cancer: a feasibility and preliminary outcome study. *J Cancer Survive*. 2014;8:485-96.
6. Breitbart W. Spirituality and meaning in supportive care: Spirituality and meaning-

- centered group psychotherapy interventions in advanced cancer. *Support Care Cancer*. 2002;10:272-80.
7. Breitbart W, Rosenfeld B, Gibson C, Pessin H, Poppito S, Neison C, Tomarken A, Timm AK, Berg A, Jacobson C, Sorger B, Abbey J, Olden M. Meaning-centered group psychotherapy for patients with advanced cancer: a pilot randomized controlled trial. *Psycho-Oncology*.2010;19:21–8.
  8. Henderson VP, Clemow L, Massion AO, Hurley TG, Druker S, Hebert J R. The effects of mindfulness-based stress reduction on psychosocial outcomes and quality of life in early-stage breast cancer patients: a randomized trial. *Breast Cancer Res Treat*.2012;131:99-109.
  9. Hosaka T, Sugiyama Y, Tokuda Y, Okuyama T. Persistent effects of a structured psychiatric intervention on breast cancer patients' emotions. *Psychiatry Clin Neurosci*.2000;54:559-63.
  10. Fukui S, Kugaya A, Okamura H, Kamiya M, Nakanishi T, Imoto S, Kanagawa K, Uchitomi Y. A psychosocial group intervention for Japanese women with primary breast carcinoma. *Cancer*.2000;89:1026-36.
  11. Hirai K, Motooka H, Ito N, Wada N, Yoshizaki A, Shiozaki M, Momino K, Okuyama T, Akechi T. Problem-solving therapy for psychological distress in Japanese early-stage

- breast cancer patients. *Jpn J Clin Oncol.* 2012;42:1168-74.
12. Fujisawa D. Randomized controlled trial of new-generation cognitive behavioral therapy. (mindfulness cognitive therapy) for depression, anxiety and fatigue of patients with breast cancer. Japan Society for the Promotion of Science. 2018.
13. Zigmond AS, Snaith, RP, Kitamura T. The hospital anxiety and depression scale. *Arch Psychiatr Diagnostics Clin Eva.*1993;4:371–72 (in Japanese).
14. Yokoyama K, Araki S, Kawakami N, Tkakeshita T. Production of the Japanese edition of profile of mood states (POMS): assessment of reliability and validity. *Japanese journal of public health.*1990;37 (11):913–918(Japanese with English abstract).
15. Van Wegberg B, Bacchi M, Heusser P, Heiwig S, Schaad R, von Rohr E, Hürny C, Castiglione M, Cerny T.. The cognitive-spiritual dimension-an important addition to the assessment of quality of life: validation of a questionnaire (SELT-M) in patients with advanced cancer. *Annals of Oncology.*1998;9(10):1091-96.
16. Akechi T, Fukue-Saeki M, Kugaya A, Okamura H, Nishiwaki Y, Yamawaki S, Uchitomi Y. Psychometric properties of the Japanese version of the Mental Adjustment to Cancer (MAC) scale. *Psycho-oncology.*2000;9:395-401.

17. Okado T. PIL kennkyuukai.Ikigai. 1993 Kawadesyobou Shinsyo, Tokyo (in Japanese)
18. Kawase M, Nakamura C. Gan Kanjya Gurūpu Ryohou no Jissai (The Practice of Group Therapy for Cancer Patients).Kyoto:Kinpodo;2009.p.105-138.
19. Robinson D, Renshaw C, Okello C, Møller H, Davies EA. Suicide in cancer patients in South East England from 1996 to 2005: a population-based study. *British Journal of Cancer*.2009;101(1):198-201.
20. Yousaf U, Christensen ML. Suicides among Danish cancer patients 1971-1999. *British Journal of Cancer*.2005;92(6):995-1000.
21. Fang F, Fall K. Suicide and cardiovascular death after a cancer diagnosis. *New England Journal of Medicine*.2012;366(14):1310-8.
22. Yamauchi T, Inagaki, M, Yonemoto N, Iwasaki M, Inoue M, Akechi T, Iso H, Tsugane S. Death by suicide and other externally caused injuries following a cancer diagnosis: the Japan Public Health Center-based Prospective Study. *Psycho-oncology*. 2014;23(9):1034-41.
23. Mitchell AJ, Ferguson DW, Gill J, Paul J, Symonds P. Depression and anxiety in long-term cancer survivors compared with spouses and healthy controls: a systematic review and meta-analysis. *Lancet Oncology*.2013;14(8):21-32.

24. Boyes AW, Girgis A, D'Este CA, Zucca AC, Lecathelinais C, Carey ML. Prevalence and predictors of the short-term trajectory of anxiety and depression in the first year after a cancer diagnosis: a population-based longitudinal study. *Journal of Clinical Oncology*. 2013 ;31(21):2724-2729.
25. Kulpa M, Kosowicz M. Anxiety and depression, cognitive coping strategies, and health locus of control in patients with digestive system cancer. *Przegląd Gastroenterologiczny*.2014;9(6):329-335.
26. Grassi L, Travado L, Gil F, Sabato S, Rossi E, Tomamichel M, Marmai L, Biancosino B, Nanni MG, Group TS. Hopelessness and related variables among cancer patients in the Southern European Psycho-Oncology Study (SEPOS). *Psychosomatics*.2010;51(3) :201-207.
27. Chochinov HM, Wilson KG, Enns M, Enns M, Mowchun N, Lander S, Levitt M, Clinch JJ. Desire for death in the terminally ill. *The American Journal of Psychiatry*.1995;152 (8):1185-91.
28. Chochinov HM, Wilson KG. Enns M, Lander S. Depression, Hopelessness, and suicidal ideation in the terminally ill. *Psychosomatics*.1998; 39(4):366-70.
29. Breitbart W, Rosenfeld B, Pessin H, Kaim M, Funesti-Esch J, Galietta M, Neison CJ, Brescia R. Depression, hopelessness, and desire for hastened death in

terminally ill patients with cancer. *JAMA*.2000;284(22):907-11.

30. Shim EJ, Hahm BJ . Anxiety, helplessness/hopelessness and 'desire for hastened death' in Korean cancer patients. *European Journal of Cancer Care*.2011;20(3):395-402.

31. Kelly B, Burnett P, Pelusi D, Badger S, Varghese F, Robertson M. Factors associated with the wish to hasten death: a study of patients with terminal illness. *Psychological Medicine*.2003 ;33(1):75-81.

32. Watson M, Homewood J. Influence of psychological response on breast cancer survival: 10-year follow-up of a population-based cohort. *European Journal of Cancer*.2005;41(12):1710-14.

#### Author information

Department of Psychology, Kyoto Notre Dame University, 1 Minami Nonogami-cho, Shimogamo Sakyo-ku, Kyoto, 606-0847, Japan.

Chizu Nakamura, Masatoshi Kawase

E-mail:nakchizu@notredame.ac.jp

Corresponding author

Correspondence to Masatoshi Kawase

Ethics declarations

Ethics approval and consent to participate

This study was approved by the ethics committee of the Department of Psychology of Kyoto Notre Dame University. Informed consent was obtained from each participant.

Consent for publication

We obtained consent for publication from each participant.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

Not applicable.

Authors' contributions

Not applicable.

Acknowledgements

This research is financially supported from 2010 to 2016 by Japan Society for the Promotion of Science (Grant-in-Aid for Scientific Research No.22530772 and No. 25380960).

Authors' information (optional)

Not applicable.