

A Preliminary Report of the Effects of Dharma Creative Art Therapy on Psychological Impacts and Quality of Life of Thai Cancer Patients: A Non-Randomized Trial

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ABSTRACT

Objectives: To determine the effects of Dharma Creative Art Therapy (CAT) on psychological impacts and quality of life

Study design: Non-randomized trial

Setting: Department of Medicine, Siriraj Hospital

Subjects: Cancer patients during chemotherapy

Methods: This preliminary study recruited eighty-two patients into an experimental group which participated in a 90-minute Dharma CAT session for two consecutive days, while the control group received only a leaflet on holistic approach of cancer palliative treatment. Psychological outcomes of the Dharma CAT were measured using the Hospital Anxiety and Depression Scale (HADS), the Thai Stress Test (TST), the Thai Mental Health Index-15 (TMHI-15), and the EQ-5D-5L, which were evaluated before, immediately after, and one month after the intervention.

Results: After the intervention, the CAT group had significantly improved positive TST and TMHI-15 scores compared to the control ($p=0.006$ and $p=0.018$, respectively). The effect size of Dharma CAT on positive TST was moderate (0.568) and was minimal for TMHI-15 (0.373). The success rate of patients after receiving Dharma CAT therapy on anxiety, depression, stress, and mental health presented with a relative risk (RR) of 3.0 (95CI: 0.64, 14.00), 1.5 (95CI: 0.46, 4.92), 2.5 (95CI: 0.85, 7.33), and 0.8 (95CI: 0.23, 2.77), respectively but the changes were not statistically significant. All outcomes were analyzed and compared between groups at baseline, at the end of the study, and at the 1-month follow-up. No statistically significant differences between the groups for any of the outcomes were found.

Conclusions: Dharma CAT reduces stress and improves mental health but does not affect anxiety, depression, or quality of life. It may be considered an adjunctive therapy for reducing stress and improving mental health of cancer patients during chemotherapy.

Keywords: art therapy; anxiety, depression, quality of life, cancer
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Introduction

Cancer is one of the health issues of greatest concern worldwide due to its increasing incidence and high mortality rate. The nature of the disease itself and its treatments have consequences. A cancer diagnosis may be perceived by some patients as a "death sentence" despite a good prognosis for some types of cancer.¹ Physical symptoms of cancers are mostly pain and fatigue, limiting the patient's ability to perform vocational tasks, social activities, and even routine self-care. The physical illnesses and the cascade of impacts that can directly influence the patient's mental health and may later lead to disability and deterioration of their overall well-being and quality of life.²

Depression is a common psychological problem among cancer patients. The high prevalence of depression in cancer patients is associated with many factors, including pain, complications from cancer treatment itself, and poor quality of life.^{3,4} Alternative treatments could potentially increase the well-being of cancer survivors by improving their psychological status and quality of life by reducing the severity of both somatic and psychiatric symptoms, e.g., the provision of psychotherapy, cognitive-behavioral therapy, and recreational therapy, which involve activity-based intervention to rehabilitate, disabled functions, improved physical health, psychological health, and general well-being. Recreational therapy has been found to be beneficial in patients with life-changing chronic non-communicable diseases, including cancer, providing them more independence and an adapted "new normal" life post-cancer therapy.⁵ Creative art therapy (CAT) is a form of recreational therapy that uses art as a medium to provide alternative ways for those being treated to communicate and express themselves.⁶ Studies have shown that exposure to CAT can improve many aspects, such as anxiety, depression, and quality of life.⁷⁻⁹

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Dharma CAT is a type of creative art therapy that applies Buddhist psychology to therapeutic activities provided to the patient. Studies of mindfulness-based stress reduction based on the Buddhist teaching of the concept of mindfulness have been found to have positive effects on both psychological and physiological stress-related outcome measures among cancer patients.¹⁰ The therapists' role is to guide and encourage participants to engage in the processes and to express their creativity in a safe and relaxed atmosphere. To the best of our knowledge, there have been no published studies on how Buddhist psychology-based CAT affects Thai cancer patients. The purpose of this study was to determine the effects of Dharma CAT on the psychological consequences and quality of life of cancer patients receiving in-patient chemotherapy.

Materials and methods

This study was a non-randomized trial. The study protocol was approved by the Siriraj Institutional Review Board (750/2563(IRB4), and funding was provided by the Routine-to-Research unit ((IO) R016435027), Faculty of Medicine Siriraj Hospital, Mahidol University, registration number TCTR20210401003. The study period was from April 19, 2021 to May 31, 2022.

Patients with cancer who received in-patient chemotherapy service, were aged 18 years or older, were Buddhist, able to communicate verbally in Thai, and willing to participate were recruited. Patients with unstable medical conditions, e.g., alteration of consciousness, unstable vital signs, dyspnea, or a numerical rating scale of pain $> 5/10$, were excluded. Each participant was informed about the study before signing the consent form.

The primary outcome was assessed using the Hospital Anxiety and Depression Scale (HADS) to detect anxiety and depression. That scale is comprised of 14 items, 7 for anxiety and 7 for depression. Each item is scored from 0 to 3. Scores are summed for each subscale, and a score of ≥ 8 was considered a possible case.¹¹ The scale has been translated into a Thai version (Thai HADS) which has been shown to be valid and reliable for both depression and anxiety with high sensitivity and specificity.¹²

The Thai Stress Test (TST) is a 24-item test with high construct validity and reliability for secondary outcomes.¹³ The first 12 items relate to the adverse effects of stress, and the following 12 items relate to the positive effects. The scores in each part are stratified into five levels and divided into nine groups using a matrix table. Participants in group 1 were considered to be in excellent mental health, groups 2, 3, and 4 were considered to have normal mental health, and groups 5 and 6 were considered to be mildly stressed. Groups 7, 8, and 9 were considered to be stressed.

The Thai Mental Health Indicator-15 (TMHI-15) is a short 2007 version of TMHI-55.¹⁴ Each answer is scored on a scale of 1-4, which are summed and interpreted according to the norm values: 51-60 means good, 44-50 means fair, and

15-43 means poor mental health. In addition, the Thai version of the five-level European QoL-five dimension (EQ-5D-5L) was used to assess the quality of life.¹⁵ The EQ-5D-5L is composed of 5 different dimensions (movement, self-care, daily routine, pain and discomfort, anxiety and depression), each scored from 1-5. The scores of each question were calculated on a utility-scale ranging from -1 to 1, where 1 means the healthiest, 0 means dead-like, and less than 0 means worse than dead. All outcomes were assessed three times: at baseline, immediately after the last session, and 1-month after treatment.

Patients receiving chemotherapy at Siriraj Hospital were recruited and assessed for eligibility. Eligible patients were provided with a patient information sheet explaining the study protocol, and informed consent was obtained. They were then allocated to either the experimental or the control group according to their preference. The experimental group received Dharma CAT, which was carried out in a conference room. The number of participants in each session did not exceed 6, respecting the physical distancing policy during the COVID pandemic. A total of 2 days of Buddhist psychology-based creative art therapy was provided to members of the experimental group by a team of 2 art therapists for 90 minutes per session, one session per day.

Each CAT session was divided into three parts. The first part included warm-up activities that lasted for 30 minutes. It started with meditation with music to create a calm atmosphere and encourage concentration on the therapy. Then a specific warm-up activity familiarized participants with the tool and art activity theme before starting each main activity. Both warm-up activities facilitated participants' getting used to the art mediums and the ambiance of the group therapy.

The second part was the main activity which lasted 45 minutes each session. It was composed of three activities that gave more time to participants and the art medium. The first activity in this part was Clay Talk, which used earthly material to represent emotion. The participants were asked to mould their feelings about the day and to use their hands to mould the clay meditatively into different shapes and forms. This technique helps individuals connect with their inner selves and alleviate stress and anxiety.

The second activity was an Emotional Card activity which used a deck of cards with words of emotion. It aimed to help with emotional awareness and practice of social skills in group therapy. Each participant expressed difficult feelings that were difficult to explain in words. Then the participants were asked to choose two cards. The first card represented the emotion that the participant felt was most desired to express. The second card was a positive emotion that the participant wanted to cultivate more at that moment.

The third activity was the Body Mandala which involved creating a drawing of the body as a map that everyone could read and communicate, knowing that showed where emotional and physical feelings are situated in the body. At the

start of the third activity, all participants were asked to draw a healing symbol for the warm-up session. Mandalas are geometric symbols traditionally used in ceremonies and Buddhist meditation practices. During this creative art activity, the participants metaphorically described their body as a mandala (map) by drawing an outline of the body on paper. During meditation, participants meditated using the technique of body scan, using colors and forms to represent feelings and emotions in each area through a of the body scan. At the end of the body scan, participants were asked to deliver a crucial message to communicate with one particular part of the body, they had chosen and which they felt needed more healing and self-communication.

The third activity also included cool-down activities that lasted 10 minutes. The final session concluded with a review of the purpose of each activity and followed by singing and creating an ending in using Buddhist belief as meditation to dedicate the merit of the goodness we all have done as a group. The session ended with a wishing circle, which made for a positive ending to the session.

In addition, both groups received a leaflet, "Effects of Cancer on Psychological Status and Quality of Life and Choice of Therapies," which contains information about different types of therapies, including Dharma CAT. The control group, which did not participate in the CAT session, received nothing except an only the leaflet.

Coauthors (P.L. and P.Y.) assessed the outcome measurements including giving the case record form containing all the questionnaires to each of the participants at baseline before starting the program and again immediately after the last session. At discharge from the hospital, each of the participants in both groups received a package containing all the questionnaires and was asked to complete them and return them to a researcher 1-month after discharge.

Statistical analysis

According to Bar-Sela et al.'s study on depression and fatigue, participants who received an entire course of art therapy had a mean HADS-Depression score of 8.9 (SD = 3.8) prior to receiving the art therapy.¹⁶ That score decreased by 2.1 to 6.8 (SD = 3.9) after the creative art therapy. With a predefined significance level of 0.05 (type I error = 0.05, 2-sided) and a power of a hypothesis test of a type II error of 0.20, 112 participants were needed. Therefore, a total of 136 participants, with 68 participants per group, were needed if a 20 dropout was expected.

Demographic and baseline characteristics are reported as descriptive statistics. Continuous data are presented as mean \pm standard deviation (SD). Categorical data are presented as numbers and percentages. An unpaired t-test was used to compare continuous data, and a chi-square test was used to compare categorical data. The mean difference in all outcomes at post-treatment and the 95 confidence interval (95 CI) between groups adjusted for pre-test scores were

analyzed using analysis of covariance (ANCOVA). The differences between pre-and post-treatment within each group were determined using a paired t-test. The changes over time of all outcomes were analyzed using repeated measure analysis of variance (ANOVA) to evaluate the effect of time and intervention on the groups. The effect of treatment on anxiety, depression, TST, and TMHI within groups and between groups was tested using the McNemar test and the chi-square test. A per-protocol analysis was used to analyze the outcomes. A p-value of less than 0.05 was considered statistically significant. All data were analyzed using PASW Statistics (SPSS) 18.0 (SPSS Inc., Chicago, IL., USA).

Results

This is a preliminary study report because although the total sample size should have been 136, only 82 eligible patients were recruited. The screening number was 246 cancer patients, but 164 participants were excluded due to not meeting the inclusion criteria (n = 40), having previously participated in a study (n=70), declining to participate (n = 15), inconvenience (n = 16) and pandemic concerns (n = 23). The 82 participants recruited were allocated equally to the experimental and control groups, as shown in the study scheme in Figure 1. There were 41 dropouts (1-month follow-up mail not received: 22 in the experimental group and 19 in the control group).

Demographic and baseline characteristics of the participants are shown in Table 1. The average age of the participants was 48 to 52 years. Most participants were married, had non-hematologic cancers, and were non-recurrent cancer participants. The time after diagnosis varied, with most patients having been diagnosed for more than three months. There were no statistically significant differences in any of the variables, including age, gender, marital status, cancer type, recurrence, and time after diagnosis between the groups ($p > 0.05$).

Table 2 compares all outcomes within and between groups. When compared to the baseline, there were statistically significant differences in the TST negative score ($p = 0.035$) and TMHI-15 ($p = 0.013$) in the experimental group, as well as the EQ-5D-5L in the control group ($p = 0.010$). Concerning the between groups comparison, the TST positive score and TMHI-15 score showed statistically significant differences in improvement between the experimental and control groups ($p = 0.006$ and $p = 0.018$, respectively). When adjusted for the effect size, the TST positive and TMHI-15 had effect sizes of 0.568 and 0.373, respectively. Dharma CAT had a moderate effect on stress (0.5 or higher) and only a minimal effect (0.2 or of patients after receiving Dharma CAT therapy on anxiety/depression, evaluated by HADS and for stress and mental health, are presented with relative risk (RR) of the intervention in Table 3. The relative risk (RR) for anxiety, depression, stress, and mental health were 3.0 (95CI: 0.64, 14.00); 1.5 (95CI: 0.46, 4.92); 2.5 (95CI: 0.85,

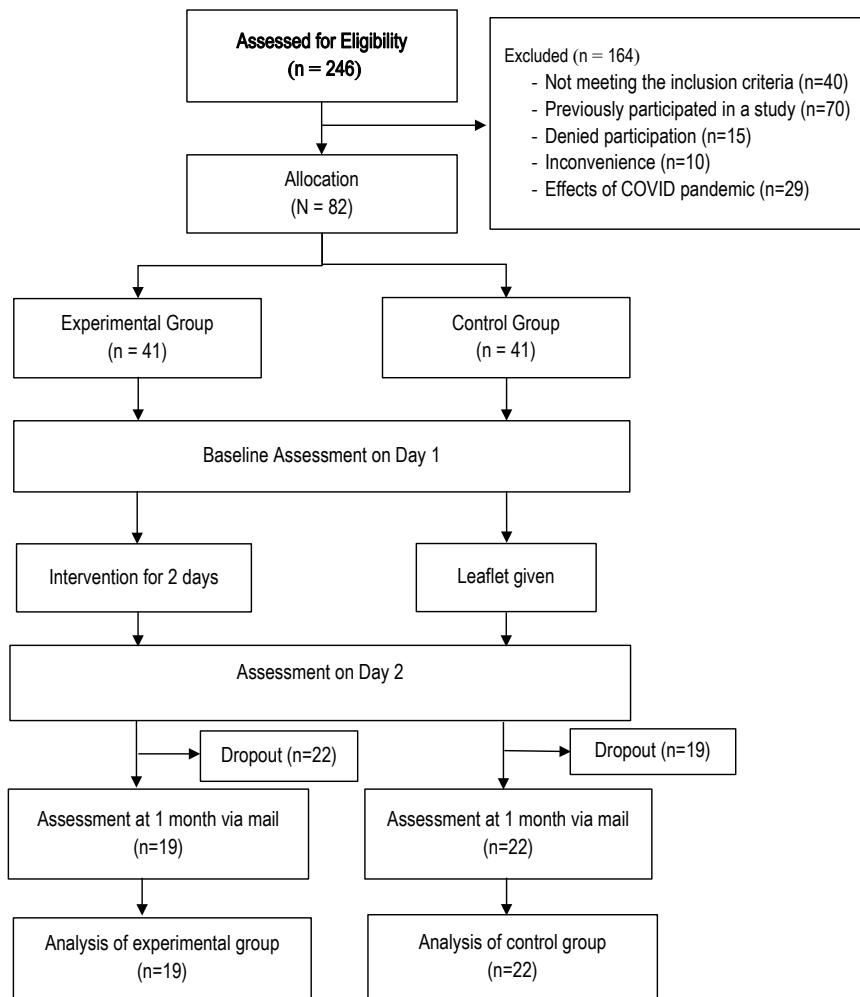


Figure 1. Flow chart of the study procedure

Table 1. Demographic and baseline characteristics

| Variable | Experimental group Dharma CAT and leaflet (n = 41) | Control group leaflet (n = 41) | p-value |
|-----------------------------------|--|--------------------------------------|---------|
| Age (years) ¹ | 48.2 (13.5) | 51.9 (12.5) | 0.212 |
| Gender ² | | | 0.100 |
| Female | 31 (75.6) | 24 (58.5) | |
| Male | 10 (24.4) | 17 (41.5) | |
| Marital status ² | | | 0.749 |
| Married | 22 (53.7) | 24 (58.5) | |
| Single | 17 (41.5) | 14 (34.1) | |
| Divorced | 2 (4.9) | 3 (7.3) | |
| Cancer types ² | | | 0.078 |
| Hematologic | 10 (24.4) | 4 (9.8) | |
| Non-hematologic | 31 (75.6) | 37 (90.2) | |
| Recurrence ² | | | 0.078 |
| No | 31 (75.6) | 37 (90.2) | |
| Yes | 10 (24.4) | 4 (9.8) | |
| Time after diagnosis ² | | | 0.233 |
| < 3 months | 8 (19.5) | 5 (12.2) | |
| 3-6 months | 12 (29.3) | 17 (41.5) | |
| 6-12 months | 12 (29.3) | 6 (14.6) | |
| > 1 year | 9 (22.0) | 13 (31.7) | |

¹Mean (standard deviation), ²number (%); Data were analyzed using unpaired t-test, Mann-Whitney U test, or chi-square test; *p < 0.05 indicates statistical significance

CAT, creative art therapy

Table 2. All main outcomes were compared with baseline (pre-post comparison within the group) and the mean difference (standard deviation) between groups (control and experimental) with effect size

| | Experimental group (n = 41) | | | Control group (n = 41) | | | Control - experimental | | |
|--------------------|-----------------------------|-----------------|---------|------------------------|---------------|---------|--------------------------|---------|-------------|
| | Pre | Post | p-value | Pre | Post | p-value | Difference (95 CI) | p-value | Effect size |
| TST negative score | 6.2 (5.7) | 5.0 (3.7) | 0.035* | 8.8 (7.6) | 7.9 (7.9) | 0.091 | 0.90 (-0.57, 2.38) | 0.225 | 0.146 |
| TST positive score | 26.1 (7.8) | 28.3 (7.6) | 0.062 | 23.7 (10.4) | 22.2 (10.2) | 0.385 | -5.10 (-8.68, -1.51) | 0.006* | 0.568 |
| HADS-A | 4.3 (3.1) | 4.1 (2.7) | 0.668 | 6.5 (4.2) | 6.0 (3.7) | 0.289 | 0.49 (-0.54, 1.53) | 0.345 | 0.149 |
| HADS-D | 4.2 (2.7) | 3.8 (2.8) | 0.301 | 6.2 (5.1) | 5.5 (4.4) | 0.186 | 0.33 (-0.77, 1.43) | 0.557 | 0.089 |
| TMHI-15 | 48.2 (5.1) | 50.4 (5.5) | 0.013* | 47.6 (7.4) | 47.6 (7.1) | 0.968 | -2.38 (-4.34, -0.42) | 0.018* | 0.373 |
| EQ-5D-5L | 0.8808 (0.1276) | 0.8894 (0.1491) | 0.538 | 0.7856±0.2110 | 0.8361±0.1768 | 0.010* | 0.0190 (-0.0250, 0.0631) | 0.392 | 0.116 |

Data were analyzed using paired t-tests for comparison within a group.

Data were analyzed using covariance (ANCOVA) analysis to compare between groups adjusted for the pre-test. *p < 0.05 indicates statistical significance

TST, Thai Stress Test; HADS-A, Hospital Anxiety Depression Scale-Anxiety; HADS-D, Hospital Anxiety Depression Scale-Depression;

TMHI-15, Thai Mental Health Indicator-15; EQ-5D-5L, Euro quality of life-5 dimensions-5 levels.

Table 3. The success rate of patients for improving anxiety, depression, stress, and mental health after receiving Dhamma Creative Art Therapy (CAT) with relative risk (RR) of the intervention

| | Experimental group (n = 41) | Control group (n = 41) | RR (95 CI) | p-value |
|-------------|-----------------------------|------------------------|--------------------|---------|
| Anxiety | 6 (14.6) | 2 (4.9) | 3.00 (0.64, 14.00) | 0.349 |
| Depression | 6 (14.6) | 4 (9.8) | 1.50 (0.46, 4.92) | 0.914 |
| Stress test | 10 (24.4) | 4 (9.8) | 2.50 (0.85, 7.33) | 0.151 |
| TMHI-15 | 4 (9.8) | 5 (12.2) | 0.80 (0.23, 2.77) | 0.800 |

TMHI-15, Thai Mental Health Indicator-15

7.33); 0.8 (95CI: 0.23, 2.77), respectively. However, no statistically significant difference was found for any of the outcomes.

Figure 2. compares the mean (SD) of anxiety, depression, TMHI-15, and EQ-5D-5L at baseline, at the end of the study, and at the one-month follow-up between groups. There were no statistically significant differences between groups for any of the outcomes (HADS-A, p = 0.055; HADS-D, p = 0.105; TMHI-15, p = 0.063; EQ-5D-5L, p = 0.062).

Discussion

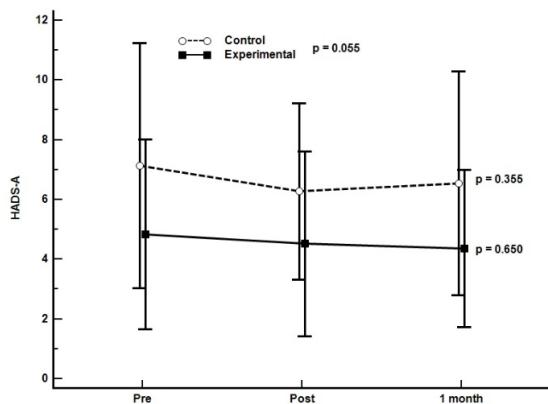
This study aimed to fill the knowledge gap regarding whether Dharma CAT can positively impact psychological consequences and quality of life in Thai cancer patients receiving chemotherapy. Our study found that Dharma CAT can decrease stress as shown by significant reductions in negative TST scores and increased TMHI-15 scores of patients after receiving the intervention. In addition, comparison between groups found that Dharma CAT significantly increased the TST positive scores and TMHI-15 scores in the experimental group, which was better than the control group. There was no study related to MCID of TST and TMHI-15, so only statistically significant differences between groups could be reported. The RR of TMHI-15 was less than 1, which indicates risk reduction after receiving Dharma CAT therapy; however, the difference was not statistically significant.

The effect of Dharma CAT may not be sufficient to significantly change the anxiety/depression score. For that

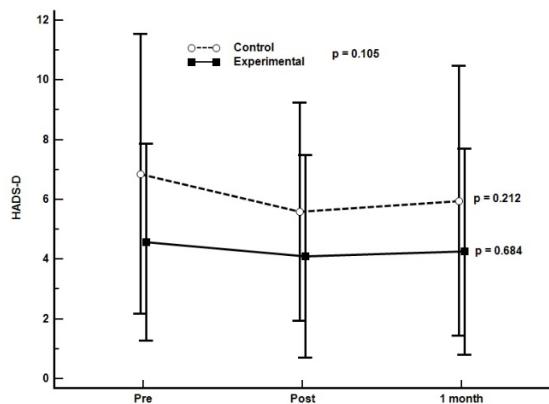
reason, this report does not include the MCID of the HADS score. It appears that treatment with CAT can decrease the percentage of participants with anxiety/depression, but the difference between the groups was not statistically significant. The failure to find a significant difference may be due to the smaller than anticipated sample size which may have been a result of the COVID-19 pandemic that occurred during recruitment. After performing post-hoc power analysis, we found only 10-11 of power. Thus, this study can be considered only as a preliminary feasibility report. Our sample size was inadequate to demonstrate clearly Dharma CAT's efficacy with cancer patients. In addition, we did not calculate the sample size to include secondary outcomes; further studies with an adequate sample size and with measurement of depression/anxiety resulting from the patient's cancer status should be performed to determine whether CAT can alleviate that psychological reaction.

There have been many studies concerning the effect of creative art.¹⁷⁻¹⁹ Chiang et al. reported that creative art provides a high benefit in minimizing symptoms and maximizing functions with low risk among patients with mental illness.¹⁷ Forzoni et al. demonstrated that art therapy helped reduce stress among most cancer patients while they were receiving chemotherapy treatment.¹⁸ Another study performed by Collette et al. reported on the benefit of art therapy in a palliative care unit and found that art therapy was beneficial in reducing the intensity of anxiety, depression, and pain. In addition, those patients in that study reported their experiences in participating in the art therapy intervention of including

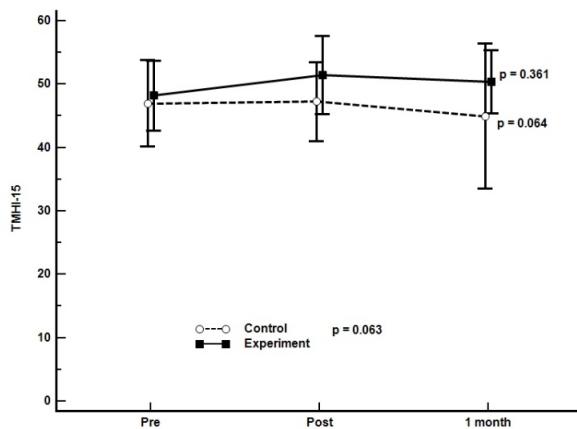
HADS-A



HADS-D



TMHI-15



EQ-5D-5L

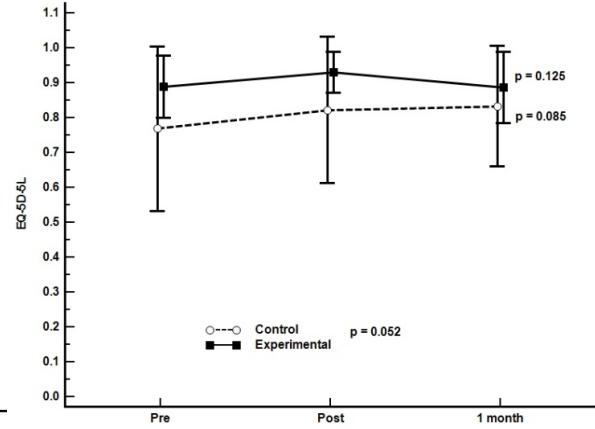


Figure 2. Mean, SD of Hospital Anxiety Depression Scale-Anxiety (HADS-A), Hospital Anxiety Depression Scale-Depression (HADS-D), Thai Mental Health Indicator-15 (TMHI-15), and Euro quality of life-5 dimensions-5 levels (EQ-5D-5L)

feeling calm, being entertained, and being able to express their emotions.¹⁹

Another issue of concern with the present study is the short duration of the Dharma CAT program. We had initially planned for a 3-day program, but could not deliver that due to the limited resources of the chemotherapy ward and the admission and discharge system in our hospital, i.e., patients admitted on Monday were to be discharged on Wednesday before noon to make room for other patients to be admitted that afternoon and discharged on Friday at noon. The creative art therapists suggested adjusting the schedule to a 2-day program. In comparison, the Chimluang et al. study performed quasi-experimental research on Dharma CAT's effect on palliative cancer patients.²⁰ In that study, the experimental group received more than our Dharma CAT program (6 activities within three days) and the results showed significantly higher improvement in physical and functional well-being in the experimental group.

Regarding anxiety and depression, Bosman et al. performed a systematic review in 2021 to determine the effects of art therapy on anxiety and depression in cancer patients.

They found that art therapy could possibly decrease anxiety and depression and improve the quality of life in adults with cancer.⁹ However, our study was not able to demonstrate the effect of art therapy on anxiety and depression. The RR seemed to be greater than 1 (RR 1.5-3.0 for anxiety and depression, respectively), but without statistical significance. This result may be due to several factors, e.g., (1) low scores for anxiety/depression at baseline and the long period since the onset of cancer was detected, (2) most participants (80-88) presented with a time after diagnosis of more than three months and (3) most participants had no cancer recurrence (76-90). All of these factors may have allowed the patients to adjust their psychological status to cope with their cancer better than newly diagnosed patients. This may also be a reason for the lower-than-expected percentage of participants with stress (26.8-56.1), anxiety (14.6-41.4), depression (12.2-36.6), and poor psychological health (17.1-31.8). That is, patients who had been diagnosed sometime ago were able to cope with their cancer better than newly diagnosed patients. Further study among newly diagnosed patients may better demonstrate the benefit of Dharma CAT

in improving the psychological status of cancer patients.

Several limitations might also have influenced the results and applicability of this study. First, we calculated that only 20 would drop out, but we were not able to recruit additional patients due to the COVID-19 pandemic, a situation which limited not only participant recruitment but also protocol continuity and outcome assessment. In addition, the budget for creative art therapists was limited. Second, the medical condition of most of the cancer patients, which included physical fatigue and side effects of medical treatment, may have limited study recruitment and compliance. Third, the study was initially designed as a randomized controlled trial. However, the Dharma CAT requires a group therapy effect, making the randomization process infeasible, influencing baseline characteristics and affecting outcomes. Fourth, the duration of the Dharma CAT sessions may need to be longer. As previously mentioned, due to the limitations of the system of admission to the chemotherapy ward, the treatment duration of Dharma CAT sessions may have been inadequate to have a definite effect on the psychological status of the patients. Fifth, Dharma CAT was performed by specialists in creative art, so the results cannot be generalized to hospitals with no creative art therapists. Sixth, confounding factors for non-randomized trials in this study included cancer recurrence rate and duration of cancer after diagnosis. Fortunately, most patients in both groups had no recurrence (75.6-90.2) and for a relatively time after diagnosis (more than three months) which was not different between the groups. Lastly, there was a high dropout rate during the follow-up period. The final number of participants analyzed, approximately half of the initially included participants, exceeded the expected number of dropouts. Therefore, the probability of beta error was increased, affecting the result's applicability.

Conclusions

Dharma creative art therapy reduces stress and improves mental health. However, no statistically significant results were achieved by the use of CAT with Thai oncology patients in terms of decreasing anxiety or depression and improving quality of life during chemotherapy. Further studies of Dharma CAT with an adequate sample size, appropriate program duration, and being conducted with newly diagnosed cancer patients is recommended.

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Disclosure statement

The authors report that there are no competing interests to declare. Before starting recruitment, this study was registered with the Thai Clinical Trial Registry (No TCTR: 20210401003).

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Author contributions

All authors contributed to the conduct of the study. JJ and VK were responsible for the drafting of the protocol. CA, CH, and KT provided suggestions and cooperated in the recruitment process. PL and PY contributed to the data collection. JJ and VK wrote the manuscript. All authors approved the final version.

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