

Efficacy of Art Therapy for Cancer Patients Undergoing Chemotherapy along the Uncertainty Theory and Patients' Coping

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Abstract

Background: Cancer patients undergoing chemotherapy sometimes experience psychological distress like depression, anxiety, or illness uncertainty. Art therapy is one of the psychological interventions, but it was no wonder how art therapy was useful for them. **Purpose:** The purpose of this study was to investigate 1) potentiality of art therapy for cancer patients undergoing chemotherapy, 2) making patterns from separating patients along the Uncertainty theory to understand their psychological state, 3) coping with cancer to find a chance from uncertainty to certainty. **Method:** Nine cancer patients participated in this study in a general hospital. A patient made arts such as tree drawing, free drawing, or collage in a chemotherapy room individually with a psychotherapist. The duration of a session was about 1 hour and there were two times total. They also answered the question of how they recognized and coped with cancer to find factors changing from uncertainty to certainty. **Results:** Patients could express their emotions or thinking in the art therapy, and most arts in the second session were much better than first. Patients were separated into 4 patterns based on Uncertainty theory: a) treatments continued, psychology calm, b) living beyond the life expectancy and continuing treatments, psychology calm, c) receiving the life expectancy announcement, psychology instability, d) stopping chemotherapy, psychology confusing. We could understand patients' psychological state from the arts. Coping categories were "Various ways to receive the announcement", "Regret of delaying medication", "Confronting side effects or aftereffects", "The desire to fight with cancer", "Letting things drift", and "Recognition of living the day". **Conclusion:** Art therapy may be useful for cancer patients as catharsis undergoing chemotherapy. Referring to the Uncertainty theory is useful for psychologists or medical staffs to understand patients' psychological states. Patients' coping may be helpful to go over uncertainly like

“the desire to fight with cancer” or “Letting things drift”. In the future, we need to include the number of participants and approve the utility of the art therapy.

Keywords

Chemotherapy, Cancer Patients, Art Therapy, Uncertainty Theory, Coping

1. Introduction

The number of cancer patients is increasing every year. [World Health Organization \(2024\)](#) reported the following, “In 2022, there were an estimated 20 million new cancer cases and 9.7 million deaths. The estimated number of people who were alive within 5 years following a cancer diagnosis was 53.5 million. About 1 in 5 people develop cancer in their lifetime, approximately 1 in 9 men and 1 in 12 women die from the disease.” Mental and psychological support will be needed as much as developing medical technology.

Chemotherapy is one of the most effective treatments. However, they often experience physical side effects, appearance changes, and psychological distress like anxiety, depression, or illness uncertainty. Illness uncertainty is defined as “the inability of a person to determine the meaning of illness-related events” ([Mishel, 1988](#)). It can persist across the cancer trajectory from the time of diagnosis, through treatment, to long-term survivorship ([Garofalo et al., 2009](#)), and can be exacerbated by disease progression ([Guan et al., 2020](#)). Previous studies showed that increased uncertainty adversely affects cancer patient’s psychological adjustment ([Jabloo et al., 2017](#); [Fisenberg et al., 2015](#)). [Massazza et al. \(2023\)](#) show the association between uncertainty and mental health by review of quantitative literature.

On the other hand, there is a positive aspect of uncertainty. Depending on the context, uncertainty can be appraised not only as a threat but also as an opportunity. Some have even found an association with certain positive psychosocial variables, such as hope ([Gill & Morgan, 2011](#)). The theory explains how people construct meaning for illness events, with uncertainty indication the absence of meaning. [Morriss et al. \(2022\)](#) suggest that uncertainty is involved in eliciting and modulating a wide array of emotional phenomena beyond fear and anxiety. Building on this, we hypothesized that certain factors or coping mechanisms could help cancer patients transition from uncertainty to certainty.

Art Therapy is one of the most effective cares for cancer patients. [Jiang et al. \(2020\)](#) conducted a meta-analysis and showed that art therapy and a positive effect on quality of life and symptoms in cancer patients and can be used as a complementary treatment for cancer patients. About chemotherapy, [Elimimian et al. \(2020\)](#) demonstrated that art therapy improved emotional distress, depression, anxiety and pain after an hour-long art therapy session like painting, drawing, clay

work, and collage construction.

In Japan, [Nagasaka & Mashima \(2013\)](#) investigated contents of uncertainty by the interview and suggested nursing interventions. [Nakahira et al. \(2021\)](#) showed the psychological adaptation of cancer patients undergoing chemotherapy by book review. These studies were observational studies or literature reviews, and there are no interventional studies. [Shimizu \(2021\)](#) suggested utility of Art therapy, [Okada & Sugimoto \(2018\)](#) showed utility of clinical drawing, and [Katayama \(2007\)](#) showed the utility of the tree drawing for spiritual care of terminally ill cancer patients. Then we used tree drawing, clinical drawing or collage constructions in art therapy.

The purpose of this study was to investigate 1) the utility of art therapy for patients undergoing chemotherapy through observing patients and their arts, 2) making patterns from separating patients along the Uncertainty theory to understand patients' mind including unconsciousness, 3) factors changing from uncertainty to certainty by recognition and coping with cancer.

2. Method

1) Participants

Participants were 9 outpatients who took chemotherapy in a general hospital. Mean age was 77 years old. Inclusion criteria were that a participant communicated with an interviewer and had physical power to make art. Exclusion criteria were that a participant had serious mental problems, and it was hard to review his life.

2) Procedure

A head nurse selected patients who cleared inclusion criteria and recruited. After he agreed with participation, a clinical psychologist began the study. The duration of a session was about 50 minutes and there were 2 times. The place of the interview was on a reclining sheet, or a bed separated individually by the curtain. The head nurse identified and recruited patients who met the inclusion criteria for the study. After he agreed with participation, a clinical psychologist began the study. The duration of a session was about 50 minutes and there were 2 times. There was an over table or a mini table in each seat. A patient made arts like drawing a tree, collage, free drawings. They talked about arts with a clinical psychologist after drawing pictures. In the session, patients answer two questions: how they recognize the cancer and how to cope with it.

3) Data analysis

Uncertainty is the inability to determine the meaning of illness-related events, especially the ambiguity and unpredictability of future medical condition like treatment effects, rate of disease progression, and their impact on prognosis ([Mishel, 1988](#); [McCormick, 2002](#); [Mori et al., 2019](#)). Thus, we referred to treatment's effects like continuation of chemotherapy or stopping, or prognosis. We separated patients referring to the Uncertainty theory. About drawings or collage, we used [Hashimoto \(2017\)](#) to assess the arts.

4) Ethics

We performed this study in accordance with the Declaration of Helsinki. The research ethics committee approved this study.

3. Results

3.1. Separation Patients into 4 Patterns

We could separate patients into 4 patterns along the Uncertainty theory by Mishel (1988) and showed characteristic arts like tree drawings or free drawings. We showed the typical case in each pattern.

3.1.1. Treatment Continue, Patients' Psychology Calm

A client B was 50 years, female, and had breast cancer with lymph nodes metastases. In the first session, a tree in a tree drawing was so small and located upper in a paper. She did not draw ground, so her reality testing ability might be low. In the second session, a tree drawing was sticking out of the paper and it showed that she was hard to control her mood or emotion. However, the size of the trees was bigger (Figure 1).

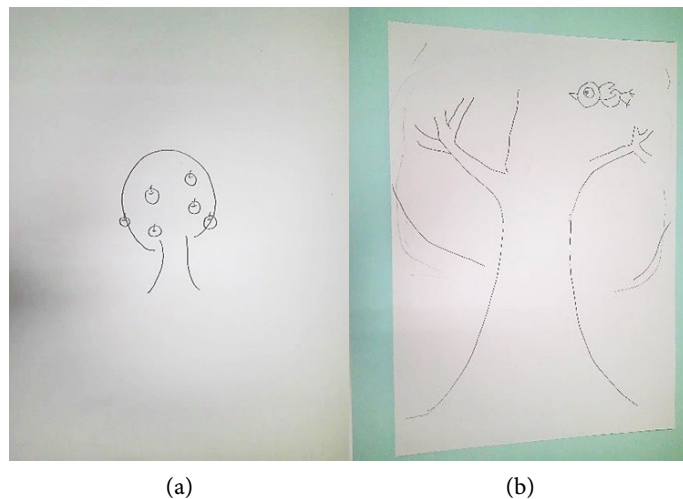


Figure 1. Tree drawings in the first (left) and the second (right) session.

3.1.2. Living Beyond the Life Expectance and Continuing Treatment, Psychology Calm

Patient C was 70 years male, and had colon cancer. He received chemotherapy for 2 years over his prognosis. He lived over two years much longer than life expectancy. He had purpose of living as much as longer to observe his grandchildren. He made collage art (Figure 2). He expressed close families, a pleasant memory in supper with a friend, and pleasant trip. He talked about his life to the therapist.

3.1.3. Receiving the Life Expectancy Announcement, Psychology Instability

Patient D was 50 years female, and had breast cancer recurrence. In the first session, she received the announcement of life expectancy. Her son who turned



Figure 2. Collage art of close family.

20 years at this spring with mental disorder entered a group home. She decided the separation from parents and separation from children and said, “My role is over.” The crown was bigger than the trunk in tree drawing, and there were many fruits. In the free drawing, she drew the grid picture shedding tears with color pencils (**Figure 3**). She said that I am glad to have my own time to draw. In the second session, each apple was big with strong pen pressure, it seemed that a belonging of each family member was determined.



Figure 3. Free drawings expressing her emotion.

3.1.4. Stopping Chemotherapy, Psychology Confusing

Patient E was 60 years female and had colon cancer of Stage 4 metastasis.

In the first session, she talked about her children and grandchild who lived near her house, and she found her meaning of life for grandchildren. In free drawings, she drew seedlings of summer vegetables in her garden. In the second session, she received the announcement of stopping chemotherapy because of not effects of treatments and recommendation of palliative care by her physician. When the researcher met her, she was very shocked, however she agreed with making art. In free drawing, she drew sunflower and oleander which seemed to stretch out lacking flexibility losing future. In the third session, In the free drawing, she drew the seedlings of autumn or others. Fruits of grape pointed downwards, and it might suggest sense of loss (**Figure 4**).



Figure 4. Clinical drawing by patient E.

3.2. Categorization of Patients' Recognition of Illness and Coping

We showed the result of categorization of patients' recognition of illness and copings (Table 1).

We used < > for subcategory, and 【 】 for category. We obtained the following categories:

【Various ways to receive the announcement】 , 【Regret of delaying medication】 , 【Confronting side effects or aftereffects】 , 【The desire to fight with cancer】 , 【Letting things drift】 , 【Recognition of living the day】 .

Table 1. Results of categorization about recognition of illness and copings.

Code	Sub-category	Category
I was depressed when my cancer metastasize to other organs. When I heard of stage 4 progress, death crossed my mind. I asked my life expectancy when cancer had recurred. Since I had lump, my suspicion for cancer was clear.	Consciousness of death by announcement of metastasis or recurrence Acceptance of the announcement	Various ways to receive the announcement
I was not upset and see, when I was notified my cancer. I was not shocked of cancer notification because I was happy working for disabled persons. I was not shocked of cancer notification because of my cancer family tree.		
I was not remember of times when my life expectancy was half of a year, though I was surprised.		
I endured the pain without going a hospital. I had better go to a hospital. I had better go to a general hospital.	Regret of delaying of going to hospitals Anxiety of delaying of treatment	
It took too much time for examination after changing hospitals and I worried about delaying treatments.		

Continued

I was shocked at my hair falling out.	Presence of side effects and adaptation	
Although the side effect was too serious and I felt powerless, I was used to it.		
I thanks my slight side effects.	Physical handicapped caused by treatment	Confronting side effects or aftereffects
Lymph node metastasis was cleaning, but disabled remained in the hand.		
I have pains in my hand because of cleaning of lymph node.		
I take treatment motivated by dying is not an option.	Will not losing to cancer	
I do not give up, though cancer is stage 4.	Not worrying over the cancer	The desire to fight with cancer
I'll do my best.		
If I don't do well, I will lose of cancer.		
It has to be the way it is.	What will be, will be.	
I can't help it.	It is no use of thinking of it.	
Anyway there is such a thing.	Obeying routine of treatment	Letting things drift
It is no use of thinking of cancer.		
There is no choice to treat after finding cancer.		
I will leave treatment up to my physician.		
I don't know how much longer I will live.	Living the day	
Everyone has their share of difficulties.		
Live one day at a time.	Acceptance of aging or physical changes	Recognition of living the day
I live now even though I became very skinny.		
I need to accept aging.		

4. Discussion**4.1. Utility of Art Therapy for Cancer Patients under Chemotherapy**

We could know the patients' psychological state from their arts. There are some characteristics of arts. Ground in the tree drawing shows reality test ability in art therapy. Although some patients did not draw ground in the first session, they drew it in the second session. It may suggest an increase of reality test ability. Moreover, the size of tree drawings or free drawings was small in the first session, but it became bigger in the second session. It may also suggest increasing power or energy. The reason for these effects may be interaction between a patient, psychologist, and image. Forzoni et al. (2010) showed the utility of triadic relationship, patient-image-art therapist. In the present study, using the triadic relationship, the patient and the psychologist could narrate their emotion or thinking through his art. Also, Liao et al. (2024) showed the promotion of social interaction by art therapy for old people. Patients in the present study might be promoted to interaction with the therapist in art therapy.

Addition to this effect, there was a catharsis effect. The chemotherapy room was

very limited space, nurses were very busy, but patients sometimes experience much suffering or nervous moment like stopping chemotherapy. In the present study, a patient drew a picture with colored pencil shedding tears. She seemed to accept her situation including a family role and find her future way (**Figure 3**). She could express her emotions freely. Patients can express both consciousness and unconsciousness through art therapy, and it leads to catharsis of patients' mind. This effect is supported by a previous study (Kirshbaum et al., 2017). They argue that art therapy provides patients with cancer the opportunity for self-development and optimistic reflection on life.

Integrated social interaction between patients and therapist and catharsis effect, art therapy may reinforce patients' resilience. It supports a previous study (Tagliaferri et al., 2022).

4.2. Separation of Patters Referring to the Uncertainty Theory

There were four patters like a) Treatment continue, patients' psychology calm (two patients), b) Living beyond the life expectancy and continuing treatment, psychology calm (two patients), c) Receiving the life expectancy announcement, psychology instability (three patients), d) Stopping chemotherapy, psychology confusing (two patients). The arts of pattern a) or pattern b) seem to be stable.

Particularly, the patients of the pattern a) or b) were psychologically calm, though the cancer stage was advanced. The patient in the pattern c) was a little instability and the patient of the pattern d) was very confused. We can understand patients' psychological states through their arts. The formal disease state is very important, but separation by the Uncertainty theory is another useful for medical staffs and patients to understand the present state of mind.

Guan et al. (2021) showed the promising potential of uncertainty management intervention, especially interventions involving multiple components including informational, emotional, appraisal, and instrumental supports. Physicians or nurses can propose informational support (Mori et al., 2019). Clinical psychologists may propose emotional support through art therapy.

We could separate 9 patients into 4 patterns. However, there may be a case who sometimes positive and sometimes negative and difficult to separate. We need to think about how to separate in the future for better understanding patients.

4.3. Possibility of Art Therapy to Find Copings from Uncertainty to Certainty

Stopping chemotherapy and transferring to palliative care sometimes makes patients feel disaster. However, Mishel said that patients change their sense of value and human growth humanistic growing, there may be positive aspects. Previous studies support of positive aspect. Morriss et al. (2022) said that it is important to find what makes patients change from uncertainly to certainly. In this study, patients' coping suggests thinking of change. Categories such as "Confronting side effects or aftereffects", "The desire to fight with cancer", "Letting things drift",

“Recognition of living the day” may be thinking from uncertainty to certainty. The recognition of “the desire to fight with cancer” may be common among other countries. The concept of “letting things drift” is characteristic in Asian countries. Mindfulness-Based Stress Reduction (MBSR) was proposed by Kabat-Zinn which is based on Buddhism. Carlson (2016) showed the usefulness of mindfulness for cancer patients. Mindfulness helps patients to recognize the importance of accepting reality for problem solving. Although the coping idea of “letting things drift” is like Carlson, it seems to be much more to be idea of Buddhism. The idea in Buddhism suggests that suffering arises when people try to control things that are beyond their power to change (Portal Site Nichirensyu, 2024).

Compare with other culture, Philippines use religious coping (Ahmadi et al., 2024). They say that religious coping is prevalent in the Philippine. It is used during natural disasters such as typhoons or earthquakes; people often come together to pray for safety and protection. In times of personal struggle, Filipinos may turn to prayer and meditation as a way to find inner strength and peace (Manalo et al., 2023).

5. Limitation and Implication

The number of participants was small in the present study, and we can't generalize these results. We need to include many more participants. Still, we can propose the possibility or utility of art therapy for patients under chemotherapy.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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