Can Art Therapy be Helpful in Oncological Rehabilitation?

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Abstract

Background and aims: Due to the improvements in cancer detection and treatments, the field of oncological rehabilitation is becoming increasingly important. To improve the effectiveness of oncological rehabilitation, mind-body interventions, such as Art Therapy (AT), may be implemented in the oncological rehabilitation to help patients in understanding and managing the complex psychological and emotional consequences of cancer disease. This study aims to compare the efficacy of a multidisciplinary oncological rehabilitation program combined with an AT group intervention with the efficacy of the conventional program only, in improving physical and cognitive rehabilitation outcomes in cancer patients. Furthermore, it aims to explore participants' subjective experience and perceived benefits related to AT.

Methods: This study is an observational retrospective study with pre and post-intervention measures. It analyzed socio-demographic variables, clinical information and rehabilitation outcomes collected in the context of the national measurement plan for rehabilitation developed by the Swiss National Association for the Development of Quality in Hospitals and Clinics (ANQ). AT perceived benefits from the participant point of view were collected specifically for this study at the end of AT intervention. The rehabilitation indices (Res) were calculated basing on the Functional Independent Measure (FIM) values to measure the rehabilitation's efficacy. The final sample consisted of 102 cancer patients who were attending a residential program at the CREO rehabilitation clinic, Novaggio (CH). The Intervention Group (IG) was composed by 54 and the Control Group (CG) by 48.

Results: The REs showed a higher improvement in motor and cognitive functioning in the IG compared to the other one, which resulted to be statistically significant. This result is consistent with the hypothesis that AT is not an intervention with a direct impact on cognitive and motor patients' functional status, as expressed by the traditional rehabilitation indices, but is a therapeutic instrument able to empower patients during the rehabilitation program. In line with this interpretation, most of the participants perceived AT as a "personal growth experience" and reported that AT helped them in improving their perceived "treatment potential".

Conclusion: AT has a significant direct effect on the traditional rehabilitation outcomes, which are expression of the patients cognitive and motor functional status and through a "process of patients empowerment", could have an indirect positive impact on patients functional status in the context of cancer rehabilitation. AT could represent an a-specific therapeutic instrument that could be useful at the same time for patients with different clinical conditions and that can perceive benefits in a wide range of domains. A hospital that implements AT intervention in the oncological rehabilitation setting can help at the same time cancer patients with different clinical profiles, different personal characteristics and needs implementing one feasible, economic and efficient instrument.

Keywords: Rehabilitation indices • Art therapy • Intervention/Control group • Severity/Comorbidity index • Functional independent measure

Introduction

Due to the improvements in cancer detection and treatments, the field of oncological rehabilitation is becoming more and more important. The rehabilitation's effectiveness in improving physical and mental health in cancer patients have been demonstrated but the observed improvements in the quality of life, physical and mental functioning are moderate [1,2]. Patients who survive cancer may experience psychological and emotional difficulties such as anxiety, depression, fear of relapse or death anxiety that have a negative impact on the global health and quality of life [3-5]. Importantly, these negative emotional states have a long-term negative effect on cancer mortality [6]. This evidence underscore the necessity to develop appropriate therapeutic offers that help patients in managing the emotional and psychological consequences of cancer and its treatment. That is why "oncological rehabilitation may involve interdisciplinary treatments that enable patients to regain as much of their independence as possible" [7]. To improve the effectiveness of oncological rehabilitation, mind-body interventions, such as Art Therapy (AT), may be inserted in the traditional rehabilitation program to help and support patients in understanding and managing the complex psychological and emotional consequences of cancer disease.

In the 2018, a literature review underscores the potential effects of AT on seven clinical populations, among which cancer patients [8]. Furthermore, recent reviews and meta-analysis supported the efficacy of AT in treating common physical and psychological cancer-related side effects [9]. Authors provided initial evidence that AT benefits cancer patients with respect to the treatment of anxiety, depression and fatigue and it helps to reduce pain and improve health-related quality of life [10]. Wood MJ, et al. wrote, "Art therapy is a psychotherapeutic approach that is being used by adults with cancer to manage a spectrum of treatment-related symptoms and facilitate the process of psychological readjustment to the loss, change and uncertainty characteristic of cancer survivorship but research in this area is still in its infancy" [11].

Although there may be some evidence for benefit of AT on cancer symptoms and consequences, no studies have yet investigated its contribution in improving rehabilitation outcomes in cancer patients following an in-patient program. The present study is an observational retrospective study with pre and post intervention measures. It aims to compare the efficacy of a traditional multidisciplinary oncological rehabilitation program combined with an AT group intervention with the efficacy of the conventional program only, in proving physical and cognitive rehabilitation outcomes in cancer patients. The first study's aim is to measure the impact of an AT group intervention on the physical and cognitive functional changes among patients who were involved in an oncological in-patient rehabilitation program. The second aim is to explore participants' subjective experience and perceived benefits of AT intervention.

Materials and Methods

Sample and procedure

Patients diagnosed by cancer that were attending a residential rehabilitation program at the CREO rehabilitation clinic, Novaggio (CH) in the period between December 2016 and December 2018 composed the initial sample. The inclusion criteria for the rehabilitation program were: Loss of autonomy due to illness, with the possibility of recovery; and/or marked asthenia after a long oncological therapeutic course; and/or painful symptoms following psychophysical deconditioning; and/or relevant psychosocial situation (altered self-image, reduced self-esteem, anxieties and fears). To enter in this study patients should meet the following inclusion criteria: Age comprised between 18 and 80 years old; favorable prognosis (minimum 6 months); stable state of health with potentially return to home and resume daily activities.

For two years, patients admitted to the CREOC oncological rehabilitation program were asked to participate in an Art-Therapy (AT) group intervention in addition to the traditional program. 54 cancer patients agreed to participate in the AT intervention (Intervention Group-IG). We retrospectively compared their clinical data with the ones of 48 cancer patients that decided to not participate in the AT (Control Group-CG). The final sample consisted of 102 cancer patients. The IG was composed by 54 and the CG by 48. In order to be part of the IG, patients had to participate in at least three AT sessions. Those who participated in one or two AT sessions were included in the CG.

Measurements

This study analyzed socio-demographic variables, clinical information and rehabilitation outcomes collected in the context of the national measurement plan for rehabilitation developed by the Swiss National Association for the Development of Quality in Hospitals and Clinics (ANQ). AT perceived benefits from the participant point of view were collected specifically for the present study at the end of AT intervention.

From the ANQ set of data we selected the following socio-demographic and clinical information: Age at the moment of admission; gender; nationality; main diagnosis based on ICD-10 criteria; duration of the rehabilitation program; place of origin before admission (home; intensive unit care; non intensive unit care; other); primary therapeutic objective (return home alone; return home with the partner; integration in a nursing home; other); need of support to achieve the primary therapeutic objective (yes/no); primary therapeutic objective achievement at the moment of discharge (yes/no); destination at the moment of discharge (home; intensive unit care; non intensive unit care; other); post-discharge suggested treatment (no treatment; out-patient treatment; residential treatment; rehabilitation program; other). Furthermore, the following clinical measures were selected and analyzed: The cumulative illness rating scale [12]. It is an interview conducted by the doctor at the admission. It consists of 13 domains related to different body systems. Severity scores range from 0 (none) to 4 (extremely severe) in each domain. Two indices were derived from the CIRS: (a) The severity index which is the sum of each domain score excluding the CIRS-14 (psychopathological domain); it ranges from 0 to 52 with higher scores indicating worse somatic clinical conditions; (b) The comorbidity index is the number of domains on which the patients scored 3 or higher (more severe comorbidity). Higher scores in the comorbidity index suggest higher level of comorbid clinical conditions.

The Functional Independence Measure (FIM) was administered by the nurse within 72 hours of the start and the end of a rehabilitation episode. The FIM measures the changes in the patient's functional ability during a rehabilitation program [13]. It is comprised of 18 items, grouped into two subscales-motor and cognition. Each item is scored on an ordinal scale, ranging from a 1 to 7. The total score for the FIM motor subscale will be a value between 13 and 91. The total score for the FIM cognition subscale will be a value between 5 and 35. The higher the score, the more independent the patient is in performing the tasks.

At the end of the AT intervention, patients completed a separate, supplemental questionnaire to subjectively rate the perceived benefits and to express their experience with the AT. Participants were asked to rate the perceived improvement in the following functional areas using a 5-point ordinal scale ranging from "no perceived improvement" to "great perceived improvement": 1) Anxiety symptoms, 2) Mood symptoms, 3) Perceived stress, 4) Expressive ability, 5) Social interaction, 6) Communication ability, 7) Pain perception, 8) Illness and hospitalization distraction, 9) Improvement in body-image, 10) Clinical insight, 11) Personal grow, 12) Improvement in perceived ability in "treatment potential".

Interventions

All participants, independently from the group, received a residential oncological rehabilitation program five days per week. This consisted of a personalized multidisciplinary treatment including medical and psychiatric services, physiotherapy, ergo therapy and nursing service.

The IG alone received additional AT group sessions directed by a qualified art-therapist. AT toke place in a ward's dedicated room, twice a week for four weeks. Each session lasted two hours and involved groups consisting of a minimum of three to a maximum of eight patients. The group was composed by cancer and chronic pain patients. The AT group was "open" meaning that its composition could vary session by session. During AT sessions, the mediators were colored pencils, markers, crayons and paints. All activities aimed at activate the patient's personal resources through the development of creativity and imagination. During the session, the art therapist's role was to facilitate, accompany, encourage patients to participate in the creative art processes and express their creativity in a safe, non-judgmental and relaxed setting. Importance was given to empathic resonance, positive thinking about their capability to create art and their ability to share the inspiration behind their art with others.

Data analysis

To compare the rehabilitation efficacy between the IG and CG, the Rehabilitation Effectiveness (REs) index was calculated. The REs express the improvements achieved during rehabilitation as a taking into the potential maximal functional improvement. For this study, the REs motor (using the FIM motor subscale) and the REs cognitive (using the FIM cognitive subscale) were calculated separately using the formula:

$$REs=(FIM.\ d\text{-}FIM.\ a) \times 100/Max \times (FIM.\ d\text{-}FIM.\ a)$$

Statistical analyses were performed using PASW statistics 18.0 (SPSS Inc., Chicago, IL., USA). Missing data and outlier checks were performed.

To examine the rehabilitation program efficacy independently from the AT, we analyze changes in the FIM subscales separately in the two group using paired t-test.

We performed pre-intervention baseline checks using t-test for continuous variables and contingency coefficients for categorical variables, to verify that results could be ascribed to the AT rather than to baseline differences.

To measure the AT effect, we analyzed REs motor and REs cognitive using F-test. We performed correlational analysis to check relationships between REs and other variables.

Results

Sample description

110 patients composed the initial sample. We excluded four patients from the analysis because the FIM values were absent. Two patients drop out from the program and two patients did not meet the age inclusion criteria. The final sample consisted of 48 participants in the CG (47.1%) and 54 participants in the IG (52.9%). Tables 1 and 2 show sample's socio-demographic and clinical characteristics. Results showed that participants in the CG are older compared to the ones in the IG (t=-2.02 (99); p=0.02). They were characterized by significantly higher CIRS comorbidity index (t=-2.48 (99); p=0.01),

indicating higher level of comorbid clinical conditions in the CG compared to IG. We found a value near the significant difference comparing the CIRS severity index in the two groups. Patients in the CG showed more severe clinical condition compared to patients in the IG (t=-1.96 (99) p=0.05). Gender, participants' psychopathological status (CIRS-14) and the hospitalization's duration (t=0.08 (100); p=0.97) were not statistically different.

Table 1. Baseline characteristics in the IG and CG.

Continuous variables	Group	
	IG (N=54)	CG (N=47)
Age at the admission	60.19 ± 12.48	65.68 ± 11.72
Duration of hospitalization	20.91 ± 4.36	20.88 ± 4.41
CIRS severity index	10.68 ± 4.94	12.89 ± 6.34
CIRS comorbidity index	1.70 ± 1.05	2.27 ± 1.26

Table 2. Baseline characteristics in the IG and CG.

Categorical variables	Group	
	IG (N=54)	CG (N=47)
Gender		
Male	44.20%	41.70%
Female	55.80%	58.30%
Psychopathological status (CIRS-14) at the time of admission		
None	38.50%	51.10%
Minor	15.40%	23.40%
Medium	40.40%	19.10%
Moderate	5.80%	6.4.7%
Severe	0%	0%
Place of origin before admission		
Home	66.70%	59.60%
Nursing home	3.80%	2.10%
No intensive unit care	18.50%	21.30%
Acute unit care	11.10%	17%
Primary therapeutic objective		
Return home alone	50	62.5
Return home with the partner	48.1	31.3
Integration in a nursing home	1.9	6.3
Need of support to achieve the primary therapeutic objective		
Yes	30.2	37.8
No	69.8	62.2
Primary therapeutic objective achievement at the moment of discharge		
Yes	90.9	94.4

No	9.1	5.6
Destination at the moment of discharge		
Home	90.7	93.6
No intensive unit care	3.7	2.1
Acute unit care	5.6	4.3
Post-discharge suggested treatment		
No treatment	24.1	14.9
Out-patient treatment	57.4 7.4	46.8 27.7
Residential treatment	9.3	6.4
Rehabilitation program	1.9	4.3

Table 3 shows motor and cognitive FIM scores and the Res. The paired t-test was used to analyze changes in the FIM subscales separately in the two groups. Results showed a significant improvement in both motor and cognitive subscales in both IG and CG (all $p<0.05$). We performed ANCOVAs to determine whether there were REs differences among the groups after controlling for the CIRS severity index, the CIRS comorbidity index and the age of participants. Regarding the REs-motor, analysis showed that both covariates were not significantly related to the REs-motor (CIRS severity index, ($F(1)=0.36$; $p>0.05$); Age ($F(1)=0.42$; $p>0.05$) and there was not a significant main effect of the AT on the REs motor ($F(1)=122$; $p>0.05$). The age was not significantly related to the REs cognitive. To the other hand, the CIRS severity index was significantly related to the REs Tot ($F(1)=5.88$; $p<0.05$). Res and FIM values were shown in Table 4. A significant difference was found in Res motor and Res cognitive between the two groups in favor of IG.

Table 3. FIM motor and cognitive score in the IG and CG.

Variables	**IG (N=54)**		**CG (N=47)**	
	Admission	**Discharge**	**Admission**	**Discharge**
FIM motor score	76.00 ± 14.22	83.00 ± 10.88	73.64 ± 13.34	79.70 ± 11.03
Comparison within group	P ≤ 0.05		P=0.05	
FIM cognitive score	30.40 ± 5.20	31.83 ± 5.10	30.85 ± 3.96	31.60 ± 3.78
Comparison within group	P ≤ 0.05		P=0.05	

Table 4. REs motor and REs cognitive in the IG and CG.

	IG (N=54)	**CG (N=47)**	
REs motor	48.6 ± 33.2	34.5 ± 31.4	P=0.0452
REs cognitive	34.2 ± 51.7	15.23 ± 35.9	P=0.0373

Correlational analysis showed no significant correlation between REs motor and participants' age, CIRS severity index and CIRS comorbidity index (all $p>0.05$). Similar results were showed for the cognitive domain, except for the CIRS comorbidity index ($R=-0.20$; $p=0.03$).

The mean number of AT sessions that intervention group participants received was 4.6 (SD=1.1; range: 3-8). The number of AT sessions performed was not related (all $p>0.05$) to the age of participants, to the severity index (CIRS), to the comorbidity index (CIRS) and to the participant's psychopathological status (CIRS 14) at the time to the admission to the clinic. At the end of the AT intervention, patients completed a separate, supplemental questionnaire to subjectively rate the perceived benefits and to express their experience with the AT. Participants were asked to rate the perceived improvement in 12 functional areas using a 5-point ordinal scale ranging from "no perceived improvement" to "great perceived improvement". Table 5 reports the participant's perceived benefits. Finally, an AT global score was calculated making the sum of the patient's score in each of the twelve functional areas present in the AT questionnaire. Higher scores suggest higher perceived benefits of AT from the patient's point of view. No significant relations between AT score and the number of performed AT session, the severity index (CIRS), the comorbility index (CIRS) and the psychopathological status (CIRS-14) and the hospitalization length were found (all $p>0.05$).

Table 5. Patients AT perceived benefits.

	No perceived improvement	1	2	3	4	Great perceived improvement
Decrease anxiety	7.9	2.6	7.9	26.3	21.1	34.2
Improvement in mood	0	0	4.8	11.9	42.9	40.5
Decrease in perceived stress	2.6	2.6	15.8	10.5	36.8	31.6
Improvement in expressive ability	0	0	0	20.5	31.8	47.7
Improvement in social interaction	0	5.1	2.6	20.5	38.5	33.3
Improvement in communication skills	2.6	0	7.7	25.6	30.8	33.3
Decrease in pain perception	15.6	6.3	6.3	15.6	15.6	40.6
Illness and hospitalization distraction	0	2.6	0	21.1	31.6	44.7
Improvement in body-image	0	0	5.7	28.6	40	25.7
Decrease in illness awarness and insight	0	0	0	7.7	48.7	43.6
Personal grow	0	0	4.9	14.6	36.6	43.9
Improvement in perceived ability in my “treatment potential”	0	0	4.8	14.3	28.6	52.4

Discussion

The Rehabilitation indices (Res) showed a higher improvement in motor and cognitive functioning in the intervention group compared to the other one, which resulted statistically different. This result is consistent with the hypothesis that AT is an intervention with a direct impact on cognitive and motor patients’ functional status, as expressed by the traditional rehabilitation indices and is a therapeutic instrument able to empower patients during the course of the rehabilitation program. Thus, the use of tasks that allow for focused expression of unpleasant emotions in cancer patients, such as AT, can lead to an increased sense of well-being and empowerment [14-16]. This process of empowerment during the course of the rehabilitation can lead to an improvement of patient’s functional status and a reduction in medical symptoms as a secondary effect, as suggested by our results. In line with this interpretation, the majority of the participants perceived AT as a “personal growth experience” and reported that AT helped them in improving their perceived “treatment potential”. Indeed, as suggested by Rubin, “AT provides access to painful or troubled emotions in a safe and therapeutic setting. This act could result in feelings of empowerment as well as the experience of inner peace through art expression”. This interpretation is supported by the participant’s experience.

The majority of the participants have reported a “very positive” experience with the AT reporting improvements in the majority of the evaluated dimensions. For example, they reported that AT helped them in in communication and expressive abilities, in line with previous evidence reporting that AT is a less threatening method to disclose private information about one’s feelings [17]. Furthermore, participants reported that AT helped them in managing better social interactions. This benefit is particularly interesting because only a fraction of cancer patients participate in-group interventions for different reasons, including limited access, negative perceptions about group process, and stigma [18,19]. Thus, AT could be an innovative therapeutic group formats for cancer patients.

Finally, our finding showed that the number of performed AT sessions seems to have no effect on the perception of AT benefits. Patients that performed three sessions tend to report the same perceived benefits compared to those performing five or six sessions, suggesting that participants tend to perceive positive benefits in a relatively short-time. Furthermore, once the participant has made the initial decision to participate in the AT intervention, all patients showed no problem in performing AT sessions, independently from the age, gender and the severity of clinical condition [20].

Conclusion

Since AT has a significant direct effect on the traditional rehabilitation outcomes, which are expression of the patients cognitive and motor functional status, our findings suggest that AT, through a “process of patients empowerment”, could have an indirect positive impact on patients functional status in the context of cancer rehabilitation. Participant’s evaluation regarding AT suggests that it is perceived as a less threatening method to disclose emotions and communicate private information about one’s feelings than more standard forms of psychological treatment, such as talking therapies. Furthermore, participants perceive benefits in performing

AT in a relatively short-time and the perceived benefits are independent from the age, gender and the severity of clinical condition. Globally our finding suggest that AT could be particularly suited to the context of rehabilitation where interventions generally take place over three to four weeks and the clinical populations is very heterogeneous. In this sense, AT could represent an aspecific therapeutic instrument that could be useful at the same time for patients with different clinical conditions and that can perceive benefits in a wide range of domains. A hospital that implements AT intervention in the oncological rehabilitation setting can help at the same time cancer patients with different clinical profiles, different personal characteristics and needs implementing one feasible, economic and efficient instrument.

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