

# Creative Art Therapy for Improving Depression, Anxiety, and Stress in Patients with Stroke: A Quasi-Interventional Study

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## Abstract

**Introduction:** Creative art therapy is a psychotherapeutic approach used to enhance the mental health status of patients.

**Objectives:** This study aimed to evaluate the effect of creative art therapy on the levels of depression, anxiety, and stress in Jordanian patients following stroke.

**Methods:** One-group pretest–posttest design was used; it included four sessions of creative art therapy which were conducted as two sessions for two weeks. This study recruited 85 participants who were within three months poststroke diagnosis. The Depression, Anxiety, and Stress Scale was used to assess the levels of psychological reactions pre and post creative art therapy intervention.

**Results:** The data showed that there was a statistically significant improvement in the levels of depression ( $t=37.98$ ;  $p < .001$ ), anxiety ( $t=20.59$ ,  $p < .001$ ), and stress ( $t=35.52$ ,  $p < .001$ ) post-intervention. There was a statistically significant improvement in the study-related psychological aspects following creative art therapy.

**Conclusion:** The findings of this study suggest that creative art therapy is a valuable method to complement other types of treatments among patients with stroke, resulting in positive patient mental health outcomes. Creative art therapy could be used as a psychotherapeutic approach to manage mental health complexities among patients with stroke. Health policymakers are invited to use the findings of this study to establish tailored counselor services using this new psychotherapeutic approach.

## Keywords

creative art therapy, depression, anxiety, stress, Jordanian, a quasi-interventional study

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## Introduction

Stroke is a neurological condition caused by an acute focal injury of the central nervous system due to vascular insults, such as cerebral infarction, intracerebral hemorrhage, or subarachnoid hemorrhage (SAH), and is a leading cause of disability and death, affecting 17 million individuals worldwide annually (Khazaal et al., 2021). Individuals who suffer from stroke experience a wide range of psychological difficulties such as depression, anxiety, stress (Hackett & Pickles, 2014), and poststroke fatigue (Mutai et al., 2017). Creative art therapy interventions are a nonpharmacological approach that fosters symbolic interpersonal communication and is an expressive tool that helps patients express their emotions, ideas, thoughts, and feelings (Eum & Yim, 2015).

## Review of Literature

A systematic review of 25,488 people reported that the proportion of depression at one and five years poststroke was 25%–33% and 23%–31%, respectively (Hackett & Pickles, 2014). A longitudinal study of 180 stroke survivors found that those who developed depression in the acute phase after stroke had a fivefold higher risk of developing depression three years later (Schöttke et al., 2020). Studies in China and Germany reported poststroke incidences of depression at 55% and 31.1%, respectively, and anxiety at 25% and 20.4%, respectively (Henning Schöttke & Giabbiconi, 2015; Yang et al., 2021). In the Middle East and North Africa region (MENA), poststroke stress, anxiety, and depression are highly prevalent, and while the burden of such debilitating psychological complexities has been recognized, little has been done to improve the psychological status of patients with stroke (Kaadan & Larson, 2017). In the Middle East region, approximately 30% of individuals with stroke have experienced psychological difficulties, such as depression (Ayasrah et al., 2018; Hackett & Pickles, 2014; Kaadan & Larson, 2017). In Jordan, studies reported that poststroke depression ranged from 76% (Ayasrah et al., 2018) to 76.1% (Khazaal et al., 2021), and poststroke anxiety from 45.6% (Ayasrah et al., 2022) to 51.3% (Khazaal et al., 2021). In addition, Khazaal et al. (2021) reported that 24.8% of study participants suffered from neuropathic pain, and 94% suffered from fatigue, indicating that neuropsychiatric conditions are highly prevalent among Jordanians with stroke, which in turn increased the rate of mental health difficulties. A recent study in Jordan reported that 15%, 24.83%, and 17.39% of respondents suffer poststroke depression on admission and after one and three months, respectively (Al Qawasmeh et al., 2022). Chronic renal problems, smoking, and stroke-related disability and dependence are strong predictors of the levels of poststroke depression (Al Qawasmeh et al., 2022), and low education levels, comorbid diseases, and independence have been linked to poststroke depression (Al Qawasmeh

et al., 2022; Ayasrah et al., 2022; Ayasrah et al., 2018). Although patients with stroke suffer from a wide range of psychological difficulties, intervention studies related to their psychological status in the MENA region, including Jordan, are scarce (Kaadan & Larson, 2017).

It is evident that people who suffer from stroke experience psychological difficulties, namely depression (Almhdawi et al., 2021; Kaadan & Larson, 2017), anxiety (Almhdawi et al., 2021; Ayasrah et al., 2022), and stress (Almhdawi et al., 2021), worth focused interventions. Depression was defined as a serious medical illness with mood, affect, cognitive, and somatic symptoms (Uher et al., 2014), while anxiety is described as vague feelings and restlessness leading to fatigability, difficulty concentrating, tension, and sleep disturbances according to the *DSM-5* criteria (Starcevic et al., 2012). Stress is known as a pattern of specific and nonspecific responses to stimuli that disturb an individual's equilibrium and exceed their ability to cope (Townsend & Morgan, 2017). However, literature has shed light on the pharmacological treatment modalities and/or exercise in dealing with psychological difficulties among patients with chronic diseases such as stroke. Needless to say, pharmacological treatments are associated with a wide range of side effects. Hence, evaluating the efficacy of other alternative approaches in managing poststroke psychosocial difficulties is crucial.

Creative art therapy is a focused form of psychological therapy composed of a wide range of activities (e.g., meditation, body movement, art, dance, acting, drawing, expressive, puppetry, and storytelling) that alleviates depression, anxiety, and stress among patients (Eum & Yim, 2015; Kulari, 2017). Further, it is a novel therapy that utilizes the creative process to help individuals explore their feelings and emotions, providing new methods to gain personal insight and develop coping skills (Malik, 2021). This therapy is reported to be highly effective in elevating the psychological burdens of a wide range of chronic diseases, such as cancer, multiple sclerosis, and stroke (Elimimian et al., 2020; Kline, 2016; Newland et al., 2020).

The focus of creative art therapy is not only to improve the artistic or the musical abilities of individuals per se but also to focus on nonverbal and symbolic interactions and expressions and to convey untold and intricate ideas, reactions, emotions, and feelings aimed at linking the body to the mind and self to other (Newland et al., 2020).

This is highly important for patients following stroke, which is an assault on the mind's capacity to coordinate body–mind connection whose “shockwaves... can leave a lasting and profound impact on how people move, see, speak, feel, or understand their world” (Michaels, 2010). Creative art therapy could help them recount their experience in their body language, utterance, visuals, language, and symbols (Reynolds, 2012); besides, it can facilitate healing through the creative process and improve a patient's psychological status and quality of life, comprising physical,

emotional, social function, economic, and other multidimensional elements (Reynolds, 2012; Shella, 2018). Further, art helps patients with chronic diseases reduce and minimize despair, anxiety, and stress by allowing them to express their internal conflicts, feelings, and psychological status and promoting mental health problem repair (Shella, 2018). A thorough assessment of creative activities revealed that they could induce relaxation, give a means of self-expression, lower blood pressure, enhance the immune system, and reduce fatigue.

### **Theoretical Framework**

Overall, art therapy is recognized as an intervention that enhances the mind–body connection and, in turn, reduces the levels of physical and psychological stressors (Elimimian et al., 2020; Malchiodi, 2003, 2020; Newland et al., 2020). Mind–body-related interventions have been described in a wide range of health-related psychology disciplines, such as sports psychology (Henning Schöttke & Giabbiconi, 2015; Schöttke et al., 2020), medical psychology, and spiritual psychology (Lusebrink, 2010; Silverstone, 2009; Winkelman & Sessa, 2019). Therapeutic interventions include a wide range of activities: eye movement and desensitization, biofeedback, breathing, relaxation, sensory-motor cascade, folks' rituals, hypnosis, and meditation practices. Importantly, most mind–body approaches have an intrapersonal focus and are oriented towards repairing a sympathetic–parasympathetic process to regain balance by providing experiential practices (Hass-Cohen & Findlay, 2015; Lusebrink et al., 2013; Malchiodi, 2003; Schall et al., 2018). Creative art therapy is distinct in that it is composed of expressive and relational focal points; it fosters activities that reduce stressors and promote self-expression using both intrapersonal and interpersonal communication modes within the context of a therapeutic relationship (Hinz et al., 2022; Lusebrink, 2010; Malik, 2021; Morris et al., 2014; Schouten et al., 2015; Sit et al., 2014). The strength of this approach is that clients are able to generalize what they experience in an art therapy session to the outside world (Malchiodi, 2020).

The Expressive Therapies Continuum (ETC) was developed by Kagan and Lusebrink (1978) and expanded by Lusebrink et al. (2013). It serves as a theoretical framework for using expressive art therapy and helps therapists map and choose activities from a continuum (Lusebrink et al., 2013). This model has been described as a practical guide and provides directions about what art media a therapist can use, in which circumstances, and with which clients. According to this model, the implementation of art experiences and expressions comprises kinesthetic and sensory activities regulated by the emotional response and combined with fundamental cognitive processes (Lusebrink et al., 2013). To elaborate, there are four levels of ECT, specifically: The Kinesthetic/Sensory level, the sensory component,

the perceptual/affective level, and the cognitive/symbolic level. The following section will discuss each one of them briefly.

The Kinesthetic/Sensory level is a simple motor expression that uses different art media and their equivalent visual manifestations of energy and sensory involvement (Lusebrink, 2010; Lusebrink et al., 2013). In this level, the model emphasizes that the kinesthetic component focuses on the weight the client invests in a given movement, the awareness of the sensory part of the expression is reduced, and vice versa, because the focus would be on the experience that the attention is directed at. On the other hand, the sensory level focuses on the awareness of sensory exploration of the art media, including materials, surfaces, and textures. The Perceptual/Affective level focuses on structures and their variations (Lusebrink, 2010; Lusebrink et al., 2013). This component processing is featured by using shape, picture, and ground differentiation in which these types and forms are identified by lines as limits and/or colors to show defined zones and spaces. It seems that the perceptual component of this level highlights the diversity and variations of shapes in a matter (Lusebrink, 2010; Lusebrink et al., 2013). The affective component of this domain is featured by focusing more on enhancing the involvement of affect and expressing the impact of forms on the affect, which would be indicated by using a wide range of shades and their values. The Cognitive/Symbolic level focuses on cognitive and intellectual operations. It is featured by integrating different forms and lines, resulting in concept development, classification, labeling, problem resolution, verbal inclusion, and the distinction of the meaning of images and concepts. The symbolic level of this component is composed of global processing and managing input from sensory and affective origins—for example, the symbolic meaning of a specific color or an idea (Lusebrink et al., 2013). Hence, a therapist's activities should be strategic and based on a model to employ creative art therapeutically.

### **Purpose of the Study**

This current study aims to evaluate the levels of psychological reactions including depression, anxiety, and stress among patients with stroke in Jordan, and to assess the impact of using creative art therapy interventions on the levels of depression, anxiety, and stress among Jordanians patients with stroke.

### **Methods**

#### **Design**

This study used a pretest–post-design approach utilizing quasi-experimental techniques. The study research question lends itself to an experimental design. However, we conducted a nonrandomized experimental study for several

reasons. First, mental health difficulties are not subject to random design (White & Sabarwal, 2014). Furthermore, we considered ethical and practical reasons and the nature of the clinical course of stroke when we chose to conduct non-randomized intervention study. Therefore, quasi-experimental techniques, which do not require random assignment, are more frequently used to assess medical treatments in the vulnerable cohort.

### Research Questions

1. What are the levels of psychological reactions among Jordanian with stroke?
2. What is the effect of creative art therapy interventions on the levels of depression, anxiety, and stress among Jordanian patients with stroke?

### Sample

The study recruited 85 participants who suffer from stroke, divided into (10 groups) (each group comprising 8–10 participants) who underwent four creative art therapy sessions/each session took 1.5-h (four sessions performed in two weeks) to reduce the levels of study-related psychological reactions. The sample size was calculated using the G\* Power (3.0.10) program, with an effect size of 0.5, a power of 0.95, and a two-sided significance level of 0.05. The sample size was 64. However, the final sample size was 85 stroke patients who volunteered to participate in this study.

This study was conducted at tertiary hospitals affiliated with the Jordanian Ministry of Health were the research sites in this study. In Amman, patients from all over Jordan visit three tertiary hospitals. A main tertiary hospital and central hospital were chosen as the study sites in this study: Al-Bashir and Madaba hospitals. The Ministry of Health provides health services to patients with stroke, including pharmacological and nonpharmacological interventions including rehabilitation services.

### Inclusion/Exclusion Criteria

The study's population included all patients with stroke who attended hospitals affiliated with the Jordanian Ministry of Health, within three months of the stroke diagnosis; were not cognitively impaired (as evidenced by their clinical record and Min-Mental State Examination score of 24–30); could read and write in Arabic; were willing to participate; had no terminal illnesses (as indicated by their medical records); and had not been previously exposed to creative art therapy sessions to manage their mental health status difficulties. Exclusion criteria included patients who were cognitively impaired, whose stroke occurred prior to the

preceding three months, or those who had extremely severe levels of depression (this category was excluded for ethical).

### Ethical approval

This study sought ethical approval from the IRB research committee at Isra University approved this study: ethics number (SREC/21/11/016). Informed consent was obtained from the participants after providing a comprehensive and detailed explanation of the study's purpose.

### Operational Definitions

The stroke diagnosis was confirmed by reviewing participants' medical records, after obtaining permission to review their medical records from the participants and health care providers who oversaw the patients with stroke at the participating hospitals. The term "sex" was used in the study rather than "gender" based on the accepted definition of sex as "the relatively unchanging biology of being male or female" (Phillips, 2005).

### Outcome Measures

This study used a structured self-reported survey that included a demographic questionnaire; the Depression, Anxiety, and Stress Scale from (DASS); and the Arabic Mini-Mental State Examination (AMMSE). The following paragraph provides a brief description of the survey's questionnaires.

### Demographic Data

A structured study guide comprised of three questionnaires was administered to the participants. A demographic data questionnaire was developed by the researchers based on literature and included items related to age, sex, educational levels, marital status, and family income.

### Depression, Anxiety, and Stress Scale

This scale was used to assess the psychological status of study participants, including depression, anxiety, and stress. This study used the Arabic version of the DASS-21, which consists of 21 items and is used among a wide range of populations. This scale is divided into the three subscales of depression, anxiety, and stress, and each is composed of seven items. These subscales are scored on Likert scales with a response format ranging from 0 (does not apply) to 3 (very much applies). This scale is valid and reliable, with alpha values of 0.81, 0.89, and 0.78 for the subscales of depression, anxiety, and stress, respectively (Coker et al., 2018). This Arabic-DASS-21 has strong psychometric properties among a wide range of discipline in Arabic

populations, with a Cronbach's alpha of 0.95 (Ali et al., 2022; Dwekat et al., 2021).

### **Arabic Mini-Mental State Examination**

This 30-item scale is a valid and reliable tool for assessing an individual's cognitive status (Al-Rajeh et al., 1999). The AMMSE has a score range of 0–30, with scores <18 denoting severe cognitive impairment, 18–23 indicating mild cognitive impairment, and 24–30 reflecting no cognitive impairment. Participants who scored less than 24 were excluded from this study to ensure that the results would not be affected by a significant cognitive decline (Tombaugh & McIntyre, 1992).

After ethics clearance, a pilot study was conducted between November 13–27, 2021, among ten Jordanian patients who suffered from stroke and fulfilled the inclusion criteria to establish the time frame and the feasibility of the study; consequently, minor modifications were made.

### **Data Collection Procedure**

The first researcher contacted nursing managers at the participating hospitals, explained the purpose of the study, and asked them to facilitate the data collection procedure. The nursing managers referred the main researcher to the head nurses, who also received a detailed explanation of the study and were required to facilitate the data collection procedure. Subsequently, a poster was placed on the wall of the clinic that stroke patients attended, with the first researcher's contact information. Those who were interested in our study and contacted the first author were screened for eligibility, and informed consents were obtained from all the participants after a comprehensive and detailed explanation of the purpose of the study and their right to withdraw from the study at any time. In addition, the first researcher asked them to provide their phone numbers to schedule a convenient time to attend the intervention sessions. The participants were then divided into groups (each composed of 8–10 participants), the sessions were constructed in a progressive manner, and the intervention module was introduced to the study participants.

### **Intervention Procedure**

The first author, a clinical nurse with experience working with chronic patients, conducted all the sessions with the help of the second author. The intervention took place at the rehabilitation department of the participating hospitals. Table 1 illustrates the guiding principles of creative art therapy, which were designed by the researchers in consultation with Dr Rami.haddad and Joyce Raie, both of whom specialize in applying creative art therapy in clinical settings. In addition, the activities that were used are in line with The Expressive Therapies Continuum and are detailed in Table 1.

At the beginning of each session, an ice-breaking exercise was applied so the researchers could establish a rapport with patients. Then participants received an explanation of the creative art therapy activity, including its themes, components, benefits, actions, and procedures. Intervention program was detailed in Table 1. Post-intervention was completed after the participants completed four sessions in two consecutive weeks.

### **Statistical Analysis**

SPSS version 25 software was used to analyze the study-related data. In the beginning, we checked data for any deviant cases, outliers, or incompleteness. Afterward, an initial analysis was conducted to explore the null hypothesis; normality and linearity of the collected data were assumed. Further, we conducted a Shapiro–Wilk test, and  $p$  value of <.05 was considered significant. The normality of the data was inspected visually via the study-related variables' histogram, normal Q-Q plots, and box plots; hence, normality was confirmed. Central tendency analysis, including mean and standard deviations, was obtained for continuous data, and frequency table, proportion, and percentages were obtained for categorical variables. A paired  $t$ -test was used to assess the difference in the levels of depression, anxiety, and stress, pre-post creative art therapy intervention. The level of significance was set at  $p \leq .05$ .

## **Results**

### **Sample Characteristics**

A total of 112 patients with stroke contacted the first researcher to participate in this study; among them, 89 participants met the inclusion criteria, the researchers divided them into 10 groups, each composed of 8–10 participants. The study took place between early November 2021 and late January 2022, during which time we lost four participants (three females, one male). When contacted, two dropouts said they did not want to continue without giving a reason, and the remaining two did not answer our calls. Hence, the final sample size included 85 participants with an average age of  $59.42 \pm 6.1$  years, and 60.0% were female. In terms of their education levels, 76.2% reported having secondary education or less, while 23.8% had tertiary education (Table 2).

## **Research Questions Results**

### **The Levels of Psychological Reactions Among the Study Participants Pre-Intervention**

In total, 68.2% of the study participants had moderate levels of depression; 28.2% reported having severe anxiety; 50.6% reported moderate levels of anxiety; and 35.3% experienced a moderate form of stress symptoms (Table 3).

**Table 1.** Creative Art Therapy Interventions.

A start for all sessions			
Number	Themes	Rational	Creative art therapy activities
A start for all sessions	Body scan	Mindful impression	Think/create an object that represents some aspect of yourself
First week			
Day 1, session 1	Attitudinal foundations to engage the participants Kinetics /sensory	Acceptance and acknowledgment of experience in the present moment, the focus of the clients would be on the experience that the awareness is directed at.	Music with improvisation (music is played, and participants were asked to improvise with the music using both verbal and nonverbal gestures, free improvisation) Playful exploration of dough/colorful materials; participants were asked to create any shape present in their mind
Day 2, session 2	Seated yoga and breathing Sensory awareness Kinetics/sensory	Connect the body and mind via a simple breathing practice with music To understand how various senses transition from one state to another and to increase awareness at cellular levels to contact the innate intelligence of the body. The art therapy mandala circle is also a representation of “wholeness”	Pre- and post-breathing (nondirective yoga, with shared reflection) for mind–body relationship Body movement (position of body parts); body–mind centering; mandala drawing treatment with inner/outer mandala (inside: internal thoughts, feelings, and emotions; outside: external factors) The art therapy mandala mirrors the self and can help highlight one’s personality traits (parts of self or sub-personalities) in the field of view or “awareness”
Second week			
Day 1 second week, session 3	Physiology of stress Perceptual/Affective level	Relaxation and stress reduction to enhance physical and emotional well-being	Drawing sessions on the physical source of stress (draw the best day, best event, worse experience, and worse moment) With music playing in the background, think of the best moment, worse moment, and how would you like to feel with free movements Draw a real approach by which you take care of yourself and use the colors that calm you Sing verses that show how you take care of yourself; use the color that calms you.
Day 2 second week, session 4	Self-compassion Perceptual/Affective level	Understand yourself, accept that you are not perfect, and understand that there is potential for learning and growth in every mistake you make	Mention the names of two people or things you are grateful for, using the most convenient body movement with music Now you have two people or two things that you are grateful for, please draw them Healing/the Bonny Method of Guided Imagery and Music; classical music and imagery place where you feel safe
	Gratitude Cognitive/Symbolic level.  Place of healing and safety Cognitive/Symbolic level.	Enhance self-regulation and resilience, promote self-motivation, and increase neural network functional connectivity and brain–heart coupling  To help explore personal growth, consciousness, and transformation	

Adopted from [103–105], [106], [107], and [108].

### *The Effect of Creative Art Therapy on the Levels of Depression, Anxiety, and Stress Among Jordanian Patients with Stroke*

The effect of creative art therapy is indicated by the differences between the levels of psychological reactions, depression, anxiety, and stress, pre-post creative art therapy interventions, which are illustrated in Table 4. The results

of the paired *t*-test indicated a significant difference in depression ( $t = 37.98$ ;  $p < .001$ ); depression levels decreased post-intervention by an average of 5.75 units. The 95% confidence interval for  $\mu d$  is [5.20, 5.90]. Also, anxiety levels decreased post-intervention by an average of 6.34 units. The 95% confidence interval for  $\mu d$  is [6.05, 7.46] and ( $t = 20.59$ ,  $p < .001$ ). Further, table four shows that there is a significant difference in stress ( $t = 35.52$ ,  $p < 0.001$ ) pre-

**Table 2.** Sociodemographic Characteristics of the Population (N = 85).

Variable	
Age, mean (SD) year, [range: [44–70]	59,42 (6.1)
Sex	
Male, n (%)	34 (40.0)
Female, n (%)	51 (60.0)
Educational level	
Secondary and less, n (%)	48 (76.2)
Tertiary, n (%)	15 (23.8)
Marital status	
Single, n (%)	9 (10.6)
Married, n (%)	65 (76.5)
Divorce, n (%)	3 (3.5)
Widow, n (%)	8 (9.4)
Duration of disease	
≤A month, n (%)	27 (31.8)
1–2-month, n (%)	58 (68.2)
Family income (Jordanian Dinars)	
<500, n (%)	68 (80.0)
500–1000, n (%)	17 (20.0)

**Table 3.** The Levels of Psychological Reactions Among the Study Participants Pre Intervention (N = 85).

Variable	n (%)
Depression, mean (SD); [Range = 10–23]	15.24 (2.81)
No depression (0–9), n (%)	0 (0.00)
Mild depression (10–13), n (%)	25 (29.4)
Moderate depression (14–20), n (%)	58 (68.2)
Severe depression (20–27), n (%)	2 (2.4)
Extremely severe ≥ (28), n (%)	0
Anxiety, mean (SD); [Range = 8–23]	15.03 (3.76)
No anxiety (0–7), n (%)	0 (0.00)
Mild anxiety (8–9), n (%)	3 (3.5)
Moderate anxiety (10–14), n (%)	43 (50.6)
Severe anxiety (15–19), n (%)	24 (28.2)
Extremely severe (≥20), n (%)	15 (17.6)
Stress, mean (SD); [Range = 14–28]	19.31 (2.81)
No stress (0–14), n (%)	0 (0.00)
Mild stress (15–18), n (%)	1 (1.2)
Moderate stress (19–25), n (%)	30 (35.3)
Severe stress (26–33), n (%)	50 (58.8)
Extremely severe (≥34), n (%)	4 (4.7)

n: number; %: percentage; M: mean; SD: standard deviation.

and post-art therapy intervention, the stress levels decreased post-intervention by an average of 6.57 units. The 95% confidence interval for  $\mu d$  is [5.99, 6.86].

## Discussion

The study was conducted to assess and evaluate the impact of creative art therapy on depression, anxiety, and stress levels among Jordanian patients with stroke. We hypothesized

that patients with stroke would have decreased levels of depression, anxiety, and stress after attending four sessions of creative art therapy in two consecutive weeks.

We found that psychological difficulties were highly prevalent among the current study participants. Approximately two-thirds of the participants had moderate depressive symptoms, and half of them suffered from moderate anxiety and stress symptoms. These results echoed the findings of previous studies, which have cited a high prevalence of depression, anxiety, and stress among Jordanian patients with stroke (Al Qawasmeh et al., 2022; Ayasrah et al., 2022; Ayasrah et al., 2018).

Creative art therapy is a form of psychological therapy used to manage psychological difficulties, such as depression, anxiety, and stress in stroke patients. Patients with stroke can express their internal conflicts, feelings, mood disorders, and psychological difficulties through creative art activities, through which mental problems can be healed (Yeongcheol Eum & Yim, 2015). This current study revealed that four sessions of creative art therapy had a significant positive influence on levels of depression, anxiety, and stress. A potential explanation for these results is that different creative art tasks with different themes were equally important and allowed patients to address their psychological status, including their thoughts, feelings, and physical symptoms to meet their treatment needs (Blomdahl et al., 2016). These study results resonate with the literature, which reported that the use of creative art therapy in clinical practice is an opportunity for individuals to express themselves verbally and non-verbally and serves as a catalyst for verbal dialogue (Blomdahl et al., 2016; Michaels, 2010). In line with our results, a previous report asserted that creative art tasks with specific themes promoted self-expression in patients with psychological complexities, such as depression, anxiety, and stress (Blomdahl et al., 2016).

A considerable body of literature has indicated that a wide range of psychotherapeutic approaches is efficacious in improving depressive symptoms, including art therapy. This could be related to the fact that adults who suffer from depressive symptoms and mood disorders adhere to psychotherapy sessions when allowed to be active and express themselves and their thoughts, rather than being passive and receiving only pharmacological treatment alone (Nan & Ho, 2017). Our study findings support those of a previous study wherein stroke patients with psychological complexities, including depression, adhered to the creative art therapy sessions in which we did not experience attrition during the intervention's sessions, which could be the underlying reasons for improving their mood status (Nan & Ho, 2017; Eum & Yim, 2015). This could also be reflected in the high participation levels in this study which could indicate that patients with stroke are in need for a wide range of different approaches to deal with their psychological status.

Creative art therapy can relieve the suppressed emotions of patients and add vitality to the body while giving them

**Table 4.** Paired *T* Test Indicates the Significant Difference Between the Psychological status of the Participants Pre-Post Intervention (*N* = 85).

Item	Pre-intervention mean (SD)	Post-intervention mean (SD)	90% confidence interval	Test statistics	
				<i>t</i> test	<i>p</i> value
Depression	15.24 (2.81)	9.49 (2.48)	[5.20, 5.90]	37.98	<.001
Anxiety	15.03 (3.76)	8.69 (2.97)	[6.05, 7.46]	20.59	<.001
Stress	19.31 (2.81)	12.74 (3.60)	[5.99, 6.86]	35.52	<.001

the energy to share their feelings with others (Eum & Yim, 2015). Further, our findings suggest that creative art therapy could be used as an outlet for patients' thoughts and feelings and would lead to positive health outcomes because after the participants of this study were subjected to the intervention sessions, the levels of their psychological difficulties reduced. This was also reflected in literature in which creative art therapy is described as helping stroke survivors to experience a "renewed purpose and joy in living" (Wilson, 1999) and plays a role in mediating the relationship between body and mind, own self and other in which it can offer space for linking fragmented and meaningless experiences (Michaels, 2010). Our results reflect those of a review study that found art therapy could fulfill a wide range of cognitive, emotional, and functional needs for people with stroke (Reynolds, 2012).

Overall, creative art therapy was found to be effective in reducing depression, anxiety, and stress among patients with stroke. This study addressed the evident gap in literature related to mental health rehabilitation among patients with stroke, and it confirmed that creative art therapy could be used as a novel approach and complement the management plan of these patients.

### Strengths and Limitations

There is limited available research regarding the use of creative art therapy as psychotherapy for patients with stroke. This study added to the body of knowledge about the use of creative art as a psychotherapy approach for managing the mental health status of patients with stroke. The findings of this study provide infrastructure material related to the mental health status of patients with stroke in developing countries and among collectivists communities at a global scale.

Although this study yielded important baseline data as it is the first study in the Arab world and one of few studies internationally to explore the impact of creative art therapy on the levels of depression, anxiety, and stress among patients with stroke, its results should be viewed with its limitations. For example, the study only recruited those with good literacy levels. Therefore, this could limit the generalizability of the study and does not represent this category of patients. Furthermore, data collection in this study was performed

using self-reporting questionnaires. Although it is a well-known method in the literature and an accepted practice in scientific research, it could generate empirically biased data (McCrae & Costa, 1983), such as social desirability bias, in which participants promote themselves in a socially acceptable manner.

### Implications for Practice

Overall, creative art therapy was shown to be an effective approach to managing psychological symptoms among patients with stroke. Thus, health policymakers could use the results of this study to establish mental health rehabilitation centers that deliver professional psychotherapy services with creative art therapy for patients with stroke. In addition, health organizations could seek professional training for staff that create and/or deliver health care plans for patients with stroke. Further studies are needed regarding the application of art therapy among patients with stroke to round out the evidence provided here.

### Conclusions

Overall, creative art therapy is an effective approach to managing psychological symptoms among patients with stroke. This study addresses a major gap in managing mental health difficulties among patients with stroke in Jordan. Creative art therapy is based on a wide range of activities and in line with a rigorous theoretical framework could be an important facet when using such therapy as an adjunct to conventional physical therapy to reduce the levels of depression, anxiety, and stress among patients with stroke. Creative art therapy promotes self-expression and can identify the emotional status of patients and serve as a useful auxiliary tool to help patients with stroke in improving their mental health status.

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## References

- Al-Rajeh, S., Ogunniyi, A., Awada, A., Daif, A., & Zaidan, R. (1999). Preliminary assessment of an arabic version of the Mini-mental state examination. *Annals of Saudi Medicine, 19*(2), 150–152. <https://doi.org/10.5144/0256-4947.1999.150>
- Al Qawasmeh, M., Aldabbour, B., Abuabada, A., Abdelrahman, K., Elamassie, S., Khweileh, M., Zahran, M., & El-Salem, K. (2022). Prevalence, Severity, and Predictors of Poststroke Depression in a Prospective Cohort of Jordanian Patients. *Stroke Research and Treatment, 2022*, 1–9. <https://doi.org/10.1155/2022/6506326>
- Ali, A. M., Alameri, R. A., Hendawy, A. O., Al-Amer, R., Shahrour, G., Ali, E. M., Alkhomees, A. A., Ibrahim, N., & Hassan, B. H. (2022). Psychometric evaluation of the Depression Anxiety Stress Scale 8-items (DASS-8)/DASS-12/DASS-21 among family caregivers of patients with dementia. *Frontiers in Public Health, 10*, 1–13. <https://doi.org/10.3389/fpubh.2022.1012311>
- Almhdawi, K. A., Alazrai, A., Kanaan, S., Shyyab, A. A., Oteir, A. O., Mansour, Z. M., & Jaber, H. (2021). Post-stroke depression, anxiety, and stress symptoms and their associated factors: A cross-sectional study. *Neuropsychological Rehabilitation, 31*(7), 1091–1104. <https://doi.org/10.1080/09602011.2020.1760893>
- Ayasrah, S., Ahmad, M., Basheti, I., Abu-Snieneh, H. M., & Al-Hamdan, Z. (2022). Post-stroke anxiety among patients in Jordan: A multihospital study. *Journal of Geriatric Psychiatry and Neurology, 35*(5), 705–716. <https://doi.org/10.1177/08919887211060015>
- Ayasrah, S. M., Ahmad, M. M., & Basheti, I. A. (2018). Post-stroke depression in Jordan: Prevalence correlates and predictors. *Journal of Stroke and Cerebrovascular Diseases, 27*(5), 1134–1142. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2017.11.027>
- Blomdahl, C., Gunnarsson, B. A., Guregård, S., Rusner, M., Wijk, H., & Björklund, A. (2016). Art therapy for patients with depression: Expert opinions on its main aspects for clinical practice. *Journal of Mental Health, 25*(6), 527–535. <https://doi.org/10.1080/09638237.2016.1207226>
- Coker, A., Coker, O., & Sanni, D. (2018). Psychometric properties of the 21-item depression anxiety stress scale (DASS-21). *African Research Review, 12*(2), 135–142. <https://doi.org/10.4314/afrr.v12i2.13>
- Dwekat, E., Al-amer, R. M., Al-Daraawi, H., & Saleh, M. Y. (2021). Prevalence and correlates of depression and anxiety among Jordanian adolescents: A cross-sectional study. *Youth & Society, 55*(1), 103–121. <https://doi.org/10.1177/0044118X211041383>
- Elimimian, E. B., Elson, L., Stone, E., Butler, R. S., Doll, M., Roshon, S., & Nahleh, Z. A. (2020). A pilot study of improved psychological distress with art therapy in patients with cancer undergoing chemotherapy. *BMC Cancer, 20*(1), 1–11. <https://doi.org/10.1186/s12885-020-07380-5>
- Eum, Y., & Yim, J. (2015). Literature and art therapy in post-stroke psychological disorders. *The Tohoku Journal of Experimental Medicine, 235*(1), 17–23. <https://doi.org/10.1620/tjem.235.17>
- Hackett, M. L., & Pickles, K. (2014). Part I: Frequency of depression after stroke: An updated systematic review and meta-analysis of observational studies. *International Journal of Stroke, 9*(8), 1017–1025. <https://doi.org/10.1111/ijss.12357>
- Hass-Cohen, N., & Findlay, J. C. (2015). *Art therapy and the neuroscience of relationships, creativity, and resiliency: Skills and practices (Norton series on interpersonal neurobiology)*. WW Norton & Company.
- Henning Schöttke & Giabbiconi, C.-M. (2015). Post-stroke depression and post-stroke anxiety: Prevalence and predictors. *International Psychogeriatrics, 27*(11), 1805–1812. <https://doi.org/10.1017/S1041610215000988>
- Hinz, L. D., & Rim, S.-r., & V. B. Lusebrink (2022). Clarifying the creative level of the expressive therapies continuum: A different dimension. *The Arts in Psychotherapy, 78*, 101896. <https://doi.org/10.1016/j.aip.2022.101896>
- Kaadan, I., & Larson, M. (2017). Management of post-stroke depression in the Middle East and North Africa: Too little is known. *Journal of the Neurological Sciences, 378*, 220–224. <https://doi.org/10.1016/j.jns.2017.05.026>
- Kagin, S. L., & Lusebrink, V. B. (1978). *The expressive therapies continuum*. Art Psychotherapy.
- Khazaal, W., Taliani, M., Boutros, C., Abou-Abbas, L., Hosseini, H., Salameh, P., & Sadier, N. S. (2021). Psychological complications at 3 months following stroke: Prevalence and correlates among stroke survivors in Lebanon. *Frontiers in Psychology, 12*, 2184. <https://doi.org/10.3389/fpsyg.2021.663267>
- Kline, T. (2016). Art therapy for individuals with traumatic brain injury: A comprehensive neurorehabilitation-informed approach to treatment. *Art Therapy, 33*(2), 67–73. <https://doi.org/10.1080/07421656.2016.1164002>
- Kulari, G. (2017). *Art therapy techniques to improve coping strategies in children 7–18 years old with a chronic disease* Universidade NOVA de Lisboa (Portugal)].
- Lusebrink, V. B. (2010). Assessment and therapeutic application of the expressive therapies continuum: Implications for brain structures and functions. *Art Therapy, 27*, (4), 168–177. <https://doi.org/10.1080/07421656.2010.10129380>
- Lusebrink, V. B., Märtinsone, K., & Dzilna-Šilova, I. (2013). The expressive therapies continuum (ETC): Interdisciplinary bases of the ETC. *International Journal of Art Therapy, 18*(2), 75–85. <https://doi.org/10.1080/17454832.2012.713370>
- Malchiodi, C. A. (2003). Art therapy and the brain. *Handbook of Art Therapy, 16–24*. <https://smartlib.umri.ac.id/assets/uploads/files/8ea41-Art-therapy.pdf#page=34>

- Malchiodi, C. A. (2020). *Trauma and expressive arts therapy: Brain, body, and imagination in the healing process*. Guilford Publications.
- Malik, S. (2021). Using neuroscience to explore creative media in art therapy: A systematic narrative review. *International Journal of Art Therapy*, (2), 1–13. <https://doi.org/10.1080/17454832.2021.1998165>
- McCrae, R. R., & Costa, P. T. (1983). Social desirability scales: More substance than style. *Journal of Consulting and Clinical Psychology*, 51, 552–566.
- Michaels, D. (2010). A space for linking: Art therapy and stroke rehabilitation. *International Journal of Art Therapy*, 15(2), 65–74. <https://doi.org/10.1080/17454832.2010.523896>
- Morris, J. H., Kelly, C., Toma, M., Kroll, T., Joice, S., Mead, G., Donnan, P., & Williams, B. (2014). Feasibility study of the effects of art as a creative engagement intervention during stroke rehabilitation on improvement of psychosocial outcomes: Study protocol for a single blind randomized controlled trial: The ACES study. *Trials*, 15(1), 1–13. <http://www.trialsjournal.com/content/15/1/380>
- Mutai, H., Furukawa, T., Houri, A., Suzuki, A., & Hanihara, T. (2017). Factors associated with multidimensional aspect of post-stroke fatigue in acute stroke period. *Asian Journal of Psychiatry*, 26, 1–5. <https://doi.org/10.1016/j.ajp.2016.12.015>
- Nan, J. K., & Ho, R. T. (2017). Effects of clay art therapy on adults outpatients with major depressive disorder: A randomized controlled trial. *Journal of Affective Disorders*, 217, 237–245. <https://doi.org/10.1016/j.jad.2017.04.013>
- Newland, P., Miller, R., Bettencourt, B. A., & Hendricks-Ferguson, V. (2020). Pilot study of videos to deliver mindfulness-based art therapy for adults with multiple sclerosis. *Journal of Neuroscience Nursing*, 52(6), E19–E23. <https://doi.org/10.1097/JNN.0000000000000547>
- Phillips, S. P. (2005). Defining and measuring gender: A social determinant of health whose time has come. *International Journal for Equity in Health*, 4(1), 1–4. <https://doi.org/10.1186/1475-9276-4-11>
- Reynolds, F. (2012). Art therapy after stroke: Evidence and a need for further research. *The Arts in Psychotherapy*, 39(4), 239–244. <https://doi.org/10.1016/j.aip.2012.03.006>
- Schall, A., Tesky, V. A., Adams, A.-K., & Pantel, J. (2018). Art museum-based intervention to promote emotional well-being and improve quality of life in people with dementia: The ARTEMIS project. *Dementia (Basel, Switzerland)*, 17(6), 728–743. <https://doi.org/10.1177/1471301217730451>
- Schöttke, H., Gerke, L., Düsing, R., & Möllmann, A. (2020). Post-stroke depression and functional impairments—A 3-year prospective study. *Comprehensive Psychiatry*, 99, 152171. <https://doi.org/10.1016/j.comppsy.2020.152171>
- Schouten, K. A., de Niet Gerrit, J., Knipscheer, J. W., Kleber, R. J., & Hutschemaekers, G. J. (2015). The effectiveness of art therapy in the treatment of traumatized adults: A systematic review on art therapy and trauma. *Trauma, Violence, & Abuse*, 16(2), 220–228. <https://doi.org/10.1177/1524838014555032>
- Shella, T. A. (2018). Art therapy improves mood, and reduces pain and anxiety when offered at bedside during acute hospital treatment. *The Arts in Psychotherapy*, 57, 59–64. <https://doi.org/10.1016/j.aip.2017.10.003>
- Silverstone, L. (2009). *Art therapy exercises: inspirational and practical ideas to stimulate the imagination*. Jessica Kingsley Publishers.
- Sit, J. W., Chan, A. W., So, W. K., Chan, C. W., Chan, A. W., Chan, H. Y., Fung, O. W., & Wong, E. M. (2014). *Promoting holistic well-being in chronic stroke patients through leisure art-based creative engagement*. Rehabilitation Nursing.
- Starcevic, V., Portman, M. E., & Beck, A. T. (2012). Generalized anxiety disorder: Between neglect and an epidemic. *The Journal of Nervous and Mental Disease*, 200(8), 664–667. <https://doi.org/10.1097/NMD.0b013e318263f947>
- Tombaugh, T. N., & McIntyre, N. J. (1992). The mini-mental state examination: A comprehensive review. *Journal of the American Geriatrics Society*, 40(9), 922–935. <https://doi.org/10.1111/j.1532-5415.1992.tb01992.x>
- Townsend, M. C., & Morgan, K. I. (2017). *Psychiatric mental health nursing: Concepts of care in evidence-based practice*. FA Davis.
- Uher, R., Payne, J. L., Pavlova, B., & Perlis, R. H. (2014). Major depressive disorder in DSM-5: Implications for clinical practice and research of changes from DSM-IV. *Depression and Anxiety*, 31(6), 459–471. <https://doi.org/10.1002/da.22217>
- White, H., & Sabarwal, S. J. (2014). *Quasi-experimental design and methods*. 8(2014), 1–16.
- Wilson, L. (Ed.). (1999). The role of art therapy in post-stroke rehabilitation. Malchiodi (Ed.), *Medical art therapy with adults* (pp. 25–42). Jessica Kingsley.
- Winkelman, M. J., & Sessa, B. (2019). *Advances in psychedelic medicine: State-of-the-art therapeutic applications*. ABC-CLIO.
- Yang, Y., Zhang, M., Zhao, J., Song, S., Hong, F., & Zhang, G. (2021). Effect of traditional Chinese medicine emotional therapy on post-stroke depression: A protocol for systematic review and meta-analysis. *Medicine*, 100(14), e25386. <https://doi.org/10.1097/MD.00000000000025386>