Development and Effect-Evaluation of A New Family-Based Art Therapy on Depression and Pain Anxiety of the Hospitalized Children with Cancer

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Abstract

The consequences of cancer do not just impact on the body only, but expands into the other levels of human existence, including psychological levels. Sometimes these consequences are even more painful and more destructive than physical harms, especially in children. Therefore, the use of psychotherapy for children, particularly art-based psychotherapies, is necessary. So, the main objective of the present research was to develop a new family-based art therapy for hospitalized children with cancer and to evaluation its effectiveness on the symptoms of depression (DEP) and pain anxiety (PA). Five hospitalized children with cancer, participated in this single-subject study (A-B type) accompanied with their mothers. The intervention was applied in eight sessions (30-60 minutes per session). Children's depression and pain anxiety were measured repeatedly in two phases and data were analyzed by graphs and tables. The effect size (ES) and reliable change index (RCI) are also reported in addition to the customary values. The results showed that family-based art therapy was significantly effective in reducing the symptoms of depression and pain anxiety in all of the children. The findings indicate the effectiveness of family-based art therapy in helping to modify the psychological consequences of cancer, and clarify the need for this approach to be applied in similar conditions.

Keywords: Cancer, Art therapy, Family-based art therapy, Depression, Pain anxiety

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Introduction

Cancer is characterized by the uncontrolled growth and distribution of abnormal body cells ("Colorectal cancer facts & figures," 2017). The incidence of cancer among children is increasing worldwide. Despite the medical advances, cancer is still considered to be fatal and pernicious in most people's opinion. This general belief on cancer is a source of intense fear, disappointment, and coercive pre-mourning reactions. It is very likely that these negative emotions and reactions to cancer will lead to various psychiatric and psychological disorders, including depression (DEP), which will further increase the incidence of cancer and physical problems (Chang et al., 2015; Goldman et al., 2015). Although psychotherapy in adults is often given as a form of supportive or interpretation-based conversations, for children it should be in their own languages: painting and playing. The most diagnostic or psycho-therapeutic procedures are used these key languages for children. Painting can be a non-verbal tool for expressing children's thoughts and emotions as well as and for effective communication with the therapist, too (Durualp & Altay, 2012; Rollins, 2005). Art therapy is an interdisciplinary mix of visual arts and psychology (Gussak & Rosal, 2016). The previous protocols of art therapy were too long and not family-based. Family-based art therapy used in the current research is the same as art therapy, but the family's participation in the treatment is compulsory. *Family-based Art Therapy* is differ from *Family Art Therapy* which is a kind of family therapy with art. Family art therapy is usually used for interpersonal family problems (Riley & Malchiodi, 2003), but family-based art therapy can be useful when the presence of the family is necessary in individual art therapy, whether due to some physical, psychological or social problems of the patient, or in order to increase the achievements and effects of treatment (Purrezaian, 2020).

Although the art crafting has been one of the oldest forms of health care throughout the history of mankind and perhaps pre-ancestry, the official introduction of art as a therapeutic approach dates back to Margaret Naumburg efforts in the 1940s (Malchiodi, 2007, 2011).

Applying a drawing intervention or other forms of art into the holistic care of a pediatric oncology patient may assist in maximizing quality of life and allow for a more tolerable lifestyle (Aguilar, 2017). The results of various research have shown art therapy is an effective way in helping children and adults to adaptation with cancer, physically and psychologically (Councill, 1993; Domnick, Domnick, Wiebelitz, & Beer, 2017; Menichetti Delor, Giusti, Fossati, & Vegni, 2015; Nesbitt & Tabatt-Haussmann, 2008). In the present study, the effect of family-based art therapy is measured based on two factors: pain anxiety (PA) and depression. Pain is one of the most debilitating and frightening side

effects of cancer. The prevalence of cancer pain is more than 50% in people treated for malignant cancers immediately, and more than 90% in people with advanced cancer (Mercadante, 2013). Despite many advances in medications, treatments, and special pain control training, proper pain management in people with cancer remains an important challenge (Money & Garber, 2018). Paining is a multidimensional experience including sensory pain, emotional pain, and pain assessments (Merskey & Bogduk, 1994; Pagé et al., 2011). Pain anxiety indicates cognitive, emotional, behavioral, and physiological responses to the expectation and/or experience of pain (McCracken & Dhingra, 2002; McCracken, Zayfert, & Gross, 1992; Pagé et al., 2011). Depression is also a common and most prevalent psychiatric disorder among patients with cancer (Çavuşoğlu, 2001; Khamechian, Alizargar, & Mazoochi, 2013; Massie, 2004) that usually associated with symptoms such as depressed mood, changes in weight (or appetite), changes in sleep, decreased energy, restlessness or mental retardation, loss of feelings, decrease the ability to thinking and concentrate, despair, and also having the thoughts based on death. Beck's cognitive theory can be regarded as the most famous theory of depression. According to Beck, depression is created as a result of cognitive distortions and negative beliefs about self, environment and future. Environmental stress events (e.g. a chronic disease like cancer) can be a major contributor to depression (Sadock & Ruiz, 2015). The research on art therapy with children in health care settings is limited (Bishop, 2012). Furthermore, art therapy has been used in a variety of clinical settings and populations recommending its effectiveness (Abdulah & Abdulla, 2018; Domnick et al., 2017; Favara-Scacco, Smirne, Schilirò, & Di Cataldo, 2001; Gold et al., 2013; Massimo & Zarri, 2006; Rollins, 2005; Teglbjaerg, 2011; Woodgate, West, & Tailor, 2014; Zeeck et al., 2009). Because art therapy has its roots in psychoanalysis theory, it is a long-term method and has not yet been implemented in a family-based way (Purrezaian, 2020). So, in the present study, a new form of art therapy (family-based and according to hospital setting) will be introduced and then, its effectiveness will be evaluated to improve the depression and pain anxiety of hospitalized children with cancer.

Method
Design: The present research undertook in a single-subject study (A-B type) design, which is placed in the category of experimental research.

Participants: Statistical population: All children aged 9 to 14 years with cancer and admitted to the children's hematology-oncology division in the hospital. Sample: Three children (10, 11 and 13 years old) with cancer -Burkitt's Lymphoma (one participant) and Leukemia

(two participants) who were hospitalized in the hematology-oncology division selected based on the inclusion and exclusion criteria.

Inclusion criteria:

1. Age between 9 and 14;
2. The first or second stage of cancer progression;
3. Being hospitalized;
4. Detection of the need for psychological treatment due to signs of BPSEIH, pain anxiety and depression;
5. Having reading and writing ability;
6. Informed consent of the parents (supervisor);
7. Participation of the mother in the research; and
8. Ensuring family stability.

Exclusion criteria:

1. Leaving the research by the child or his/her mother;
2. Acute physical illness, accompanied with cancer;
3. Acute psychiatric disorders and using any psychiatric drug;
4. Having serious motor difficulties and/or need for absolute rest;
5. Having obvious perceptual problems; and
6. The existence of obvious family problems (including parental divorce in the last two months).

Procedure: The present study was carried out in two general phases:

Phase 1: To design and development of the therapeutic protocol. At this phase, we required a comprehensive study of the protocols and techniques available in numerous books and articles. The initial form of the research protocol was then prepared and criticized by professional experts (two clinical psychologists, a psychiatrist, an oncologist, and two art therapists). The next step was to implement it in a pilot study before the original research. At this point, we received valuable feedbacks from children and their parents in hospital and developed the final form of our protocol. Consequently, a new indigenous family-based protocol of art therapy was developed and designed (see Table 1).

Phase 2: Implementation of the treatment's protocol. At this phase, after selecting each of the participants (based on the criteria for inclusion or exclusion) an introductory session was held with the mother on the basis of the treatment plan, and then the family-based art therapy was applied for all children, individually, family-based, and in the same way.

Table 1: The family-based art therapy designed in the present study

Session number	Session description
Introductory meeting	- Selecting the child based on the research's criteria, and organizing a brief educational meeting for the mother of the child with the aim of introducing the manner of implementing family-based art therapy and

Session number	Session description	
		expressing its positive effects in scientific research, and encouraging her to participate effectively in all treatment sessions.
1	*arting stage*	- To play a childish happy music with a game.
	Implementing the techniques	pplying scribble technique (with the dominant and then with the non-dominant hand) to reduce the child's primary stress, Finding beautiful, funny and hopeful spontaneous shapes and images in the child's scribbles, To paint the shapes found by the child in collaboration with the therapist and the mother, and - Painting with the theme "Me and all my goodness".
	nding stage	orytelling based on the produced works, by the therapist with the mother, and - Inserting child's paintings on her album gallery.
2	*arting stage*	rforming a group painting game with custom colors by the child, her mother, and the therapist.
	lementing the techniques	To paint and making collection with the theme "The process of creating disease and treating it" on three separate card titles of "white blood cells and platelets", "pathogens" and "damaged tissues or cells" (with a childish language full of hope for treatment), Converting the paintings to 3D objects by colorful pastes, and - Storytelling based on the produced works.
	Ending stage	- Browsing a story or narration made, and - Inserting child's paintings on her album gallery.
3	*Starting stage*	To practice the mental imagery in the child with a subject of shining the healing light toward the parts of body with the current or expected pain.
	Implementing the techniques	To draw with crayons and pastels, with the subject of mental imagery experienced at the beginning of the session (healing light).
	Ending stage	Creating a joy marker to remind the healing light, during a pain, and - Inserting the child's paintings on her album gallery.
4	*Starting stage*	- To review previous sessions.
	Implementing the techniques	- Performing a game with colored pastes and dolls, aimed at symbolic fighting with cancer cells.
	Ending stage	tory making and storytelling by children from the experience of fighting with cancer.
5	*Starting stage*	rawing a spontaneous mandala improvised by colored pencils to reduce child's anxieties and worries.
	Implementing the techniques	draw two paintings with future themes for the next year and the ten years later with colored pencils or pastels.
	Ending stage	Making an invitation card based on the drawing of the ten years later, and - Inserting the child's paintings and invitation card on her album gallery.
6	*Starting stage*	istening to a childish happy music accompanying puppeteering, and onversation with the child on the differences between a child in a hospital (a child with a disease) and a child at home (a healthy child), including behaviors, feelings, thoughts, and family or social relationships (friends and others).

Session number		Session description
	Implementing the techniques	...forming the technique of painting the feelings and thoughts with their colors by the techniques of the therapist's third hand.
	Ending stage	...scussion with the child about ways to express feelings to parents or other trusted individuals, and - Inserting the child's paintings on her album gallery.
7	*Starting stage*	- Coloring a black and white picture.
	Implementing the techniques	...king a wallpaper with the theme of emotions and thoughts using the previous session paintings, and ...orytelling and puppeteering on ways to get support from parents and other trusted people.
	Ending stage	...Review the methods of expressing feelings and getting support, and - Inserting the child's wallpaper on her album gallery.
8	*Starting stage*	...draw a painting by the mother and the therapist with the subject determined by the child and then complete the painting by her.
	Implementing the techniques	...o draw a painting and play with paste with the theme "If I was a doctor ...".
	Ending stage	- Inserting child's paintings on her album gallery, - Awarding child, and ...tting homework painting assignments (in collaboration with the mother or other members of the family) and taking photo of them.
...llow up session		- To review the photos taken from the child's artistic assignments and then, providing feedbacks.

Measures: The Children's Depression Inventory (CDI). the CDI is made up of 27 items, was developed by Kovacs and Beck (1977) to measure the symptoms of depression in children aged 7 to 17 years. Each item has three response options that score 0 (absence of symptomatology), 1 (mild symptomatology), or 2 (severe symptomatology). This questionnaire has a good validity and reliability. Cronbach's Alpha of the test in clinical and non-clinical samples has concluded over.80 (Ivarsson, Svalander, & Litlere, 2006; Masip, Amador-Campos, Gómez-Benito, & del Barrio Gándara, 2010). In the present study, Cronbach's alpha was .92.

The Child Pain Anxiety Symptoms Scale (CPASS). The CPASS is a validated form of the pain anxiety syndrome test (McCracken & Dhingra, 2002), developed for children aged 8 to 18 years by Pagé and colleague (Pagé, Fuss, Martin, Escobar, & Katz, 2010). The CPASS has 20 items with five response options in Likert type from one (as the lowest point of agreement) to five (as the highest point of agreement). The scale has high validity and reliability. The Cronbach Alpha has reported to be more than .90 (Pagé et al., 2011; Pagé et al., 2010). In the present study, Cronbach's alpha was.89.

Data Analysis: The present research's data, as well as all of the single-subject studies, are presented in the form of graphs. These graphs,

drawn using Excel software, indicate changes in the score of participants from A condition to B condition. The tables that are presented after the graphs, include within and between conditions visual analysis of data. Calculations in the mentioned tables are based on a step by step guide to visual analysis (Gast, 2010). The effect size (ES) and reliable change index (RCI) are also reported in addition to the customary values.

Results
Visual-Inferential Results
The following graphs (fig.1-3) contain data on the frequent measurement of depression and pain anxiety in children with cancer from A condition to B condition. The tables presented after the graphs, contain data that can be used to analyze the inferential graphs.
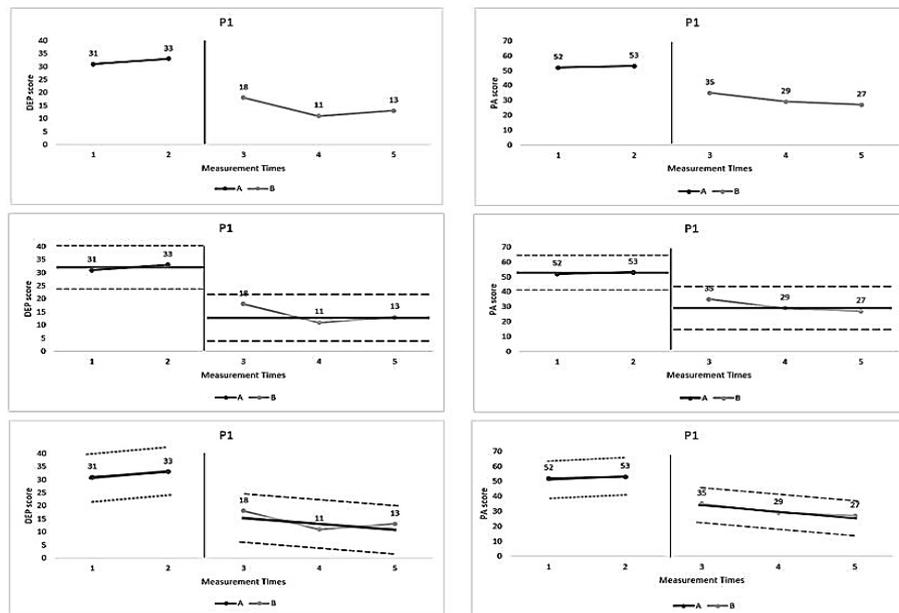

Figure 1. The graphs related to participant no.1 (P1) scores.

The first graph (above) to the left: Data for depression (DEP) score changes from A to B; the second graph (middle) to the left: Level stability envelope for depression; and the third graph (bottom) to the left: Estimate of trend and trend stability for depression. The first graph (above) to the right: Data for pain anxiety (PA) score changes from A to B; the second graph (middle) to the right: Level stability envelope for pain anxiety; the third graph (bottom) to the right: Stimate of trend and trend stability for pain anxiety.

Figure 2. The graphs related to participant no.2 (P2) scores.

The first graph (above) to the left: Data for depression score changes from A to B; the second graph (middle) to the left: Level stability envelope for depression; and the third graph (bottom) to the left: Estimate of trend and trend stability for depression. The first graph (above) to the right: Data for pain anxiety score changes from A to B; the second graph (middle) to the right: Level stability envelope for pain anxiety; the third graph (bottom) to the right: Stimate of trend and trend stability for pain anxiety.
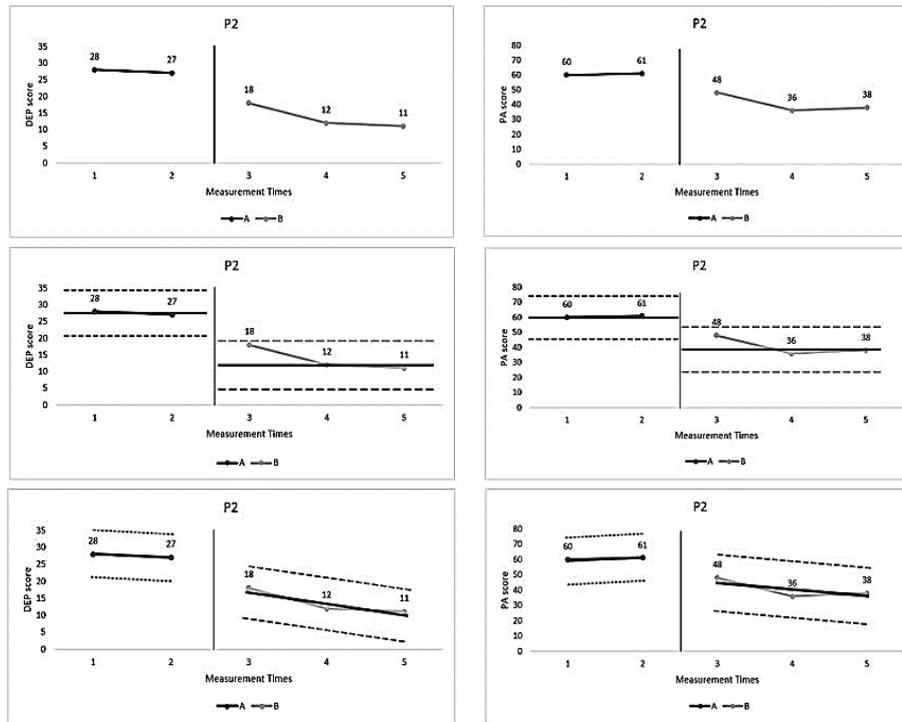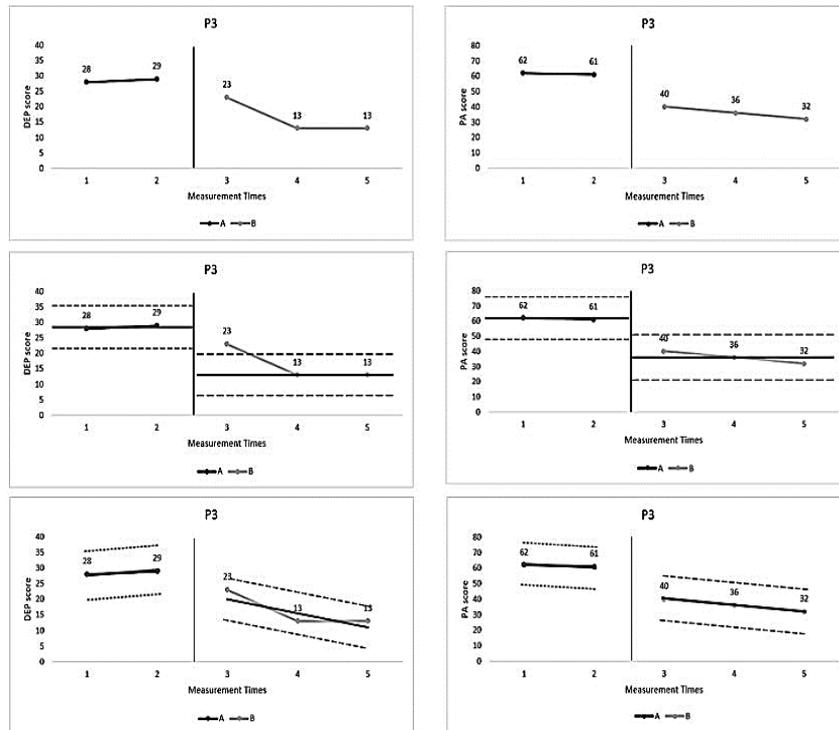
Figure 3. The graphs related to participant no.3 (P3) scores.

The first graph (above) to the left: Data for depression score changes from A to B; the second graph (middle) to the left: Level stability envelope for depression; and the third graph (bottom) to the left: Estimate of trend and trend stability for depression. The first graph (above) to the right: Data for pain anxiety score changes from A to B; the second graph (middle) to the right: Level stability envelope for pain anxiety; the third graph (bottom) to the right: Stimate of trend and trend stability for pain anxiety

Table 2. Summary of within and between conditions visual analysis of data related to participant 1 (Depression)

Depression				
Within Conditions			Between Conditions	
	A_1	B_1		
1.Condition sequence:	1	2	1.Numbre variable changed	1
2.Condition length:	2	3	2.Change in trend	

3.Level:			2.1 Direction Change	-
3.1 Median	32	13	2.2 Effect	Positive
3.2 Mean	32	14	2.3 Stability Change	Stable to stable
3.3 Range	31-33	11-18	3.Change in level	
3.4 Stability envelope 80. / 25.	Stable (100%)	Stable (100%)	3.1 Relative change	33 to 18
4.Level change:			3.2 Absolute change	33 to 18
4.1 Relative change	31-33	18-11	3.3 Median change	32 to 11
4.2 Absolute change	31-33	18-13	3.4 Mean Change	32 to 14
5.Trend			4. Data overlap	
5.1 Direction	Accelerating	Decelerating	4.1 PND	100%
5.2 Stability	Stable (100%)	Stable (100%)	4.2 POD	0%
5.3 Multiple paths within trend	No	No	4.3 RCI	45.13
			4.4 ES	12.77

Table 3. Summary of within and between conditions visual analysis of data related to participant 1 (Pain anxiety)

Pain anxiety				
Within Conditions			Between Conditions	
	A_1	B_1		
1.Condition sequence:	1	2	1.Numbre variable changed	1
2.Condition length:	2	3	2.Change in trend	
3.Level:			2.1 Direction Change	-

3.1 Median	52.5	29	2.2 Effect	Positive
3.2 Mean	52.5	30.33	2.3 Stability Change	Stable to stable
3.3 Range	52-53	27-35	3.Change in level	
3.4 Stability envelope 80. / 25.	Stable (100%)	Stable (100%)	3.1 Relative change	53 to 35
4.Level change:			3.2 Absolute change	53 to 35
4.1 Relative change	52-53	35-27	3.3 Median change	52.5 to 29
4.2 Absolute change	52-53	35-27	3.4 Mean Change	52.5 to 30.33
5.Trend			4. Data overlap	
5.1 Direction	Accelerating	Decelerating	4.1 PND	100%
5.2 Stability	Stable (100%)	Stable (100%)	4.2 POD	0%
5.3 Multiple paths within trend	No	No	4.3 RCI	95.49
			4.4 ES	31.67

Table 4. Summary of within and between conditions visual analysis of data related to participant 2 (Depression)

Depression				
Within Conditions			Between Conditions	
	A_1	B_1		
1.Condition sequence:	1	2	1.Numbre variable changed	1
2.Condition length:	2	3	2.Change in trend	
3.Level:			2.1 Direction Change	

3.1 Median	27.5	12	2.2 Effect	Positive
3.2 Mean	27.5	13.66	2.3 Stability Change	Stable to stable
3.3 Range	27-28	11-18	3.Change in level	
3.4 Stability envelope 80. / 25.	Stable (100%)	Stable (100%)	3.1 Relative change	27 to 18
4.Level change:			3.2 Absolute change	27 to 18
4.1 Relative change	28-27	18-11	3.3 Median change	27.5 to 12
4.2 Absolute change	28-27	18-11	3.4 Mean Change	27.5 to 13.66
5.Trend			4. Data overlap	
5.1 Direction	Decelerating	Decelerating	4.1 PND	100%
5.2 Stability	Stable (100%)	Stable (100%)	4.2 POD	0%
5.3 Multiple paths within trend	No	No	4.3 RCI	69.90
			4.4 ES	19.77

Table 5. Summary of within and between conditions visual analysis of data related to participant 2 (Pain anxiety)

Pain anxiety				
Within Conditions			Between Conditions	
	A_1	B_1		
1.Condition sequence:	1	2	1.Numbre variable changed	1
2.Condition length:	2	3	2.Change in trend	
3.Level:			2.1 Direction Change	
3.1 Median	60.5	38	2.2 Effect	Positive

3.2 Mean	60.5	40.66	2.3 Stability Change	Stable to stable
3.3 Range	60-61	36-48	3.Change in level	
3.4 Stability envelope 80. / 25.	Stable (100%)	Stable (100%)	3.1 Relative change	61 to 48
4.Level change:			3.2 Absolute change	61 to 48
4.1 Relative change	60-61	48-38	3.3 Median change	60.5 to 38
4.2 Absolute change	60-61	48-38	3.4 Mean Change	60.5 to 40.66
5.Trend			4. Data overlap	
5.1 Direction	Accelerating	Decelerating	4.1 PND	100%
5.2 Stability	Stable (100%)	Stable (100%)	4.2 POD	0%
5.3 Multiple paths within trend	No	No	4.3 RCI	85.46
			4.4 ES	28.34

Table 6. Summary of within and between conditions visual analysis of data related to participant 3 (Depression)

Depression				
Within Conditions			Between Conditions	
	A_1	B_1		
1.Condition sequence:	1	2	1.Numbre variable changed	1
2.Condition length:	2	3	2.Change in trend	
3.Level:			2.1 Direction Change	
3.1 Median	28.5	13	2.2 Effect	Positive

3.2 Mean	28.5	16.33	2.3 Stability Change	Stable to stable
3.3 Range	28-29	13-23	3.Change in level	
3.4 Stability envelope 80. / 25.	Stable (100%)	Stable (100%)	3.1 Relative change	29 to 23
4.Level change:			3.2 Absolute change	29 to 23
4.1 Relative change	28-29	23-13	3.3 Median change	28.5 to 13
4.2 Absolute change	28-29	23-13	3.4 Mean Change	28.5 to 16.33
5.Trend			4. Data overlap	
5.1 Direction	Accelerating	Decelerating	4.1 PND	100%
5.2 Stability	Stable (100%)	Stable (100%)	4.2 POD	0%
5.3 Multiple paths within trend	No	No	4.3 RCI	61.47
			4.4 ES	17.39

Table 7. Summary of within and between conditions visual analysis of data related to participant 3 (Pain anxiety)

Pain anxiety				
Within Conditions			Between Conditions	
	A_1	B_1		
1.Condition sequence:	1	2	1.Numbre variable changed	1
2.Condition length:	2	3	2.Change in trend	
3.Level:			2.1 Direction Change	⟍ -
3.1 Median	61.5	36	2.2 Effect	Positive

3.2 Mean	61.5	36	2.3 Stability Change	Stable to stable
3.3 Range	61-62	32-40	3.Change in level	
3.4 Stability envelope 80. / 25.	Stable (100%)	Stable (100%)	3.1 Relative change	61 to 40
	4.Level change:		3.2 Absolute change	61 to 40
4.1 Relative change	62-61	40-32	3.3 Median change	61.5 to 36
4.2 Absolute change	62-61	40-32	3.4 Mean Change	61.5 to 36
	5.Trend		4. Data overlap	
5.1 Direction	Decelerating	Decelerating	4.1 PND	100%
5.2 Stability	Stable (100%)	Stable (100%)	4.2 POD	0%
5.3 Multiple paths within trend	No	No	4.3 RCI	109.84
			4.4 ES	36.43

According to the left part of Table 2, the mean depression rate of participant 1 after intervention ($\bar{X}$=14) is significantly lower than the same score at baseline level ($\bar{X}$=32). In addition, the direction of the trend has been changed from accelerating to decelerating, by maintaining 100% stability in both conditions, A and B. The PND and POD indicate that 100% of the data points in condition B are outside the range of condition A. The amount of effect size (ES=12.77) shows that art therapy has had a high effectiveness in reducing depression score of the participant. As well, the amount of RCI (45.13>1.96) indicates that the change in depression score from A to B is statistically significant.

Based on the right part of Table 2, the mean pain anxiety rate of participant 1 after intervention ($\bar{X}$=30.33) is significantly lower than the same score at baseline level ($\bar{X}$=52.5). Furthermore, the direction of the

trend has been changed from accelerating to decelerating, by maintaining 100% stability in both conditions, A and B. The PND and POD indicate that 100% of the data points in condition B are outside the range of condition A. The amount of effect size (ES=31.67) shows that art therapy has had a high effectiveness in reducing pain anxiety score of the participant. Additionally, the amount of RCI (95.49>1.96) indicates that the change in pain anxiety score from A to B is statistically significant.

According to left part of Table 3, the mean depression rate of participant 2 has been significantly reduced from baseline ($\bar{X}$=27.5) to post intervention state ($\bar{X}$=13.66). The direction of the trend and the stability have not been changed but decelerating change in the trend of B condition is much more than that of in A condition. The PND and POD indicate that 100% of the data points in condition B are outside the range of condition A. The amount of effect size (ES=19.77) shows that art therapy has had a high efficiency in reducing depression score of the participant. Also, the amount of RCI (69.90>1.96) indicates that the modification in depression score from A to B is statistically significant.

The right part of Table 3, states that the mean pain anxiety rate of participant 2 after intervention ($\bar{X}$=40.66) is significantly lower than the same score at baseline level ($\bar{X}$=60.5). Moreover, the direction of the trend has been changed from accelerating to decelerating, by maintaining 100% stability in both conditions, A and B. Based on the PND and POD, 100% of the data points in condition B are outside the range of condition A. The effect size (ES=28.34) shows that art therapy has had a great efficacy in reducing pain anxiety score of the participant. In addition, the RCI (85.46>1.96) indicates that the alteration in pain anxiety score from A to B is statistically significant.

The left part of Table ٤, shows that the mean depression rate of participant 3 after intervention ($\bar{X}$=16.33) is considerably lower than the same score at baseline level ($\bar{X}$=28.5). It is also clear that the direction of the trend has been changed from accelerating to decelerating, by maintaining 100% stability in both conditions, A and B. The PND and POD indicate that 100% of the data points in condition B are outside the range of condition A. The effect size (ES=17.39) also indicates that art therapy has been effective on decreasing depression score of the participant. Additionally, the amount of RCI (61.47>1.96) indicates that the variation in depression score from A to B is statistically significant.

According to the right part of Table ٤, the mean of pain anxiety for participant 2 has been significantly reduced from A condition ($\bar{X}$=61.5) to B condition ($\bar{X}$=36). The direction of the trend and the stability have

not been changed but decelerating change in the trend of B condition is greatly more than that of in A condition. The PND and POD indicate that 100% of the data points in condition B are outside the range of condition A. The effect size (ES=36.43) shows that art therapy has had a strong effectiveness in reducing pain anxiety score of the participant. Also, the RCI (109.84>1.96) indicates that the change in pain anxiety score from A to B is statistically significant.

Discussion

Development and introduce a new brief form of art therapy as family-based art therapy especially for hospitalized children with cancer, was the first aim of the present study. Performing the existing protocols was not possible in our research because of the following reasons: 1) The long process of treatment in the previous protocols. We needed a protocol for hospital intervention, which could be done within a maximum of one week (the usual time of each hospital admission for children with cancer in our country). 2) Individual or group-based forms of traditional art therapy, instead of family-based. Most art therapy protocols are executed either individually or in groups. Group therapy in Iranian hospitals is rarely possible due to inconsistencies in the admission time of children. Families' concerns about the physical problems of their children make them prefer to attend all psychotherapy sessions in order to further care. The psychological problems caused by cancer in children are not unique to them. It also occurs in their family. Parents of a child with cancer often experience problems such as depression, anxiety, and stress. They also sometimes have problems in supporting their child. Participating in family-based art therapy sessions can be effective in reducing their own psychological problems caused by childhood illness, and on the other hand, it can play a role in their independence to supporting the child and coping with their problems. Therefore, the creation of a family-based art therapy protocol was essential.

The second aim was to evaluate the effect of family-based art therapy on depression and pain anxiety as the most important psychological problems in children with cancer based on our observations. The results showed that the mean scores of depression and pain anxiety were significantly reduced at post intervention (from A condition to B condition). These findings are consistent with the studies that have confirmed the effectiveness of art therapy (Abdulah & Abdulla, 2018; Domnick et al., 2017; Favara-Scacco et al., 2001; Gold et al., 2013; Massimo & Zarri, 2006; Rollins, 2005; Teglbjaerg, 2011; Woodgate et al., 2014; Zeeck et al., 2009).

One of the reasons for depression of children with cancer, seems to be the restriction of their social relationships with family and friends. According to our investigations, silence as one of the complications and sometimes one of the causes of depression, is an important feature of these children. This silence may be wholly selective in protesting the illness or hospital conditions; or due to lack of proper companion in the hospital; or even owing to the weaknesses of the verbal language to express the thoughts, feelings and emotions of the children. Artistic expression in art therapy is a developmentally proper means of communication for children (Rollins, 2005).

Art therapy can change the difficult conditions of hospital; art therapist can be a good companion for children; and art production may be a worthy substitute for verbal language. Furthermore, family-based art therapy can teach the families how to communicate with their children in hospital as if they are at home. Drawing is an accepted, indeed, preferred activity in hospitals since it is a simple and easy game for children (Massimo & Zarri, 2006). Social abilities are reflected in the outcome's negative symptoms. This is important because impairments in the ability to build and sustain satisfying relationships with others are at the core of various mental health problems (Gold et al., 2013). The use of drawing improved communication through direct visual expression and/or through verbal expression via the campfire effect. We know that improving communication in children can prevent them from becoming depressed or reduce the symptoms of depression in depressed children (Rollins, 2005).

Pain anxiety is the other issue in hospital, especially for children. Over-estimation of pain and extreme reactions to it, as pain anxiety, can be due to the patterning of other children, or the inappropriate behavioral and emotional reactions of parents. Art therapy can be helpful for parents as well as children. The art therapist could lead the parent towards a state of better self-awareness and became a behavioral model by showing potential ways for the parent to interact with their child in a supportive way. When parents are adequately prepared, the child perceives the painful procedure as a less traumatic experience. Child's adaptability is directly related to the parent's emotional state (Favara-Scacco et al., 2001). Moreover, Pictures emerging from art therapy have established to be significant and denote the children's perception of the disease, and of their fears and hopes. Their pictures reflect not only their current state of mind, but also past experiences and future prospects. Art therapy verified to be a really important means of narrative communication for severely sick children in hospital. Drawings accompanied by comments surely provide a broader

approach to better understanding the child's anxiety and feelings (Massimo & Zarri, 2006).

In conclusion, based on the findings, art therapy with its applicable techniques, can be useful for hospitalized children to modifying their depression and pain anxiety. In addition, family-based art therapy can be applied when group art therapy is not possible or when the family's attendance is necessary.

Due to the reduction of hospitalization time, designing brief or short-term psychotherapies to apply in hospitals is of special importance, especially in health psychology. In the present study, the brief family-based art therapy with this feature was introduced. But it is also recommended to compress and adjust other psychotherapies. Furthermore, considering the effective role of families in facilitating the adaptation of children to cancer, the production of special educational/therapeutic package or software for families is recommended too.

Conflict of Interest: The authors declare that they have no conflict of interest.

Ethical Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Ethical considerations: Informed consent was obtained from the parents before any intervention.

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