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Effect Of Art Therapy On Psychological Condition Of Children Having Acute Lymphoblastic Leukemia Undergoing Chemotherapy

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Abstract

Children with cancer face harmful unpleasant side effects that can be treated using complementary and alternative medicine, such as art therapy, to lessen their anxiety and stress (Mondanaro et al., 2021)**.** The current study aimed to evaluate the effect of art therapy on psychological condition of children having Acute Lymphoblastic Leukemia (ALL) undergoing chemotherapy. A quasi-experimental design was utilized. This study was conducted at the In-Patient Pediatric Hematology Oncology Departments Children's Cancer Hospital Foundation- Egypt, Cairo (57357). A purposive sample of 50 children suffering from ALL undergoing chemotherapy was selected. Tools included an interviewing questionnaire, Psychological assessment scale for children to assess depression, anxiety and stress. The current study revealed there was a high statistical significant difference between pre/ post intervention regarding studied children total knowledge about art therapy where 98% of studied children had unsatisfactory knowledge pre intervention while 96% of them had satisfactory knowledge post intervention. Also, that there were a highly statistically significant differences found between studied children pre/ post intervention regarding their total depression, anxiety and stress respectively ($p<0.001$). Based on the findings of the study it was concluded that, the art therapy methods, reduced depression, anxiety and stress in children with ALL undergoing chemotherapy. Recommendation: Designing and implementing art therapy program for supporting psychological condition of children with acute

lymphoblastic leukemia, undergoing chemotherapy**.** Furthermore, design psychological assessment sheet regarding stress, anxiety and depression assessment and being a routine for nurses.

Keywords: Acute Lymphoblastic Leukemia, chemotherapy, Art Therapy, psychological Condition

Introduction

Leukemia is typically the most prevalent type of childhood cancer in the majority of countries around the world, with the exception of a few African nations near the equator, where lymphoma is the most common type of pediatric cancer. 80% of all instances of childhood leukemia are of the most prevalent kind, acute lymphoblastic leukemia (ALL). The real causes of ALL remain unknown, and most studies have produced contradictory results. (Loucaides et al., 2019).

Due to the high incidence of childhood cancer, inadequate care, and lack of funding, childhood cancer is a top issue in Egypt. Due to the lack of information in the National Cancer Registry, it is challenging to assess survival progress. In this study, we looked at the survival rates and trends of the biggest cohort of Egyptian children with cancer (n = 15779, aged 0–18 years) treated at Children's Cancer Hospital Egypt (CCHE) between 2007 and 2017. This cohort represented 40% to 50% of all pediatric cancers in Egypt at the time. (National Institutes of Health, 2019).

Treatment for acute lymphoblastic leukemia typically consists of three stages: stage one, known as remission induction, kills leukemia cells in the bone marrow, restores the balance of blood cells, and alleviates symptoms; stage two, known as consolidation, kills any remaining leukemia cells; and stage three, known as maintenance, involves taking chemotherapy drugs on a regular basis to prevent the leukemia from coming back. (Karvonen et al., 2019).

According to 2016 research published in the Journal of the American Art Therapy Association, anyone can reduce stress and improve their psychological health with less than an hour of creative effort, regardless of artistic experience or expertise. An art therapist may employ a variety of artistic techniques, including drawing, painting, and fold creations from young children (George et al., 2021).

Sometimes it seems as though there is nowhere for the concerns and anxieties of cancer patients to be expressed. However, children can utilize their imaginations during art therapy to picture the things that are troubling them. A child's drawings can be utilized

to determine what specific aspects of their illness or therapy are stressing them out if they are displaying other symptoms of stress and anxiety. Then, based on this knowledge, suitable coping mechanisms may be suggested. (Councill& Ramsey 2019).

Significance of the study

Children Cancer Hospital Foundation-Egypt (57357) in Cairo is the first hospital in Egypt used art therapy for pediatric oncology patients since 2015. Following that, the art therapy program was established as a strong instrument incorporating the use of creative means for psychological expression, including anxiety and stress reduction, as well as enhancement of psychological and cognitive skills in children. By stimulating the memory through art therapy, acute lymphoblastic leukemia patients undergoing chemotherapy can express themselves without needing to be talented, the primary goal being to reveal their feelings of depression, stress, and anxiety.

Aim of the Study

To evaluate the effect of art therapy on psychological condition of children having Acute Lymphoblastic Leukemia (ALL) undergoing chemotherapy. This aim was attained through:

1-Assess the psychological status of children having acute lymphoblastic leukemia undergoing chemotherapy.

2- Implement art therapy program related to care of children having acute lymphoblastic leukemia undergoing chemotherapy

3-Evaluate the effect of arts therapy program on the psychological status of children having acute lymphoblastic leukemia undergoing chemotherapy.

Research Hypothesis

- The art therapy program will be improving psychological condition of children having acute lymphoblastic leukemia undergoing chemotherapy.

Research Design

A quasi-experimental design was utilized to fulfill the aim of the current study.

Setting

The current study was conducted at the In-Patient Pediatric Hematology Oncology Departments Children's Cancer Hospital Foundation (57357), Egypt.

Sample

A purposive sample of 50 children suffering from ALL undergoing chemotherapy that attended to In-Patient Pediatric Hematology Oncology Departments Children's Cancer Hospital Foundation (57357) was approached to participate in the current study (according to sample size formula (Terwee et al., 2007). The subjects were divided randomly to two groups: study group and control group. At the

beginning of the study, according to list of admitted children, every odd number child was taken into the study group, while every even number child was taken in control group. The art therapy program was applied to the study group only.

Inclusion Criteria

Newly diagnosed children with ALL within one week from diagnosis, in the treatment phases (induction phase then consolidation phase), aged from 6 to 18 years (this age able to express themselves), from both genders at any educational level and from any residence area.

Exclusion Criteria

Critically, terminally ill children and those who have any psychiatric illness excluded from the current study.

Tools of data collection: two tools were used:

Tool (1) Interviewing Questionnaire: pre/ post art therapy. It was constructed by the researcher and consisted of three parts; first part which included sociodemographic data of children such as: Age, gender, level of education, ranking, residence, medical diagnosis reason of admission and stage of treatment, second part which included children knowledge regarding art therapy such as meaning, types, indications, advantages, participation of art therapy, art therapy favorite, art therapy and psychological condition and art therapy period. Scoring system: correct, incorrect total knowledge and third part that included physical assessment sheet: it was used to assess children physical condition and their body systems. Scoring System: It was consisted of 17 questions, 12 questions scored from rare (0), often (1) & always (2), while the others 5 questions scored from (0), No& (1) Yes. The total score of physical assessment sheet is 29 scores. Zero < 15→ not affected, 15 ≥ 29 →affected

Tool (II): To assess Psychological Condition of Children Pre/ Post, this consisted of 3 scales as follows:

1. **Hamilton Depression Rating Scale (HDRS) for children:** It was adopted from Hamilton (1960) to assess children's depression. It was consisted of 17 sentences which include depression, feeling of guilt, suicide, insomnia, work and activities, retardation, agitation, anxiety – psychic, anxiety – somatic symptoms-gastrointestinal, somatic symptoms- general, genital symptoms, hypochondriasis, loss of weight and insight. Scoring System: it consists of 17 sentences, 8 sentences scoring from 0-4 while the others 9 sentences scoring from

0-2. The total scores for HDRS are 50 scores. The total children depression was divided into: No depression: from zero to 7, Mild depression: from 8 to 13, Moderate depression: from 14 to 18, Severe depression: from 19 to 22, Very severe depression: from 23 and above.

2. **Spence Children's Anxiety Scale (SCAS):** It was adopted from Spence et al., (2003) used to assess severity of anxiety symptoms in children. It was consisted of 45 sentences. The scale divided into six domains including: separation anxiety, social phobia, obsessive compulsive problems, panic / agoraphobia, generalized anxiety and fears of physical injury. Scoring System: it consists of 45 sentences, only 38 sentences were scored, the other 7 sentences did not score. (11,17, 26, 31, 38, 43 and 45). Scoring from never (0) to always (3), the total scores for Spence children's anxiety scale is 114 scores. The total children's anxiety was divided into: Normal: from 40 to 60, High: more than 60
3. **Perceived Stress Scale (PSS):** It was adopted from White, (2006) to assess children's stress. It was consisting of 14 questions. Scoring System: Each question scored from never (0) to a lot (3). The total scores of scale are 42 scores. Low stress: from 0 to 13, Moderate stress: from 14 to 26, High stress: from 27 to 42

Content Validity and Reliability

Tools of this study were judged by a panel of seven expertise and they were professors of pediatric nursing. The necessary modifications were done according to experts' opinion to ensure validity of the content.

The reliability was conducted for the developed tools. The reliability was scaled as follows: <0-0.25 weak reliability, 0.25-0.75 moderate reliability, 0.75- <1 strong reliability and 1 is optimum. The reliability for this questionnaire was 0. 81.

Pilot Study

A pilot study was carried out on 5 (10%) of the sample size children to test the applicability and feasibility of the study tools which was used in data collection in addition to calculate the time that required to fill each tool. No radical modification was done in the study tools after pilot study, so the studied children in the pilot study were included in the study subject.

Protection of ethical and human rights

The Human Research and Ethical Committee at the Faculty of Nursing Ain Shams University approved the current study with ethical number 05.07.002. The aim and the nature of the study were also explained in Scientific Medical Advisory Committee (SMAC) to gain their acceptance and support. Then the researcher obtained approval from the Institutional Review Board (IRB) at the data collection setting. The medical and nursing directors of the In- Patient Department gave official permissions.

Procedure

The study was carried out over a period of 6 months in Children's Cancer Hospital Egypt, In- Patient Department. The researchers were available in the study setting 2 days/ week (Monday& Thursday) from 9:00am. to 2:00pm. and the actual field work was divided into four phases:

1. **The Assessment Phase**: In this phase, the researcher was using the constructed tools in collecting the data about children's knowledge of art, physical assessment and psychological assessment for children having acute lymphoblastic leukaemia.

2. **The Planning Phase:** The program was designed on the light of the literature review and using the art therapy in the hospital to improve their psychological status of children regarding to paediatric oncology. The content of art therapy program included colouring, drowning, origami art, handicrafts, visual art (Photograph), dance movement, play music, drama sessions.

3. **The Implementation Phase:** The studied children were divided into 13 groups, each groups included 3 – 5 children according to their attendance to the study setting. The total number of session was 9 sessions each session took about 60 – 120 minutes. The total time was 12 hours for studied children and the total hours of the program was 156 hrs. At the beginning of the first session, an introduction about the art therapy program and assessment data was done and at the end of each session the researchers inform children about the date and time of next session according to their time in the in- patient department.

4. The Evaluating Phase: Upon the completion of the art therapy program, the post intervention was done for children to evaluate the effect of

art therapy on psychological condition of children having acute lymphoblastic leukemia.

Results: Table (1): Distribution of Studied Children According to Their Characteristics (n= 50).

Items	Study Group		Control Group		X2 and P value
	No.	%	No.	%	
Age 6 <10 years 10 <14 years 14 ≤18 years	**19** **13** **18**	**38** **26** **36**	**22** **9** **19**	**44** **18** **38**	2.14 0.54
Sex Male Female	34 16	68 32	38 12	76 24	0.79 0.37
Level of education Primary school Prep school Secondary school University	1 31 13 5	2 62 26 10	1 27 11 11	2 24 22 22	2.6 0.44
Residence Urban Rural	20 30	40 60	23 27	46 54	0.36 0.54

Table (1) shows that there were no statistically significant differences between characteristics of study and control groups regarding their characteristics namely; age, sex, level of education and residence. Moreover, this table reveals
that 38% and 44% of study and control groups were in the age group 6<10 years respectively.

Table (1): Distribution of Studied Children According to Their Knowledge about Art Therapy Pre/ Post Intervention (n= 50)

Items	Pre		Post		X^2 &
	Correct	Incorrect	Correct	Incorrect	

	No.	%	No.	%	No.	%	No.	%	P value
Meaning of art therapy	1	2	49	98	48	96	2	4	88.3 0.001*
Types of art therapy	1	2	49	98	50	100	0	0	96 0.001*
Indications of art therapy	0	0	50	100	46	92	4	8	85.1 0.001*
Benefits of art therapy	2	4	48	96	49	98	1	2	88.3 0.001*
Art therapy improves mood	14	28	36	72	44	88	6	12	38.6 0.001*
Art therapy improves period to children hospitalization	16	32	34	68	39	78	11	22	24 0.001*

Table (2) shows that there were statistical significant differences pre/ post art therapy program regarding knowledge of studied children about art therapy. All of studied children had incorrect knowledge about indications of art therapy pre intervention compared with 92% of them had correct knowledge post intervention.

Figure (1): Relation between Studied Children According to Their Total Knowledge about

Art Therapy Pre/ Post Intervention (n= 50)

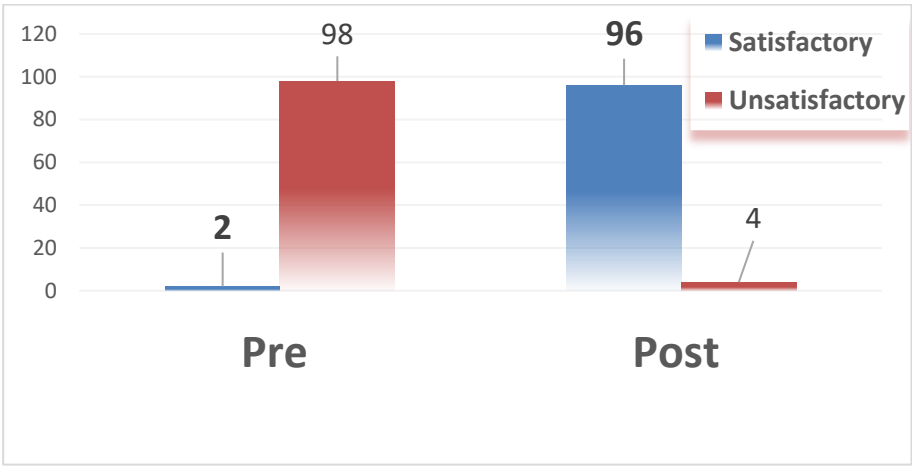

Figure (1) represent that there was a high statistical significant difference between pre/ post intervention regarding studied children total knowledge about art therapy. Where 98% of studied children had unsatisfactory knowledge pre intervention while 96% of them had satisfactory knowledge post intervention.

Figure (2): Distribution of Studied Children According to Their Total Physical Condition Pre/ Post Intervention (n= 50).

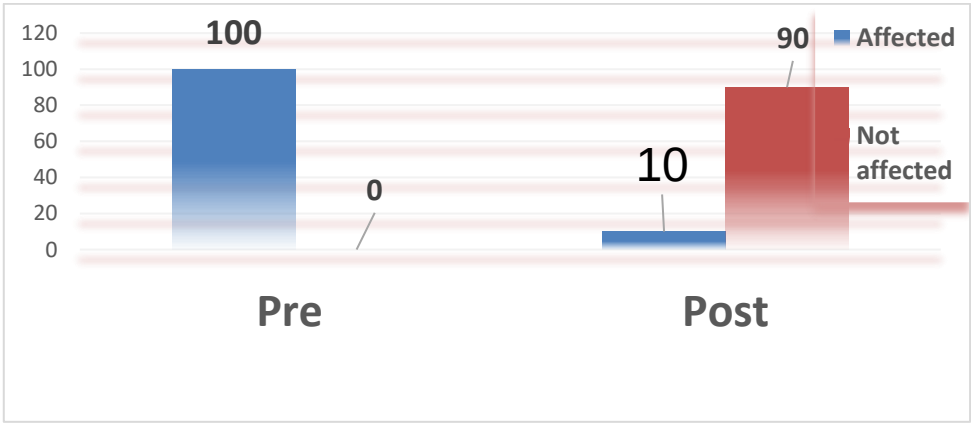

Figure (2) shows that there was a high statistical significant difference between studied children pre/ post intervention regarding their total physical condition.

Figure (3): Distribution of Studied Children According to Their Total Depression Pre/ Post Intervention (n= 50).

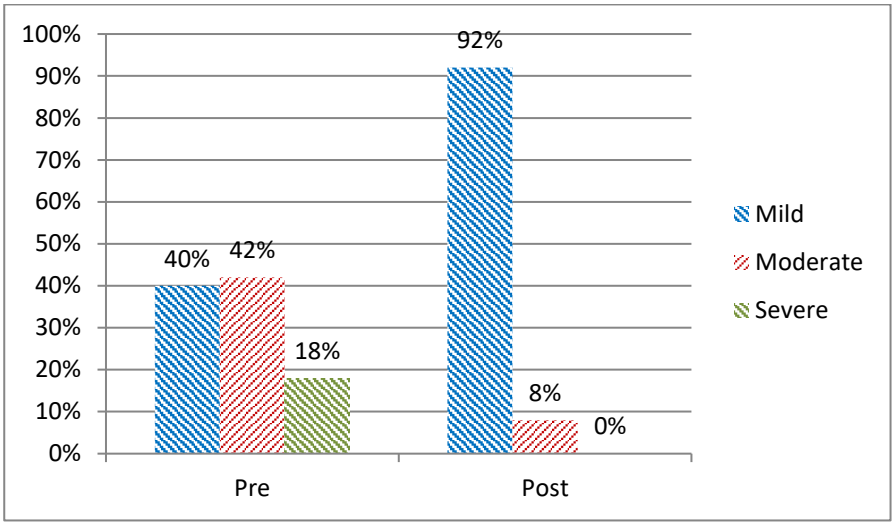

Figure (3) illustrate that there was a high statistical significant difference between studied children pre/ post intervention regarding their total depression, where there was 21 (42%) of studied children had moderate depression pre intervention compared with 4 (8%) post intervention.

Figure (4): Distribution of Studied Children According to Their Total Anxiety Pre/ Post Intervention (n= 50).

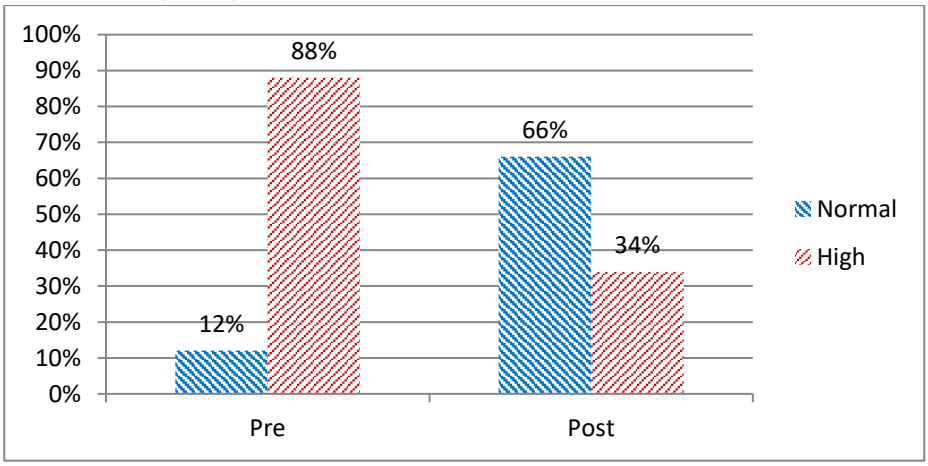

Figure (4) showed that there was a highly statistical significant difference between studied children pre/ post intervention regarding their total anxiety (X^2 =30.6& p<0.001).

Figure (5): Distribution of Studied Children According to Their Total Stress Pre/ Post Intervention.

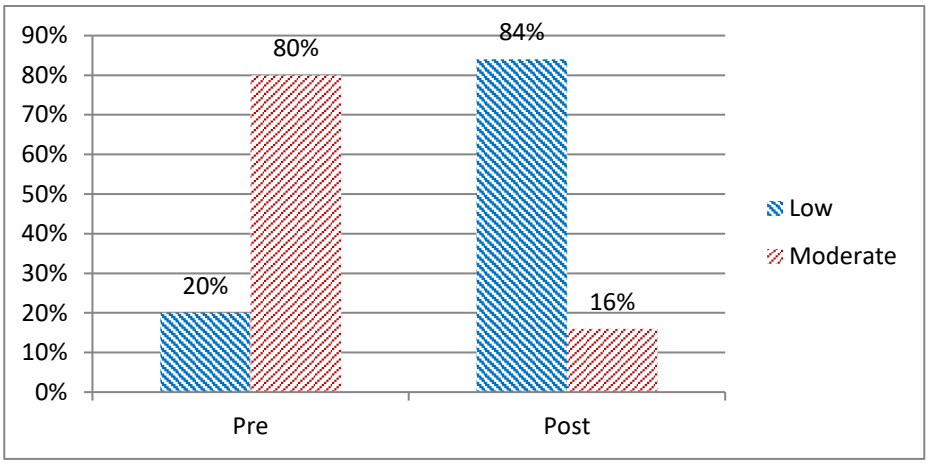

Figure (5) shows that there was a highly significant difference between studied children pre/ post intervention regarding their total stress (X^2 =41 & p<0.001). Where 40 (80%) of studied children had moderate stress pre intervention compared with 8 (16 %) post intervention.

Table (3): Correlation Between Studied Children Pre/ Post Intervention related to their Depression, Anxiety and Stress.

	Anxiety		Stress	
	R	P	R	p
Depression Pre post	0.14 0.28	0.13 **0.04***	0.11 0.02	0.24 0.84
Anxiety Pre post	1		0.24 0.28	**0.01*** **0.05***

Table (3) shows that there is positive moderate correlation between depression & anxiety and between anxiety and stress post intervention while there is positive weak correlation

between depression and stress post intervention.

Discussion

A blood-forming cell cancer called leukemia starts in the bone marrow and blood. By utilizing creativity and symbolism, art therapy helps patients cope with and peacefully discharge their inner, uncontrollable feelings, preventing the inevitable anxiety states that occur with hospitalization. Given that it is based on analogue communication, it promotes non-traumatic psycho-emotional processing and allows for empathy, understanding, comfort, and other emotional functions. It has proven to be quite helpful in a medical situation. Due to its broad foundation and variety of modalities, art therapy is very adaptable and versatile and may therefore support children's unique coping mechanisms. Art techniques may be combined with therapeutic goals to reach (Berry et al. 2017).

This study's goal was to investigate the effects of art therapy on the psychological health of children with acute lymphoblastic leukemia (ALL) who were receiving chemotherapy. By looking at the psychological health of kids with acute lymphoblastic leukemia who were receiving therapy, this objective was achieved. establishing and implementing an art therapy program for children receiving chemotherapy for acute lymphoblastic leukemia. observing the effects of arts therapy programmes on the mental health of young patients with acute lymphoblastic leukemia who are receiving chemotherapy.

The findings of the current study showed that there was no statistically significant difference between characteristics of study and control groups regarding their characteristics namely, age, sex, level of education and residence. This results were in agreement with results of Seitz., et al. (2014), who carried out a study entitled "Efficacy of an internet-based cognitive-behavioral intervention for long-term survivors of pediatric cancer: a pilot study" and found that there were no statistically significant regarding demographic characteristics of study group. These results are due to the study and control group are homogenies.

The result of the present study clarified that there was statistically significant difference pre/ post art therapy program intervention regarding knowledge of studied children about art therapy. All of studied children had incorrect knowledge about indications of art therapy pre intervention compared with almost of them had correct knowledge post intervention. In addition, almost of studied children had unsatisfactory total knowledge pre intervention compared with the greatest of them had

satisfactory total knowledge post intervention.

These results were in agreement with results of Katz& Hamama (2013), who performed a study entitled "Draw me everything that happened to you: Exploring children's drawings of coping with cancer" and found that there was improvement in children knowledge post program implementation regarding drawing program.

The findings of this study revealed that there was a substantial statistical difference in overall depression between examined children pre and post intervention, with fewer than half of studied children having moderate depression before intervention compared to less than one tenth post intervention. This finding was consistent with the findings of Mardani, et al. (2020), who observed that art therapy had a statistically significant beneficial effect on child despair and anxiety in a research examine Art therapy on lowering anxiety in orphaned children." This may be due to the program affect positively on the children and decrease their level of depression.

The current study's findings demonstrated that there were statistically significant variances in all aspects of the analyzed children's generalized anxiety disorder before and after intervention. Furthermore, there were statistically significant variations in all aspects of the children's anxiety linked to panic attacks and agoraphobia before and after the intervention. These findings matched those of Khoolaee et al. (2016), who assessed Impact of painting therapy on aggressiveness and discovered statistically significant variations in anxiety disorder between study children before and after intervention. This may be due to art therapy makes child express his feeling by drawing it and it help in relieving their anxiety.

According to the findings of the current study, there was a very significant difference in overall stress levels between the tested children before and after intervention. While the majority of the children in the study experienced moderate stress before the intervention, only about one-fifth had moderate stress after the intervention. This may be due to the program affect positively on the children and decrease their level of stress. These findings matched those of Cook et al. (2018), who assessed psychological distress and cancer survival and discovered a statistically significant variance in total stress levels between children in the study group pre/post intervention, as well as between the study and control groups.

Regarding to the correlation between studied children pre and post intervention there were positive correlation between

depression & anxiety and between anxiety and stress post intervention while there is positive weak correlation between depression and stress post intervention. This result was in agreement with results of Kissane (2009), who carried out a study entitled "Beyond the psychotherapy and survival debate: the challenge of social disparity, depression and treatment adherence in psychosocial cancer care" and found that there were statically differences between depression and anxiety and stress from pre to post intervention for patients with breast cancer and melanoma. This may be due to when child diagnosed with stress and anxiety he become irritable and depressed.

Conclusion

In the light of the present findings it can be concluded that, the art therapy methods, reduced depression, anxiety and stress in children diagnosed with acute lymphoblastic leukemia and undergoing chemotherapy. Thus, nurses can use art therapy to reduce the psychological problems of hospitalized children and this method could be an effective step toward enhancing the quality of life of children.

Recommendation

1. Support the children with acute lymphoblastic leukemia, undergoing chemotherapy and their families to cope with the cancer by designing and carrying out art therapy with appropriate program according to psychological assessment for each one and provide supervision to identify the progress of psychological status.
2. The art therapy team must be included physician, nurse, psychiatrist, psychologist, social worker, art specialists and secretary.
3. Designing a questionnaire for children who will enter the art therapy unit. The questionnaire includes the following points: the child's personal data, information related to art therapy, their favorite types, and the child's physical condition.
4. Design psychological assessment sheet regarding stress, anxiety and depression assessment among children with acute lymphoblastic leukemia and being a routine for nurses

Conflict of interest: None

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