

## **EFFECT OF PUPPET THERAPY ON REDUCTION OF ANXIETY AMONG CHILDRENS (6-12 YEARS) SUFFERING FROM LEUKEMIA IN SELECTED HOSPITALS OF ODISHA.**

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### **Abstract:**

**Introduction:** Leukemia is the most common type of childhood cancer seen in India. The use of non-pharmacological intervention like puppet therapy having greater implication in the reduction of anxiety also helps the children to cope with the situation. The study was to assess the anxiety level on children suffering from leukaemia and determine the effect of puppet therapy on anxiety.

**Methodology:** A quasi-experimental non-randomized controlled group study design was undertaken in SCB and Acharya Harihar Regional Cancer Centre, Cuttack. Among all the children admitted with leukaemia and fulfil the inclusion criteria, 40 children were selected conveniently and assigned equally in both the groups. The standardised Hamilton Anxiety scale was used to measure the anxiety by interviewing, observation and assessment technique. This scale is a self-report measure of anxiety consist of 14 items which were scored as  $\leq 17$  for mild, 18-24 for moderate, 25-30 as severe. The puppetry was shown to the sample for 5 days with 15 minutes play by using hand puppets, stick puppets and readymade finger puppets.

**Result:** The mean age was 6.5 in experimental and 6 in the control group respectively. Most of the children were male is 75% in both groups. The mean anxiety score before and after puppet therapy was  $14 \pm 4.94$  and  $8.95 \pm 2.87$ . The mean difference was found extremely significant. Similarly, the post-test of anxiety mean score among the children who are suffering from leukaemia showing puppetry was  $8.95 \pm 2.87$  and  $12.4 \pm 3.97$  respectively between experimental and control group also found extremely statistically significant. There was a significant positive relation ( $p < 0.001$ ) between age, sex, day of hospitalization, family income, treatment and previous history of hospitalization with pre-test anxiety score. **Conclusion:** It was concluded that the use of puppet therapy as an innovative method to overcome anxiety among children who are suffering from leukaemia.

**Keywords:** Leukaemia, Anxiety, Puppet Therapy

### **Introduction:**

Childhood leukaemia is very often seen in children, which can cause the abnormal production of White blood cells from the bone marrow.<sup>1</sup> The four main types of leukaemia among all the acute

type of Leukemia is a very common diagnostic group of childhood cancer and most common in children under 15 years in India.<sup>2</sup> Its incidence is indiscriminate among people in different age groups in different countries.<sup>3</sup> There were various possible risk factors are seen in children with acute leukaemias such as environmental, genetics or infectious which are considered to determine the aetiology of such disease.<sup>4</sup> The treatment modalities for blood cancer showing effective result by taking chemotherapy and radiation therapy with different dose in different age groups. Acute leukaemias are the most common diagnostic group of childhood cancer.<sup>2,5</sup> Anxiety can be identified as the presence of multiple disorders that causes fear, apprehension, nervousness and worrying. Due to the different pattern of treatment modalities in cancer become very painful which results in anxiety in children, This disorder affects the feel, behave and one can manifest real physical symptoms. In response to that, the children are poorly coping with the painful situation than in adults, so they behave unusually.<sup>2,6</sup>

A puppet is a visual object, that can be structured in different purpose. A puppeteer is a person who can manipulate and perform the play in front of others. They can do the movement with their hand- arms or control device such as rods and strings to move the head, limb etc. usually used in children to enable them to express concepts, feelings and past action freely.<sup>7</sup> Therapeutic puppet is a best non-interventional remedies, possibly cause anxiety reduction.<sup>2</sup> This is the way to externalize a problem, emotion, or experience and can help children identify and relate to trauma because as they play, the puppets become an extension of themselves. Although there has been considerable research around the use of puppets in trauma counselling there is limited evidence around the value of the puppet creation process as a tool for more complete healing.<sup>8</sup> Therapeutic puppetry is essential and effective for children's anxiety reduction and gain the confidence to overcome fears from the time of hospital admission to the treatment procedure or discharge from the hospital.<sup>9</sup>

Now a day, the health team members like Psychiatrist, Psychologist, Pediatrician and Nurses are using puppet therapy among the emotionally disturbed children at the time of investigation procedure. As a result of the study, this therapy is effective for children.

By using puppet therapy on leukaemia children researcher having a greater expectation to reduce anxiety by increasing their attention and involving them in different activities.

**Methodology-** The study was conducted with quasi-experimental non-randomized controlled (NRS) study design in cancer department of Government medical college and hospital that is SCB Medical and Acharya Harihar Regional Cancer Center (AHRCC), Cuttack. The cancer patients of all ages and sexes admitted in this setup. Among all the children admitted with leukaemia, only children suffering from leukaemia at age of 6-12 years are selected as target group except those were critically ill. From this segment of the population in the period from Dec 2017 to Feb 2018, 40 Samples were selected conveniently as they met the criteria of inclusion in sampling. The children were assigned equally in both groups. The standardised Hamilton Anxiety scale was used to measure the severity of anxiety symptoms by interviewing, observation and assessment technique. This scale is a self-report measure of anxiety consist of 14 items, which is scored as  $\leq 17$  for mild, 18-24 for mild to moderate, 25-30 for moderate to severe. In the data collection procedure, Puppetry was shown to the sample continuously for 5 days with 15 minutes play by using hand puppets (which was prepared by socks gloves, buttons, cotton ball, string and plastic eyes), stick puppets (were made by art paper, cotton, colours, colourful paper, gum, stick, scissor) and readymade finger puppets purchased from online. Proper ethical permission has taken before data collection, with the consent of hospital authorities and parents of the children. Every day the puppet activities were like hand puppet for introduction for 2 minutes, finger puppets for a conversation with children regarding themselves, their daily activities, likes and dislikes, general knowledge and about their family members for 8 minutes and sticks puppets for different interesting rhymes for 5 minutes. This was more interesting for every child while puppets showed to them and they enjoyed a lot.

## Result and Discussion:

The findings of the present study are discussed in terms of statistically measured data are:

**Socio-demographic findings:** A total of 40 samples were studied, in which maximum samples in the interventional group were (75%) and in monitoring group (65%) in the age group of 6-8 years. and minimum age group of 9-10 years is (5%) in both the group. The result shows the majority (75%) male and (25%) are female in both the group. According to Religion both experimental and control group equally belongs to (90%) are Hinduism. whereas (5%) Christian in experimental and (10%) in the control group, only (5%) Muslims are in the experimental group and there were no Muslim Participants in the control group. Based on their education, the majority (65%) in experimental and (70%) in the control group are under primary education, under nodal education both groups are having the equal percentage that is (30%) there was only (5%) illiterate in the experimental group. According to the days of hospitalization, the result found that maximum (45%) in the interventional group, (50%) are monitoring group hospitalized for more than 1 month, (25%) for experimental and (15%) in control group admitted since less than 10 days, (20%) in the interventional group and (30%) in monitoring group for 10-20 days and (10%) for the experimental group and (5%) for control group admitted since 20-30 days. According to their monthly family income majority (70%) in the experimental group and (75%) in the control group having <10,000, (25%) and (10%) are having family income >30,000 in interventional group and monitoring group, (5%) in the experimental group and (15%) in control group having 10,001-20,000, no data is found for 20,001-30,000. Distribution of sample according to their treatment pattern shows that maximum (90%) in the experimental group and (80%) in the control group are taking chemotherapy, (10%) from the experimental sample are being treated through radiation therapy and no data for the control group, in bone marrow transplantation there have no data in the experimental group and (10%) in the control group, only control group (10%) samples are getting both chemo and radiation therapy. According to their previous history of hospitalization, data shows that maximum (35%) in experimental and (15%) in the control group are having the previous history of hospitalization and (65%) in the experimental group and (85%) in the control group are not having any previous history of hospitalization. (Table-1)

**Pre-test Post-test Anxiety score:** Result shows that in the experimental group the pre-test mild score anxiety was (90%) wherein post-test (100%) there was no result in moderate anxiety, in experimental group maximum (10%) were having severe anxiety in pre-test and there is completely absent of post-test anxiety as severe. Whereas in monitoring group the pre-test mild anxiety score having (85%) and same in post-test also, there was moderate anxiety score of the control group (15%) both in pre and post-test and no result of severe anxiety seen in monitoring group. (Table-2) To support the study another study conducted by, William H.C. Li, 2016, also gave similar result after performing ANOVA, The children admitted in pediatric cancer unit with age group (both 3-7 and 8-12 ) are experienced less anxiety in the experimental group as compared to those receiving standard care only.<sup>9</sup>

**Effectiveness of Puppet therapy:** A total of 20 samples in an experimental group showing puppetry the result found that the mean of anxiety score in pre-test  $14 \pm 4.94$  and post-test was  $8.95 \pm 2.87$ . The Statistical difference as evidenced by t-test = 4.355, df=18, and p-value = 0.0004 extremely significant. Therefore the research hypothesis was accepted and the null hypothesis was rejected. Which means there is a positive effect of puppet therapy to reduce the anxiety level of children who are suffering from leukaemia. (Table-3). A similar study conducted by

**Konstantinos Koukourikos et al,** 2015. play therapy and puppet therapy are having high therapeutic value for ill children.<sup>8-10</sup> controversial studies conducted by Elisa. Delvecchio and

etal, in 2019, the result found that there were no significant differences were found for play and anxiety scores.<sup>11</sup>

A total of 20 samples in the control group Result found that mean result  $\pm$  SD of pre and post-test anxiety score among the children who are suffering from leukaemia was  $4.28 \pm 13.65$  and  $3.97 \pm 12.4$  respectively. Statistical difference was found between pre-test and post-test as evidenced by  $t$ -test=0.76,  $df=18$  and  $p$  value=0.457 which was not significant. So, the researcher will accept the null hypothesis. (**Table-4**)

The comparison result depicts that the mean pre-test of anxiety score among the children who are suffering from leukaemia in both experimental and control group showing puppetry was  $14 \pm 4.94$  and  $13.36 \pm 4.28$  respectively. Statistical difference was found between two groups as evidenced by  $t$ -test= 0.239,  $df = 38$ , and  $p=0.406$  again it is not significant. (**Table-5**)

The comparison of post-test anxiety score among the children who are suffering from leukaemia in both experimental and control group showing puppetry was  $8.95 \pm 2.87$  and  $12.4 \pm 3.97$  respectively. the difference was found between two groups as evidenced by  $t$ -test= 3.14 at  $df=38$ , and  $p$ -value =0.001 very significant. So the alternative hypothesis is accepted here, which means there is a strong significant difference exists between both the group and their anxiety score after the intervention, Hence it is indicated that the administration of puppet therapy to children suffering leukaemia in study group there was a notable reduction of anxiety than the control group who underwent normal hospital routine care. (**Table-6**). To support the above findings related studies conducted by K.Patel, 2014, the result showed that the mean score of anxiety among hospitalized children in the study group was 0.70 with S.D 0.46 and the post-test mean score of anxiety among children in the control group was 3.43 with S.D 0.50. The calculated unpaired 't' value of  $t = 21.808$  was found significant at  $p < 0.001$  level.<sup>10,12</sup> Another supportive study result showed the anxiety level was lower in an interventional group than the other two compare groups.<sup>6</sup>

**Association of anxiety with socio-demographic variables:** Result shows that there was strong association on pre and post-test anxiety score and socio-demographic variable such as age, sex, days of hospitalization, history of the previous hospitalization but religion, education, family income and treatment taken are not statistically significant keeping  $p$  value= $( < 0.001 )$  (**Table-7**)<sup>2</sup>

### **Conclusion:**

Reducing anxiety among children, suffering from leukaemia is very much essential to protect them from psychological illness. The present study was aimed to assess the effectiveness of puppet therapy to achieve the objective of the study Hence, it can be concluded that puppet can be utilized as an innovative method to reduce anxiety among the children who are suffering from any chronic illness like leukaemia.

**Conflict of Interest:** None

**Ethical Permission:** Approved

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**Table-1 Frequency and percentage distribution of demographic variables of the children having leukaemia in the experimental and control group.**

$$N=n_1(20)+n_2(20)=40$$

Socio-demographic Parameter	Experimental group		Control group	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
<b>A. Age in Years</b>				
6-8 Years	15	75%	13	65%
9-10 Year	1	5%	1	5%
11-12 Year	4	20%	6	30%
<b>B. Sex</b>				
Male	15	75%	15	75%
Female	5	25%	5	25%
<b>C. Religion</b>				
Hinduism	18	90%	18	90%
Christian	1	5%	2	10%
Muslim	1	5%	00	00

<b>D. Education</b>				
Primary education	13	65%	14	70%
Nodal education	6	30%	6	30%
Illiterate	1	5%	00	00
<b>E. Duration of hospitalization</b>				
Less than 10 days	5	25%	3	15%
10-20 days	4	20%	6	30%
20-30days	2	10%	1	5%
More than one month	9	45%	10	50%
<b>F. Monthly family income:</b>				
Rs.<10,000	14	70%	15	75%
Rs.10,000-20,000	1	5%	3	15%
Rs.20,000-30,000	00	00	00	00
Rs.>30,000	5	25%	2	10%
<b>G. Treatment pattern:</b>				
Chemotherapy	18	90%	16	80%
Radiation therapy	2	10%	00	00
Bone marrow transfusion	00	00	2	10%
Both chemo and radiation therapy	00	00	2	10%
<b>H.History of the previous Hospitalization</b>				
Yes	7	35%	3	15%
No	13	65%	17	85%

**Table-2: Frequency(f) and percentage (%) based on pre and post-test anxiety score of both the experimental and control group.**

$$N=n_1(20)+n_2(20)=40$$

	Experimental group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	F	%	F	%	F	%	F	%
Mild (<17)	18	90%	20	100%	17	85%	17	85%
Moderate(18-24)	0	0	0	0	3	15%	3	15%
Severe(25-30)	2	10%	0	0	0	0	0	0

**Table: 3.Pre and post-test anxiety score result by Mean and standard deviation paired t value and p-value of the study group.**

$$N=n_1(20)$$

PARAMETERS	Mean ± SD		t-test	Df	P-value
	Pre-test	Post-test			
Anxiety	14±4.94	8.95±2.87	4.355	18	0.0004 ***

\* Significant at p = 0.001 level of significance

**Table: 4.Pre and post-test anxiety score result by Mean and standard deviation, Paired t value, df and p-value of the observed group.**

**N=n<sub>2</sub>(20)**

PARAMETERS	Mean ± SD		t-test	Df	P-value
	Pre-test	Post-test			
Anxiety	4.28±13.65	3.97±12.4	0.76	18	0.457 NSS

**Table: 5.Pre-test Comparison of Anxiety score result of Mean and standard deviation, Unpaired t value, p-value between the study group and observed group.**

**N=n<sub>1</sub> (20)+n<sub>2</sub>(20)=40**

PARAMETERS	Mean ± SD		t-test	df	P-value
	Experimental group	Control group			
Anxiety	14±4.94	13.65 ±4.28	0.239	38	.406 NS

**Table: 6.Post-test comparison of anxiety score result by Mean and standard deviation, Unpaired t value, p-value between the study group and observed group.**

**N=n<sub>1</sub> (20)+n<sub>2</sub>(20)=40**

PARAMETERS	Mean ± SD		t-test	Df	P-value
	Experimental group	Control group			
Anxiety	8.95±2.87	12.4±3.97	3.14	38	0.001**

\* Significant at p = 0.001 level of significance

**Table-7. Association between the anxiety in pre-test and socio-demographic variables of the children suffering from leukaemia.**

Sl no.	Socio-demographic variables	Df	Chi-square value	Significance
1.	<b>Age</b>		66.011	P=.001**
2.	<b>Sex</b>	2		

3.	<b>Religion</b>	1	38.11	P= .001**
4.	<b>Education</b>	2	4.12	P=0.9 NS
5	<b>Day of hospitalization</b>	2	4.26	P=0.3 NS
6.	<b>Family income</b>	3	187.25	P=0.0001**
7.	<b>Treatment</b>	3	187.25	P=0.0001**
8.	<b>Previous history of hospitalization</b>	3	59.31	P=.0001**
		1	79.91	P=0.0001**

\*\*p<0.01, S – Significant, N.S – Not Significa



Fig.1 FINGER PUPPETS



Fig.2 Hand Puppets



Fig. 3 Stick Puppets



Fig. 4. Stick Puppets



Fig 5- Application of stick puppet during Implementation of Puppet Therapy



Fig -6 Application of hand puppet and finger during the time of therapy.