

Original Research Article

## Effectiveness of Play Therapy on Pain and Anxiety in Children Post Surgery

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### ABSTRACT

**Background:** Surgery can be a threatening experience for everyone, especially for children. Children are more vulnerable to stress due to their lack of knowledge of procedures, lack of perceived control, lack of explanation in child-appropriate terms and lack of pain management. Pain and anxiety in children is often left untreated in children. There are evidences about play therapy being effective in reducing stress in children between age 6-12 years but there isn't any strong evidence whether they are effective in reducing pain and anxiety.

**Method:** Group A was given play therapy in the form of picking up sticks, bubble blowing and building blocks. Group B was given conventional physiotherapy in the form of general mobility exercises, breathing exercises and ambulation. These exercises were given keeping in mind the surgery that the child has undergone. Spence's Children Anxiety Rating Scale (SCARS-parent reported) and Wong- Baker Pain Rating Scale (face) were the outcome measures used. Readings were taken pre and post intervention for both groups.

**Result:** Paired t- test was applied for SCARS and Wilcoxon test was applied for WBPS. The value of P (level of significance) was found to be <0.05 for within group analysis and unpaired t test was applied for between group analysis for SCARS and Mann- Whitney U test for WBPS, p value being <0.05.

**Conclusion:** Play therapy and conventional physiotherapy both were equally effective in reducing pain and anxiety in the postsurgical children.

**Keywords:** Play therapy, children, post surgery

### INTRODUCTION

Hospitalization to any child is a very unpleasant and traumatic experience. Hospitalized children require more than recreational play because illness and hospitalization constitute crisis in a child's life and since these situation are brought with overwhelming stress, children need to play out their fears and stress as a means of coping with these stresses. Surgery can be a threatening experience for everyone, especially for children. Children are more vulnerable to stress due to their lack of knowledge of procedures, lack of perceived

control, lack of explanation in child-appropriate terms and lack of pain management. More than a million children undergo surgery every year, and it is reported that 50% of these children develop significant stress and anxiety before surgery. This causes significant hardship to parents too. <sup>(1)</sup> Anxiety is the most commonly reported negative response and high levels of anxiety can be harmful to children's physiological and psychological health. Excessive anxiety also impedes children's efficacy in coping with medical treatment and increases their uncooperative behavior

and negative emotions towards medical professionals. <sup>(2)</sup> Anxiety and pain are regarded as two common problems experienced by children and adolescents pre- and post- operatively. Increasing anxiety is associated with anticipating more pain and tolerating pain for less time. <sup>(3)</sup> Most surgeries cause some pain. No matter what kind of surgery a child has, most postoperative pain can be prevented or at least reduced. The psychological and physical methods used for short and sharp pain is useful for postoperative pain. They can make a child much comfortable. <sup>(4)</sup> Sometimes it is useful and can be a warning of danger, injury or illness. Pain causes changes in brain and makes future pain worse. It can slow healing, disrupt treatment and may cause medical problems. Untreated pain causes anxiety, depression, irritability and exhaustion. Pain in children is often undertreated. The reasons for the lack of adequate pain control may include; myths about pain and health professionals and lack of appropriate assessment. Children can tell people about their own pain if they are asked in a way they understand.

There are three ways to find out how much pain a child has: <sup>(5)</sup>

1. What a child says
2. What a child is doing
3. How the child's body is reacting

Non- directive play therapy looks at play as healing process. It gives the child the opportunity to “play out” feelings and problems and learn about themselves in relation to therapist. The mean age of children benefiting from play therapy ranges from 6-13 years. The proper selection and use of toys can reduce the traumatic effects of a hospitalization experiences and aid in recovery phase of illness. Toys are the “tools” of play and provide a more natural environment for a child. Proper selection and use of toys can reduce the traumatic effects of experience in hospital and aid in recovery phase of illness. <sup>(1)</sup> Pain and anxiety in children is often left untreated. The main reason behind this is the inability of the child to express the pain and anxiety

after any surgery. There are many techniques to measure and treat these problems but age specific actions can be more effective. If treatment is given considering their age, the effects will really amaze us. There are evidences about play therapy being effective in reducing stress in children between age 6-12 years but there isn't any strong evidence whether they are effective in reducing pain and anxiety. Therefore, this study will focus on taking age-appropriate measures to treat anxiety and pain in children of this age group who have undergone any kind of surgery.

The aim of the study was to compare effects of conventional therapy and play therapy on anxiety and pain in children post surgery. The objectives of the study were to evaluate the effectiveness of play therapy in children on anxiety and pain after undergoing surgery using Spence's Children Anxiety Rating Scale (SCARS-parent reported) and Wong- Baker Pain Rating Scale(face), to evaluate the effectiveness of conventional therapy in children on anxiety and pain after undergoing surgery using Spence's Children Anxiety Rating Scale (SCARS-parent reported) and Wong- Baker Pain Rating Scale(face), and to compare the effectiveness of conventional therapy and play therapy on pain and anxiety using Spence's Children Anxiety Rating Scale (SCARS-parent reported) and Wong- Baker Pain Rating Scale(face).

## **MATERIALS AND METHODS**

The study was an experimental study. It was carried out in Dr. D Y Patil Hospital and Research centre. The sample size was 30 and sampling type was purposive. Inclusion criteria was children aged 6-12 years, both males and females gender, children undergone surgery, post operative 2 days to 2 weeks, and children who have score >34 on SCARS(parent report). The exclusion criteria were children with any complication post surgery eg. Infection, oozing wound, etc., parents not consenting for intervention, children with diagnosed psychological disorders and

children who did not complain of pain. The materials used were-

Play tools:

- i. Bubble solution (commercial/homemade)
  - ii. Ice-cream sticks (colorful)
  - iii. Colorful blocks
1. Timer
  2. SCARS (parent report)
  3. Wong- Baker Pain Rating Scale (face)

Written and signed consent was taken from the parents of the child before commencing the study. Readings were taken on Parent Rated Anxiety Scale and Wong-Baker Pain Scale. Thereafter, the subjects were selected who fulfilled the inclusion and exclusion criteria. These subjects were randomly allocated in two groups (Group A and Group B) using chit method.

Group A was given play therapy in the form of picking up sticks, bubble blowing and building blocks.

- **Bubble Breathing:** The therapist begins by filling the room with bubbles; most children will immediately begin to pop them as they fall. After a few minutes, the children are asked to blow only one big bubble. The therapist teaches the children to take deep breaths from the stomach and slowly exhale.
- **Picking up sticks:** Either the therapist or the child holds the sticks in their fist and then drops them on the table. The goal of the game is for the individual to remove a stick without moving any of the other sticks. The players take turns removing the sticks. A turn is ended

when the player accidentally moves one of the other sticks.

- **Building blocks:** The therapist introduces the activity to the child by saying “I am going to give you some blocks and I am going to set the timer for 10 minutes. During that time, you are to build a tower with the blocks and not be distracted by anything around you. Do not stop building until you hear the timer go off.”

Group B was given conventional physiotherapy in the form of general mobility exercises, breathing exercises and ambulation. These exercises were given keeping in mind the surgery that the child has undergone. If he/ she have been operated for any extremity fracture, mobility exercises were given considering the orthopedic condition of the extremity. The exercise protocol was given for five days (One session per day) in both the interventions.

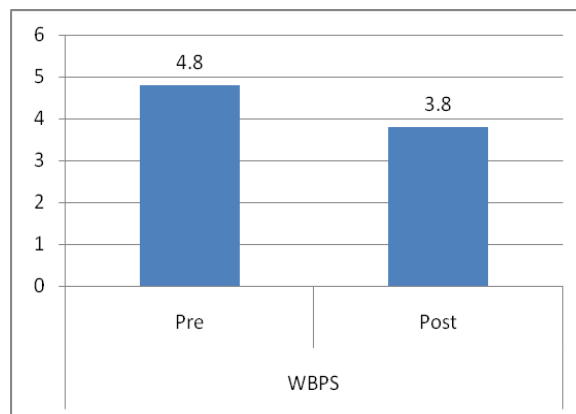
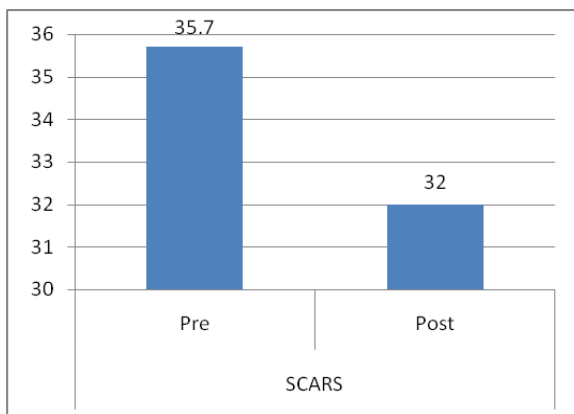
**DATA ANALYSIS AND RESULT**

**Table 1:** This table shows average number of males and females in Group A and B.

Group	A	B
Males	11	6
Females	4	9
Mean age	8.4	9.2

**Table 2:** This table shows mean pre- and post-intervention scores of SCARS and WBPS of Group A.

Group A	SCARS		WBPS	
	Pre	Post	Pre	Post
Mean	35.7	32	4.8	3.8
SD	1.4	1.7	1.6	0.9
	p < 0.05		p < 0.05	
	t = 10.1		r = 0.8	



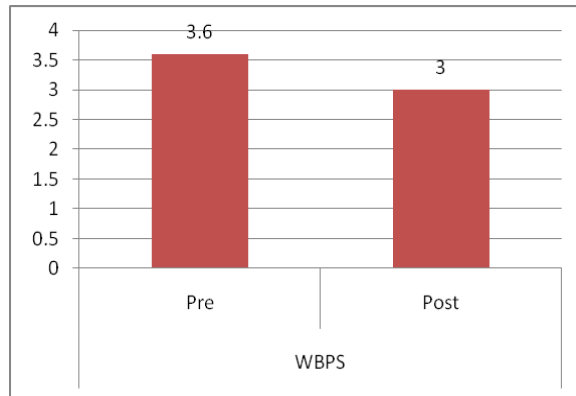
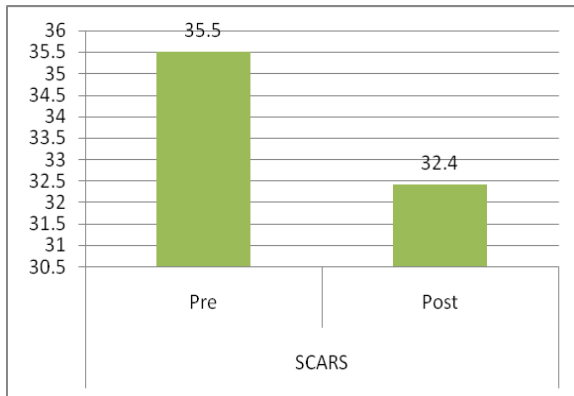
**Graph 1:** These graphs represent within group analysis of pre- and post-intervention scores of SCARS and WBPS of Group A.

Interpretation: The above table and graph shows average pre- and post- intervention scores of SCARS and WBPS. The mean pre- and post SCARS score were found to be  $35.7 \pm 1.4$  and  $32 \pm 1.7$ . And for WBPS, the mean pre- and post scores were  $4.8 \pm 1.6$  and  $3.8 \pm 0.9$ . Paired t- test was applied for SCARS and Wilcoxin test was applied for

WBPS. The value of P (level of significance) was found to be  $<0.01$ .

Table 3: This table shows mean pre- and post-intervention scores of SCARS and WBPS of Group B.

Group B	SCARS		WBPS	
	Pre	Post	Pre	Post
Mean	35.5	32.4	3.6	3
SD	1.5	1.5	1.5	1
	$p < 0.05$		$p < 0.05$	
	$t = 9.74$		$r = 0.73$	



Graph 2: These graphs represent within group analysis of pre- and post-intervention scores of SCARS and WBPS of Group B, respectively.

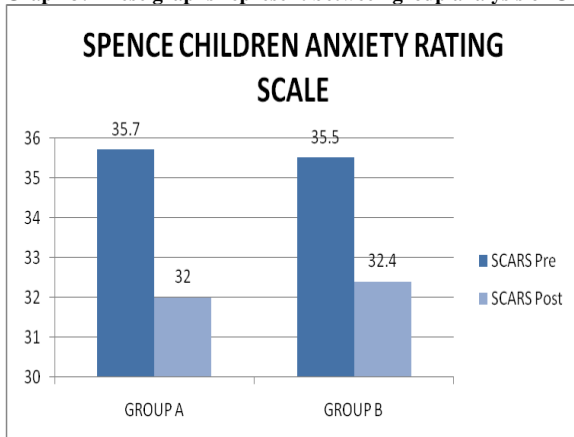
Interpretation: The data presented in above table shows the mean and standard deviation of Group B with respect to the SCARS and WBPS. The average pre-intervention score of SCARS was found to be  $35.5 \pm 1.5$  and that of WBPS was found to be  $3.6 \pm 1.5$ . Whereas, the post-intervention readings are  $32.4 \pm 1.5$  and  $3 \pm 1$ , respectively; Paired t- test was applied for SCARS and Wilcoxon test was applied for WBPS. The level of

significance (P) for SCARS and WBPS here is  $<0.01$ .

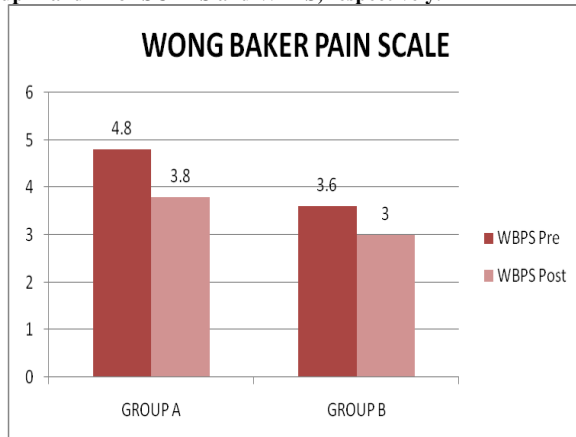
Table 4: This table shows post-intervention scores of Group A and B for SCARS and WBPS.

Between	SCARS		WBPS	
	A	B	A	B
Mean	32	32.4	0.93	0.53
SD	1.7	1.5	1.2	0.9
	$p = 0.5$		$p = 0.48$	
	$t = 0.5$		$U = 129.5$	

Graph 3: These graphs represent between group analysis of Group A and B for SCARS and WBPS, respectively.



Graph 3(a): The above graph compares the average pre and post intervention scores of SCARS of Group A and B



Graph 3(b): The above graph compares average pre and post intervention scores of WBPS scores of Group A and B.

Table 4 and Graph 3(a) and (b) shows between group analysis of group A and B,

where unpaired t-test for SCARS and Mann Whitney U test for WBPS was used. p was

found to be  $>0.05$ , which indicates the data being statistically not significant. But, for within group analysis, the data was statistically significant which means that both the interventions, i.e., play therapy and conventional physiotherapy were effective in reducing anxiety and pain.

## DISCUSSION

The present study was conducted to assess the effectiveness of play therapy and conventional physiotherapy on anxiety and pain in post surgical children. Children are vulnerable to the global surgical stress response because of limited energy reserves, larger brain masses and obligatory glucose requirements. The human response to surgical stress is characterized by series of hormonal, immunological and metabolic changes that together constitute the global surgical stress response. <sup>(6)</sup> Fernand Seganfredo Weber et al in 2014 conducted a study in Bangalore to assess the effectiveness of play therapy in reducing stress among hospitalized children. For the experimental group mean and standard deviation was 53.4 and 1.73 respectively. The findings showed that the children were stressors pre-intervention and were not stressors post intervention. <sup>(7)</sup> Play therapy or therapeutic play techniques have been used by many clinicians for treating stress. One reason play therapy has been proved to be more effective in children is that they have not yet developed abstract reasoning and verbal skills as an adult. For children, toys are their words and play is their language. It has been suggested that play therapy serves as neutralizing medium by which young children attempt to gain mastery over traumatic or anxiety inducing event. <sup>(8)</sup> Elizabeth Anderson and Geetha Shivkumar et al conducted a study in 2013 and concluded that regular exercise results in physiological adaptations in body. Hypothalamic-Pituitary-Adrenal (HPA) axis plays crucial role in developing adaptive responses in body. Dysregulation in HPA axis have been implicated with manifestation of anxiety symptoms.

Exercise increases endogenous opioid activity in central and peripheral nervous system and may induce euphoric state and reduce pain. Distraction has been proposed as another reason why exercise is effective at reducing anxiety. The anxiolytic benefits of exercise may result from it being a distraction from stressors and a “time out” from daily activities. Exercises and cognitively based distraction techniques were shown to have equal effectiveness at reducing state of anxiety. <sup>(9)</sup>

Exercise induces hypoalgesia (EIH) is characterized by increased pain threshold and tolerance in addition to reduction of pain intensity rating during and after exercises. <sup>(10)</sup> The central opioid systems are activated by increased discharge from mechanosensitive afferent nerve fibres A-delta arising from skeletal muscles secondary to rhythmic muscle contraction. <sup>(11)</sup>

## CONCLUSION

Play therapy and conventional physiotherapy both were equally effective in reducing pain and anxiety in the postsurgical children. Small sample size, all surgeries were considered and individual attention was not given to any surgery was the limitation of the study. The study can be carried out in adults, in other conditions.

## REFERENCES

1. Nikita Suryawanshi, Effectiveness of Play Therapy in Reducing Stress among Hospitalized Children (6-12 years) Undergoing Surgery in Selected Hospitals, Indian Journal of Research, 2016.
2. Sanjeev Deshpande, Martin P Ward Platt, Albert Aynsley-Green, Patterns of the metabolic and endocrine stress response to surgery and medical illness in infancy and childhood, 1993.
3. Fernada Sangfredo Weber. The influence of playful activities on anxiety during preoperative period, Journal of Pediatrics, 2010.
4. William H C Li, Joyce Oi Kwan Chung and Blondi Ming Chaw Kwok, Play interventions to reduce anxiety and negative

- emotions in hospitalized children, BMC Pediatrics, 2016.
5. Patrick J McGrath, G Allen Finley, Judith Ritchie, Stepanie J Dowden, Elizabeth Owen, Pain, Pain go Away: Helping Children With Pain, second Edition, 2003.
  6. Chernow B, Robert C Smallridge, W Raleigh Thompson, David Cook, David Bearsly, Mitchell P Fink, Raymond Jake, J Raymond Fletcher, Alexander HR, Hormonal response to graded surgical stress, Achieves of Internal Medicine, 1987.
  7. Fernand Seganfredo Weber, The influence of playful activities on children's anxiety during the pre-operative period at the outpatient surgical center, Journal de pediatria, 2014.
  8. Lynn A Barnett and B Storm, Play, Pleasure and Pain: The reduction of anxiety through play, Leisure Science, 1981.
  9. Elizabeth H Anderson and Geetha Shivkumar, Effects of exercise and physical activity on anxiety, 2013.
  10. Koltyn KF, Brellenthin AG, Cook DB, Sehgal N, Hillard C, Mechanisms of Exercise induced hypoalgesia, The Journal of Pain, 2014.
  11. Thoren P, Floras JS, Hoffman P, Seals DR, Endorphins and Exercise: Physiological mechanism and implications, Medicine and science in sports and exercise, 1990.

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