

## A Quasi Experimental Study to Assess the Effectiveness of Picture Book on Level of Anxiety and Post- Operative Quality of Recovery among Children Undergoing Surgery in Selected Hospitals, Chennai

Indumathi H.\*, Abirami P.\*\*

**Author Affiliation:** \*Assistant Professor \*\*Associate Professor, SRM College of Nursing, Kancheepuram Dist.

### Abstract

The main aim of the study was to assess the effectiveness of picture book on level of anxiety and post-operative quality of recovery among children undergoing surgery in selected hospitals, Chennai. Quasi experimental pre-test and post-test design was adopted for this study. Using Non probability purposive sampling technique, 50 children for study group and 50 children for control group were allotted. Data collection was done for the period of one month. Picture book was provided after assessing the demographic variables and pre test level of anxiety before undergoing surgery. The anxiety level after surgery and the post operative quality of recovery was assessed post operatively. The comparison of pre test level of anxiety and post test level of anxiety among study shows t value of 19.656 and  $p=0.001$  which is statistically significant. The comparison of post test level of post operative quality of recovery among children undergoing surgery in study and control group shows t value of 15.97 which is statistically significant at  $p=0.001$  level.

**Keywords:** Picture Book; Anxiety; Quality of Recovery; Surgery.

### Introduction

Hospitalization is a stressful experience for children. Illness and hospitalization are one of the crisis children may face. The unfamiliar settings and uncertainty about treatment seemed to create feelings of anxiety. They are also concerned and feared about investigations and operations in relation to possibility of harm, mutilation, pain and possible death.

Kain et al. has shown that children with higher levels of preoperative anxiety were at 3.5 times higher risk for showing immediate postoperative negative behavior as compared to less anxious children. Anesthetic induction may be one of the most

stressful peri-operative experiences for children [1].

According to Nelson (1986), children's coping skills were dependent not only by memory, but also through a sense on their awareness and understanding of their previous experience. This developmental experience serves as the foundation for the children's appraisal and their responses in dealing with threatening situation. There is a need to identify interventions that are targeted according to the children's cognitive and psychological development, to assist them to develop appraisal coping skills to deal with stressors when hospitalized [2].

Good preparation can help children feel less anxious about the anesthesia and surgery and get

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**Reprint Request:** Abirami P., Associate Professor, S.R.M. College of Nursing, SRM University, Potheri Kattankulathur  
Kancheepuram District Pin Code: 603203 TamilNadu India.  
E-mail: abiramikarnamurthy@gmail.com

through the recovery period faster. But, like parents health care professionals also probably uncertain about the best way to prepare the child [3].

*Donna Koller* conducted a study in Toroto, Ontario, Canada revealed that most children prepared for surgical procedures experience significantly lower level of fear and anxiety as compared to the children who are not prepared. Preparation also promotes long term coping and adjustment to the future medical challenges [4].

Picture book is a creative process to improve and enhance the physical, mental and emotional well being of individual of all ages. It is based on the belief that the creative process involved in artistic self-expression helps people to resolve conflict and problems, develop interpersonal skills, manage behavior, reduce stress, reduce anxiety, increase self-esteem for communication than simply having a conversation and talking about things [5].

#### *Statement of the Problem*

A Quasi experimental study to assess the effectiveness of picture book on level of anxiety and post- operative quality of recovery among children undergoing surgery in selected hospitals, Chennai

#### *Objectives*

1. To determine the effectiveness of picture book on the level of anxiety and post-operative quality of recovery among children undergoing surgery in study group and control group.
2. To correlate the post test level of anxiety with post operative quality of recovery among children undergoing surgery in study group and control group.
3. To associate the post test level of anxiety and post-operative quality of recovery among children undergoing surgery with their demographic variables in study and control group.

#### **Methodology and Materials**

Quantitative approach and quasi experimental pre-test and post-test design was used. The study was conducted at 2 hospitals, Kanchi Kamakotti Child Trust Hospital and Mehta Children's Hospitals Private Limited, Chennai. Using Non probability purposive sampling technique, 50 children for study group and 50 children for control group were allotted. Picture book and explanations were given only to

study group. The ethical guidelines were followed throughout the study.

#### *Development, Description of The Tools*

Section A: Structured Questionnaires were used to elicit demographic variables.

Section B: 1. *Spence Anxiety Scale for Hospitalized Children*

This scale was developed by Dr.Susen H Spence.and Professor Ron Rapee in 1999. The scale assesses six domains of anxiety including generalized anxiety, panic/agoraphobia, social phobia, separation anxiety, obsessive compulsive disorder and physical injury fears. The scoring of the tool was grouped into 3 categories. Mild anxiety- 25-50%, moderate anxiety – 51-75% and severe anxiety is 76- 100%.

#### *Post-Operative Quality of Recovery Scale (QoR-40)*

It is a short questionnaire developed in 1999 by Dr. P.S. Myles, 40 items questionnaire intended to measure the Quality of Recovery. The items were grouped according to various aspects (dimensions) of recovery: emotional state (n=9), physical comfort (n=12), psychological support (n=7) physical independence (n=5) and pain (n=7). The scoring of this tool was grouped into 4 categories. Less than 20% Very poor; 21% – 40% Poor; 41%– 60% Average; 61%– 80% Good; 81% - 100% Excellent post operative Quality of recovery.

#### **Results and Discussion**

*The Collected Data was Analyzed with SPSS Version 11.5*

The data pertaining to the demographic variables of the study group are with regards to age 22(44.0%) age were in 6 to 8 Yrs; With regards to gender, 27 (54%) children were male and 23(46.0%) were females. In terms of education, 15 (30.0%) children were in 2<sup>nd</sup> standard. Regarding religion, 42 (84.0%) children were belongs to Hindu religion; In terms of number of siblings, 41 (82.0%) had one sibling. Regarding birth order 24 (48.0%) children were first in order. With respect to type of family 32 (64.0%) children were from nuclear family. With respect to surgery done, 30 (60.0%) have undergone appendicectomy, 10 (20.0%) have undergone repair of hypospadias, 10 (20.0%) have undergone tonsillectomy.

The data pertaining to the demographic variables

of the control group are with regards to age 21(42.0%) age were in 6-8 Yrs; With regards to 28(56%) were males and 22(44.0%) children were females. In terms of education control group 13(26.0%) children were in 2<sup>nd</sup> standard. Regarding religion 38(76.0%) children were belongs to Hindu religion; In terms of number of siblings 45(90.0%) have one sibling;

Regarding birth order 29 (58.0%) were first in order; With respect to type of family 24 (48.0%) were in nuclear family, 26 (52.0%) were from joint family. With respect to surgery done, 30 (60.0%) have undergone appendicectomy, 10 (20.0%) have undergone repair of hypospadias, 10(20.0%) have undergone tonsillectomy.

**Table 1:** Assessment of pre-test and post-test level of anxiety of children undergoing surgery in study and control group N=100

	Study Group (n=50)						Control Group (n=50)					
	Mild anxiety		Moderate anxiety		Severe anxiety		Mild anxiety		Moderate anxiety		Severe anxiety	
	n	%	n	%	n	%	n	%	n	%	n	%
Pre Test	14	28	36	72	0	0	12	24	38	76	0	0
Post Test	48	96	2	4	0	0	14	28	36	72	0	0

\* significant at P≤0.05 \*\* highly significant at P≤0.01 \*\*\* very high significant at P≤0.001

**Table 2:** Assessment of post-test level of post operative quality of recovery children undergoing surgery in study and control group N=100

Post operative Quality of recovery	Study group (n=50)		Control group (n=50)	
	No. of Children	%	No. of children	%
Very poor	0	0	0	0
Poor	0	0	0	0
Average	0	0	0	0
Good	5	10	15	30
Excellent	45	90	35	70

\* significant at P≤0.05 \*\* highly significant at P≤0.01 \*\*\* very high significant at P≤0.001

**Table 3:** Comparison of pre and post test level of anxiety among children undergoing surgery between study and control group N=100

Test	Group	Mean	SD	Unpaired 't' Test	'p' value
Pre Test	Study Group (n=50)	66.6	10.6	5.89	0.68
	Control Group (n=50)	65.92	8.03		
Post Test	Study Group (n=50)	40.96	3.88	14.73	***
	Control Group (n=50)	61.7	9.2		

\* significant at P≤0.05 \*\* highly significant at P≤0.01 \*\*\* very high significant at P≤0.001

**Table 4:** Comparison of pre test and post test level anxiety of children undergoing surgery in study group and control group N=100

Group	test	Mean	SD	Paired "t" test	"p" value
Study Group (n=50)	Pre-test	66.6	10.6	19.656	0.001
	Post-test	40.96	3.88		
Control Group (n=50)	Pre-test	65.92	8.03	5.89	0.675
	Post-test	61.7	9.2		

\* significant at P≤0.05 \*\* highly significant at P≤0.01 \*\*\* very high significant at P≤0.001

**Table 5:** Comparison of post test level post operative quality of recovery among children undergoing surgery in study and control group N=100

Group	Mean	SD	Unpaired "t" test	"p" value
Post test Study group	182.98	4.91	15.97	0.001***
Control group	165.36	6.06		

\* significant at P≤0.05 \*\* highly significant at P≤0.01 \*\*\* very high significant at P≤0.001

The analysis depicted that in study group, pre test 14 (28%) children had mild anxiety; 36(72%) children had moderate anxiety and none of them had severe anxiety during hospitalization. In post-test 48(96%) of them had mild anxiety; 2(2%) children had moderate anxiety and none of them had severe anxiety.

The analysis depicted that in control group, pre test 12 (24%) children had mild anxiety; 38 (76%) children had moderate anxiety and none of them had severe anxiety during hospitalization. In post-test 14 (28%) of them had mild anxiety; 36 (72%) children had moderate anxiety and none of them had severe anxiety.

The analysis depicted that in study group, post test level of post operative Quality of recovery is 45 (90%) children had excellent post operative Quality of recovery and 5 (10%) children had good post operative quality of recovery. In control group 35 (70%) children had excellent post operative quality of recovery and 15 (30%) children had good post operative quality of recovery.

In pre test, the mean pre test level of anxiety for study group is 66.6 and the standard deviation is 10.6. For control group, mean pre test level of anxiety is 65.92 and the standard deviation is 8.03. The "t" value is 5.89, which suggest that there is no statistical significant difference in pre test level of anxiety between study and control groups at  $P \leq 0.05$ .

In post test, the mean post test level of anxiety for study group is 40.96 and the standard deviation is 3.88. For control group, mean post test score level of anxiety is 61.7 and the standard deviation is 9.2. The "t" value is 14.73, which is statistically significant at  $p \leq 0.001$ .

In study group, the pretest mean value of level of anxiety of children undergoing surgery is 66.6 with the standard deviation of 10.6. The mean value of post test level of anxiety of children undergoing surgery is 40.96 with the standard deviation of 3.88. The "t" value is 19.656 which is significant at  $p \leq 0.001$ .

In control group the pretest mean value of level of anxiety of children undergoing surgery is 65.92 with the standard deviation of 8.03.6. In post-test, the mean value of level of anxiety of children undergoing surgery is 61.7 with the standard deviation of 9.2. The "t" value is 5.89 which suggest there is no statistical significance in pre test and post test level of anxiety among children undergoing surgery in the control group at  $P \leq 0.05$

In study group, the mean post test level of post operative quality of recovery is 182.98 and the standard deviation is 4.91. In control group, mean post test level of post operative quality of recovery is 165.36 and the standard deviation is 6.06. The "t" value is 15.97, which is statistically significant at  $p \leq 0.001$

Table 6 reveals that in study group, correlation coefficient between the post test level of anxiety and post operative quality of recovery  $r = - 0.44$  which shows Moderate negative correlation  $P = 0.01$  which is statistically significant. In control group correlation coefficient between the post test level of anxiety and post operative quality of recovery  $r = - 0.19$  which shows Poor negative correlation between post test level of anxiety and post operative quality of recovery among children undergoing surgery.  $P = 0.12$  which is not statistically significant.

**Table 6:** Correlation between post test level of anxiety with post operative quality of recovery among children undergoing surgery in study and control group N=100

Group	Variables	Mean ± SD	Karl pearson correlation coefficient	Interpretation
Study group n=50	Anxiety	45.50±10.70	$r = -0.44$ $p = 0.01^{**}$	<b>Moderate negative correlation</b> between post test level of anxiety and post operative quality of recovery among children undergoing surgery
	Quality of recovery score	182.98±4.91		
Control group n=50	Anxiety	60.94±10.23	$r = - 0.19$ $p = 0.12$	<b>Poor negative correlation</b> between post test level of anxiety and post operative quality of recovery among children undergoing surgery
	Quality of recovery score	165.36±6.06		

\* significant at  $P \leq 0.05$  \*\* highly significant at  $P \leq 0.01$  \*\*\* very high significant at  $P \leq 0.001$

**Table 7:** Association between the post-test level of anxiety among children undergoing surgery in study group with their selected demographic variables n=50

Demographic variables		Post test level of anxiety score				total	Chi square
		mild		moderate			
		n	%	n	%		
Age	6 -8 yrs	14	63.6%	8	36.4%	22	$\chi^2=6.77$ $p=0.03^*$
	8 - 10 yrs	7	87.5%	1	12.5%	8	
	10 -12 yrs	19	95.0%	1	5.0%	20	
Gender	Male	23	92.0%	2	8.0%	25	$\chi^2=4.50$ $p=0.03^*$
	Female	17	68.0%	8	32.0%	25	

Table 7 shows the association between post test level of anxiety among children undergoing surgery in study with their demographic variables. It reveals

elder and male children are benefitted more than others. Statistical significance was calculated using chi square test.

Table 8 shows the association between post test level of post operative quality of recovery among children undergoing surgery in study group with their demographic variables. It reveals that elder and male gender are more benefitted. Statistical significance was calculated using chi square test.

### Discussion and Conclusion

A study was conducted on effectiveness of picture book on children’s worries about surgery, were performed on 60 samples (30 samples in control group and 30 samples in experimental group) of age of 5-12 years, who were posted for surgery in a tertiary hospital in Karnataka state. A quasi experimental, pre test and post test control group design was used

**Table 8:** Association between the post-test level of post operative quality of recovery among children undergoing surgery in study group with their selected demographic variables n=50

Demographic variables		Post test level of post operative quality of recovery score					Chi square
		excellent		good		total	
		n	%	n	%		
Age	6 -8 yrs	5	22.7%	17	77.3%	22	$\chi^2=7.07$ p=0.05*
	8 - 10 yrs	0	0.0%	8	100.0%	8	
	10 -12 yrs	0	0.0%	20	100.0%	20	
Gender	Male	0	0.0%	25	100.0%	25	$\chi^2=8.05$ p=0.01**
	Female	5	20.0%	20	80.0%	25	

and child worries questionnaire related to surgery as a rating scale which is developed by faculty of university of murica, Spain. A statistical analysis of data revealed that picture book related to surgery was effective in reducing the worries of children about surgery t value=-2.318 and p value =<0.05. they conclude that, the child in experimental group, who received the picture book had reduced in their worries as compared to the control group [6].

A study on Effect of play intervention in the reduction of anxiety among pre-operative children admitted in preoperative wards of selected hospitals at Mangalore, the samples composed of 60 preoperative school age children of 6-12 yrs , in that 30 control group and 30 experimental group , who were selected by purposive sampling technique. The demographic Performa and numerical state anxiety scale were use for data collection. The study result showed the calculated t value (t=14.225) was greater than table value (t<sub>58</sub>=1.67) at 0.05 level of significance. The findings of the study shows that the play intervention was effective in reducing the anxiety among pre-operative children [7].

In the study of the effect of performing preoperative preparation program on school age children’s anxiety. A randomized controlled trail was performed on 122 children age of 7-12yrs of age (experimental group-61 and control group -61) in Aminkola paediatric hospital , Mazandaran. A single blind technique was used and randomized controlled trail, two group pretest and repeated post test, between subject design was used. The experimental group given a therapeutic play therapy. The statistical

analysis showed that the mean and standard deviation of the state anxiety scores of children in experimental and control group before intervention were 35.52±6.99 and 34.98±6.78, after intervention 31.44±5.87 and 38.31±7.44 respectively. The state anxiety score was lower significantly in experimental group prior to postoperative surgery than the control group( P=0.000). This study conclude that therapeutic play intervention is an appropriate method for preparing children before surgery decreases their anxiety [8].

A dismantling approach is used to analyzing a family-centered preoperative intervention programme , the 96 children aged 2-10 yrs subjects were selected(who underwent anesthesia and surgery). A modified Yale preoperative anxiety scale was used to assess the anxiety of children. The measures used were baseline characteristics, parental adherence to the components of advance, and child and parent anxiety assessment. ANOVA is used to determine which components of intervention had significant impact on child anxiety. Statistical significance was accepted at P<0.05. the relationship of adherence to ADVANCE and anxiety, ANOVA indicates that children in a high parental adherence group had significantly lower mYPAS score at mask introduction compared with children in the low adherence group [36.5(17.8) vs 52.8(25.7), P=0.01]. This study showed that greater parental adherence to the advance intervention was associated with lower child anxiety before surgery [9].

In the study, the effectiveness of a standardized preoperative preparation in reducing child and parent anxiety; a single blind randomized controlled

trail study design was conducted at a tertiary referral hospital for children in Western Australia. 73 children and one of their care giver (usually a parent) were randomly assigned into two groups. The control group had standard practice with no specific preoperative education and the experimental group received preoperative preparation, including a photo file, demonstration of equipment using a role-modeling approach and a tour. The parent anxiety is assessed by STAI- standard measures of anxiety and children's anxiety by modified Yale preoperative anxiety scale (mYPAS). The statistical significance shows that pre-operative preparation reduced parent state anxiety significantly (-2.32, CI-4.06 to -0.56,  $p=0.009$ ), but not the child anxiety (-0.59, CI-1.23 to 0.06,  $p=0.07$ ). This study concludes that preoperative preparation was more efficient on parent than child. Although the preoperative preparation had limited effect on child anxiety, it permitted to decrease pain experience in the post operative period [10].

The interventional study was done to assess the effectiveness of picture book on level of anxiety and post- operative quality of recovery among children undergoing surgery in selected hospitals, Chennai. The analysis shows in study group the mean post test level of anxiety is 40.96 and the standard deviation is 3.88. In control group, mean post test score level of anxiety is 61.7 and the standard deviation is 9.2. The "t" value is 14.73, which is statistically significant at  $p < 0.001$ . The analysis reveals that in study group, correlation coefficient between the post test level of anxiety and post operative quality of recovery  $r = - 0.44$  which shows Moderate negative correlation between post test level of anxiety and post operative quality of recovery among children undergoing surgery.  $P = 0.01$  which is statistically significant. The analysis revealed that in study group, both for anxiety and post operative quality of recovery, elder and male children are benefitted more with picture book than others at  $p=0.05$  level.

## Reference

1. Kain ZN, Wang SM, Mayes LC et al "Distress during the induction of anesthesia and postoperative behavioral outcomes". *Anesth Analg.* 1999; 88: 1042-1047.
2. Lee Hiu Tan, Margaret. A. "Therapeutic play program for children undergoing day surgery," HKU Scholers Hub. 2009; pp 24-30.
3. [http://kidshealth.org/parent/system/surgery/hosp\\_surgery.html](http://kidshealth.org/parent/system/surgery/hosp_surgery.html).
4. Donna Koller, PhD, "Preparing Children and Adolescents for Medical Procedures," Child Life Council Evidence-Based Practice Statement. 2007; pp 4-5.
5. Art therapy in children. <http://www.child-art-therapy.com>.
6. Babitha M, Mamatha S, Anjaline . Effectiveness of picture book on childrens worries about surgery. *International Journal of Nursing education.* July-December 2011; 3(2): 8-11.
7. Nisha k, Umarani J. effect of play intervention in reduction of anxiety among preoperative children. *International Journal of current Reseach and Review.* June 2013; 5(11): 104-08.
8. Nazamin v. et al. The effect of performing preoperative preparation program on school age children's anxiety.
9. Flortier MA, Blount LR, Wang SM, Mayes LC, Kain ZN. *British Journal of anesthesia.* February 2011; 106(5): 713-18.
10. Fincher W, Shaw J, Ramelet AS. Effectiveness of standardized preoperative preparation in reducing child and parent anxiety: A single blind randomized controlled trail. *Journal of clinical Nursing.* 2012; 21: 946-55.