

Reiki: A Complementary Therapy For Managing Pain And Anxiety In Children Undergoing Surgery

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Abstract

Introduction: Along with the pharmacological measures, any complementary therapy is also an important factor for a best outcome as complementary therapy can work in tandem with standard medical management without causing any adverse effect. Reiki is a form of energy healing touch therapy. So along with routine medical measures, some complementary therapy can also be adopted to cope with invasive procedures. However, there is a lack of solid scientific evidence about the clinical benefits of complementary therapy in paediatric patients; especially Reiki Therapy. Hence the study aimed to find the effectiveness of reiki therapy among children undergoing surgery. **Materials and Methods:** A Quasi experimental pre-test post-test control group research design was adopted for the study. It was conducted among children aged between 6- 12 years who undergone elective surgery in Yenepoya Medical College Hospital, Mangaluru. The study participants were recruited using non probability purposive sampling technique. The sample size was 84, allocated 42 each in intervention and control group. Anxiety was assessed one day before surgery, on the day of surgery, 12 hours after surgery, 24 hours after surgery and 48 hours after surgery using the tool modified Yale Pre operative Anxiety Scale. Post operative pain was assessed on 12 hours after surgery, 24 hours after surgery and 48 hours after the surgery using Wong Baker Faces Pain rating scale. The intervention group received reiki therapy two times a day (with a gap of 5 hours in between) on one day before surgery, on the day of surgery, 12 hours after surgery, 24 hours after surgery and 48 hours after surgery, whereas the control group children received the routine care. The obtained data were analyzed using descriptive and inferential statistics. **Results:** When comparing the post operative pain scores within the intervention and control groups, mean pre- to post-test score showed a significant difference in the intervention group ($p < 0.05$), whereas in control group there is no significant difference found. Within the intervention and control groups, the comparison of the anxiety score showed there is a significant difference in the intervention group ($p < 0.05$), where as in control group there is no significant difference found when comparing the mean pre- to post-test score ($p > 0.05$). Effectiveness of Reiki Therapy between the group showed there is no significant difference when comparing post operative pain between the intervention and control group ($p > 0.05$), while, in case of anxiety between the intervention and control group, there is a significant difference found in the mean post-test scores ($p < 0.05$) for most of the outcome. **Conclusion:** This study concluded that Reiki therapy is effective in controlling anxiety among children undergoing surgery. It can be implemented in clinical setting for planned surgeries as a preparation to the children to cope with anxiety.

Keywords: Reiki therapy; anxiety; pain; surgery; children; Complementary therapy.

Introduction

Childhood is a period, where happiness is following them as well as the adults around them. According to UNICEF, Children should be free from fear, violence, abuse, injury and exploitation.

¹However, illness, injury, surgery and

hospitalization are unavoidable part of childhood: also, it could be fearful and stressful to the children moreover their parents. Major stressors of hospitalization in children include separation, loss of control, anxiety, fear, bodily injury and pain. Children's reaction to these crises could vary according to the age and can be influenced by their

previous experiences of illness and hospitalization, coping skill and support system available. Especially in surgical mode of treatment, the condition could be worse; the child may exhibit feelings of tension, nervousness, anxiety towards surgical instruments, invasive procedures, unfamiliar surroundings, even the care providers are strangers to them².

A study published on 2012 says that in the United States, approximately 450,000 children less than 18 years of age are admitted for surgery annually³. India with over 1.2 billion population has over 400 million children are less than 14 years of age⁴. Many children undergo either elective or emergency surgeries every year. Pediatric surgery as a specialty is about 45 years old in India. Incidence rate of abdominal surgery is approximately 1 in 319 children in India. The incidence rate of abdominal surgery in Karnataka is 1.76% in school age children.⁵

For anticipated surgery there are two major stressors; one is preoperative anxiety and the other one is postoperative pain. Anxiety is a state where mental health can be disrupted, characterized by a feeling of tense, worrying, quickly getting angry, irritable, sudden outburst, eating can be interrupted with negative thoughts and they may hardly try to concentrate. Pain is a general term that describes unpleasant feeling in the body, children may show pain by favouring one arm or leg over other, a decrease in physical activity, change in appetite or sleep pattern, avoiding contact with other person, crankiness, irritability, unruly behaviour, and also some may exhibit non-verbal clues like gasping, wincing or frowning.⁶

Reiki is a type of energy healing technique. Mikao Usui, a Japanese Buddhist, developed Reiki in 1922. 'Reiki' is a Japanese word that denotes universal life energy. It is built on a simple spiritual principle: we are all guided by the same invisible life force, which controls our physical, mental, and emotional well-being. When the energy flows freely, we can tap into unknown resources. Reiki is best practiced in a tranquil environment, but it can be done anywhere. The patient will sit in a comfortable chair or recline on a table with fully clothed. There may be or may not be music, depending on the patient's choices. For 2-5 minutes, the practitioner lightly places their hands on or over certain regions of the body such as the head, limbs, and chest, using various hand shapes. Hands can be positioned in 20 various locations on the body. Sessions might last from 15 to 90 minutes. If there is a specific injury or burn, the hands can be held just above the wound. Energy is transferred when the practitioner holds their hand lightly on or over the body. The

practitioner's palm may get warm and tingly at this period. Each hand placement is held until the practitioner feels that the flow of energy has subsided. When the practitioner feels that the energy or heat in their hands has abated, they will remove their hands and may place them over different areas of the body⁷.

Reiki therapy is one of many complementary therapies; the relaxing practice of reiki can aid benefit in children by improving relaxation, confidence, reducing fear and stress, and it is also effective in pain management since it enhances the body's inherent healing mechanisms. While this energy cannot be measured using modern scientific techniques, it can be felt by those who tune in. Reiki is intended to relax, cope with obstacles, relieve emotional stress, promote general wellbeing, and minimize discomfort⁷.

A previous study found that if pain is not addressed and treated early, it can have a negative impact on a child's quality of life by interfering with mood, sleep, hunger, school attendance, academic performance, and participation in sports and other extracurricular activities. Repeated pain exposure can alter pain sensitivity, social skills, and can develop a pattern of self-destructive behavioral patterns, as well as increase a child's vulnerability to pain later in life.⁸ Furthermore, ineffective postoperative pain management has been linked to deep vein thrombosis, pulmonary embolism, coronary ischemia, myocardial infarction, pneumonia, poor wound healing, and demoralization. All of this has economic and medical consequences, such as longer hospital stays, readmissions, and patient dissatisfaction with medical care.^{9, 10}

The parents of the children, who are undergoing surgery are also stressed and worried. There is a significant relationship between mother's fear-anxiety and children's fear-anxiety.¹¹ Also, there are studies that present significant results for reduced anxiety by Reiki.^{12, 13} Studies have shown that Reiki treatment is useful in managing and minimizing preoperative anxiety levels from further rise and postoperative pain.^{14, 15} Studies are highlighted the effectiveness of reiki in cancer patients, chronically ill patients, knee replacement surgery and abdominal hysterectomy.^{16, 17, 18, 19}

However, studies on children are still insufficient to draw empirical findings. As complementary therapies are effective among adult patients; it is an essential one to check the effectiveness of such therapies in children also. Hence the investigators planned to assess the effectiveness of reiki therapy on pain and anxiety among children undergoing surgery and to associate pain and anxiety with selected demographic variables.

Materials And Method:

Quasi-experimental pre-test post-test control group design was adopted for this study. The study was conducted among children of 6 -12 years undergoing surgery at Yenepoya Medical College Hospital, Mangaluru, Karnataka, India. Non probability purposive sampling technique was used to obtain the samples. Written approval for the study was obtained from the ethics committee of university (Approval number: YEC2/855). Consent from all the parents and assent from the children were obtained. The samples included were the school aged children who were undergoing elective surgery in the age of 6 - 12years, admitted for at least 24 hours prior to surgery, anticipated to have hospital stay for at least 48 hours after surgery. Children, who are critically ill, undergone cardiac surgeries, having a history of previous surgery, not accompanied by a parent during admission were excluded in the study.

Sample size estimation: The sample size was computed using g^* power software. In order to detect effect of size 0.88 with 5% level of significance 95% power, total sample size estimated was 84. Forty-two subjects were included in each group.

Training on Reiki therapy: The researcher underwent training for Reiki and received attunement in first degree reiki therapy.

Development and description of the tool:

The data were collected by administering the tool namely, modified Yale Preoperative Anxiety Scale (m YPAS), to assess the anxiety of children. The tool has five components and under those components scores have been distributed. The Wong Baker Faces Pain Rating Scale was used to assess the post operative pain. In order to obtain validity of tool, the draft of tool was submitted for the seven experts for their valuable suggestions and recommendations. As per expert's opinion the tool was appropriate for the data collection. The tool was pretested by administering in 10 samples. It was found to be clear and feasible. Reliability was assessed by using Rater inter-rater method and was calculated by using Cohen's Kappa formula. The reliability of m YPAS was 0.92 and Wong Baker faces pain rating scale was 0.96, which indicated that the tool is reliable. Pilot study was conducted with 10 samples to know the

feasibility. No changes were made after the pilot study.

Data collection Procedure:

After self-introduction, the researcher explained the purpose of the study and obtained consent from parent and assent from the subjects followed by an interview conducted to obtain the demographic data. The researcher performed 30 minutes reiki therapy to the intervention group two times (5 hours gap in between two session) in a day for 4 days along with the routine care. The control group children received only routine care. Pre and post-test assessment of pain and anxiety recorded in both groups. The control group data was collected first and then the intervention group data was collected to avoid the data contamination.

Intervention group: The children were placed comfortably on the bed with fully clothed. Pretest assessment done on one day before the surgery. Immediately after the pretest, the first session of Reiki therapy was performed by superficial touching with the palm on the head, hands and chest for 10 minutes each. After 5 hours of interval the second session of Reiki therapy was performed. Post-test assessment carried out immediately after the second session. Similar steps were continued on the day of surgery, 12 hours after surgery, 24 hours after surgery and 48 after surgery.

Control group: The child was placed comfortably on the bed. Routine care was given. Pretest and post-test assessment of pain and anxiety carried out on one day before surgery, on the day of surgery, 12 hours after surgery, 24 hours after surgery and 48 after surgery.

Statistical Analysis:

The data was analysed by using by descriptive (frequency and percentage) and inferential statistics (Mean \pm SD) using IBM SPSS statistics²³. Chi-square test, paired t-test and unpaired t-test at 5% level of significance were used for statistical analysis. A p-value of <0.05 considered to be statistically significant.

Results:

Total 84 participants with age range from 6 to 12 years were divided in two groups. Each group had 42 participants. In the intervention (50.0%) and in the control (61.9%) group majority were belonging to the age group of 6-7 years. With

regard to the gender of the children in the intervention group, 61.9% and in the control group, 59.5% were males. Majority of the children were in 1st and 2nd standards, with 50.0% in the intervention group and 61.9% in the control group. Most of the children (69.0% in the intervention group and 57.1% in the control group) belong to the Muslim religion, and they were accompanied by their mother; 66.7% in the intervention group and 95.2% in the control group. Majority of the children in both the intervention (97.6%) and control (88.7%) groups belong to nuclear families. In the intervention group, majority (61.9%) were second born, where as in the control group, majority (50.0%) was first born. Regarding the type of surgery, most of the children in both intervention (47.6%) and control (45.2%) groups underwent gastrointestinal surgery (table1).

Table 1: Frequency and percentage distribution of sample characteristics.
N=42+42

Demographic variables	Intervention group		Control group			
	frequency (%)	p value	p value	frequency (%)	p value	
					Post operative pain	Anxiety
Age in years						
6-7	21(50.0)	0.881	0.459	26(61.9)		
8-10	8(19.0)			6(14.3)	0.412	0.339
11-12	13(31.0)			10(23.8)		
Gender						
Male	26(61.9)	0.758	0.169	25(59.5)	0.888	0.735
Female	16(38.1)			17(40.5)		
Religion						
Hindu	13(31.0)	0.859	0.700	15(35.7)	0.859	0.859
Muslim	29(69.0)			24(57.1)		
Christian	-			3(7.1)		
Class of study						
1 st &2 nd standard	21(50.0)	0.251	0.712	26(61.9)	0.412	0.339
3 rd &4 th standard	3(7.1)			6(14.3)		
5 th ,6 th and7 th standard	18(42.9)			10(23.8)		
Person accompanying						
Mother	28(66.7)	0.026*	0.508	40(95.2)	0.004*	0.810
Father	14(33.3)			2(4.8)		
Type of family						
Nuclear	41(97.6)	0.404	0.243	37(88.1)	0.287	0.375
Joint	4(2.4)			5(11.9)		
Birth order of child						
First	10(23.8)	0.079	0.014*	21(50)	0.424	0.446
Second	26(61.90)			14(33.3)		
Third	6(14.3)			7(16.7)		
Fourth or more	-			-		
Name of surgery						
Gastrointestinal	20(47.6)	0.452	0.056	19(45.2)	0.613	0.386
Genitourinary	6(14.3)			9(21.4)		
Ortho surgery	1(2.4)			2(4.8)		
Plastic reconstructive	5(11.9)			6(14.3)		
Neuro surgery	5(11.9)			2(4.8)		
others	5(11.9)			4(9.5)		

* Significance at p<0.05

Effectiveness of Reiki Therapy on pain and anxiety within group.
Assessment and comparison on post operative pain within the intervention and control group

Table 2: Assessment and comparison of post operative pain within the intervention and control group.
N=42+42

Time of assessment of post operative pain		Intervention group			Control group		
		Mean± SD	t-value	p value	Mean± SD	t-value	p value
12 hours after surgery	Pre-test 1	4.26±0.91			3.67±0.98		
	Post-test 1	3.50±0.86	11.454	0.001*	3.40±1.04	0.417	0.812
24 hours after surgery	Pre-test 2	3.26±0.89			2.93±1.02		
	Post-test 2	2.69±1.09	6.765	0.001*	2.69±1.02	0.186	0.930
48 hours after surgery	Pre-test 3	2.55±1.17			2.10±1.08		
	Post-test 3	1.83±0.91	7.765	0.001*	2.07±1.11	0.573	0.570

* Significance at p<0.05

To compare the post operative pain scores within the intervention and control groups paired t test was computed. The paired t test shows there is a significant difference in the pain scores within the intervention group at p<0.05 level. Within the control group there is no significant difference in the pain scores at p<0.05 level, which indicate that Reiki Therapy is effective in controlling post operative pain.

Assessment and comparison of anxiety within the intervention and control group

Table 3: Assessment and comparison of anxiety activity score within the intervention and control group.
N=42+42

Time of assessment of anxiety		Intervention group			Control group		
		Mean± SD	t-value	p value	Mean± SD	t-value	p value
On the day before surgery	Pre-test 1	2.98±0.64	9.140	0.001*	2.88±0.77	0.946	0.201
	Post-test 1	2.12±0.50			2.48±0.74		
On the day of surgery	Pre-test 2	3.24±0.66	7.065	0.001*	2.93±0.75	0.077	0.514
	Post-test 2	2.57±0.67			2.83±0.73		
12 hours after surgery	Pre-test 3	2.79±0.61	6.577	0.001*	2.50±0.80	0.432	0.160
	Post-test 3	2.10±0.69			2.40±0.80		
24 hours after surgery	Pre-test 4	2.38±0.49	3.566	0.001*	2.48±0.77	0.077	0.544
	Post-test 4	2.07±0.51			2.38±0.79		
48 hours after surgery	Pre-test 5	2.31±0.47	7.196	0.001*	2.50±0.74	1.000	0.323
	Post-test 5	1.57±0.63			2.57±0.77		

* Significance at p<0.05

Table 4: Assessment and comparison of anxiety vocalization score within the intervention and control group.
N=42+42

Time of assessment of anxiety		Intervention group			Control group		
		Mean± SD	t-value	p value	Mean± SD	t-value	p value
On the day before surgery	Pre-test 1	2.67±1.00	5.252	0.001*	2.62±1.03	0.650	0.519
	Post-test 1	2.07±0.81			2.69±0.67		
On the day of surgery	Pre-test 2	3.00±0.83	3.469	0.001*	2.88±0.67	0.077	0.344
	Post-test 2	2.57±0.50			2.79±0.56		
12 hours after surgery	Pre-test 3	2.76±0.66	4.367	0.000*	2.60±0.83	1.000	0.323
	Post-test 3	2.29±0.46			2.52±0.74		
24 hours after surgery	Pre-test 4	2.52±0.67	5.496	0.000*	2.60±0.83	0.011	0.051
	Post-test 4	1.86±0.52			2.43±0.74		
48 hours after surgery	Pre-test 5	2.19±0.55	9.055	0.001*	2.69±0.78	0.374	0.710
	Post-test 5	1.52±0.51			2.67±0.69		

* Significance at p<0.05

Table 5: Assessment and comparison of anxiety Emotional expressivity score within the intervention and control group. N=42+42

Time of assessment of anxiety		Intervention group			Control group		
		Mean±SD	t-value	p value	Mean±SD	t-value	p value
On the day before surgery	Pre-test 1	2.76±0.79	5.031	0.001*	2.62±1.03	0.650	0.519
	Post-test 1	2.21±0.72			2.69±0.95		
On the day of surgery	Pre-test 2	3.17±0.58	6.716	0.001*	2.60±0.75	1.000	
	Post-test 2	2.64±0.48			2.52±0.74		0.323
12 hours after surgery	Pre-test 3	2.48±0.51	5.268	0.001*	2.55±0.83	0.672	0.411
	Post-test 3	1.83±0.85			2.33±0.82		
24 hours after surgery	Pre-test 4	2.02±0.15			2.43±0.77	0.355	0.183
	Post-test 4	1.69±0.84	3.146	0.001*	2.36±0.88		
48 hours after surgery	Pre-test 5	2.31±0.56	10.124	0.001*	2.60±0.77	0.952	0.058
	Post-test 5	1.60±0.77			2.48±0.80		

* Significance at p<0.05

Table 6: Assessment and comparison of anxiety State of apparent arousal score within the intervention and control group. N=42+42

Time of assessment of anxiety		Intervention group			Control group		
		Mean±SD	t-value	p value	Mean±SD	t-value	p value
One day before surgery	Pre-test 1	2.74±0.63	6.716	0.001*	2.60±1.01	0.776	0.083
	Post-test 1	2.21±0.72			2.52±0.94		
On the day of surgery	Pre-test 2	2.88±0.50	3.532	0.001*	2.67±0.87	0.432	0.160
	Post-test 2	2.55±0.50			2.62±0.82		
12 hours after surgery	Pre-test 3	2.50±0.80	4.376	0.000*	2.33±0.82	0.614	0.212
	Post-test 3	2.05±1.06			2.19±0.83		
24 hours after surgery	Pre-test 4	2.14±0.35	3.653	0.001*	2.43±0.86	0.691	0.342
	Post-test 4	1.69±0.64			2.31±0.75		
48 hours after surgery	Pre-test 5	2.05±0.38	9.564	0.000*	2.33±0.75	0.077	0.344
	Post-test 5	1.36±0.48			2.24±0.73		

*p<0.05 level of significance

Table 7: Assessment and comparison of anxiety Use of parent score within the intervention and control group. N=42+42

Time of assessment of anxiety		Intervention group			Control group		
		Mean±SD	t-value	p value	Mean±SD	t-value	p value
One day before surgery	Pre-test 1	2.83±0.58		0.001*	2.57±0.83	0.776	0.083
	Post-test 1	2.12±0.92	5.980		2.50±0.74		
On the day of surgery	Pre-test 2	2.88±0.50		0.001*	2.38±0.85	0.432	0.160
	Post-test 2	2.45±0.50	5.545		2.33±0.79		
12 hours after surgery	Pre-test 3	2.21±0.42	4.239	0.001*	2.33±0.69	0.274	0.210
	Post-test 3	1.83±0.54			2.24±0.76		
24 hours after surgery	Pre-test 4	2.69±0.47	5.280	0.001*	2.31±0.78	0.752	0.456
	Post-test 4	2.29±0.46			2.40±0.89		
48 hours after surgery	Pre-test 5	2.19±0.51	3.528	0.001*	2.36±0.69	0.432	0.160
	Post-test 5	1.83±0.54			2.26±0.70		

* Significance at p<0.05

Table 3-7 depicts the comparison of the anxiety within the intervention and control group. Each component of anxiety (activity, vocalization, Emotional expressivity, state of apparent arousal & use of parent) was assessed separately. The paired t test shows there is a significant difference in all the component of anxiety within the intervention group at p<0.05 level, whereas in the control group there was no significant difference found in the anxiety at p<0.05 level, which indicates that Reiki Therapy is effective in controlling the anxiety of children.

Effectiveness of Reiki Therapy on pain and anxiety between group.

Assessment and comparison on post operative pain between group

Table 8: Assessment and comparison of post operative pain between the intervention and control group. N=42+42

Time of assessment of post operative pain	Group	Mean±SD	t value	p value
12 hrs after surgery	Intervention group	3.50±0.86	0.458	0.649
	Control group	3.40±1.04		
24 hrs after surgery	Intervention group	2.69±1.09	0.000	1.000
	Control group	2.69±1.02		
48 hrs after surgery	Intervention group	1.83±0.91	1.074	0.238
	Control group	2.07±1.11		

* Significance at p<0.05

Table 8 shows the comparison post operative pain between the intervention and control group. Independent t test computed shows that there is no significant difference in the post operative pain between the intervention and control group at p<0.05 level.

Assessment and comparison on anxiety between group

Table 9: Assessment and comparison of anxiety activity score between the intervention and control group. N=42+42

Time of assessment of post operative pain	Group	Mean±SD	t value	p value
One day before surgery	Intervention group	2.12±0.50	2.585	0.012*
	Control group	2.48±0.74		
On the day of surgery	Intervention group	2.57±0.67	1.716	0.090
	Control group	2.83±0.73		
12 hrs after surgery	Intervention group	2.10±0.69	1.821	0.072
	Control group	2.40±0.86		
24 hrs after surgery	Intervention group	2.07±0.51	2.120	0.037*
	Control group	2.38±0.79		
48 hrs after surgery	Intervention group	1.57±0.63	6.515	0.001*
	Control group	2.57±0.77		

* Significance at p<0.05

Table 10: Assessment and comparison of anxiety vocalization score between the intervention and control group. N=42+42

Time of assessment of post operative pain	Group	Mean±SD	t value	p value
One day before surgery	Intervention group	2.07±0.81	3.217	0.002*
	Control group	2.69±0.95		
On the day of surgery	Intervention group	2.57±0.50	1.840	0.069
	Control group	2.79±0.56		
12 hrs after surgery	Intervention group	2.29±0.46	1.773	0.080
	Control group	2.52±0.74		
24 hrs after surgery	Intervention group	1.86±0.52	0.434	0.665
	Control group	2.43±0.74		
48 hrs after surgery	Intervention group	1.52±0.51	8.686	0.001*
	Control group	2.67±0.69		

* Significance at p<0.05

Table 11: Assessment and comparison of anxiety emotional expressivity score between the intervention and control group. N=42+42

Time of assessment of post operative pain	Group	Mean±SD	t value	p value
One day before surgery	Intervention group	2.21±0.72	2.449	0.016*
	Control group	2.64±0.88		
On the day of surgery	Intervention group	2.64±0.48	1.553	0.124
	Control group	2.86±0.75		
12 hrs after surgery	Intervention group	1.83±0.85	2.744	0.007*
	Control group	2.33±0.82		
24 hrs after surgery	Intervention group	1.69±0.64	3.342	0.001*
	Control group	2.36±0.88		
48 hrs after surgery	Intervention group	1.60±0.77	5.139	0.001*
	Control group	2.48±0.80		

* Significance at p<0.05

Table 12: Assessment and comparison of anxiety state of apparent arousal score between the intervention and control group. N=42+42

Time of assessment of post operative pain	Group	Mean±SD	t value	p value
One day before surgery	Intervention group	2.21±0.72	1.693	0.094
	Control group	2.32±0.94		
On the day of surgery	Intervention group	2.55±0.50	1.376	0.172
	Control group	2.62±0.82		
12 hrs after surgery	Intervention group	2.19±0.83	0.687	0.494
	Control group	1.69±0.64		
24 hrs after surgery	Intervention group	1.69±0.64	1.992	0.050*
	Control group	2.31±0.75		
48 hrs after surgery	Intervention group	1.36±0.48	6.538	0.001*
	Control group	2.24±0.73		

* Significance at $p < 0.05$

Table 13: Assessment and comparison of anxiety between the intervention and control group.

N=42+42

Time of assessment of post operative pain	Group	Mean±SD	t value	p value
One day before surgery	Intervention group	2.12±0.92	2.096	0.039*
	Control group	2.50±0.74		
On the day of surgery	Intervention group	2.45±0.50	0.826	0.411
	Control group	2.33±0.79		
12 hrs after surgery	Intervention group	1.83±0.54	2.821	0.006*
	Control group	2.24±0.76		
24 hrs after surgery	Intervention group	2.29±0.46	0.774	0.411
	Control group	2.40±0.89		
48 hrs after surgery	Intervention group	1.83±0.54	3.146	0.002*
	Control group	2.26±0.70		

* Significance at $p < 0.05$

Table 9-13 shows the comparison of five components of anxiety between the intervention and control group. Independent t test was computed, which shows there is a significant difference in the anxiety during various time of post-test at $p < 0.05$ level.

Discussion:

The use of complementary therapies is growing in acceptance. The National Center for Complementary and Integrative Health [NCCIH], 2016, defines these therapies as ‘healthcare techniques with a history of use or origins outside mainstream medicine’. A more holistic approach to pain, anxiety, and various other symptom management is demonstrated by using selected complementary therapies. Reiki is one among those, which are particularly known for ‘energy healing’ and touch therapy, which is affordable, non-invasive and has no side effects. The researcher found the necessity of finding the effectiveness of Reiki Therapy as the previous studies had proven its practicability and feasibility even in newborn²⁰ and children with cerebral palsy.²¹ There are a lot of research conducted to assess the effectiveness of Reiki; yet, in the pediatric population, studies are few to support it with substantial scientific evidence. The current study had a major flaw that needs to be discussed;

that it might be a trial assessment for the children during their hospitalization; as the children were not mentally prepared to receive the healing from the Reiki session. Problems with the study were linked to the fact that most of the parents of children may be illiterate or of low educational status, have a low socioeconomic class, and are literally unfamiliar with the term ‘Reiki Therapy’. The researcher found a challenge in convincing them about the benefits of Reiki therapy.

Majority of the children in intervention (50.0%) and control (61.9%) groups belong to the age group of 6-7 years. With regard to the gender of the children in the intervention group, 61.9% and in the control group, 59.5% were males. Majority of the children were in 1st and 2nd standards, with 50.0% in the intervention group and 61.9% in the control group. Regarding the type of surgery, most of the children in both intervention (47.6%) and control (45.2%) groups underwent gastrointestinal surgery.

In contrast to those demographic characteristics, a study on Reiki therapy for post operative oral pain in pediatric patients showed the average age of the 38 participants was 25.6 months (range = 9–48 months), with 42 percent being male. The distribution of procedures found that palatoplasty was performed on 65 percent of the participants.²² Pain is a specific symptom during the post-operative period that requires careful consideration because it frequently involves the individual's clinical, physiological, cognitive, and psychological experiences, making it difficult for the professionals to find an accurate and customized control strategy for that individual patient. Therefore, the importance of the management of pain relies on careful assessment and adoption of a complementary method along with medical care.

The present study found that administering Reiki as a complementary therapy is effective in controlling post operative pain in children aged 6-12 years. The study results showed that there is a significant difference in post-operative pain when comparing the pre to post-test assessment at different time intervals at $p < 0.05$ level. While the findings of the control group showed there was no significant difference when comparing the pre to post-test score of post-operative pain at $p < 0.05$ level.

The study results are consistent with another study, investigated the impact of Reiki Therapy for Symptom Management in Children Receiving Palliative Care. This pre-post single group pilot study explored the efficacy, acceptance, and pain outcomes using Reiki therapy with children receiving palliative care. Theme an scores for pain

decreased from pre-to post test.²³ Another experimental pretest and post-test study has been conducted on 'The Power of Reiki: Feasibility and Efficacy of Reducing Pain in Children with Cancer Undergoing Hematopoietic Stem Cell Transplantation', has revealed a considerable variation between the three time periods. The experimental group had a decrease in pain in the short and medium term, whereas the pain level remained consistent during the follow-up period.²⁴ Studies are also available on adults, which support Reiki as a complementary therapy during surgery. A quasi-experimental study was conducted on the effect of Reiki on pain among patients undergoing knee replacement surgery. Out of three groups, the reiki group got 30 minutes (3 or 4 times) of interventions. Only the reiki group demonstrated statistically significant reduction in pain.¹⁸ Anxiety can arise from medical illness, as a reaction to being distressed or in the hospital, a frightening environment, other hereditary or psychological causes, or as a mix of all of these variables. Furthermore, prior exposure to physical pain and/or frequent unpleasant medical procedures is linked with fear and anxiety during later procedures and treatments, which can lead to medical nonadherence and other comorbidities¹. So, assurance about the relief of anxiety by the use of complementary therapy should be promoted by the hospitals, especially in pediatric wards.

The current study showed that providing Reiki as a complementary therapy which is effective in children aged 6-12 years, in terms of anxiety. The study findings support that Reiki could benefit children in alleviating the symptoms of anxiety. The study results showed that there is a significant difference in anxiety when comparing the pre to post-test assessment at different time intervals of assessment at $p < 0.05$ level. The findings of anxiety within the group are supported by the study conducted to assess the effectiveness of Reiki Therapy for Symptom Management in Children Receiving Palliative Care. This pre-post single group pilot study explored the efficacy, acceptance, and the outcomes of anxiety using Reiki therapy with children receiving palliative care. The mean scores for anxiety decreased when comparing pre to post Reiki treatment.²³

The present study showed that Reiki Therapy does not effectively regulate post-operative pain among children undergoing surgery when comparing the post-test assessment of pain between the groups. Even though Reiki had shown a significant difference in the intervention group in controlling the pain from a further rise; the post-test assessment at different time intervals identifies that there is no significant difference

when comparing both the intervention and control group at $p < 0.05$ level. The findings of the study are supported by the study of Reiki therapy for postoperative oral pain in pediatric patients. Among thirty-eight children, the results showed that there was no statistically significant difference between the intervention and control groups on post-operative pain.²²

The present study showed that Reiki Therapy is effective for anxiety among children undergoing surgery. The components of the anxiety scale have been assessed and represented separately to find out the statistical significance, and it's been discovered that there is a significant difference in the mean post-test score between the groups for the majority of the outcome at $p < 0.05$ level. When comparing the post-test score of anxiety between the intervention and control group, most of the outcome of the study supports the Reiki as a complementary therapy among children undergoing surgery. But still, on the day of surgery, it is found that there is no significant difference in the mean post-test score between the groups at $p < 0.05$ level.

The present study results are supported by the studies explored in the adult population. Research evidence is too scarce in children to compare the findings of anxiety between the groups. A quasi-experimental pretest post-test study was evaluated on the effect of preoperative reiki application on anxiety levels. The data from two hundred and ten samples who were undergoing general surgery showed that the level of anxiety of the experimental group patients did not alter according to their state anxiety scores ($p > 0.10$). However, anxiety levels in the control group patients elevated.¹⁴

Another study, utilizing experimental design, highlighted the Reiki's effects on pain and anxiety in women who underwent abdominal hysterectomies. In which, the experimental group received 30 minutes of Reiki in addition on nursing care. According to the findings, the experimental group reported less anxiety on discharge compared to the control group.¹⁹

The current study found that there is a significant association between person accompanying and post operative pain (in the intervention group; $\chi^2 = 4.941$, $p = 0.026$ and in control group; $\chi^2 = 11.000$, $p = 0.004$). Also, it showed that there is a significant association between birth order of child and anxiety in the intervention group ($\chi^2 = 8.538$, $p = 0.014$), whereas in the control group none of the variable had shown any significant association with anxiety. There has been no research to find the most appropriate duration or number of Reiki sessions that should be offered. A

Reiki practitioner will frequently recommend three sessions as a starting point, with more Reiki preferable than to less. Because the optimal amount is likely to differ for each setting and probably for each individual, this could be a large source of experimental variation that has yet to be examined.²⁶

Overall, the findings of this study are positive for future research and the use of Reiki therapy as a complementary therapy for children undergoing surgery to reduce anxiety. The effect of Reiki therapy on post-operative pain is still controversial. Further research into Reiki therapy with children undergoing surgery and other pediatric populations is worth while and necessary to produce scientific evidence of Reiki therapy's benefits. In addition, the findings of this study could help to guide future research on Reiki therapy with children and their parents.

The use of accurate assessments, child self-report, and the inclusion of objective outcomes are critical design considerations for future research to elaborate on the body of knowledge about Reiki therapy in children. This study may help to strengthen the health care system's use of complementary therapies for providing holistic care, as recommended by the WHO Traditional Medicine Strategy 2014–2023.

The current study has a limitation that the surgical procedures were heterogeneous. This factor could limit the interpretation of the study results, since pain may vary from procedure to procedure. Additionally, the anxiety of the children may differ in different age groups. Another limitation in the study was that the control group children were not given Reiki therapy even after the data collection period as the children got discharged.

The nursing implications of this study could be, to better prepare pediatric nurses, the nursing curriculum can include complementary therapy along with medical and nursing management as a branch. The nurse administrator plays a critical role in managing and coordinating the entire health care team and their activities. For the health benefits of society, nurse administrators have to update patient care facilities in conjunction with newer trends. This study's findings can be used by the nursing administrator to develop policies and programs for offering Reiki therapy practices for the nursing staff in hospitals. The current study will provide critical information for future nursing research in Reiki Therapy. The findings of this study can be used by nursing researchers to do additional research on Reiki therapy to establish its efficacy in various physiological and psychological parameters.

The authors are recommending that further studies can be conducted in different age groups like late adolescence as their maturational level is higher compared to other groups of children. The study can be reproduced to assess the changes in physiological parameters in various diseases and also to assess the effectiveness of Reiki in treating behavioural disorders in children. The study can be replicated to evaluate mood and well-being in children with chronic illness.

Conclusion:

Comparison with in the intervention group at different time showed a significant difference ($p < 0.05$) with reduction of post operative pain. Whereas within the control group did not show significant difference ($p > 0.05$) when comparing the mean pre to post test scores. Comparison between the group for post operative pain did not show significant difference ($p > 0.05$). When comparing the anxiety with in the intervention group, it showed there is a significant difference ($p < 0.05$) in the reduction of anxiety at different time. Whereas within the control group did not show any significant difference ($p > 0.05$). Comparison between the group also showed there is a significant difference ($p > 0.05$) for most of the outcome of anxiety.

The present study also revealed that there is a significant association between person accompanying and post operative pain (in the intervention group; $\chi^2 = 4.941$, $p = 0.026$ and in control group; $\chi^2 = 11.000$, $p = 0.004$). Also, there is a significant association between birth order of child and anxiety in the intervention group ($\chi^2 = 8.538$, $p = 0.014$), whereas in the control group none of the variable had shown any significant association with anxiety.

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