

Use of kaleidoscope as an attention diversion tool among children during surgical dressing to avert pain in selected hospitals, Bhubaneswar, Odisha

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Abstract: A true experimental research study (post test only control group design) was conducted to assess the effect of use of the Kaleidoscope as an attention diversion tool among children during surgical dressing to avert pain in selected hospital of Bhubaneswar and to determine the association of the level of pain with the selected socio-demographical variables. For this study, quantitative experimental approach and post test only control group design was selected. The self structured socio demographic interview schedule was utilized to collect the data. By using simple random sampling techniques ,80 post operative children of 2nd post operative day belonging to age 6 to 10 years were chosen in order to check the effectiveness of kaleidoscope in reducing the pain among postoperative children during dressing.

Background: The pain is the worst experience sensed by the children throughout surgical wound dressing as they are more sensitive than adults. It has been seen that the sisters are facing trouble to do any invasive procedures because they cannot get the cooperation from the children. Thus researcher is very interested to carry out the study regarding lowering the pain perception related to surgical dressing by using Kaleidoscope.

Materials and Methods: For this study, quantitative experimental approach and post test only control group design was selected . The self structured socio demographic interview schedule was utilized to collect the data.80 post operative children of 2nd POD of age 6 to 10 years were elected and divided into two groups experimental (n=40) and control group (n=40). The Kaleidoscope was given to the children of experimental group and motivated to play from the onset of the surgical dressing and those in control group no or routine intervention were given. The pain level was assessed throughout the dressing upto 10 minutes after it by using Wong Baker Facial pain scale.

Results: The result conveys that 60% of children in experimental group were experiencing pain little bit and 42.5% of children in control group, having the pain a lot. The unpaired „t" test value was -18.5 which was highly statistically significant which indicates that presence of statistical difference in the post test level of pain after surgical dressing among the children in between the experimental group and control group at 0.05% level of significance.

Conclusion: The outcome of this present study concluded that kaleidoscope is effective in reducing the pain among post operative children during surgical dressing.

Keywords: Kaleidoscope, surgical dressing, distraction, post-operative pain and post operative children.

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I. Introduction

The pain perception causes displeasing & vexatious feelings which involve all the aspects such as physical, emotional, sensory and cognitive functions. In 1960, according to, Harold Merskey the pain is a disgusting sensation that we mainly link with physical injury or explain in terms of tissue break down.¹Pain is one of the most common symptoms after surgery while under treatment and associated with adverse outcomes.³ Many non-pharmacological treatments have been effectively used in the reduction of the pain perception among school-age children with satisfactory cognitive development. This distraction methods aim to shift the concentration of the children from the medical or surgical procedure, in turn to manage his or her perception of pain. While the children focus their attention on something other than pain, the children can able to control their algogenic perception of pain, therefore decreasing distress, anxiety, and fear⁷.Therefore the main goal of this study is decreasing the surgical dressing pain among the kids by providing Kaleidoscope.

II. Materials and Methods

The true experimental research study was performed over children at pediatric surgical ward of IMS & SUM Hospital from February 2019 to March 2019. A total 80 post-operative children aged 6 to 10 years having surgical dressing at 2nd postoperative day were chosen for this research.

Study Design: True Experimental post-test only control group design

Study Location: The pilot study was conducted at Jagannath Hospital and the setting for the main study is the pediatric surgical ward of IMS & SUM Hospital.

Study Duration: February 2019 to March 2019

Sample Size: 80 children

Sample Size Calculation: $n = (z^2 \times p \times q / e^2)$ {Researcher did not know total population for 1 year so this formula was applied} In my hospital total children were undergone 1st surgical dressing were 500 per month. The children who had 1st surgical dressing belonged to age group 6 to 10 years were 473 per month. We assumed the confidence interval of 10% and 95% of confidence level. So sample size obtained for this study was 80 post-operative children having surgical dressing at 2nd POD. Therefore, I had divided the children into 2 groups i.e experimental and control group (40 children /group)

Subjects and selection methods: The post-operative children who undergone surgical dressing in 2nd postoperative day at the pediatric surgical unit of IMS & SUM hospital were the study sample. 80 postoperative children at 2nd post-surgical day having surgical dressing were chosen by using simple random sampling technique and categorized by blind-folded methods. Here mainly the paper folds containing even and odd numbers were given to the children and instructed them to pick any one of the paper fold. If they picked even number then put to experimental group & if picked an odd number then placed to control group (each group consisted 40 children)

Inclusion Criteria:

1. The children who are allowed by their parents and given consent to take part in this study.
2. Children can able to comprehend Odia or English.

Exclusion Criteria:

1. The children are critically ill.
2. The children are having visual & hearing problem.
3. The children who are having psychiatric problem.
4. The children who are comatose.

Procedure methodology

The investigator at first presented formally herself to the parents and their children & explained the purpose of the study. The researcher established an interpersonal relationship with parents and the children in order to get co-operation throughout of study process. They were assured that their reply would be reserved as top secret and employed just for research purpose and written informed consent was taken from the parents. 80 postoperative children at 2nd post-surgical day having surgical dressing were selected by applying simple random sampling technique. The socio- demographic data were collected from their parents. Self-Structured Demographic Schedule such as age, gender, presence of caregiver, previous hospitalization experience, the anatomical site of the surgical procedure during present hospitalization, number of days staying in the hospital after surgery, presence of postoperative pain after the surgical dressing & when 1st dressing has been changed were collected by interview technique. After that the children were divided into an experimental and control group the kaleidoscope was provided to the experimental group at the onset of the surgical dressing and regular or no intervention to the control group. The pain level was assessed from all through the dressing up to 10 minutes after dressing by the researcher. The pain level was measured by means of Wong-Baker facial pain scale. The Wong-Baker scale includes six facial expressions range from cheery or happy face that represents no pain to a very sad, crying face that indicates severe pain. The researcher by observing the facial expression of the child has to choose the faces that best describes the child's feeling during and after the surgical dressing.

Statistical Analysis

At first the all the data were assembled and written in the master sheet. Then collected data were analyzed by applying descriptive statistics which includes Frequency and percentage distribution will be used to examine the demographical variables of the children (6 to 10 years). Comparison of mean, standard deviation, mean percentage and difference in mean percentage of pain among children in experimental & control group after the surgical dressing is used to assess the effect of the kaleidoscope and inferential statistics such as The statistical t-test is used to assess the effect of using kaleidoscope as distraction techniques on the level of pain among children in experimental and control groups. Chi-square test is used to find out the association between

post-test level of the pain with socio demographical variables in the experimental group and control group. The value of $P < 0.05$ was considered as the cutoff value or significance.

III. Result

Data related to the age of the post-operative children reveals that majority of children in the experimental group i.e 55% and 58% in control group belonged to age group of 6 to 8 years.

Majority children in experimental group i.e 52.20% were male and 50% in control group were male & female.

Highest percentage of presence of the caregiver in experimental group I.e 55% were mother and 57.5% in control group were father.

With regards to previous hospitalized experience, the majority of children in control group having experience were 60% and 55% in experimental group did not have the experience.

In relation with an anatomical site of surgery, the majority percentage in experimental group I.e 47.50% were undergone surgery related to gastrointestinal system , 45% of children in control group were undergone surgery related to Genito-Urinary system.

The duration of staying in the hospital for 2 days in experimental group was 45% and control group i.e 37.5% .

Most of children in experimental group I.e 62.5% were having pain after surgical dressing and 45 % in control group did not have the post-surgical pain after surgical dressing.

With respect to the duration of the 1st dressing changed, highest of children of control group were having 1st dressing after 48 hours were 60% , 47.5% of children of experimental group were having 1st dressing after 24 hours.

Table no 1 shows Frequency (f) and percentage (%) distribution of study samples according to the presence of post operative pain after surgical dressing and duration of 1st dressing changed. Data presented in table depicts that 62.50% & 55% children of experimental & control group were having presence of post operative pain after surgical dressing. 45% & 37.5% children of control, experimental group did not have the post operative pain . 47.5% & 40% children of experimental and control group were having 1st dressing after 24 hours, 60% & 52.5% children in control, experimental group were having 1st dressing after 48hours .

Table no 1: Frequency (f) and percentage (%) distribution of study samples according to the presence of post operative pain after surgical dressing and duration of 1st dressing changed.

Items	Experimental Group		Control Group	
	Frequency(f)	Percentage (%)	Frequency(f)	Percentage(f)
$n=80(n_1+n_2=40+40)$				
Presence of post-operative pain				
Yes				
No	25	62.5	22	55
	15	37.5	18	45
When 1 st dressing changed.				
After 24 hours	19	47.5	16	40
After 48 hours	21	52.5	24	60

Distribution of study participants according to severity of post-operative pain after surgical dressing among children by using frequency and percentage. The data in figure 2 shows 22.5% , 60% , 17.5% children of experimental group had pain score 0, 2, 4 and 37.5%, 42.50%, 20% children of control group had pain score 6, 8, 10.

Fig 2: 2D Bar diagram showing distribution of children according to the post surgical pain level.

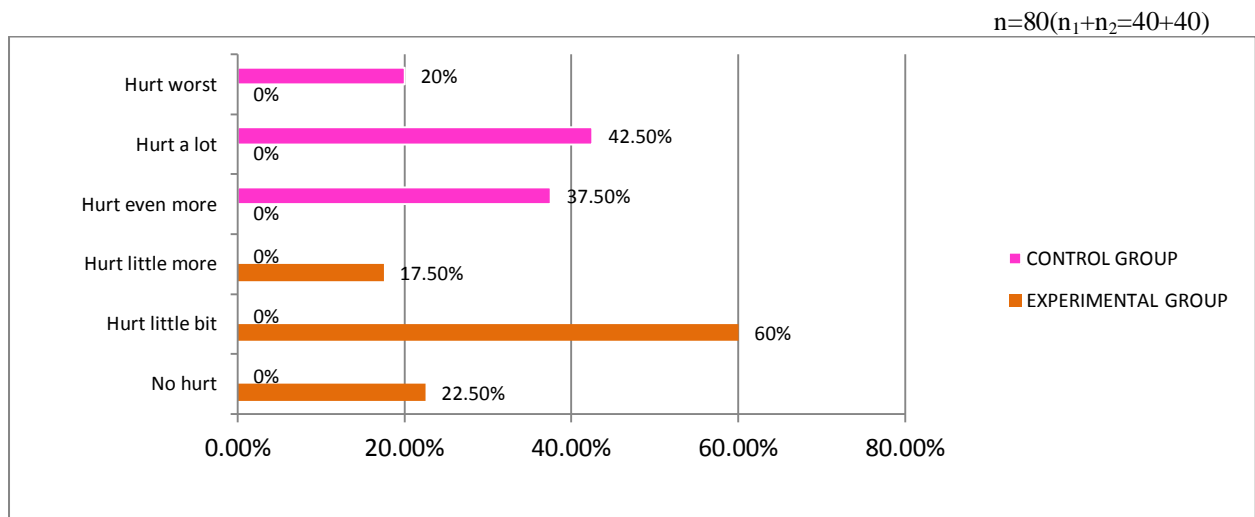


Table no 3: Mean, SD, Unpaired t test, P-value to compare the effect of the kaleidoscope on the level of pain among experimental and control group. The data in table 4.2 depicted that mean and standard deviation (SD) of experimental group was 1.9 ± 1.277 and mean and standard deviation (SD) of control group was 7.65 ± 1.494 . The unpaired “t” test value was -18.5 at 78 degree of freedom with p value $< .0001$ which was extremely statistically significant at $p < .05$. The standard error (SE) at experimental group was 0.202 and standard error (SE) at control group was 0.236. Therefore null hypothesis rejected and research hypothesis was accepted and there is significant difference between effect of kaleidoscope on the level of pain among experimental group and control group. The researcher concluded that the use of kaleidoscope during the surgical dressing reduce the post surgical pain.

Table no 3 : Mean, SD, Unpaired t test, P-value to compare the effect of the kaleidoscope on the level of pain among experimental and control group.

n=80(n ₁ +n ₂ =40+40)					
GROUP	MEAN + SD	STANDARD ERROR	df	UNPAIRED t TEST	P VALUE
EXPERIMENTAL GROUP	1.9±1.277	0.202			
CONTROL GROUP	7.65±1.494	0.236	78	-18.5	<0.0001**

Tableno 4: Chi-square analysis to determine the association between post test level of pain among the children in the experimental group with their selected demographical variables. The calculated chi-square (χ^2) values 7.697 were more than tabulated (χ^2) value at 0.05 significant level at degree of freedom (df=2) which implies there were association between post test level of pain among the children in the experimental group with when 1st dressing has changed. Hence, the null hypothesis was rejected and research hypothesis was accepted. Hence when 1st dressing has changed may or may not cause the pain.

Table no 4: Chi-square analysis to determine the association between post test level of pain among the children in the experimental group with their selected demographical variables.

n ₁ =40			
Demographical Variables	Chi Square	df	P value
Age	.750	2	=.687
Gender	.321	2	=.857
Presence of care giver	7.41	4	=.116
Previous hospitalization experience.	.526	2	=.769
The anatomical site of the surgical procedure during present hospitalization	2.521	4	=.641
Number of days staying in the hospital after surgery.	6.368	4	=.173
Presence of post operative pain after the surgical dressing.	.902	2	=.637

When 1 st dressing has changed.	7.697	2	=.021*
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*p<0.05= statistically significant

IV. Discussion

It is also confirmed that hospitalized children are experiencing severe pain during dressing as it gets stick to the wound area. Their pain perception depends on previous exposure to hospitalization, degree of fear & anxiety of unknown about what will happen specially during dressing and also their preconceived thought about the procedures. Therefore, the researcher has claimed that the application of distraction technique such as viewing of kaleidoscope helps to divert the focus of kids from pain to countless variety of portraits or geometrical figures & it is also cost-effective devoid of any adverse effect. Thus they will be less annoyed, irritated while doing any invasive treatment towards them and ultimately they will be relaxed and felt more comfortable throughout the procedure.

The result of the present study depicted that majority of children in the experimental group i.e 55% and 58% in control group belongs to age group of 6 to 8 years, 52.20% in experimental group were male and 50% in control group were both male & female, 55% care giver in experimental group were mother and 57.5% in control group were father and in case of previous hospitalized experience, in control group having experience were 60% and 55% in control and experimental group did not have the experience.

The current study revealed that maximum children in experimental group I,e 60% were experiencing pain little bit(scored 2) and 42.5% in control group were having pain a lot (score d 8). The study is consistent to other study conducted by Ms. Mercy suguna.e(2011) in which the some of children in experimental group II I,e 20% having moderate pain and 8% of them having severe pain in experimental group I.²⁷

The researcher revealed that “t” test value was -18.5 at df=78,p=.0001 which was statistically significant at p<.05.So there is significant difference between effect of kaleidoscope on the level of pain among experimental group and control group.

The findings of another study also supported the present study by kolu.S.et.al (2006) conducted a study in which researcher found that “t” value which was calculated by using Wong Baker scale was 3.144 and that of p value =<0.01 which was considered statistically significant. Thus result suggested that the kaleidoscope is effective for lowering the pain among the children.²⁸

The present study concluded that post-operative pain causes serious bodily suffering, discomfort among the children which is triggered during the surgical dressing. So in order to reduce the negative effect on emotional and physical status of the children the kaleidoscope must be used in pediatric ward. Moreover, it is cheaply made and creates mesmerizing images in the eyes of the kids while the tube is rotated by hand helps in drawing away the attention of children from the pain.

V. Conclusion

Therefore, from the finding of the study the investigator has stated that the application of kaleidoscope as a diversion technique is fruitful in bringing down the pain among kids during the painful procedure as it does not has any side effect & it can be used by pediatric nurses both in hospital and community.

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