True experimental study to assess the effectiveness of kaleidoscope as a diversional therapy on level of pain among children (3- 6yrs) receiving intravenous injection in selected hospitals of surat district, gujarat.

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Abstract: *a true experimental study to assess the effectiveness of kaleidoscope as a diversional therapy on level of pain among children (3- 6yrs) receiving intravenous injection in selected hospitals of surat district, gujrat.* ***Methodology:*** *the research design adopted for the study is true-experimental post-test only group design. The conceptual framework used in this study was based on ernestine wiedenbach's helping art of clinical nursing theory (1964). Variables under study were pain as dependent variables, kaleidoscope as independent variable. The tools used under this study were demographic data, clinical profile of patient, wong baker pain scale and instrument used was kaleidoscope. The data collected were analysed and interpreted by using descriptive and inferential statistics.* ***Result and interpretation****: the mean score regarding pain level of experimental group is 3.43 which is lower than the control group 8.69 that shows there is reduction in pain among children due to kaleidoscope on the experimental group to which it is introduced. The calculated t-value of **21.974** exceeds the tabulated t-value of **1.995** at 68 degrees of freedom, and the p-value is **0.00001**, indicating a highly significant difference between the two groups. This suggests that the kaleidoscope therapy was effective in reducing the pain levels among children receiving intravenous injections.*
Conclusion*: the findings from this study reveal that the use of a kaleidoscope as a diversional therapy significantly reduces the level of pain in children receiving intravenous injections. This is supported by the data showing that children in the experimental group, who used the kaleidoscope during iv administration, experienced significantly lower pain levels compared to those in the control group who did not use the kaleidoscope.*

Key words*: kaleidoscope, iv injection, pain, children, effectiveness*

INTRODUCTION:

Pain is an unpleasant sensory and emotional experience associated with actual or potential or potential tissue damage, are described in terms of such damage. Thus, a child experience during painful medical procedures likely plays a significant role in shaping that individuals pain response to future. Pain is described as the fifth vital sign and inadequate pain management is linked to numerous immediate and long-term negative outcomes. Children are the most precious assets and investments for the future of commitment to the improvement in the health and wellbeing of children. Distraction in child can be defined as a strategy whether cognitive or behavioural that draw's a child's attention away from noxious pain stimuli. Kaleidoscopes create captivating patterns using mirrors and objects like coloured glass, beads and confetti, with designs varying based on the mirror configuration and the items used. The artistry of kaleidoscope design is limitless, influenced by the choice of materials, light source and the creativity of the creator

Statement of the study

A true experimental study to assess the effectiveness of kaleidoscope as a diversional therapy on level of pain among children receiving intravenous injections at selected hospitals of surat district, gujarat.

Objective

- To assess the effectiveness of a kaleidoscope as a diversional therapy on level of pain among children receiving intravenous injection among experimental groups.

- To assess the level of pain among children receiving intravenous injection among control group.
- To compare the level of pain among children receiving intravenous injection between the experimental and control group.
- To find the association of level of pain with their selected demographic variables among children receiving intravenous injection among experimental and control group.

METHODOLOGY
research design: a quantitative research approach, true-experimental post-test only
Research variables
Independent variable: kaleidoscope
Dependent variable: level of pain among children receiving intravenous injections.
Demographic variable: age 3-to-6-year, gender, religion, residential area, birth order of the child, type of the family, family income was selected as socio-demographic variables.
Research setting: selected hospitals of surat district, gujarat.

Population: children between the age group of 3 to 6 years, who are receiving intravenous injections at hospitals.

Sample: children who were admitted at selected hospitals of surat district, receiving intravenous injection.
Sample size: a total of 70 samples were taken for the study. 35 patients in the experimental group and 35 patients in the control group.
Sampling techniques: probability sampling technique. Samples were selected by using simple random technique for both experimental and control group.
Criteria for sample selection
Inclusion criteria
- Age group (3-6 years)
- Parent who are willing to give consent for participation
- Who are undergoing through intravenous injection
- Parents who understand hindi and guajarati
Exclusion criteria
- Children who are chronically ill
- Mentally challenge child
- Child with sensory problems
Tools and techniques
　　　Tool which was developed for data collection consist of socio-demographic variables, clinical profile of patient and wong-baker pain scale.
Description of tool
It has been divided into three sections
Section i: sociodemographic variables
Section ii: clinical profile of the patient
Section iii: assess the level of pain (by wong baker pain scale) in childrens

figure wong-baker's faces pain rating scale

Analysis and interpretation of data
Section i frequency and percentage distribution of demographic data of the samples
table 1 frequency and percentage distribution of demographic variables

$(n_1=35)$ $(n_2=35)$

Demographic variables		Control group		Experimental group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Age group (years)	A. 3 years	4	11.40%	9	25.70%
	B. 4 years	12	34.30%	13	37.10%
	C. 5 years	8	22.90%	6	17.10%
	D. 6 years	11	31.40%	7	20.00%
Gender	A. Male	13	37.10%	17	48.60%
	B. Female	22	62.90%	18	51.40%
Religion	A. Hindu	19	54.30%	20	57.10%
	B. Muslims	11	31.40%	8	22.90%
	C. Christins	4	11.40%	7	20.00%
	D. Other	1	2.90%	0	0.00%
Type of family	A. Nuclear	22	62.90%	29	82.90%
	B. Joint	13	37.10%	6	17.10%
	C. Others	0	25.70%	0	25.70%
Family income	A. Rs.5000- 10,000	0	0.00%	1	2.90%
	B. 10,001-20,000	3	8.60%	1	2.90%
	C. 20,001-30,000	10	28.60%	19	54.30%
	D. Above 30,001	22	62.90%	14	40.00%
Residential area	A. Rural	10	28.60%	11	31.40%
	B. Urban	25	71.40%	24	68.60%
Birth order of child	A. First born	17	48.60%	13	37.10%
	B. Second born	9	25.70%	16	45.70%
	C. Third born	5	14.30%	5	14.30%
	D. Fourth born	4	11.40%	1	2.90%

Section ii findings related to the clinical variables of the participants

Table 2 frequency and percentage distribution of clinical profile of samples

$(n_1=35)$ $(n_2=35)$

Clinical variables		Control group		Experimental group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Diagnosis	A. Disorders of gastrointestinal system	14	40.00%	13	37.10%
	B. Disorders of renal system	1	2.90%	3	8.60%
	C. Disorders of respiratory system	2	5.70%	2	5.70%

	D. Disorders of hematologic system	4	11.40%	4	11.40%
	E. Disorders of neurologic system	0	0.00%	2	5.70%
	F. Disorders of integumentary system	3	8.60%	3	8.60%
	G. Disorders of ent system	0	0.00%	1	2.90%
	H. Disorders of general	11	31.40%	7	20.00%
Presence of care giver	**A. Yes**	35	100.00%	35	100.00%
	B. No	0	0.00%	0	0.00%
How many days it has been to iv canulization	**A. Less than 2 days**	14	40.00%	18	51.40%
	B. 2 days	15	42.90%	16	45.70%
	C. More than 2 days	6	17.10%	1	2.90%
Size of iv cannula	**A. 22 guage**	15	42.90%	16	45.70%
	B. 24 guage	20	57.10%	19	54.30%
Type of iv medication	**A. Analgesics**	2	5.70%	4	11.40%
	B. Antacid	5	14.30%	12	34.30%
	C. Antiemetic	5	14.30%	6	17.10%
	D. Antipyretic	4	11.40%	1	2.90%
	E. Antibiotics	19	54.30%	12	34.30%

Section iii: findings related to the effectiveness of kaleidoscope as a diversional therapy on level of pain among children receiving intravenous injections at selected hospitals of surat district.
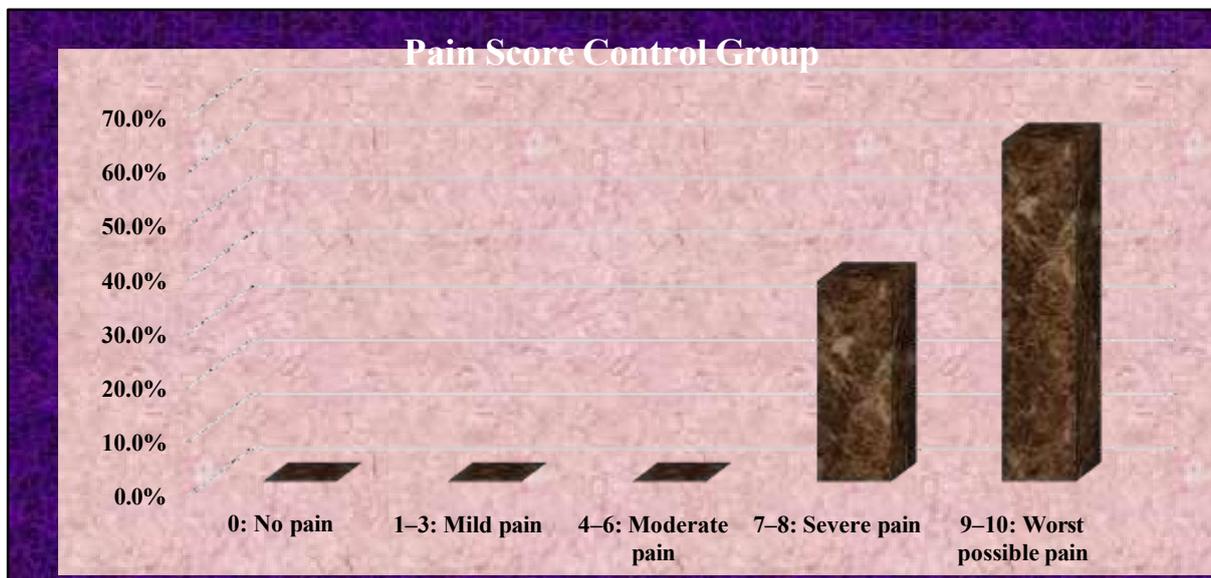
Frequency and percentage distribution of pain score among experimental group

(n$_2$=35)

Pain Score Experimental Group

Frequency and percentage distribution of pain score among control group

(n_1=35)

above graph displays the frequency and percentage distribution of pain scores among the control group participants. This indicates that a significant portion of the control group experienced high levels of pain during the procedure.

Table 3 comparison of pain score on kaleidoscope as a diversional therapy on level of pain among children receiving intravenous injections of experimental and control group by inferential statistics independent sample test

(n_1=35) (n_2=35)

Pain score	Mean score	Standard deviation	Degree of freedom	Calculated 't' value	Tabulated 't' value	P-value
Experimental group	3.43	1.092	68	21.974	1.995	0.00001*
Control group	8.69	0.900				

Above table shows the**.** This suggests that the kaleidoscope therapy was effective in reducing the levels of pain among children receiving intravenous injections.

Section iv findings related to the association of the demographic variables with the pain scores of participants.

Table 4 chi-square association of the demographic variables of experimental group with the pain scores of participants

(n_2=35)

Experimental group								
				Pain score				
Sr. No.	**Demographic variables**		**F**	**Mild pain**	**Moderate pain**	**Df**	**χ^2 value**	**P-value**
1	Age group (years)	A. 3 years	9	8	1	3	7.666	0.043*
		B. 4 years	13	7	6			
		C. 5 years	6	5	1			
		D. 6 years	7	2	5			
2	Gender	A. Male	17	15	2	1	9.119	0.003*
		B. Female	18	7	11			
3	Religion	A. Hindu	20	14	6	2	4.467	0.107
		B. Muslims	8	6	2			
		C. Christins	7	2	5			
		D. Other	0	0	0			
4	Type of family	A. Nuclear	29	17	12	1	1.3	0.254
		B. Joint	6	5	1			
		C. Others	0	0	0			
5	Family income	A. Rs.5000-10,000	1	1	0	3	1.378	0.711
		B. 10,001-20,000	1	1	0			
		C. 20,001-30,000	19	12	7			
		D. Above 30,001	14	8	6			
6	Residential area	A. Rural	11	9	2	1	2.47	0.116
		B. Urban	24	13	11			
7	Birth order of child	A. First born	13	6	7	3	3.012	0.39
		B. Second born	16	11	5			
		C. Third born	5	4	1			
		D. Fourth born	1	1	0			

Table presents certain demographic factors, particularly age and gender, are more influential in determining the pain levels of children receiving intravenous injections.

Table 5 chi-square association of the demographic variables of control group with the pain scores of participants

(n₁=35)

Control group								
Sr. No.	Demographic variables		F	Pain score		Df	χ² value	P-value
				Severe pain	Worst possible pain			
1	Age group (years)	A. 3 years	4	1	3	3	3.509	0.32
		B. 4 years	12	6	6			
		C. 5 years	8	1	7			
		D. 6 years	11	5	6			
2	Gender	A. Male	13	7	6	1	2.472	0.116
		B. Female	22	6	16			
3	Religion	A. Hindu	19	8	11	3	1.047	0.79
		B. Muslims	11	4	7			
		C. Christins	4	1	3			
		D. Other	1	0	1			
4	Type of family	A. Nuclear	22	10	12	1	1.753	0.186
		B. Joint	13	3	10			
		C. Others	0	0	0			
5	Family income	A. Rs.5000- 10,000	0	0	0	2	1.928	0.381
		B. 10,001-20,000	3	1	2			
		C. 20,001-30,000	10	2	8			
		D. Above 30,001	22	10	12			
6	Residential area	A. Rural	10	4	6	2	1.876	0.391
		B. Urban	25	9	16			
7	Birth order of child	A. First born	17	8	9	3	1.844	0.605
		B. Second born	9	2	7			
		C. Third born	5	2	3			
		D. Fourth born	4	1	3			

Table 4.7 presents the chi-square association between the demographic variables of the control group participants and their pain score.

Section v: findings related to the association of the clinical variables with the pain scores of participants.

Table 6 chi-square association of the clinical variables of experimental group with the pain scores of participants

(n₂=35)

Experimental group							
Sr. No.	Clinical variables	F	Pain score		Df	χ² value	P-value
			Mild pain	Moderate pain			

1	Diagnosis	A. Disorders of gastrointestinal system	14	10	4	5	5.727	0.334
		B. Disorders of renal system	1	1	0			
		C. Disorders of respiratory system	2	1	1			
		D. Disorders of hematologic system	4	1	3			
		E. Disorders of neurologic system	0	0	0			
		F. Disorders of integumentary system	3	3	0			
		G. Disorders of ent system	0	0	0			
		H. Disorders of general	11	6	5			
2	Presence of care giver	A. Yes	35	22	13	Na	Na	Na
		B. No	0	0	0			
3	How many days it has been to iv canulization	A. Less than 2 days	14	10	8	2	1.24	0.538
		B. 2 days	15	11	5			
		C. More than 2 days	6	1	0			
4	Size of iv cannula	A. 22 guage	15	10	6	1	0.968	0.002*
		B. 24 guage	20	12	7			
5	Type of iv medication	A. Analgesics	2	4	0	4	4.661	0.324
		B. Antacid	5	8	4			
		C. Antiemetic	5	3	3			
		D. Antipyretic	4	0	1			
		E. Antibiotics	19	7	5			

Above table shows the chi-square association between the clinical variables of the experimental group participants and their pain scores. The presence of a caregiver was not assessed statistically due to all participants having a caregiver. Overall, only the size of the iv cannula significantly influenced the pain experienced during iv injections.

Table 7 chi-square association of the clinical variables of control group with the pain scores of participants

$(n_1=35)$

Control group							
Sr. No.	Clinical variables	F	Pain score		Df	χ^2 value	P-value
			Severe pain	Worst possible pain			

1	Diagnosis	A. Disorders of gastrointestinal system	13	4	9	7	13.043	0.041*
		B. Disorders of renal system	3	0	3			
		C. Disorders of respiratory system	2	0	2			
		D. Disorders of hematologic system	4	2	2			
		E. Disorders of neurologic system	2	1	1			
		F. Disorders of integumentary system	3	0	3			
		G. Disorders of ent system	1	0	1			
		H. Disorders of general	7	6	1			
2	Presence of care giver	A. Yes	35	13	22	Na	Na	Na
		B. No	0	0	0			
3	How many days it has been to iv canulization	A. Less than 2 days	18	5	9	2	0.53	0.767
		B. 2 days	16	5	10			
		C. More than 2 days	1	3	3			
4	Size of iv cannula	A. 22 guage	16	5	10	1	0.163	0.737
		B. 24 guage	19	8	12			
5	Type of iv medication	A. Analgesics	4	1	1	4	9.188	0.047*
		B. Antacid	12	3	2			
		C. Antiemetic	6	4	1			
		D. Antipyretic	1	2	2			
		E. Antibiotics	12	3	16			

Table 7 presents the chi-square association between the clinical variables of the control group participants and their pain scores.

Recommendations

The following recommendations are made on the basis of the findings of the present study:

1. Integrate kaleidoscope diversional therapy into standard care for children receiving intravenous injections.

2. Develop competencies in diversional therapies for pediatric nurses.

3. Incorporate diversional therapies into nursing education curriculum.

4. Provide ongoing workshops and training programs for practicing nurses.

5. Develop hospital policies for diversional therapy implementation.

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