

Effectiveness of Distraction Technique for Pain Reduction after Administration of Intramuscular Injection among Children in Selected Hospitals of Punjab

Khushbu Saharan

Abstract

The pain associated with immunisation is a source of anxiety and distress for children receiving immunisation. Distraction is a good way to keep a child's mind off the pain like talking, watching television, playing with toys or listening music helps to divert their attention from pain. In this quasi-experimental research design study, conducted on 60 samples of children at immunisation room in selected hospitals of Punjab. The sample was selected by purposive sampling technique. Collected data was analysed by descriptive and inferential statistics. The data was obtained by Wong-Baker's faces pain scale, and analysed by applying descriptive and inferential statistics. The findings showed that the mean pain score among children after providing distraction technique was higher than the mean pain score after administration of intramuscular injection among children, and found to be significant with a calculated 't' value. There is association between mean pain score of children after providing distraction technique with selected variables like weight (in kg) and professional qualification of nurse. So, it is indicated that the distraction technique was effective to reduce the pain after administration of intramuscular injection among children at immunisation room.

Pain is an unpleasant feeling caused by intense or damaging stimuli, such as stubbing a toe, burning a finger and putting alcohol on a cut (Potter & Perry, 2007). Pain is a subjective experience and children respond to pain with behaviour that depends upon their age and cognitive process. The toddler is able to locate pain and react by withdrawing the affected part. Generally, this age group responds with intense emotion and physical restraints to actual or perceived painful experience, including clenched teeth, rocking, aggressive behaviour, and crying. Every child has his or her own perception of pain (Marlow et al, 2007).

Several studies have discussed the efficiency of non-pharmacological methods of pain relief in hospitalised paediatric patients. Distraction is a good way to keep a child's mind off the pain. Talking, watching television, listening music or playing with toys helps to divert their attention from the pain (Brunner & Sunddardh, 2009).

Prbhakar et al (2007) conducted a study to evaluate and compare the two distraction techniques in management of anxious paediatric dental patients among 60 children aged between 4-8 years in Government Dental College, Rohtak. Child's anxiety level

in each visit was assessed using a combination of four measures: Venham's picture test, Venham's rating of clinical anxiety, pulse rate, and oxygen saturation. It was concluded that audiovisual distraction technique was more effective in managing anxious paediatric dental patient as compared to audio distraction technique.

In a quasi-experimental study conducted in immunisation clinic in 2007, to compare two distraction techniques in altering behavioural response to pain among children receiving immunisation at Mangalore, 60 children selected by purposive sampling were randomly assigned to Group 1 (who were given a sound producing toy), Group 2 (who were given music) and Group 3 (no distraction). Data were collected by using behavioural observation scale. The finding of the study supports the effectiveness of toy as a distraction compared to music (Sharma, 2007).

So as a nurse, the investigator felt the need for utilising these distractions after administration of intramuscular injection during immunisation to divert the child's attention from pain. Nurse must meet the challenges in relieving pain by distracting the children. The parents of children were lacking knowledge related to types of distraction techniques, its effect on pain,

The author is Assistant Professor, SGT University, Gurgaon (Haryana).

which type is most effective for reducing pain etc.

Objectives

The study sought:

1. To provide distraction technique after administration of intramuscular injection among children in experimental group,
2. To assess the pain level after administration of intramuscular injection among children (a) in control group and (b) after providing distraction technique in experimental group, and
3. To find out the association of pain intensity with selected socio-demographic variables.

Operational definitions

Effectiveness: Refers to the extent to which the distraction technique reduced the pain after administration of intramuscular injection.

Distraction technique: Refers to moving electronic toy used to divert children's attention.

Pain: An unpleasant sensation caused by the administration of intramuscular injection during immunisation.

Children: Those between 18-24 months of age receiving intramuscular injection.

Intramuscular injection: Refers to DPT booster injection.

Hypothesis

H_1 : There was significant difference in mean pain score among children in experimental group and control group.

H_0 : There was no significant difference in mean pain score among children in experimental group and control group.

Materials and Methods

Research design: A quasi-experimental design (non-equivalent post-test control group design) was used to assess the effectiveness of distraction technique for pain reduction after administration of intramuscular injection among children at immunisation room.

The study was undertaken in immunisation room in selected hospitals of Punjab namely civil hospital, Jalandhar and Civil Hospital, Kapurthala. The population for the study was children brought to the immunisation room for vaccination in Civil Hospitals at Jalandhar and Kapurthala.

Target population: The population for study was children (28-24 months) brought to the immunisation

room for vaccination of DPT Booster of Civil Hospital, Jalandhar and Civil Hospital, Kapurthala, Punjab.

Sample and sampling technique: The sample size comprised of 60 children receiving intramuscular injection during immunisation. Purposive sampling technique was employed to select the sample.

Description of tool: Tool comprised two sections. Section A: Socio-demographic data sheet with 5 items for obtaining information about selected background factors such as age, weight, professional qualification of nurses, professional experiences of nurses, continuing education related to immunisation programme.

Section B: Standardised Wong-Baker's faces rating scale to measure the intensity of pain in children, who were receiving intramuscular injection (Fig 1).



Fig 1: Wong-Baker's faces rating scale for measuring pain

Plan for data analysis: Data analysis and interpretation of data was done by using descriptive and inferential statistics. Descriptive statistics used were frequency, percentage, mean, SD inferential statistics were calculated by 't' test. Bar diagrams were used to depict the findings. The level of significance chosen was $p < 0.05$ and $p < 0.001$.

Results & Discussion

In experimental group maximum (80%) children were in age group 18-20 months, in control group maximum (76.67%) in age group 18-20 months of age. In experimental group equal number of male and female (50% each) received DPT booster injection. In control group maximum (53.33%) children were male.

The maximum number of children were between 7-9 kg (66.67%). In control group 60 percent children had weight between 7-9 kg. In experimental group and control group 70 percent were professional ANM nurses. In experimental group and in control group maximum nurses (53.33%) had experience 21-30 years. In experimental group and in control group maximum (53.33%) nurses attended continuing education related to immunisation programme 6-11 times.

In control group pain score before distraction technique, 63.34 percent of children hurts was 'worse',

Table 1: Frequency and percentage distribution of children according to socio-demographic variables in control and experimental groups

S.No.	Socio-demographic variables	Control group (N=30)		Experimental Group (n=30)	
		n	%	n	%
1	Age (in months)				
	18-20	23	76.67	24	80
	21-23	7	23.33	6	20
2	Gender				
	Male	14	46.67	15	50
	Female	16	53.33	15	50
3	Weight (kg)				
	7-9	18	60	20	66.67
	10-12	12	40	10	33.33
4	Professional qualification of nurses				
	ANM	21	70	21	70
	GNM	9	30	9	30
5	Professional experience of nurses (years)				
	1-10	14	46.67	14	46.67
	11-20	0	0	0	0
	21-30	16	53.33	16	53.33
6	Continuing education related to immunisation programme				
	1-5	14	46.67	14	46.67
	6-11	16	53.33	16	53.33

33.33 percent of children felt 'hurts a whole lot', 3.33 percent felt 'hurts even more' and no one, 'no hurts', 'hurts a little bit' and 'hurts a little more'.

In experimental group pain score after distraction technique, half (50%) of children felt 'hurts a little more', 30 percent felt 'hurts even more', 13.33 percent of children felt 'hurts a little bit', 6.67 percent felt 'hurts a whole lot' and no one felt 'hurts worse' and 'no hurts'.

Weight depicted the mean pain score after distraction technique among children for 7-9 kg of weight it was 2.5 ± 0.82 and for 10-12 kg of weight it was 1.9 ± 0.56 . In experimental group it was statistically significant. Professional qualification of nurses revealed that the mean pain score after distraction technique

among children with professional ANM nurse was 2.52 ± 0.74 and professional GNM nurses was 1.77 ± 0.66 ; in experimental group it was statistically significant. Table 1 depicts the frequency and percentage distribution of children according to their socio demographic variables.

Table 2 and Fig 1 reveal that most of children (63.34%) in control group 'hurt worse', 33.33 percent of children 'hurts a whole lot', 3.33 percent of children 'hurts even more'. In experimental group, 13.33 percent of children 'hurts a little bit', 50 percent of children 'hurts a little more'. 30 percent of children 'hurts even more', 6.67 percent of children 'hurts a whole lot'. In post-pain score there was no child who felt 'no hurt'.

Table 4 describes the association of pain intensity in children in control group with selected sociodemographic variables.

A significant relationship was found between pain score after distraction technique with socio-demographic variables (weight and professional qualification of nurse) in experimental group. The present study shows that the effects of distraction technique i.e. electronic moving toy for three minutes after administration of intramuscular injection among children in experimental group. The pain level after administration of intramuscular injection among children in control group was: 3.33 percent of children 'hurts even more', 33.33 percent 'hurts a whole lot', 63.34 percent 'hurt worse'. The pain score after providing distraction technique in experimental group maximum 50 percent of children 'hurts a little more', minimum 13.33 percent children 'hurts a little bit' and 30 percent of children 'hurts even more', 6.67 percent of children 'hurts a whole lot'. Where was no children having 'no hurt' or 'hurt worse' in experimental group.

Table 2: Frequency and percentage distribution of pain level after administration of intramuscular injection among children in control group (n=60)

Level group of pain	Score	Control group (N=30) Pain score after administration of injection		Experimental Group (n=30) Pain score after distraction technique	
		n	%	n	%
No hurt	0	0	0	0	0
Hurts a little bit	1	0	0	4	13.33
Hurts a little more	2	0	0	15	50
Hurts even more	3	1	3.33	9	30
Hurts a whole lot	4	10	33.33	2	6.67
Hurt worse	5	19	63.34	0	0

Maximum -5, Minimum - 0

In the experimental group the level of pain reduced remarkably after the distraction technique. Pain level after administration of intramuscular injection among children in control group maximum 63.34 percent children 'hurt worse', minimum 3.33 percent children 'hurts a whole lot' and rest of 3.33 percent children 'hurts even more'. In experimental group maximum (50%) of children 'hurts a little more', minimum (13.33%) children 'hurts a little bit' and (30%) of children 'hurts even more', (6.67%) of children 'hurts a whole lot'. There were

Table 3: Association of pain intensity in children in control group with selected socio-demographic variables (n=30)

S.No.	Socio-demographic variables	Pain level after intramuscular injection in control group				
		n	Mean	SD	t	df
1	Age (in months)					
	18-20 21-23	23 7	4.61 4.57	0.58 0.53	0.1507 NS	28
2	Gender					
	Male Female	14 16	4.5 4.68	0.65 0.47	0.9069 NS	28
3	Weight (kg)					
	7-9 10-12	18 12	4.61 4.58	0.61 0.51	0.1301 NS	28
4	Professional qualification of nurses					
	ANM GNM	21 9	4.47 4.89	0.60 0.33	1.9227 NS	28
5	Professional experience of nurses (years)					
	1-10 11-20 21-30	14 0 16	4.78 0 4.43	0.42 0 0.63	1.7482 NS	28
6	Continuing education related to immunisation programme					
	1-5 6-11	14 16	4.78 4.43	0.42 0.63	1.7482 NS	28

NS – Not significant

Table 4: Association of pain intensity in children in control group with selected socio-demographic variables in experimental group (n=30)

S.No.	Socio-demographic variables	Pain level after intramuscular injection in control group				
		n	Mean	SD	t	df
1	Age (in months)					
	18-20 21-23	24 6	2.73 2	0.82 0.63	1.0355 NS	28
2	Gender					
	Male Female	15 15	2.2 2.4	0.56 0.98	0.6831 NS	28
3	Weight (kg)					
	7-9 10-12	20 10	2.5 1.9	0.82 0.56	2.0558**	28
4	Professional qualification of nurses					
	ANM GNM	21 9	2.52 1.77	0.74 0.66	2.576**	28
5	Professional experience of nurses (years)					
	1-10 11-20 21-30	14 0 16	2.07 0 2.5	0.73 0 0.81	1.0561 NS	28
6	Continuing education related to immunisation programme					
	1-5 6-11	14 16	2.07 2.5	0.73 0.81	1.5061 NS	28

** Significant ($p < 0.05$), NS – Not significant

no children having 'no hurt' or 'hurt worse' in experimental group. In experimental group pain score after distraction technique was reduced 60 percent of children were 7-9 kg of weight and 40 percent were 10-12 kg of weight (Table 3&4, Fig 2&3). Weight had impact on pain intensity and 't' value was more than tabulated value so that mean pain score was significant in pain score after distraction technique in experimental group. Professional qualification of nurses had impact on pain intensity and 't' value more than tabulated value so that the mean pain score was significant in pain score before distraction technique and pain score after distraction technique.

The experimental group showed a dramatic change in the level of pain score indicating that distraction technique (electronic moving toy) is effective to reduce the level of pain in children who receive intramuscular injection.

Limitation: Purposive sampling technique was chosen to collect the data restricts the generalisations of the study and did not provide the representative sample from the population of the study.

Recommendations & Implications

Similar study can be replicated on a large sample to generalise the findings. A comparative study can be conducted between the two different distraction techniques. The findings of the study have implications on nursing service, nursing education, nursing administration and nursing research.

Nursing Practice: The nurses working in the paediatric ward in hospital setting should have adequate knowledge regarding pain management in children with distraction. This acquired knowledge will be greatly helpful to reduce the pain level in children who have undergone any invasive procedures.

Nursing Education: In nursing insti-

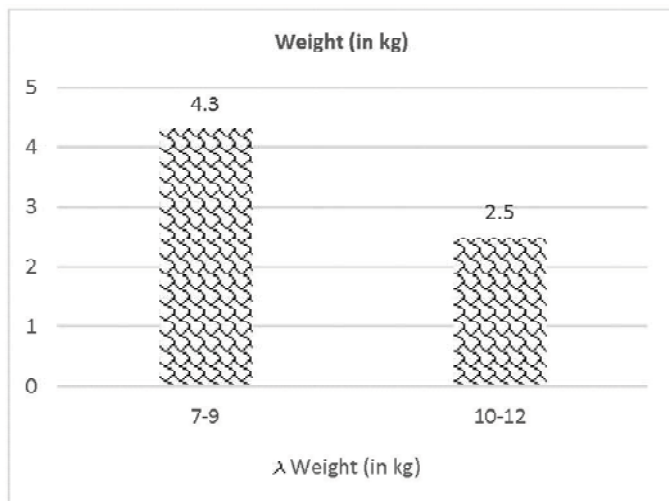


Fig 2: Association of pain intensity in children in experimental group according to weight (in kg)



Fig 3: Association of pain intensity in children in experimental group according to professional qualification of nurses

tutions, paediatric nursing students should be adequately prepared to provide distraction to the children for reducing the pain. The study emphasises the significance of short term in-service education for nurses in advance knowledge on pain management among children during immunisation and other painful procedures.

Nursing Administration: The nursing administrator should take part in health policy making, developing protocol standing orders related to care of clients in paediatric unit regarding their proper pain management. In the hospitals and corporation health post setups she can provide in-service education for the nurses working in the paediatric ward and improve their skills and knowledge.

Nursing Research: Children unable to verbalise the location of pain suffer from routine immunisation pain, IV cannulation pain and pain related to other invasive procedure. So nurse researchers can investigate the existing pain management with distraction technique (electronic moving toy), which is very effective for reducing the pain among children after immunisation.

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