



Compare the effectiveness of selected interventions on pain perception and parental satisfaction among infants receiving multiple immunizations at Public Health Centre, Chennai.

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ABSTRACT

An experimental study was conducted at Public Health Centre, Chennai to compare the effectiveness of selected interventions on pain perception and parental satisfaction among Infants receiving immunizations. The total of 60 infants where as 30 in experimental group I and 30 in experimental group II were selected by simple random sampling method. Post test only design was adopted. Experimental group I received oral sucrose and experimental group II received 5 S's technique. The data collection tool used were, modified riley pain scale, parental satisfaction likert scale. The result found that experimental group II mean pain score (3.01) was statistically less than the experimental group I mean pain score (3.94). The study concluded that 5 S's technique was an effective intervention for the infants receiving immunization.

KEYWORDS : Immunization, pain perception, parental satisfaction, 5 S'S technique, oral sucrose

Introduction

The development and administration of Immunizations are the greatest public health achievements of 20th century and their positive impact on disease prevention and alleviating human suffering is almost incalculable. Hundreds of millions of cases of illness and millions of deaths have been prevented by these agents. As per the current centers for disease control and prevention schedule recommends immunization against 14 diseases, which translates into 14 to 20 separate injections before the age of 2 years, depending on the number of combination vaccines available. Therefore, immunizations are the most frequently occurring and inevitable painful procedures performed in pediatric settings.

According to the International Association for the study of pain, "Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage". Perception of pain in pediatrics is complex and entails physiological, psychological, behavioural and developmental factors. However, in spite of its frequency, pain in infants, children and adolescent is often underestimated and under treated. It has also been shown that infants and children, who experience pain in early life, show long term changes in terms of pain perception and related behaviours. Health care professionals in this setting have a responsibility to reduce pain as much as possible.

During immunization to ensure adequate pain relief, or to make pain more tolerable and to give the children a sense of control over the situation, which indirectly reduces the greater anxiety and distress.

In a 2013 study published in Official Journal of American Academy of pediatrics, lead author Dr. John Harrington of Children's Hospital of the King's daughter and Easter Virginia Medical school, found that use of Karp's 5 S's technique was as effective as the commonly used analgesic source. The results of the study of 230 children over a six month period revealed that 5 S's physical intervention was the most effective both in reduction of pain level. To incorporate this physical intervention during immunization, further study on 5 S's technique to be replicated in order to validate the findings.

So, the purpose of this study is to compare the impact of the selected interventions on pain perception and parental satisfaction among infants receiving immunization.

Materials and methods

Quantitative research – True experimental post test only design was used for the study. Formal written permission was obtained from the Principal, GRT College of Nursing and Managing Director and Head of the department of Paediatrics, Public Health Centre, West Mambalam, Chennai. The pilot study was conducted between

August 2015 and September 2015 among 60 Infants (30 Infants in experimental group I and 30 Infants in experimental group II) were selected by using simple random sampling-lottery method. Inclusion criteria included infants aged between 1 and 4 months, who are accompanied by mother, immunized with pentavac and pneumococcal vaccine. Exclusion criteria consisted of infants having neurological disorder, congenital anomaly, fever, anaphylactic reaction to previous vaccine and prior participation in trial. Prior to data collection, proper explanation was given and informed consent was obtained. Demographic data was collected with questionnaire using interview method. 30 Infants in experimental group I received 2ml of oral sucrose 2 minutes before immunization and comforted by mother after immunization and experimental group II received 2ml of plain water (placebo) 2 minutes before immunization and 5 S's technique after immunization. 24% Oral sucrose solution was prepared by mixing one teaspoon sugar with roll boiled and cooled 10ml of water and using 2ml of sterile syringe, draw 2ml of sucrose solution, placed a tip of syringe into the infant's mouth on anterior portion of tongue and dispense solution slowly, allow the infant to savour the sweetness which was given 2 minutes before immunization for experimental group I where as plain water given in same way for experimental group II. 5 S's technique comprises of swaddling, side lying, swinging and sucking consists of before immunization, the infant was half swaddled i.e. exposing the thigh and after immunization fully swaddled, side lying given, swung, shushed and sucked the pacifier (infants not used to pacifier, avoid sucking) altogether in 30-45 seconds by trained staff nurse for experimental group II where as comfort by mother for experimental group I. All infants assessed for pain perception using modified riley pain scale after immunization at every 15 seconds interval for 2 minutes, then every 30 seconds upto 5 minutes. Then parental satisfaction assessed by using parental satisfaction likert scale contains ten statement with option carries scoring of Very Satisfied - 5, Satisfied - 4, Unsure/Neutral - 3, Dissatisfied - 2 and Very dissatisfied - 1.

Results

Demographic data showed that the majority of the infant in the age of 1 ½ months, birth weight is ≥ 2.5 kg, follows Hindu religion and belongs urban area.

Table 1: Mean and standard deviation of pain perception in both groups

n = 60 (30 + 30)

S.No	Group	Mean	Standard deviation	't' value
1.	Experimental Group I	3.94	0.52	7.62*
2.	Experimental Group II	3.01	0.42	

*- significant at $p \leq 0.05$, **-high significant at $p \leq 0.01$, ***-very high

significant at
 $p \leq 0.001$ & NS – Non Significant

In above table indicates that experimental group I mean is 3.94 and standard deviation is 0.52 and experimental group II mean is 3.01 and standard deviation is 0.42. By applying student unpaired' test, the 't' value is 7.62 and it is statistically significant at the level 0.05. This indicates that there is significant difference between experimental group I and experimental group II in pain perception.

Table 2: Mean and standard deviation of Parental satisfaction in both groups n=60 (30+30)

S.No	Parental satisfaction	Mean	Standard deviation	't' value
1.	Experimental Group I	36.27	4.24	5.52*
	Experimental Group II	42.30	4.22	

*- significant at $p \leq 0.05$, **-high significant at $p \leq 0.01$, ***-very high significant at $p \leq 0.001$ & NS – Non Significant

In the table 2, among parental satisfaction, experimental group I has mean is 36.27 and standard deviation is 4.24 are compared with experimental group II has mean is 42.30 and standard deviation is 4.22. By applying student unpaired' test, the 't' value is 5.52 and it is statistically significant at the level 0.05. This indicates that there is significant difference between experimental group I and experimental group II in parental satisfaction.

Table 3: Correlation of pain perception and parental satisfaction in both groups n = 60 (30 + 30)

S.No	Group	Mean value of pain perception	Mean value of parental satisfaction	'r' value
1.	Experimental Group I	3.94	36.27	- 0.20
2.	Experimental Group II	3.01	42.30	- 0.11

Table 3 indicates that Pearson correlation coefficient "r" value for experimental group I is -0.20 and experimental group II is -0.11 represents that both group 'r' value is negative which indicates pain perception and parental satisfaction are negatively correlated.

Chi square test was used to find out the associate between pain perception with demographic variable based on Infant such as age, gender, birth weight, religion, method delivery, gestational age, early painful experience, any medical condition, last feeding and last nap and based on family such as paternal age, paternal education, paternal occupation, total family income, family arrangement, type of family, parity and residence. It revealed that there was no significant association between pain perception and demographic variables statistically.

Association between parental satisfaction and demographic variables also revealed that there was no statistically significant association.

Discussion

The present study was carried out to compare the effectiveness of selected intervention on pain perception and parental satisfaction among infants receiving immunization revealed that 5 S'S technique is an effective intervention for the infants undergoing immunization. The findings of this study was supported by John W Harrington (2012) who conducted study on Effective analgesia using physical interventions for infant immunizations found that 5 S'S technique was effective in reducing pain ($P < .001$).

Conclusion

The justification of the study was based on that by providing effective intervention during immunization to the infants their pain perception, memory of pain and long term adverse effect such as

fear of needles, anxiety and hypersensitivity will be diminished and also significantly reduce the distress of their parents. Thus concluded that the 5 S's technique is simple, effective, safe and cost effective physical intervention for the infant receiving immunization and also enhance the parental satisfaction.

Ethical considerations

The pilot and main study was conducted after getting ethical clearance from the Institutional ethical committee, public Health Centre, West Mambalam. Formal written permission was obtained from the Principal, GRT College of Nursing and Managing Director and HOD of Paediatric department, Public Health Centre, West Mambalam, Chennai. Informed consent was obtained for participation after giving explanation about the study with ensuring confidentiality. The ethical principles were considered and maintained throughout the study.

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