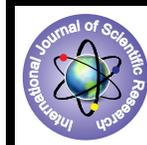


Cartoon Distraction Reduces Venipuncture Pain Among Preschoolers – a Quasi Experimental Study



Medical Science

KEYWORDS : Effectiveness, Cartoon Distraction, Pain, Invasive Procedure, Preschooler

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ABSTRACT

A quasi-experimental study was conducted on children of 3 to 6 years of age who were undergoing venipuncture in selected hospitals of Mangalore. The study comprised of 60 preschoolers selected by convenience sampling method - 30 in experimental and 30 in control group. Animated cartoon was shown along with routine care for the experimental group and routine care was given to control group. Then the post venipuncture pain was assessed. The tool included was baseline proforma, Wong – Baker Faces pain scale. The results revealed that there is significantly ($p < 0.05$) less pain felt by the children who viewed cartoon during venipuncture than those children who did not receive it. The findings also revealed that there was no significant association between the level of pain and demographic variables. It was concluded that cartoon distraction is an effective distraction method for the children undergoing venipuncture.

INTRODUCTION

Children are the future of our society and special gifts in the world (Kyle, 2009). Biologically a child is anyone between birth and puberty or in the developmental stage of childhood, between infancy and adulthood (Child, 2011). Their overall health has improved and rates of death and illness in some areas have decreased, but we still must focus on children's health globally (Kyle, 2009).

Many children endure an array of painful medical treatments starting at birth and continuing through adolescence (Piira, 2006). All children undergo a number of immunizations and many children need to have a wound re-scheduled after a trauma. Children with chronic or serious illnesses are also exposed to a number of investigations and treatments due to complications and their diagnoses. The children's visits to the hospital are often associated with examinations and treatments, i.e., medical and surgical procedures (Nilsson, 2000). How a child reacts to hospitalization depends on child's age, preparation, previous illness related experience, support from family and health professionals and the child's emotional status (Price & Gwin, 2009). Acute painful medical procedures frequently endanger anxiety reaction in children and sensitize them to future medical intervention (Kuttner, 1999).

The preschooler period is the period between 3 and 6 years of age, a time that considered critical for emotional and psychological development. Today's preschooler have a better opportunity for good health than ever before because of advancement in immunizations, antibiotics and early detection methods (Laura, 2005).

In a typical year, a preschool child will see their general practitioner about 6 times. Children exhibit and report high level of distress during painful medical procedures, which have been associated with increased sensitivity to later medical insults. Recognizing the importance of interventions in this area, researchers have developed several effective non-pharmacological treatment protocols for reducing procedure related discomfort. Most of these are cognitive behavioral in nature and the majority includes distraction (Moyses, 2009).

Venipuncture is one of the commonly experienced procedures by children and 50% of children experience significant level of distress during venipuncture. Venipuncture differs from other needle insertion procedure like immunization as venipuncture is longer, involves other medical equipment such as tourniquets to find an appropriate vein and drawing of blood thereby making it more anxiety provoking in children (James, 2012).

The Convention on the Rights of the Child recognizes 'the right of the child to the enjoyment of the highest attainable standard of health and to facilities for the treatment of illness'. Procedural

and post-operative pain management is important strategies to reach this goal (James & Ashwill, 2009).

Analgesic and sedative drugs often reduce procedural and post-operative pain in children. Children undergoing medical or surgical procedures often find emotion-focused coping strategies helpful. Interventions including hypnosis, distraction, imagery may be effective alone or as adjuncts to pharmacological interventions (Landier & Tse, 2009).

Distraction has considered being an attention diversion. A variety of distracters have been used in the context of children's pain management. Play therapists or nurses implement some techniques (Hayes & Piira, 2002). Depending on the age group of the children subjects undergoing intervention, the effectiveness of the distraction technique may vary. For example interaction distraction intervention may be appropriate for older children and passive distractions such as cartoon movies may be appropriate for children of all ages (Lim, 2006).

A Meta-analysis indicated that a distraction for pediatric pain management was equally effective across gender and ethnic group but was more effective for children < 7 yr old. Mac Laren and Cohen showed that movies are to be superior to an interactive toy (Lucia & Petra 2011). There is abundance of literature supporting the efficacy of distraction, researchers have used procedural talk, cartoon movies, and interactive toys. These strategies differ on several dimensions one of which is the amount of interaction required by the child (Mac & Cohen, 2005).

There are numerous pain reduction methods for children undergoing venipuncture, these are not widely used due to the increased time it takes for implementation or their cost and availability in medical offices/hospitals. It is because of these costs and risks that an animated cartoon as a distraction strategy intervention during needle procedures is proposed as a simple alternative to the current methods used. Physicians and nurses dealing with the health of children are responsible for the alleviation of their pain (Merskey, 1999). Hence the investigator likes to use cartoon as distraction for the preschoolers while undergoing invasive procedure. In this preview the researcher planned the present study.

OBJECTIVES

- To assess the level of pain among preschoolers with cartoon distraction in the experimental group.
- To assess the level of pain among preschoolers without cartoon distraction in the control group.
- To assess the effectiveness of cartoon distraction on level of pain.
- To find the association between level of pain and selected demographic variables in experimental and control group.

MATERIALS AND METHODS

A quasi-experimental post-test only design was used in the study .the study conducted at Vihsal children hospital and Sahara hospital, Mangalore. After getting the approval of institution ethics committee and the informed written consent,the data was collected.

Sixty children undergoing venipuncture were selected according to inclusion and exclusion criteria using convenience-samplingtechnique. Children of 3- 6years attending the hospital were included in the study. Children who were disabled, who had chronic illness and attempted more than two pricks were excluded from the study. The tool used were baseline proforma consisting of age,gender, type of family,caregiver present during the procedure, reaction to previous venipuncture and experience with distraction methods. Another tool used to assess the pain was Wong – Baker Faces pain scale, a standardized scale, which includes six faces with scores from 0 to 10. According to the face shown by the children, they were categorized as 0 – No pain, 2 – Mild pain , 4 and 6 – Moderate pain and 8 and 10 as Severe pain . The tools for the study were chosen and prepared after reviewing various studies and validated by experts in pediatric nursing,pediatrics.

After collecting the baseline information, the child is taken to procedure room and animated cartoon – panchathantra story was shown to the children in the experimental group for 15 minutes, starting 5 minutes prior to the procedure and it runs throughout the venipuncture procedure. After the venipuncture pain scores were obtained from the children. The data was analyzed according to the objectives and hypothesis of the study using both descriptive and inferential statistics. The various statistical methods used were frequency distribution, measures of central tendency , measures of dispersion , unpaired t test ,chi square to find the statistical significance .

Results

It was observed that in experimental group the maximum percentage (40%) of the preschoolers were in the age group of 5 to 6 yrs, 33.3% were of 4 to 5 years, 26.7% were of 3 to 4 years. In control group 40% were of 5 to 6yrs, 36.7% were of 4 to 5 yrs and 23.3 % were of 3 to 4 years. The gender status of the preschoolers included in the study revealed that in experimental group majority (56.7%) of the preschoolers were female and 43.3 % of them were male, whereas in control group 46.7% of the preschoolers were female and 53.3% were male. With regard to the type of family, the present study identified that in experimental group 73.3% of the preschoolers were from nuclear family, 26.7% were from joint family. But in control group 76.6% of the preschoolers were from nuclear family, 23.4% were from joint family.

The sample characteristics about area of residence revealed that in experimental group majority (83.4%) of the preschoolers were from urban area and 16.6% were from rural area. In control group majority (76.6%) of the preschoolers were from urban area and 23.4% were from rural area. Regarding the previous experience of invasive procedure, it was noted that in experimental group majority (76.7 %) of the preschoolers were rebellious and highly resistant and 23.3% experienced minimal resistance during previous invasive procedures whereas in control group 73.4% were rebellious and highly resistant and 26.6% experienced minimal resistance during previous invasive procedures. The analysis on the relationship of the child with the caregiver who was present during the procedure found out that in experimental group majority (56.6%) of the preschoolers were accompanied by their mothers, 33.4% with their fathers, 10% were with grandparents whereas in control group majority (46.6%) of the preschoolers were accompanied by their mothers, 33.4% with their fathers, 20% with their grandparents.

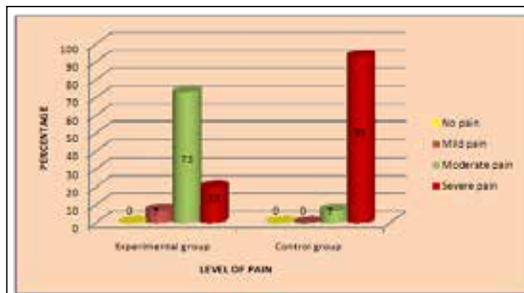


Fig 1: Bar diagram showing distribution of samples on the basis of level of pain

Figure 1showed that it was observed in experimental group after cartoon distraction, 73% of preschoolers reported moderate pain, 20% reported severe pain, 7% reported mild pain and none of the preschoolers were in the category of 'no pain'. In the control group 93% of preschoolers had severe pain, 7% had moderate pain and none of them had mild and no pain.

N= 60

Group	Mean	Standard Deviation	Mean Difference	Unpaired 't' test
Experimental Group	5.9	1.99	2.8	7.3*
Controlgroup	8.7	1.25		

66 p < 0.05 , * Significant

Table 1 : effectiveness of cartoon distraction on pain.

The mean post test pain score(table-1) of children in experimental group (5.9± 1.99) was less than the control group (8.7±1.25). The calculated 't' value (7.3) was greater than the table value (t=1.66) at p< 0.05 level, which indicates that the cartoon distraction was effective in preschoolers .

Chi-square test was computed to find association between the level of pain and selected demographic variables. It has been found that there was no association between the level of pain and selected demographic variables in both groups.

DISCUSSION

Children's memories of painful experiences can shape their future reaction to painful events. In younger children memory can often be distorted and contribute to negative perceptions of medical care. Distraction has been shown to minimize fear, anxiety and pain associated with acute painful medical procedures in children(price &Gwin 2005).

Level of pain:

It was observed that in experimental group 73% of preschoolers reported moderate pain, 20% reported severe pain, 7% reported mild pain and there were no preschoolers in the category of 'no pain'. In the control group 93% of preschoolers had severe pain, 7% had moderate pain and none of them had mild and no pain.

A study was done including 203 patients aged between 2 and 15 years. During venipuncture a video was shown to the patient. Pain and parent collaboration were measured using validated scales. Significant differences were observed between the mean score of pain in patients undergoing venipuncture with audio-visual distracting technique (2.53 +/- 1.76) and the mean score

obtained in those undergoing venipuncture without this technique (5.22 +/- 2.53). In the group with audio-video distractors, the mean level of cooperation 0.38 (SD = 0.63) compared to 0.20 (SD = 0.54) in the control group. In relation to the presence of parents, no significant differences were found in the mean pain scores ($P = 0.5 > 0.05$), whereas the mean scores of cooperation were significantly different ($P = 0.0076 < 0.05$) (Bangazo & Rosa, 2012)

Hence in the present study, result shows that there is significant difference in the level of pain between experimental and control group at $p < 0.05$ level. Hence the hypothesis was accepted.

Effectiveness of cartoon distraction on pain during invasive procedure:

The present study showed that the mean post test score of the experimental group 5.9 is lesser than the mean post test score 8.7 of the control group. The independent 't' value computed between the pain score of preschoolers in experimental and control group was statistically significant at 0.05 level of significance. The calculated 't' value ($t=7.3$) was greater than the table value ($t=1.66$). This indicates that the cartoon distraction was effective on pain during venipuncture in preschoolers.

This study was supported by a study conducted at West Virginia University, eighty-eight, 1-7 year old children receiving venipuncture were randomly assigned to one of three treatment conditions- interactive toy distraction, passive movie distraction or standard care. Distress assessed via observation coding. An ANOVA examining child engagement in distraction indicated that there were significant differences between groups, $F(2,79)=41.62$, $p < 0.001$. Children in the passive distraction were more distracted than in the interactive condition (Kuttner 1999).

Association between the level of pain and selected demographic variables:

Chi square test was used to calculate the association between pain score and selected demographic variables. The study findings showed that there was no significant association between level of pain and selected demographic variables of experimental and control group at $p > 0.05$ level of significance.

The study conducted at PGIMER also revealed that there is no influence of gender on perception of pain. Children who had minimal and high rebellious resistance during previous venipuncture had an increased perception of pain during the current venipuncture and the presence of caregiver had no role on the same (Moyses 2005).

A study was conducted to determine whether presence of parents could change tolerance of pain and distress in children. A hundred and thirty five children between 3- 6yrs were included in the study. The result showed that during the procedure 53 members of group 1 and 58 members group 2 obtained Wong Baker scores higher than 3, but this difference was not statistically significant. The study showed that parental presence had a minimal positive effect on pain tolerance Ozentin et al (2011).

CONCLUSION

The pain and distress associated with venous access procedures may have far reaching effects that consists anxiety response, elevated pain perception, diminished analgesic effectiveness with subsequent procedures and an avoidance of medical care because of blood- injection- injury phobia (Deborah & Jennifer, 2009). Efforts to control and treat pain in children have been hindered by lack of knowledge and educations regarding pain in children. Children have different needs for alleviation of pain during different phases of their development (James, 2012).

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