

Cough trick technique on vaccination prick pain among preschool children

ABSTRACT

Aims: To determine the effectiveness of Cough trick technique on vaccination prick pain among preschool children.

Study design: Quantitative approach with true experimental research design.

Place and Duration of Study: Pranav baby clinic, Chennai, from May 2021 to June 2021.

Methodology: True experimental post-test only research design was adopted to conduct the study with 40 samples. Samples were randomly allocated into experimental group (n=20) and control group (n=20). Demographic variables were collected from mothers of preschoolers using structured questionnaire. Cough trick technique was administered to the experimental group during vaccination intramuscularly whereas the control group received the regular techniques of the intramuscular vaccination. The post-test level of pain was assessed by FLACC scale for both the group. The data were tabulated and analyzed by descriptive and inferential statistics using SPSS statistical package.

Results: The result of the study shows that in the experimental group, 14(70%) had mild pain and 6(20%) had no vaccination prick pain whereas in the control group, 14(70%) had severe pain and 6(20%) had moderate vaccination prick pain. Independent 't' test reveals that there is a significant difference between experimental group and control groups after giving at the level of $P < 0.05$.

Conclusion: The finding of the present study concludes that cough trick technique is the effective and easy method to minimize and reduce the pain during vaccination intramuscularly. It is a simple distraction technique can be effective in helping children cope with the pain of immunization.

Keywords: Cough trick technique, Intramuscular, Pain, Preschooler, Vaccination,

INTRODUCTION

Pain is a global health problem which exists from the birth to the last stage of the life. Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage [1]. Pediatric pain was been recognized as a major challenges for health care personnel while caring the pediatric clients. Injections for vaccinations, the most common source of iatrogenic pain in childhood [2]. In hospital settings, children experience pain because of different causes. Medical procedures, particularly needle insertions, are among the most feared experiences reported by children. Injections are the most frequently used medical procedure in health care setting globally. The pain associated with injections is a source of distress for children, their parents and those administering the injections. If not considered, it can lead to pre-procedural anxiety in the future, needle fears and health care avoidance behaviors, including non-adherence with vaccination schedules [3]. It is estimated that up to 25% of adults have a fear of needles [4], with most fears

developing in childhood [5]. About 10% of the population avoids vaccination and other needle procedures because of needle fears [3]. In India 77.2% of rural and 80 % of urban children are immunized with vaccines annually. However, the children vaccinated will experience severe to moderate pain.

A number of strategies such as local anesthetics (LA), ethyl chloride, ice, or even distraction to reduce intramuscular pain have been developed to optimize patient comfort and satisfaction [6,7]. Those strategies stimulate nerves in the skin near the injection site with a device or through pinching, rubbing, or stroking. Although they are effective, nearly all of the existing strategies require increased time, cost, and/or effort on the part of clinic staff members or patients [8-15]. Cough trick is one of the non-pharmacological pain management strategies. Cough-trick” (CT)—coughing on command simultaneously to skin puncture—is a simple effective method of pain relief during peripheral venipuncture and various injections [16–18] which is confirmed by several investigations. The underlying mechanisms of the pain reduction effects of CT still remain unclear; however it could be the activation of the segmental pain inhibitory pathways due to the increased pressure in the subarachnoid space during coughing mediated by vagal afferents [19–21].

Investigators found that during their clinical experience most of the children receiving vaccination and they were anxious and fear of injections due to pain and discomfort. Reviewing the literature considering the previous study findings which proven that cough trick helps in reduction of pain as well it is simple and easy applicable non pharmacological management of pain. Hence the study was conducted with the aim to determine the effectiveness of cough trick technique to reduce vaccination prick pain during vaccination among preschool children.

METHODS AND MATERIALS:

True Experimental Study – posttest only design was adapted to conduct the study at Pranav Baby Clinic with 40 Preschool children. Samples who met the inclusion criteria were selected randomly and allocate into experimental group (n=20) and control group (n=20). Preschool children under age group 3years to 6 years receiving immunizations intramuscularly and their mothers were willing to give consent to participate in the study were included in the study. The exclusion criteria were uncooperative children, impaired cognitive function, history of peripheral neuropathy; and abnormal skin conditions (infection, scars, psoriasis, or eczema) at the site of injection. An investigator introduced herself and explained about the purpose of the study and their right to participate or withdraw from the study to the mothers of preschooler. Assent consent was obtained after assuring confidentiality. Demographic variables were collected from mothers of preschoolers using structured questionnaire. Cough trick technique was administered to the experimental group during vaccination intramuscularly. The children were instructed to cough with moderate force as a test cough. Immediately after, in a second cough, an investigator administered vaccine intramuscularly, this was coincided with needle puncture. Whereas the control group participants received the intramuscular vaccination in regular technique. The post-test level of pain was assessed by FLACC scale for both the group. FLACC scale is standardized scale as well observation checklist of Face, Legs, Activity, Cry, and Consolability and interpreted as 0 - no pain, 1-3: mild pain, 4-6: moderate pain, 7-10: severe pain Confidentiality was maintained throughout the study. The data were tabulated and analyzed by descriptive and inferential statistics using SPSS statistical package. A probability of 0.05 or less was taken as statistically significant.

RESULTS:

Demographic characteristics of preschooler:

The findings of the current study show that preschool children in the experimental group, 10(50%) were aged between 5 – 6 years, 12(60%) were male, 14(70%) belonged to nuclear family, 6(30%) of caregivers had high school education, 12(60%) were first born child, 16(80%) were vaccinated till date, 11(55%) of children cried frequently during injection and 18(90%) had no previous knowledge about pain reduction interventions. In control group, 11(55%) were aged between 3 – 4 years, 13(65%) were female, 13(65%) belonged to nuclear family, 6(30%) of caregivers were graduate and above, 10(50%) were first

born child, 18(90%) were vaccinated till date, 15(75%) of children cried frequently during injection and all 20(100%) had no previous knowledge about pain reduction interventions as depicted in Table 1.

Table 1: Frequency and percentage distribution of demographic variables of preschool children in the experimental and control group.

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
Age of the child in years				
3 – 4	6	30.0	11	55.0
4 – 5	4	20.0	7	35.0
5 – 6	10	50.0	2	10.0
Gender				
Male	12	60.0	7	35.0
Female	8	40.0	13	65.0
Type of family				
Nuclear family	14	70.0	13	65.0
Joint family	6	30.0	7	35.0
Caregivers literacy level				
No formal education	3	15.0	5	25.0
Primary education	3	15.0	2	10.0
High school	6	30.0	3	15.0
Higher secondary	3	15.0	4	20.0
Graduate and above	5	25.0	6	30.0
Birth order				
First child	12	60.0	10	50.0
Second child	8	40.0	7	35.0
Third and above	-	-	3	15.0
Have you vaccinated till date?				
Yes	16	80.0	18	90.0
No	4	20.0	2	10.0
Do your child cry frequently during injection?				
Yes	11	55.0	15	75.0
No	9	45.0	5	25.0
Previous Knowledge about pain reduction interventions				
Yes	2	10.0	-	-
No	18	90.0	20	100.0

Level of Vaccination prick pain

The below Table 2 shows that in the experimental group, 14(70%) had mild pain and 6(20%) had no vaccination prick pain among preschool children. Whereas in the control group, 14(70%) had severe pain and 6(20%) had moderate vaccination prick pain among preschool children.

Table 2: Frequency and percentage distribution of level of vaccination prick pain among preschool children in the experimental and control group.

Vaccination prick pain	No Pain (0)	Mild Pain (1 – 3)	Moderate Pain (4 – 6)	Severe Pain (7 – 10)
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	No.	%	No.	%	No.	%	No.	%
Experimental	6	30.0	14	70.0	0	0	0	0
Control	0	0	0	0	6	30.0	14	70.0

Table 3. Comparison of posttest level of vaccination prick pain between experimental and control group

Vaccination Prick Pain	Mean	S.D	Student Independent 't' test Value
Experimental Group	1.75	1.29	t = 13.719 p = 0.000 S***
Control Group	7.50	1.36	

***p<0.001, S – Significant

The table 3 depicts that in the experimental group mean score of vaccination prick pain was 1.75 with standard deviation 1.20 and the mean score of vaccination prick pain in the control group was 7.50 with standard deviation 1.36. The calculated student independent 't' test value of $t = 13.719$ was found to be statistically significant at $p < 0.01$ level. This clearly infers that cough trick technique administered to preschool children in the experimental group was found to be effective in reduction of vaccination prick pain than the preschool children in the control group.

Association between posttest level of vaccination prick pain with selected demographic variables of preschooler in both experimental and control group.

Chi-square test reveals that none of the demographic variables had not shown statistically significant association with level of vaccination prick pain among preschool children in both the experimental and control group.

DISCUSSION

Pain from vaccine injection is common and is a source of distress for individuals of any age especially children as well as for the immunization provider. The main concern is to minimize the vaccination prick pain by diverting the focus of children from vaccine injection. The aim of the management is to reduce the level of pain as it cannot completely alleviate but can reduce the threshold of pain. The main focus of the study was to determine the effectiveness on cough trick technique on intramuscular vaccination prick pain. The findings of the current study demonstrated that there is significant reduction in the level of vaccination prick pain after implementation of cough trick technique. This study findings is supported by the study conducted by Kumar VS et al concluded that cough trick can be an effective strategy for the reduction of pain for male adolescent children undergoing routine immunizations [17]. A study by G Betty Lebona G et al found that there is reduction in percentage of pain when compared to the control group [22]. Dustin P Wallace also concluded that the cough trick can be an effective strategy for the reduction of pain for some children undergoing routine immunizations [18]. Taras I. Usichenko reported that cough trick technique is effective reducing pain during venipuncture in comparison with two distraction methods, as well as under the influence of naloxone among healthy volunteers [23]. Similarly in another study by Ramandeep Kaur et al also reported that there is significant decrease in pain score in cough trick method group as compared to Conventional care group among (6-12yrs) old children undergoing intravenous cannulation. This reduction in the pain results in judicious application of this intervention as it is one of easiest non-pharmacological method in managing pain due to intravenous cannulation [24]. These supportive study findings are accordance with present study. Cough trick technique is effective in reducing pain during needle puncture of intramuscular and intravenous for all age group people, However Further research study can be done by comparing the effect of cough trick between children and adult with large samples. Despite, the present study findings found that few children had severe pain due to individual difference in perception of pain and distraction. This intervention can be implemented in both

hospital and community setting as it is very simple, cost effective, feasible and no side effects when compared to pharmacological management of pain and as a significant means of reducing vaccination prick pain.

CONCLUSION

The finding of the present study concludes that cough trick technique is the effective and easy method to minimize and reduce the pain during vaccination intramuscularly. It is a simple distraction technique can be effective in helping children cope with the pain of immunization as well can be applied in any invasive procedure. The strategy requires no equipment, time consuming, cost effective, feasible, and minimum training for parents, children, and nursing staff members.

CONSENT

The participants were explained about the purpose of the study and obtained the written Assent form from the care giver of preschool children.

ETHICAL APPROVAL

This study was ethically cleared and approved by the Institutional Scientific Review Board (ISRB) with reference of 512/2021/ISRB/SCON dt 21.01.2021.

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