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EFFECT OF DISTRACTION IN REDUCING PAIN AMONG CHILDREN DURING VACCINATION

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ABSTRACT

Pain in childhood can have long-term and psychologically damaging consequences. Vaccines, unfortunately, are the most prevalent cause of childhood pain, which can lead to non-adherence to the prescribed vaccination schedule. As a result, it is the obligation of the health-care professional to take steps to limit vaccination pain. A true experimental research was conducted to assess the effect of distraction among children who undergo vaccination injection. With systematic random sampling technique, 120 (60 study, 60 reference) children were selected. Party blower as a distraction, was given to study group children before, during and after injection and pain perception was assessed immediately with FLACC scale while reference group underwent standard protocol. The results showed that the pain perception during vaccination was less in study group which is highly significant at $P < 0.001$. The study concludes that the party blower is effective in reducing pain perception of the children during IM infection.

KEYWORDS

Distraction, Party blower, Pain perception, Children, Intra muscular injection, Vaccination and FLACC.

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INTRODUCTION

Vaccinations are the most efficient and safest strategy to avoid serious illness and death. Vaccinations, in reality, prevent nearly 2.5 million deaths each year, so the Centers for Disease Control and Prevention recommend vaccines to avoid 17 life-threatening disease¹. As a result, children will receive an average of 18-24 injections by the time they are two years old if they follow the

recommended vaccine schedule². Despite the fact that vaccinations are effective in reducing morbidity and mortality, several countries struggle to sustain high immunization rates as the pain associated with such injections, is a source of distress for children, their parents and for those administering the injections². Common parental reasons for refusing childhood vaccinations also include concerns about vaccine safety, contraindications with a child's medical condition, and the pain and anxiety associated with needle puncture^{2,3}

Immunizations, despite the fact that most health care practitioners (HCPs) perceive vaccinations to be a benign procedure⁴ requiring little intervention, are the most common uncomfortable and anxiety-inducing procedures, performed in outpatient health care clinics^{5,6}. Nonetheless, some children have a strong aversion to immunizations, which can lead to noncompliance with the prescribed vaccination regimen^{7,8}. The most common cause of vaccination-related pain and anxiety is a fear of needles, which affects roughly 25% of the population into adulthood⁹. Unfortunately, two out of every three individuals with needle phobia are less likely to vaccinate their own children⁹. Despite the fact that needle-associated pain during vaccines is a surmountable obstacle, noncompliance with the immunization schedule is still a major factor¹⁰. As a result, HCPs should be aware of these concerns and use strategies to alleviate anxiety and pain during vaccinations¹¹ which may help patients stick to their vaccination schedule.

Due to the characteristics such as the child's age, developmental level, cognitive and communicative capabilities and previous experiences with pain, each child's pain evaluation is unique. Similarly, these variables make it difficult to manage pain effectively, necessitating consideration of the child's developmental stage. Pain management during vaccines should be tailored to the child's age, with studies looking into the efficacy of various pain management strategies¹². There is a plethora of ways for alleviating vaccination discomfort, making it difficult for HCPs to determine which is the most beneficial.

Additionally, the American Academy of Pediatrics and American pain society, addressed the need for appropriate pain management as the treatment of pain in children, which frequently remain inadequate. In India, vaccines are administered to 77.2 percent of rural children and 80 percent of urban children on an annual basis. The children who have been immunized will feel severe to moderate pain. Hence, the purpose of this study is to evaluate effective pain management during vaccinations among children and make a better recommendation for pain relief during IM injections to the children. The aim of the present study is to assess the effect of distraction in reducing pain among children during vaccination.

MATERIAL AND METHODS

A true experimental design was chosen with 120 children aged 2.5 - 5 years who attended the immunization clinic were selected using systematic random sampling from two selected hospitals for children, Chennai. Among the two hospitals, each setting was allotted as samples for study (n =60) and reference group (n =60). Demographic Variables such as age in years, gender, type of family, area of residence, family monthly income and clinical variables such as height, weight, kind of injection, previous hospitalization of the child, history of allergic response were assessed. The FLACC (Face, Legs, Activity, Cry and Consolability) scale to assess pain was used, which is a standardized scale developed by Merkel *et al* in 1997¹³. It has five criterion such as face, leg, activity, cry, consolability with the score of 0, 1 and 2. Institutional ethical approval and informed consent from the parents were obtained prior to the study. Data on demographic variables, clinical variables and pain was assessed after intramuscular injection without any intervention for reference group. For the study group, a party blower (is a horn formed from a paper tube, often one that is flattened and rolled into a coil and which unrolls when blown into, producing a horn-like noise) is given to each child before intramuscular injection and asked to blow it before, during and after IM injection vaccination by the parents. Assessment of pain was done

instantaneously for 1 minute by using FLACC scale. Descriptive and inferential statistics like 't' test and chi-square were used to assess the association with the demographic variables and pain perception of children during intramuscular injection.

RESULTS AND DISCUSSION

According to the present study findings, most of the children were in the age group of more than 30 months (59.1, 66.6%), with the family income of Rs.10001- 15000 (51.3%, 46.6%) in reference and study group respectively. Majority (66.66%) were males in reference group and in study group, 63.33% were females. Regarding the anthropometric assessment, most of the children in both reference and study group (81.9% and 83.2%), fell into normal BMI for age and sex. Only 18.1% of children in reference group and 16.8% of children in study group fell into below normal BMI. For these children, additional learning materials on diet were given for ethical reasons. Sixty percent of children in reference group received MMR injection and 53.3% of children in study group children received Pentavac injection. The data showed that caregivers are aware of recent trends in combination immunization, which avoids numerous injections and may reduce their children's stress. It is a noticeable fact that only 10% in reference group and 3.33% of children in study group had previous history of hospitalization. It's a remarkable finding that all the children in both groups did not have any allergic reaction to any drugs.

The data presented in the Table No.1 reveals that majority of children in the reference group had severe pain (86.6%) during vaccination (IM) injection, whereas in study group 60% of children had mild pain. In their study, Bowen and Dammeyer¹⁴ also used a blowing distraction to urge the youngster to blow on a noisemaker or pinwheel.

The instrument was created exclusively for that study. The parents described significantly less distress and pain in their child when the noisemaker intervention was given during vaccination (P=0.01). Table No.2 depicts that the mean and standard deviation of the reference and study group children's pain perception which is 6.7 ± 1.37 and 2.8 ± 1.21 respectively. The 't' value of 10.98 which is highly significant at P< 0.001 which says that the pain perception of study group was less and the party blower intervention greatly reduced the pain perception of the children. Similarly, Boivin *et al*^{15,16} investigated the effectiveness of blowing bubbles before immunization in addition to applying an anaesthetic patch. The findings were substantial in lowering pain in children aged 4-9 years (P=0.019) which shows that the party blower distraction is effective in reducing the pain perception among children during vaccination.

This study finding did not show any significant association between demographic variables like age, gender, type of family area of residence, family monthly income and pain perception. There was no noticeable link between clinical characteristics such as height, weight, injection type, previous hospitalization and pain perception.

Table No.1: Pain perceived by children during IM vaccine injection by FLACC scale

S.No	Group	No pain		Mild		Moderate		Severe	
		N	%	N	%	N	%	N	%
1	Reference group	-	-	2	3.3	6	10	52	86.6
2	Study group	2	3.3	36	60	22	36.6	-	-

Table No.2: Comparison of Mean and Standard Deviation of Pain Perception

S.No	Group	N	Mean	SD	't' value
1	Reference group	60	6.7	1.37	10.98***
2	Study group	60	2.8	1.21	

***P<0.001

CONCLUSION

As the IM injection is a painful event for children, it is necessary to provide pharmacological or non pharmacological intervention to reduce the pain. This study finding conclude that using a party blower to distract children during vaccines has proven to be a successful distraction method and it is inexpensive and simple to use, so that it can alleviate pain and stress among children during vaccination.

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DECLARATION OF CONFLICTING INTEREST

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

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