

ORIGINAL ARTICLE

An Animation Video as a Distraction Strategy on Behavioral Response to Pain among Children Receiving Immunization- A Quantitative Study

Molly Saldhana,¹ Malathi K,¹ Sunanda Govinder Thimmajja^{2*}

¹Kanachur College of Nursing Sciences, Mangaluru, India.

²Department of Psychiatric Nursing, Dharwad Institute of Mental Health and Neuroscience, Dharwad, Karnataka, India.

*Corresponding author:

Dr. Sunanda Govinder Thimmajja, Assistant Professor, Department of Psychiatric Nursing, Dharwad Institute of Mental Health and Neuroscience, Dharwad, Karnataka, India. Email: sunandagt1977@gmail.com

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Abstract

Background: Immunization provides protective immunity and immunological memory to individuals, families, and communities against any infectious diseases. As immunization is a painful procedure, for children it may result in fear and anxiety regarding the procedure in the future. So, it's necessary to manage the pain by using different distraction strategies. So, our aim was, to assess the effectiveness of an animation video as a distraction strategy to reduce pain while immunization.

Methods: A quasi-experimental non-equivalent post-test only control group design was used, to evaluate the usefulness of an animation video as a strategy of distraction to reduce pain while immunization among a sample of 60 children who were selected using a purposive sampling technique. An animated video was used as a distraction strategy to reduce the behavioral response to pain among children. Data was collected through demographic proforma and FLACC scale. Collected data were analyzed using descriptive and inferential statistics.

Results: The results demonstrated that the calculated mean difference between the control group and the experimental group was 4.56 and the 't' test value was 8.59, which was greater than the table value at 0.05 level of significance, indicating that animation video reduced pain among children in the experimental group. Thus, the distraction strategy is helpful in reducing pain while immunization.

Conclusion: The findings of the study showed that, there was difference in behavioral response to pain in control group and experimental group following distraction using animated video which inferred that the distraction strategy is helpful in reducing pain among children during immunization process.

Keywords: Animated video, Distraction strategy, Behavioral response to pain, Children, Immunization.

Introduction

Prevention of the disease is the top most priority in child care. During infancy and childhood, preventive measures against certain infectious diseases are available. Immunization is an important and cost-

effective public health tool for disease control.¹ Immunization is the strengthening of the defense mechanism against infection. Untreated immunization pain causes undue distress. In addition to this, the lack of pain control for injection is a barrier to immunization.

Immunization is painful and children show behavioural distress due to pain while receiving immunization. Younger children particularly need intervention because they report more pain and display more behavioural distress during the medical process. The child's distress upset not only the child but adults also involved—both parents and professionals—and it often makes it more difficult to complete the needed procedure. Untreated immunization pain causes undue distress. In addition to this, the lack of pain control for injection is a barrier to immunization.²

Many sources report that pain relief is both an ethical imperative and a child's right, requiring an accurate planning focused on the needs and characteristics of children and their families. This requires a multi-disciplinary approach that is simple, safe, effective, and inexpensive, capable of reducing suffering and improving the outcomes of clinical procedures in children.³

Distraction techniques are used to divert the attention from the anxious stimuli. Previous reports indicate that children are scared of shots.⁴ Distraction techniques, namely, video, music, tactile, blowing, and oral distraction, will help to reduce the pain effectively during vaccination. Distraction is a non-pharmacological intervention that diverts attention from a noxious stimulus through passively redirecting the subject's attention or by actively involving the subject in the performance of a diversion tasks.⁵

A variety of distractions have been used in the context of children's pain management. Depending on the age group of the child and subjects undergoing intervention, the effectiveness of the distraction technique may vary. For example, interaction distraction interventions may be appropriate for older children and passive distractions such as cartoon movies may be appropriate for children of all ages.⁶ So the present study aimed to assess the effectiveness of an animation video as a distraction strategy to reduce pain while immunization among children.

The objectives of the study were,

1. To determine the behavioral response to pain among children receiving immunization in the control and experimental groups using FLACC scale.
2. To evaluate the effectiveness of animation video on the reduction of pain among children receiving immunization in the experimental group.

3. To find the association between the behavioral response score among children receiving immunization with their selected demographic variables in the experimental group.

Materials and Methods

A quasi-experimental non-equivalent post-test control group design was used to assess the effectiveness of an animation videos on behavioural response to pain among children receiving immunization. A demographic Performa and FLACC pain scale was used as a tool for data collection. The content validity of the tool and animation videos was established by giving to 5 experts and a standardized FLACC pain scale was used to assess behavioral response. The data was collected from purposively selected 60 samples divided into a control and experimental group in a selected hospital.

Pilot study was conducted among 10 children in the immunization clinic of pediatric OPD at a selected hospitals. Pilot study was conducted to assess the effectiveness of the data collection plan, identify the inadequacies of the plan, and make due modification as required. The study design was found feasible and practical by the investigators and cost of the study was within the limit.

The main study was conducted among 60 children, 30 included in the control group and 30 assigned to the experimental group at the selected hospitals. Prior to the study, permission was obtained from the concerned authority. Purposive sampling technique was used to select the samples. The Guardians or parents of the selected samples were informed about the purpose of the study and consent was obtained. The effectiveness of an animation video on pain while receiving immunization among children was assessed using FLACC pain scale. The collected data were analyzed using descriptive and inferential statistics (frequency, percentage, standard deviation, t- test, mean percentage, chi-square).

Results

Section I: Frequency and percentage distribution of behavioral response to pain according to FLACC scale.

The data showed that, in the control group the majority of the sample (53.3%) had moderate pain and 46.6% of them had severe pain whereas none of the child had mild or no pain. In the experimental group, majority of the sample (60%) had moderate pain, 23.3% had no pain and 16.6% with mild pain, and none of the children had severe pain (Table 1).

Table 1 : Classification of respondents with behavioral response score of pain.

Category	FLACC Scale score	Control Group		Experimental Group	
		Number	Percentage	Number	Percentage
No pain	0	0	0%	7	23.37%
Mild	1 – 3	0	0%	5	16.63%
Moderate	4 – 7	16	53.3%	18	60%
Severe	8 – 10	14	46.6%	0	0%

Table 2: Effectiveness of animation video on reduction of pain among children receiving immunization in terms of mean, SD, and paired 't' Value

Groups	Mean	Mean Difference	Median	SD	SE	t Value	p Value
Control	7.86	4.56	7	0.302	0.137	8.59	2.00
Experimental	3.3		5	0.437			

Significant at 5% level, $t(0.05, 58df) = 2.00$

Section II: Effectiveness of animation video on reduction of pain among children receiving immunization

The calculated 't' test value is 8.59 which is greater than the table value at 0.05 level of significance, which indicates that the animated video had an effect in reducing pain among children in experimental group. Hence, the null hypothesis (H_0) is rejected and the research hypothesis (H_1) is accepted. It was concluded that the animated video was effective as a distraction strategy in reducing pain while receiving immunization (Table 2).

Section III: Association between demographic variables and behavioral response score of pain.

The calculated χ^2 values with regard to age ($\chi^2=4.48$, $p<0.05$); gender ($\chi^2=0.737$, $p<0.05$); immunization status ($\chi^2=5.99$, $p<0.05$); caretaker who came during immunization ($\chi^2=0.923$, $p<0.05$). It revealed that there is no association between the behavioral response score and demographic variables.

Discussion

In the present study, an analysis of the effectiveness of animation video was obtained by finding out the significant difference between the control group and the experimental group. Control group mean percentage is 33.3% with standard deviation (SD) of 0.302 and experimental group mean value is 50%, with SD of 0.437. The calculated t value, 8.59 is greater than the tabulated value at 0.05 level of significance. The above findings are supported by Bijimol *et al.*,⁷ on the effectiveness

of an animation video on behavioral response to pain among children during immunization in selected PHC at Mangalore. The results also support the study conducted by Kaur *et al.*⁸ who found that cartoon distraction is an effective distraction strategy to reduce pain and distress among children during intravenous injection.

The control group mean percentage obtained was 39.8%, $SD=0.332$ and experimental group mean percentage were 56.4%, $SD=0.445$. The calculating value t value $a = 8.19$ is greater than the tabulated value at 0.05 level of significance. As the obtained t value = 8.59 is greater than the tabulated value at 0.05 level of significance, the study conducted were found effective in reducing pain among children while receiving immunization.

The earlier studies support the results of present study are study conduct by Gedam *et al.*⁹ The lower pain score in response to vaccination in test group indicates that distraction technique i.e. light & sound producing toys and cartoon movies are practical way to reduce pain during routine medical interventions in toddler. The studies conducted & reports^{10,11,12,13} the findings of the studies revealed that the play therapy & distraction therapies was effective for hospitalized preschool children during intravenous cannulation. The previous study supports the present study to develop a clinical practice guideline, based on systematic reviews of the literature, as interpreted by experts, to assist clinicians in managing procedure-related pain and distress among children undergoing vaccine injections.¹⁴ The study findings suggest that repeated pain experiences in

neonates may induce activity-induced changes in the functioning of pain pathways that persist well beyond infancy.¹⁵

Hence, the study conducted were found to be effective, as the distraction strategy was useful in reducing behavioural response and pain as evidenced by results of the study.

Implications

Nurses need to acquire knowledge and skills to deal with rapid changes in society. The nurse educators have the responsibility to update the knowledge of nursing personnel on different methods to reduce the pain of children receiving immunization. Moreover nursing students needs to gain adequate knowledge regarding immunization and to determine the various distraction strategy methods that are applicable to reduce pain while receiving immunization from various health personnel. The study findings will help the nurse to give immunization in an effective way to children as it decreases the chance of fear and anxiety that might develop in children in the future because of the pain received during immunization. Nursing administrators can encourage and provide facilities and materials to the nurses to carry out educational programs on distraction strategies to reduce pain while giving immunization among children.

Conclusion

Immunization is the most painful procedure during childhood, especially when they are administered without adopting the pain management practice. Uncontrolled pain in children has a negative and long-lasting effect on the development of the child. Distraction techniques are the most important tools to reduce pain in children. Child cognitive development should be more responsive to seeing animation videos. The present study concludes that using animation video as a distraction strategy was effective to reduce pain among children within the age group of 9 months to 3 years receiving immunization.

Conflict of Interest

None

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