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Shweta
Assistant Professor, St.
Stephen's Hospital College of
Nursing, Delhi, India

CLARICE A LYNGDOH
Assistant Professor, St.
Stephen's Hospital College of
Nursing, Delhi, India

Priyanka, Prabhdeep
B.Sc. (Hons.) Nursing
Students, St. Stephen's
Hospital College of Nursing,
Delhi, India

Anjali
B.Sc. (Hons.) Nursing
Students, St. Stephen's
Hospital College of Nursing,
Delhi, India

Arathy
B.Sc. (Hons.) Nursing
Students, St. Stephen's
Hospital College of Nursing,
Delhi, India

Shikha
B.Sc. (Hons.) Nursing
Students, St. Stephen's
Hospital College of Nursing,
Delhi, India

Corresponding Author:
Shweta
Assistant Professor, St.
Stephen's Hospital College of
Nursing, Delhi, India

An experimental study to assess the effectiveness of therapeutic play during immunization on infant (2 months-12 months) in selected hospital in Delhi

Shweta, CLARICE A LYNGDOH, Priyanka, Prabhdeep, Anjali, Arathy and Shikha

Abstract

Vaccine injections are the most common reason for iatrogenic pain in childhood. With the steadily increasing number of recommended vaccinations, there has been a concomitant increase in concern regarding the adequacy of pain management. Despite the proven benefits of the immunization procedure, the pain associated with these injections is a source of great anxiety and distress for the infants as well as the parents. The non-pharmacological methods of pain management helps to reduce the pain perception, makes pain tolerable, decreases anxiety and enhances wellbeing. Painful procedures cause fear and physical and emotional suffering to children, mainly when the procedure is not explained to them, and they are not prepared or supported properly.

Based on the understanding that the toy is the main means of communication between the child and the professional, the authors of this study proposed to explore the use of therapeutic play to prepare children for vaccination, as well as the influence of this activity on their behavior during the procedure. One of the several uses of therapeutic play is to prepare children for therapeutic and painful procedures. This type of playing is called instructional. Although therapeutic play and play therapy are terms used inadvertently as synonyms, their concept and applicability differ.

Play therapy is a psychiatric technique, and therefore carried out by a skilled professional. It is developed in a controlled environment, and used to treat children with emotional disorders.

Keywords: Vaccine, iatrogenic pain, pain, immunization, therapeutic, play therapy

Introduction

Immunization is a global success story in terms of health and development, saving millions of lives each year. Vaccines minimize the risk of contracting a disease by enhancing your body's natural defences. When you receive a vaccine, your immune system reacts^[1].

Immunization is an essential component of primary health care and a basic human right. It's also one of the best health investments you can make with your money. Vaccines are also important in preventing and controlling infectious disease outbreaks. They support global health security and will be critical in the fight against antimicrobial resistance^[2].

Immunization is the procedure of administering a vaccine to a person in order to protect them from disease. Immunity (protection) from immunization is similar to immunity from disease, except that instead of acquiring the disease, you get a vaccine. This is why vaccines are such effective medicines. Most vaccines are administered via needle (injection), although others are administered via mouth (orally) or nasal spray (nasally). Immunizations can also be referred to as vaccinations, needles, shots, or jabs^[3].

The most common cause of iatrogenic pain in children is vaccine shots. As the number of recommended vaccinations has progressively increased, there has been a concomitant increase in worry about the sufficiency of pain treatment^[4].

Recent research suggests that infants are not only capable of feeling pain, but may also feel it more intensely than adults^[4].

Pain is defined by the International Association for the Study of Pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage."⁽⁴⁾ Despite the demonstrated benefits of immunization, the discomfort associated with these shots causes tremendous anxiety and anguish in both infants and parents.

Non-pharmacological pain management strategies serve to lower pain perception, make pain tolerable, reduce anxiety, and improve overall well-being [4].

Objectives

1. To assess the level of pain during immunization in experimental and control group in selected Hospital in Delhi
2. To assess the effectiveness of play therapy during immunization in experimental group in selected Hospital in Delhi.
3. To find out the association between experimental and control group with demographic variable in selected Hospital in Delhi.

Materials and Methods

An experimental study was selected. The setting of the study was for pilot study Swami Dayanand Hospital, Delhi and for final study Delhi Government Dispensary, Nand Nagri, Delhi was selected. In the present study, sample consists of 80 infants (2months – 12 months) coming in OPD's for immunization. Sampling technique adopted for the present study was convenient sampling Technique. After obtaining ethical permission from the Institutional Ethical Committee of St. Stephen's Hospital, New Delhi, to conduct the research study, a formal permission for conducting research was obtained from the selected hospital of Delhi. A written informed consent was taken from each parents of study subject. They were assured of anonymity and confidentiality of the information provided during the research study. Data was collected using a structured tool and standardized pain assessment scale (FLACC). Descriptive and inferential statistics were used for data analysis.

Results

Sample characteristics

- According to age, In the experimental group, majority of age group belongs to ≤ 6 months as 67.5% (27) and the minority belongs to > 6 months ≤ 9 months as 15% (6). In the control group, majority of age belongs to > 6 months as 47.5% (19), ≥ 9 to ≤ 12 months as 27.5% (11) and the minority belongs to > 6 months ≤ 9 months as 25% (10).
- According to gender, In experimental group, both of male and female gender is 50% (20); In the control group majority of age belongs to male as 55% (22) and minority belongs to female as 45% (18).
- According to gestational age, In experimental group, majority of gestational age belongs to term as 70% (28), and the minority belongs to post-term 10% (4): In the

control group, the majority of gestational age belongs to term as 85% (34) and minority belongs to pre-term and post-term as 7.5% (3).

- According to mother's education, In the experimental group, the majority of mother's education belongs to middle school a 42.5% (17) and the minority belongs to professional degree and illiterate as 2.5% (1) whereas diploma is 0% (0); In the control group, majority of mother's education belongs to middle school as 47.5% (19) and minority belongs to illiterate as 2.5% (1) whereas professional degree and graduate is 0% (0).
- According to father's education, In the experimental group, majority of father's education belongs to graduates and middle school as 22.5% (9) and minority belongs to professional degree as 5% (2) whereas illiterate belongs as 0; In the control group, the majority of father's education belongs to high school as 42.5% (17) and minority belongs to primary school as 7.5% (3) whereas professional degree and illiterate is 0% (0).
- According to order of child, In experimental group, majority of birth order belongs to first child as 45% (18) and minority belongs to third child and more as 15% (6); In the control group, majority of birth order belongs to second child as 55% (22) and minority belongs to first child and third child and more as 22.5% (9).
- According to religion, In the experimental group, the majority of religion belongs to Muslim as 62.5% (25) and the minority belongs to Hindu as 37.5% (15) whereas Christian, Sikh and others are 0% (0); In the control group, the majority of religion belongs to Hindu as 60% (16) whereas Christian, Sikh and other are 0% (0).
- According to past visit to hospital, In the experimental group, majority of number of past hospital visits in the recent 6 months belongs to 1-2 hospitals as 77.5% (31) and the minority belongs to 2-4 hospitals as 22.5% (9) whereas more than 4 is 0% (0); In the control group, majority of number of past hospital visits in recent 6 months belongs to 1-2 hospitals as 97.5% (39) and minority belongs to 2-4 hospitals as 2.5% (1) whereas more than 4 is 0% (0).
- According to no. of siblings, In the experimental group, majority of number of siblings belongs to one as 42.5% (17) and minority belongs to three as 2.5% (1) and more than three is 0% (0); In the control group, majority of number of siblings belongs to one as 57.5% (23) and minority belongs to three and more than three as 2.5% (1).

Table 1: Table depicting the mean, median and standard deviation and "z" value in experimental and control group N=80

	Maximum Score	Score Range	ME AN	Mean difference	Medi AN	Stand ARD Deviation	"z" value
Control Group	0-10	5-9	7.35	3.925	8	0.7589	4.31*
Experimental Group		2-5	3.425		3	0.9457	

*significant at "z" value < 0.05 level of significance

Table 2: Findings related to the association between control group with demographic variables in selected hospitals in Delhi. N=40

S. no.	Socio demographic variables	Relaxed	Mild	Moderate	Severe	D.F	Chi Square	Table Value
		0	1-3	4-6	7-10			
Age								
1.	≤6months	0	15	12	0	6	0.778	12.59 ^{NS}
	>6months - ≤ 9 months	0	5	1	0			
	≥9months ≤ 12 months	0	4	3	0			
Gender								
2.	Male	0	9	11	0	3	10.5	7.82*
	Female	0	15	5	0			
Gestational Age								
3.	PRE – TERM	0	5	3	0	6	1.0045	12.59 ^{NS}
	TERM	0	16	12	0			
	POST – TERM	0	3	1	0			
Weight of the child								
4.	≤4KG	0	0	1	5	9	0.524	16.92 ^{NS}
	>4KG - ≤ 7.5 KG	0	0	3	10			
	≥7.5-≤ 9KG	0	0	2	10			
	≥9KG -≤ 12 KG	0	0	2	7			
Types of family								
5.	Nuclear family	0	0	5	18	6	7.46	12.59 ^{NS}
	Extended family	0	0	1	1			
	Joint family	0	0	1	14			
Mother's education								
6.	Professional degree	0	0	0	0	18	6.27	28.87 ^{NS}
	Graduate	0	0	0	0			
	Diploma	0	0	0	3			
	High school	0	0	2	4			
	Middle school	0	0	3	16			
	Primary school	0	0	2	9			
Illiterate	0	0	1	0				
Father's Education								
7.	Professional degree	0	0	0	0	18	3.3793	28.87 ^{NS}
	Graduate	0	0	1	5			
	Diploma	0	0	0	6			
	High school	0	0	5	12			
	Middle school	0	0	2	6			
	Primary school	0	0	0	3			
Illiterate	0	0	0	0				
Birth order								
8.	First child	0	0	4	5	6	5.6755	12.59 ^{NS}
	Second child	0	0	4	18			
	Third and more	0	0	0	9			
Area of residence								
9.	Rural	0	0	1	0	6	4.1	12.59 ^{NS}
	Urban	0	0	7	32			
	None	0	0	0	0			
Religion								
10.	Hindu	0	0	6	18	12	2.18	21.03 ^{NS}
	Muslim	0	0	2	14			
	Christian	0	0	0	0			
	Sikh	0	0	0	0			
	Others	0	0	0	0			
Number of past hospitals visit in last 6 months								
11.	1-2 Hospital	0	0	4	22	8	1.38	15.51 ^{NS}
	2-4 Hospitals	0	0	4	10			
	More Than 4	0	0	0	0			
Number of Siblings								
12.	1	0	0	4	19	9	5.359	16.92 ^{NS}
	2	0	0	0	6			
	3	0	0	0	1			
	More Than 3	0	0	0	1			
	None	0	0	4	5			
Position of child during immunization								
13.	Sitting	0	0	0	11	6	10.8326	12.59 ^{NS}
	Standing	0	0	2	0			
	Lying	0	0	6	21			

^{NS} - Chi-square value is not significant at 0.05 level of significance.

* -Chi-square value is significant at 0.05 level of significance.

Table 3: Findings related to the association between experimental group with demographic variables in selected hospitals in Delhi N=40

S. No.	Demographic Variables	Relaxed	Mild	Moderate	Severe	D.F	Chi Square	Table Value	
		0	1-3	4-6	7-10				
1.	Age								
	≤6 Months	0	15	12	0	6	0.778	12.59 ^{NS}	
	>6 Months - ≤ 9 Months	0	5	1	0				
	≥9 Months - ≤ 12 Months	0	4	3	0				
2.	Gender								
	Male	0	9	11	0	3	10.5	7.82*	
	Female	0	15	5	0				
3.	Gestational age								
	Pre – Term	0	5	3	0	6	1.0045	12.59 ^{NS}	
	Term	0	16	12	0				
	Post – Term	0	3	1	0				
4.	Weight of the child								
	≤4KG	0	4	4	0	9	1.32	16.92 ^{NS}	
	>4KG - ≤ 7.5 KG	0	14	8	0				
	≥7.5 ≤ 9KG	0	4	2	0				
	≥9KG - ≤ 12 KG	0	2	2	0				
5.	Types of family								
	Nuclear family	0	14	10	0	6	24.231	12.59*	
	Extendedfamily	0	1	1	0				
	Joint family	0	9	5	0				
6.	Mother’s education								
	Professional degree	0	1	0	0	18	2.204	28.87 ^{NS}	
	Graduate	0	3	3	0				
	Diploma	0	0	0	0				
	High school	0	6	3	0				
	Middle school	0	9	8	0				
	Primary school	0	4	2	0				
Illiterate	0	1	0	0					
7.	Father’s education								
	Professional degree	0	1	1	0	18	7.623	28.87 ^{NS}	
	Graduate	0	6	3	0				
	Diploma	0	3	5	0				
	High school	0	3	4	0				
	Middle school	0	7	2	0				
	Primary school	0	4	1	0				
Illiterate	0	0	0	0					
8.	Birth order								
	First child	0	8	10	0	6	2.346	12.59 ^{NS}	
	Second child	0	12	4	0				
	Third and more	0	4	2	0				
9.	Area of residence								
	Rural	0	0	0	0	6	0.682	12.59 ^{NS}	
	Urban	0	23	16	0				
	None	0	1	0	0				
10.	Religion								
	Hindu	0	8	7	0	12	0.43	21.03 ^{NS}	
	Muslim	0	16	9	0				
	Christian	0	0	0	0				
	Sikh	0	0	0	0				
	Others	0	0	0	0				
11.	Number of past hospital visit in last 6 months								
	1-2 hospital	0	17	14	0	8	1.528	15.51 ^{NS}	
	2-4 hospitals	0	7	2	0				
	More than 4	0	0	0	0				
12.	Number of siblings								
	1	0	12	0	1	9	4.311	16.92 ^{NS}	
	2	0	4	0	0				
	3	0	0	1	0				
	More than 3	0	0	0	0				
	None	0	8	9	0				
13.	Position of child during immunization								
	Sitting	0	5	2	0	6	1.885	12.59 ^{NS}	
	Standing	0	0	1	0				
	Lying	0	19	13	0				

^{NS}– Chi-square value is not significant at 0.05 level of significance

* -Chi-square value is significant at 0.05 level of significance

Discussion

The data gathered was analyzed and interpreted using descriptive and inferential statistics. The critical value is 1.96 and the calculated “z” value is 4.31 which is more than the critical value at 0.05 level of significance which indicates that play therapy is effective on infants pain level during immunization.

To support this research a study was conducted by Shankar R, Subramani G in 2016 on effectiveness of distraction techniques upon pain among children receiving immunization. The aim was to compare the effectiveness of distraction techniques upon pain among children and the results shows that group 1 children who receives play therapy had moderate pain level as compared to group 3 who receives normal day care routine ^[5].

To support this study a research was conducted by Subramani in 2011 to compare the effectiveness of distraction techniques upon pain among children receiving immunization at pediatric outpatient department in Madurai medical college, Madurai and the results reveals that experimental group children have lower pain score as compare to the other groups ^[6].

To support this study a research was conducted by Cassidy KL, Reid G, *et al.* in 2002 to evaluate the effectiveness of audiovisual distraction compared with blank TV screen in the reduction of pain associated with intramuscular immunization in Ontario and the results of the study depict that there were no significant group differences for any pain or distraction measures ^[7].

Conclusion

The main aim of the study was to assess the effectiveness of therapeutic play on infants during immunization. Most of the infants high levels of pain score than the infants who were administered with play therapy during immunization they show moderate to low levels of pain score

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