IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 5, Issue 5 Ver. VIII (Sep. - Oct. 2016), PP 72-78
www.iosrjournals.org

Effect of Primary Caregiver Presence in Decreasing Behavioural Distract among Children during Invasive Procedure

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Abstract: *Child is a human being below the age of 18 years. The preschool child period is from 3 to 5 years of age, considered critical for emotional and psychological development.Venipuncture and intravenous cannulation are most common source of pain for the children.The present study was carried out with an objective to evaluate the effect of primary caregiver presence in decreasing behavioural distract among children during invasive procedure. Purposive non-probability sampling technique was used to select 70 children attended outpatient department of Healthy Baby Children Hospital and Raikhi Hospital, Patiala, out of which 35 were in experimental group (EG; child held by primary caregiver) and 35 were in control group (CG; child held by staff member) during venipuncture or intravenous cannulation. Modified Behavioural Distract Scale was used to assess the level of behavioural distract during invasive procedures by observing the children during those procedures. The findings revealed that the mean behavioural distract score of EG was 7.1 ± 2.46 and CG was 9.1 ± 2.85. Findings also revealed that in EG majority 16 (45.71%) got moderate behavioural distract, 14 (40%) got severe behavioural distract and only 5 (14.29%) had mild behavioural distract whereas in CG maximum children 26 (74.29%) got severe behavioural distract, 6 (17.14%) had moderate behavioural distract and 3 (8.57%) got mild behavioural distract. The comparison of mean behavioural distract score of both groups was checked statistically by computing Z test and the value comes out to be 3.28 which was found to be signification at p≤0.05 level of significance. Furthermore, the findings also revealed the significant associations between the behavioural distract score with demographic variables (age, education of mother, occupation of father and previous exposure with venipuncture) of children of experimental group during invasive procedures. A significant association was found between the behavioural distract score with demographic variables (such as age, gender, education of father, education of mother, occupation of mother, type of family, previous exposure with venipuncture, size of the needle and reason for venipuncture) of children of control group during invasive procedures. Therefore, the presence of primary caregiver is considered to be important in reducing children's behavioural distract in general during venipuncture or intravenous cannulation.*

Keywords: *Behavioural distract, children, invasive procedure, primary caregiver,intravenous cannulation, injection*

I. Introduction

Child is a human being below the age of 18 years. The preschool child period is from 3 to 5 years of age, considered critical for emotional and psychological development. Their concrete, egocentric and magical thinking limits their ability to understand events because they view all experiences from their own self-referenced perspective. Without adequate preparation for unfamiliar settings or experiences, their fantasy explanations for such events are usually more exaggerated, bizarre and frightening than the facts.

According to World Population (2011) children constitute 27% of the total world population. Children are vulnerable to all kinds of illness due to immature development of physical, intellectual and immune system, and they often get hospitalized.It is estimated that more than 10 million children die each year in developing countries before reaching their fifth birthday. Seven in ten of these deaths are due to acute respiratory infections (mostly pneumonia), diarrhea, measles, malaria, or malnutrition—and often to a combination of these conditions.

Venipuncture is the most common and widespread invasive procedure performed on children followed by intravenous cannulation. Venipuncture and intravenous cannulation are most common source of pain for the children. Most children frightened and anxious before this procedure and during venipuncture they may cry, suffer pain and refuse to co-operate.Reducing needle related pain and anxiety could be important in order to prevent further distract, especially for children needing multiple hospital admission. Distraction is an interruption or an obstacle to concentration that divide the attention of an individual or group from the chosen object onto the source of distraction which is caused by the lack of ability to pay attention, lack of interest, novelty or attractiveness of something other than the object of attention.Behavioral distraction involves physical

activities such as toys, listening to music, watching cartoons, using party blowers, looking through kaleidoscopes, videogames, animal animated interactions, vibration devices, blowing soap bubbles, soft ball, balloon inflation, puppetry, diversional talk and the use of local anesthetic creamsbefore and during theneedle related procedures. Parents must be collaborated in helping children to cope with pain by just their presence.
Parents have become increasingly more active participants in their child's health care. Although participating in painful medical procedures of children is highly traumatic for them. But still, their presence during medical procedures has been found to be helpful in decreasing children's distress.

II. Methodology

A quasi-experimental research approach was used with posttest only control group design. The setting of the present study was the outpatient department of Healthy Baby Children Hospital and Raikhi Hospital, Patiala, Punjab. Seventy children of three to six years (35 in both experimental and control group)were selected by purposive non-probability sampling technique. The criteria for selection of sample subjects were:

- The children undergoing invasive procedures like intravenous injections and cannulation.
- The children aged between three to six years.
- The children attending the outpatient department of selected hospitals.
- The children available and their caregivers were willingto participate in the data collection.

The tools developed for the study was modified behavioural distract scale to assess the behavioural distract of the children during intravenous injections and cannulation. The observation ratings were madesimultaneously at the time of the invasive procedures.Themodified behavioural distract scale was a rating scale and comprised categories such as cry, scream, verbal, seeking emotional support, restraint and flail or activity.Each category was scored on the 0–2 scale, which resulted in a total score of 0–12. It indicated 0, 1-4, 5-7, 8-12; no, mild, moderate and severe behavioural distract respectively. The reliability of the scale was calculated by interrater (kappa agreement) and found out to be 0.67 (substantial agreement).Ethical approval was taken from the Institutional Ethical Committee of DeshBhagat University, MandiGobindgarh, Punjab. Written permission to conduct study wasobtained from the medical in-charge of selected hospitals. Written informed consent was obtained from the primary caregivers of the study subjects regarding their willingness to participate in the research study.

III. Results

The data presented in table 1 shows the frequency and percentage distribution of demographic characteristics of children of experimental and control group. Most of the children were in the age of 3 years in the control group(71.43%) as well as in the experimental group (42.86%). Majority of the children were boys (68.57%) in control group and (77.14%) in the experimental group. Maximum education of fathers was up to senior secondary in both the control group (40%) and the experimental group (37.15%). Equal number of mothers was educated up to senior secondary and post-graduation (25.71%) in the control group while in the experimental group maximum mothers were postgraduate and above (40%). In both the groups the preferred occupation of children's fathers were business or self-employed (60%) in control group and (48.57%) in the experimental group Majority of mothers were housewives in the control group(91.43%) and in the experimental group (71.43%). In both the groups, approximately three forth children were residing in joint families (71.43%) in control group and (57.14%) in the experimental group. Majority of the children had experienced venipuncture for five to seven times (31.43%) in control group and in the experimental group most of the children had experienced venipuncture for two to four times (45.71%). In both the groups maximum number of children were venipunctured with 23G needle (77.14%) in control group and (82.86%) in the experimental group due to blood taking (77.14%) in control group and (100%) for in the experimental group.

Table.1: Frequency and Percentage Distribution of Demographic Characteristics of Children of Experimental Group and Control Group N = 70

n_e=35 n_c =35

Sr. no.	Demographic Characteristics	Experimental Group		Control Group		χ^2
		(f)	**(%)**	**(f)**	**(%)**	
1	**Age**					
1.1	3 years	15	42.86	25	71.43	8.14^{*}
1.2	4 years	04	11.43	04	11.43	
1.3	5 years	09	25.71	05	14.28	
1.4	6 years	07	20.00	01	02.86	
2	**Gender**					
2.1	Boy	27	77.14	24	68.57	0.65^{NS}
2.2	Girl	08	22.86	11	31.43	
3	**Father education**					
3.1	Illiterate	01	02.86	01	02.86	1.70^{NS}

3.2	Matriculation	06	17.14	09	25.71	
3.3	Senior secondary	13	37.15	14	40.00	
3.4	Graduate	09	25.71	08	22.86	
3.5	Postgraduate & above	06	17.14	03	08.57	
4	**Mother education**					
4.1	Illiterate	02	05.71	02	05.71	2.02^{NS}
4.2	Matriculation	08	22.86	08	22.86	
4.3	Senior secondary	06	17.14	09	25.71	
4.4	Graduate	05	14.29	07	20.00	
4.5	Postgraduate & above	14	40.00	09	25.71	
5	**Father occupation**					
5.1	Private	10	28.57	12	34.29	4.20^{NS}
5.2	Government	08	22.86	02	05.71	
5.3	Business/self employed	17	48.57	21	60.00	
6	**Mother occupation**					
6.1	Housewife	25	71.43	32	91.43	5.56^{NS}
6.2	Private	07	20.00	01	02.86	
6.3	Government	03	08.57	02	05.71	
7	**Type of family**					
7.1	Nuclear	15	42.86	10	28.57	1.56^{NS}
7.2	Joint	20	57.14	25	71.43	
8	**Previous exposure with venipuncture**					
8.1	First time	01	02.86	06	17.14	5.65^{NS}
8.2	2-4 times	16	45.71	10	28.57	
8.3	5-7 times	08	22.86	11	31.43	
8.4	8 or more times	10	28.57	08	22.86	
9	**Size of the needle**					
9.1	23 G	29	82.86	27	77.14	0.36^{NS}
9.2	24 G	06	17.14	08	22.86	
10	**Reason for venipuncture**					
10.1	Blood taking	35	100.0	27	77.14	9.03^{*}
10.2	Cannulation	00	00.00	08	22.86	

* Significant $p \leq 0.05$
NS – Non-significant

The data presented in table 2 depicts the frequency and percentage distribution of behavioural distract items of experimental and control group. In the experimental group, most of the children had cried steadily with or without tears (48.57%). majority of the children had expressed sharp or shrill tones (60%). approximately half of the children had complained about pain for one or few times (48.57%). maximum number of children had hold hands and grabbed others (57.14%). majority of the children (74.29%) were restrained. most of the children (45.71%) had kicked legs or thrown their arms repeatedly or had jerky or rigid back.
On the contrary, in the control group, most of the children had cried steadily with or without tears (68.57%). approximately half of the children had expressed shrieks or sharp tones (51.43%). majority of the children had complained about pain for three or more times (57.14%). maximum number of children had called and pleased momma and daddy (62.86%). approximately half of the children (51.43%) were restrained. most of the children (68.57%) had kicked legs or thrown their arms repeatedly or had jerky or rigid back.

Table.2: Frequency and Percentage Distribution of Behavioural Distract Items of Children of Experimental Group and Control Group N = 70

n_e=35 n_c =35

Sr. no.	**Items**	**Experimental Group**		**Control Group**	
		(f)	**(%)**	**(f)**	**(%)**
1	**Cry**				
1.1	No cry	04	11.43	03	08.57
1.2	Moans, soabs or crying sounds	14	40.00	08	22.86
1.3	Crying steadily with or without tears	17	48.57	24	68.57
2	**Scream**				
2.1	No verbal expression	06	17.14	06	17.14
2.2	Sharp or shrill tones	21	60.00	11	31.43
2.3	Shrieks or high tones	08	22.86	18	51.43
3	**Verbal**				
3.1	No complaints about pain	05	14.29	00	00.00
3.2	One or few complaints about pain	17	48.57	15	42.86
3.3	Three or more complaints about pain	13	37.14	20	57.14
4	**Seeking emotional support**				
4.1	None	06	17.14	04	11.43

4.2	Hand holding, grabbing at others	20	57.14	09	25.71
4.3	Calling or pleasing "Momma or Daddy"	09	25.72	22	62.86
5	**Restraint**				
5.1	None	03	08.57	02	05.71
5.2	Present	26	74.29	18	51.43
5.3	Present with verbal resistance	06	17.14	15	42.86
6	**Flail or Activity**				
6.1	Normal position or relaxed	05	14.29	01	02.86
6.2	Pounding fist, squirming, shifting back and forth, tense	14	40.00	10	28.57
6.3	Kicking legs or throwing arms repeatedly, jerky or rigid back	16	45.71	24	68.57

The data presented in table 3 depicts the mean and standard deviation of behavioural distract items of children of experimental group and control group. The findings revealed that the mean of behavioural distract in the cry (1.37 ± 0.67) present the highest value in the experimental group whereas the mean of behavioural distract in the flail or activity (1.66 ± 0.54) present the highest value in the control group.

Table.3: Mean and Standard Deviation of Behavioural Distract Items of Children of Experimental Group and Control Group **N = 70**

n_e=35 n_c =35

Sr. no.	**Items**	**Experimental Group**		**Control Group**	
		Mean	**SD**	**Mean**	**SD**
1	Cry	1.37	0.67	1.60	0.64
2	Scream	1.06	0.60	1.34	0.75
3	Verbal	1.23	0.69	1.57	0.49
4	Seeking emotional support	1.09	0.66	1.51	0.68
5	Restraint	1.09	0.52	1.37	0.58
6	Flail or activity	1.31	0.69	1.66	0.54

The data presented in table 4 depicts thecriterion measure of behavioural distract score of children during invasive procedures in experimental group and control group. The data revealed that in the experimental group maximum children had shown moderate behavioural distract (45.71%) while in control group majority of children (74.29%) had shown severe behavioural distract which indicated that the presence of primary care giver during the invasive procedure was effective in reducing behavioural distract among children.

Table.4: Criterion Measure of Behavioural Distract Score of Children during Invasive Procedures in Experimental Group and Control Group N = 70

n_e=35 n_c =35

Level of behavioural distract score	**Experimental Group**		**Control group**	
	(f)	**(%)**	**(f)**	**(%)**
Mild (1- 4)	05	14.29	03	08.57
Moderate (5 – 7)	16	45.71	06	17.14
Severe (8 – 12)	14	40.00	26	74.29

The data presented in table 5 depicts themean, standard deviation and Z value of behavioural distract score of children during invasive procedures in experimental group and control group. The data revealed that the mean behavioural distract score of control group (9.1 ± 2.85) was higher than the mean behavioural distract score of experimental group (7.1 ± 2.46). The computed Z value of 3.28 was found statistically significant at the 0.05 level of significance.

Table.5: Mean, Standard Deviation and Z value of Behavioural Distract Score of Children during Invasive Procedures in Experimental Group and Control Group N = 70

n_e= 35 n_c = 35

Behavioural distract score	Mean	SD	Z value
Experimental Group	7.1	2.46	3.28*
Control Group	9.1	2.85	

Maximum Behavioural Distract Score = 12 * significant $p \leq 0.05$
Minimum Behavioural Distract Score = 0 $Z_{tab} = 2.20$

The data presented in table 6 depicts thechi square values showing association of selected demographic variables of experimental group with behavioural distract score. The findings revealed that the chi square value of age(15.52), mother education(8.80), fathers' occupation (12.96) and previous exposure with venipuncture(9.23) were found significant with the behavioural distract score. The computed chi square values of gender (0.16), father education(1.76), mothers' occupation(5.76), type of family (0.00) and size of the needle (0.64) were found non-significant with the behavioural distract score.

Table.6: Chi Square Values Showing Association of Selected Demographic Variables of Experimental Group with Behavioural Distract Score

n_e = 35

Demographic Characteristics	Frequency		df	χ^2
	Below mean	**Above mean**		
Age				
3 years	7	8	3	15.52*
4 years	2	2		
5 years	6	3		
6 years	6	1		
Gender				
Boy	16	11	1	0.16NS
Girl	5	3		
Father education				
Illiterate	1	0	4	1.76 NS
Metric	4	2		
Senior secondary	8	3		
Graduate	5	2		
Postgraduate & above	3	7		
Mother education				
Illiterate	3	0	4	8.80*
Metric	6	2		
Senior secondary	3	3		
Graduate	3	2		
Postgraduate & above	7	7		
Father occupation				
Private	6	4	2	12.96*
Government	3	5		
Business / self employed	12	5		
Mother occupation				
Housewife	15	10	2	5.76 NS
Private	3	4		
Government	3	0		
Type of family				0.00 NS
Nuclear	9	6	1	
Joint	12	8		
Previous exposure with venipuncture				
First time	0	1	3	9.23*
2-4 times	11	5		
5-7 times	4	4		
8 or more times	5	5		
Size of the needle				
23 G	17	12	1	0.64NS
24 G	4	2		

***** Significant $p \leq 0.05$ NS – Non-significant

The data presented in table 7 depicts thechi square values showing association of selected demographic variables of control group with behavioural distract score. The findings revealed that the chi square value of age(23.81), gender(15.55), fathers' education (23.39), mothers' education (26.78), mothers' occupation (8.25), type of family (83.59), size of the needle (28.24) previous exposure with venipuncture (33.48) and reason for venipuncture (28.24) were found significant with the behavioural distract score. The computed chi square values of father occupation (2.52) found non-significant with the behavioural distract score.

Table.7: Chi Square Values Showing Association of Selected Demographic Variables of Control Group with Behavioural Distract Score

n_c = 35

Demographic Characteristics	Frequency		df	χ^2
	Below mean	**Above mean**		
Age				
3 years	14	11	3	23.81*
4 years	0	4		
5 years	1	4		
6 years	1	0		
Gender				
Boy	9	15	1	15.55*
Girl	7	4		
Father education				
Illiterate	1	0	4	23.39*
Metric	4	5		
Senior secondary	4	10		
Graduate	6	2		
Postgraduate & above	1	2		
Mother education				
Illiterate	0	2	4	26.78*
Metric	2	6		
Senior secondary	3	6		
Graduate	3	4		
Postgraduate & above	7	2		
Father occupation				
Private	6	6	2	2.52NS
Government	0	2		
Business / self employed	10	11		
Mother occupation				
Housewife	13	19	2	8.25*
Private	1	0		
Government	2	0		
Type of family				
Nuclear	0	10	1	83.59*
Joint	16	9		
Previous exposure with venipuncture				
First time	5	1	3	33.48*
2-4 times	6	4		
5-7 times	2	9		
8 or more times	3	5		
Size of the needle				
23 G	15	12	1	28.24*
24 G	1	7		
Reason for venipuncture				
Blood taking	15	12	1	28.24*
Cannulation	1	7		

* Significant $p \leq 0.05$ NS – Non-significant

IV. Discussion

Present study findings indicated that majority of children (74.29%) had shown severe behavioural distract followed by (17.14%) children had moderate behavioural distract, and (8.57%) children had mild behavioural distract in control group. The study findings were consistent with Hughes (2012) who conducted a observational, non-participant, qualitative study to explore the nature, process and consequences of giving information to 11 children aged 3 to 11 years and 4 health care professionals before and during venipuncture. The findings revealed that some of the distress associated with venipuncture can be avoided if children are given information about the procedure in a way they can understand.

Present study findings indicated that the mean behavioural distract score of control group (9.1 ± 2.85) was higher than the mean behavioural distract score of experimental group (7.1 ± 2.46). The computed Z value of 3.28 was found statistically significant at the 0.05 level of significance.These findings were consistent with Sikorova and Hrazdilova (2011) who conducted a study to investigate the effect of structured psychological intervention on the level of perceived pain in children aged 5-10 years undergoing venipuncture through CHEOPS scale and Wong and Baker faces pain rating scale. The study results revealed a significant difference in evaluating pain between the intervention group and the control group. A greater level of pain was found in children in the age group 5-7 years, in children where peripheral venous catheter was introduced and in children where the parents were present.

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