

Original Research Article

Effectiveness of Oral Sucrose on Level of Pain among Infants during Pentavalent Vaccination, SGRD Hospital, Amritsar, Punjab

Maninderjit Kaur¹, Gopal Singh Charan²

¹Lecturer, SGRD College of Nursing, SGRDUHS, Amritsar

²Associate Professor, SGRD College of Nursing, SGRDUHS, Amritsar

Corresponding Author: Maninderjit Kaur

ABSTRACT

Vaccination is a process of protecting an individual from diseases through the introduction of live, killed or attenuated organisms in the individual system. Routine immunization injections are the most common painful procedure for the infants. It is the common source of iatrogenic pain in childhood. Distraction is the most frequently used intervention to guide children's attention away from the painful stimuli and reduce pain. There are two types of pain management:- Pharmacological and Non Pharmacological treatment. Administering of sucrose during pentavalent vaccination relieve pain among infants. A quasi experimental study was conducted to assess the effectiveness of administration oral sucrose on level of pain among infants during pentavalent vaccination. The study was carried out at immunization room, SGRD Hospital, Vallah, Amritsar, Punjab. 80 infants were recruited by using purposive sampling technique. FLACC Behavioural Pain Scale was used for data collection. Research tool included information data sheet, level of pain according to FLACC Behavioral Pain Scale and procedure for oral sucrose solution. 1ml (1.5mg) of sucrose solution was administered to infants orally during pentavalent vaccination. Data was analyzed by statistical software SPSS 17.0 version. The study results revealed that experimental group mean score was 4.2250 ± 1.059 and in control group was 6.6750 ± 1.071 . Calculated t-value; 9.444 which was more than tabulated 1.990 t value. So, null hypothesis was rejected. It was found highly significant with p-value $0.000 < p\text{-value } 0.05$ at df 78. The study concluded that there is statistically significant difference in the mean score of experimental and control group after administration of oral sucrose to reduce level of pain among infants during pentavalent vaccination.

Keywords:- Vaccination, Pain, Infants, Pentavalent, Sucrose

INTRODUCTION

Immunization is the process of inducing immunity against a specific disease. [1] Immunization is the one of the most cost effective public health intervention and largely responsible for reduction of under five mortality rate. [8]

Routine immunization injections are the most common painful procedure for the infants. It is the common source of iatrogenic pain in childhood. [2] Vaccines are prepared from live attenuated organisms, inactivated or killed organisms, extracted cellular fractions, toxoids or combination of

these. [3] The word *pain* is derived from the Latin word “*poena*” which means punishment or penalty. [4] It is an unpleasant sensory and emotional experience associated with actual or potential tissue damage. [5] Pain is the fifth vital sign which is present from birth to the last stage of our life.

Distraction is the most frequently used intervention to guide children’s attention away from the painful stimuli and reduce pain. The most common pain measures used for infants are behavioral. Behavioral measures are the most reliable tool when measuring short, sharp procedural pain such as during injections. The most commonly used behavioral pain measure is FLACC Behavioral Pain Scale. [6]

There are two types of pain management:- Pharmacological and Non Pharmacological treatment. The non Pharmacological measures used to alleviate pain and reduce discomfort in infants include repositioning, music, tactile comfort measure, cuddling, oral sucrose and non nutritive sucking. Administering sucrose during pentavalent vaccination relieve pain among infants. [2] The pain associated with vaccination is a source of anxiety and distress for the infants receiving vaccination, their parents and the providers who must administer them. Evaluation of pain in infants is difficult due to subjective nature of pain and the inability of infants to verbally express pain. [2]

The comfort is a concept and central art of nursing. The pain treating has become a crucial part for any procedure of neonatal care. The pharmacological treatments are rarely used during the procedures because of their effectiveness and potential adverse effects. Therefore, non pharmacological interventions are valuable alternatives. There are several therapeutic and preventive strategies involved in non pharmacological interventions which are reported to be effective in relieving pain in infants. [2] Glucose solutions are readily available in neonatal care units and easier to use in routine practice. [7] In 2014, national

immunization drive that aims to strengthen India’s immunization system and increase full immunization coverage to at least 90% by 2018. [9]

The researchers from their experience and review of literature felt that as the pain is the fifth vital sign which need to be assessed and managed appropriately, this should be a part of the child’s care plan. It is important that the distracter should be cheap, easily available, easily usable without any additional training, and less time consuming so that it can be used easily in busy settings as well. We observed that infants receiving immunization with no any attempt made to reduce the pain and I felt the need for application of an easily usable, available and effective distraction to reduce the pain of infants during pentavalent vaccination. In this study researchers assessed the effectiveness of oral sucrose for reducing the pain response in infants receiving pentavalent vaccination.

HYPOTHESIS

H₀:-There is no significant difference between level of pain in experimental and control group ($p \leq 0.05$)

OBJECTIVES OF STUDY

1. To assess the level of pain in experimental and control group.
2. To compare the level of pain in experimental and control group.

MATERIALS AND METHODS

The quantitative research approach was adopted with quasi experimental non randomized post test only design to assess the effectiveness of administration of oral sucrose on level of pain among infants during pentavalent vaccination. The study was conducted at immunization room, SGRD Hospital, Vallah, Amritsar. It is one of the pioneer hospital in the state. There are different departments to provide all type of services to the patients. Over the year it has grown in the every sphere and renders services in all specializations. It has well equipped outpatient department for all specialties. The researcher included 80

infants through purposive sampling from which 40 were in experimental group and 40 in control group with inclusion and exclusion criteria. Data was collected from 6th Jan 2017 to 4th Feb 2017. Research tool consisted of three parts:- Part-I Information data sheet, Part-II FLACC Behavioral Pain Scale, Part-III Procedure for oral sucrose administration. Tool was prepared and finalized after extensive review of literature, consultation and discussion with experts of nursing. Ethical permission was obtained from ethical and research committee members of Sri Guru Ram Das Institute of Medical Sciences and Research

(SGRDIMSR), Amritsar, Punjab. After gaining the approval from research and ethical committee, permission was taken from Director Principal SGRDIMSR to conduct research study. Permission was taken from Markel, Sandra for using their FLACC Behavioral Pain Scale in my study. Written informed consent was taken from the mothers of infants. Anonymity and confidentiality were maintained during and after data collection. Reliability of Standardized FLACC Behavioral Pain Scale is $r=0.82$ by Cronbach's Alpha. Data analysis was done with use of statistical software SPSS 17.0.

RESULTS

Table:1-Socio Demographic Characteristics of infants. N=80

Sr. No.	Socio-demographic variables	Experimental Group n=40		Control group n=40	
		f	%	f	%
1.	Age (In months)				
	1-2	13	32.5	16	40.0
	2-3	13	32.5	11	27.5
	3-4	14	35.0	13	32.5
	Mean±SD	10±0.57		13.33±2.516	
2.	Sex				
	Male	26	65.0	25	62.5
	Female	14	35.0	15	37.5
3.	Weight (In kg)				
	2.5-3.5	02	05.0	02	05.0
	3.5-4.5	06	15.0	11	27.5
	4.5-5.5	32	80.0	27	67.5
	Mean±SD	13.133±16.289		13.333±12.662	

Table 1: Reveals that majority i.e. 14 (35%) of experimental group infants were in age group of 3-4 months whereas 16(40%) of control group infants were in age group of 1-2 months, followed by 13 (32.5%) experimental infants lies category of age 2-3 months and similar 13(32.5%) infants were in age group 1-2 months. Mean age of infant in experimental group 10 and while 13.33 in control group. In control group 13(32.5%) infants were in age group of 3-4 months and 11(27.5%) infants were in age group of 2-3 months. According to sex distribution of

infants majority of were male i.e. 26(65%) in experimental group and 25(62.5%) were in control group while there were female 14(35%) in experimental group and 15(37.5%) were in control group. As per weight categories majority of infants 32(80%) of experimental group and 27(67.5%) of control group in 4.5-5.5 weight in kg. Followed by 6 (15%) of experimental group and 11 (27.5%) of control group in 3.5-4.5 weight in kg. few of them 2(5%) in both experimental and control group in 2.5-3.5 weight in kg.

Table2:- Level of Pain in experimental and control group. N=80

Level of Pain	Experimental Group (n=40)		Control Group (n=40)	
	f	%	f	%
Mild discomfort(1-3)	10	25	-	-
Moderate pain(4-6)	30	75	18	45
Severe pain(7-10)	-	-	22	55

Table 2: represent the level of pain in experimental and control group. In

experimental group most of the infants i.e. 30(75%) experienced moderate pain and

mild discomfort 10(25%). Whereas in control group most of the infants

Table-3: Comparison of level of pain in experimental and control group N=80

Group	Mean \pm SD	Mean Difference	t-value	df	p-value
Experimental	4.2250 \pm 1.059	2.450	9.444	78	.000 ^s
Control	6.6750 \pm 1.071				

Note : S- Significant (p-value<0.05)

Table 3: shows the Mean score of level of pain in experimental group was 4.2250 \pm 1.059 and in control group mean score was 6.6750 \pm 1.071. The difference between mean score of level of pain in experimental group and control group was 2.450. Calculated t value 9.444 was more than tabulated value 1.990. So null hypothesis was rejected and concluded that there is statistically significant difference in the mean score of experimental and control group after administration of oral sucrose to reduce level of pain. It was found to be highly significant at p-value 0.000 < p-value 0.05 at df 78.

DISCUSSION

The study was conducted to assess the effectiveness of oral sucrose on level of pain among infants during pentavalent vaccination. The present study findings showed that the level of pain in experimental group was mild (25%), moderate (75%) and in control group was moderate (45%), severe (55%). This shows that the level of pain in experimental group was less than in control group. These findings were congruent with the findings of the study conducted by Rouben N et.al (2013) which showed that the level of pain in experimental group was mild (63.4%), moderate (36.6%) and in control group was moderate (3.4%), severe (96.6%).^[10]

The present study findings revealed that the mean in experimental group was 4.2250 \pm 1.059 and in control group was 6.6750 \pm 1.071. There was significant reduction in the level of pain in experimental group (p<0.05). Similar study was conducted by Rouben N et.al (2013)

experienced severe pain i.e. 22(55%) and moderate pain 18(45%).

that revealed mean in experimental group was 2.33 \pm 0.922 and in control group was 5.53 \pm 0.73. There was significant reduction in the mean pain score during venipuncture performed after the sucrose solution administration (p \leq 0.001).^[10]

CONCLUSION

This study was undertaken to assess the effectiveness of administration of oral sucrose on level of pain among infants during pentavalent vaccination. The study findings showed that the level of pain in experimental group was mild (25%), moderate (75%) and in control group was moderate (45%), severe (55%). This shows that the level of pain in experimental group was less than in control group. The study revealed that the mean in experimental group was 4.2250 \pm 1.059 and in control group was 6.6750 \pm 1.071. The mean difference between level of pain in experimental group and control group was 2.450 and t-value was 9.444. There was significant reduction in the level of pain in experimental group when compared with control group i.e. 0.000(p<0.05). This means that the administration of oral sucrose during pentavalent vaccination significantly decreases the level of pain.

ACKNOWLEDGEMENT

I acknowledge the expertise and guidance contributed by my supervisor, and sincere thanks to Principal SGRD College of Nursing, HOD Pediatrics SGRD Hospital, Amritsar for granted me the permission to conduct study.

Conflict of interest: The authors have no conflict of interest to declare.

REFERENCES

1. Kliegman, Behrman, Jehson, Stanton. Textbook of Pediatrics. 18th ed. New Dehli: Elsevier Publishers; 2008
2. Abo El. Magd AN, Abd El. Moez Ali B, Abd. El Karim HE & Mohamed NT. Effect of oral sucrose administration on reducing infantile sensation of pain during immunization. Al Azhar Assiut

- Medical Journal. 2014;[cited 2016,Jan 5] 12(4): 1683-97. Available from : <http://www.aamj.eg.net/inner/jarticle.aspx?aid=2243>.
3. Datta P. Pediatric Nursing. 2nd ed. New Delhi: Jaypee; 2009.
 4. Sahare B. Effect of oral sucrose on pain reduction. *Nightingale Nursing Times*. 2012;7-10.
 5. Forfar & Arneil's. Textbook of Pediatrics. 7th ed. China: Elsevier; 2008.
 6. Hockenberry MJ, Wilson D. Essentials of Pediatric Nursing. 8th ed. New Delhi: Elsevier; 2009.
 7. Isik U, Ozek E, Bilgen H, Cebeci D. Comparison of oral glucose and sucrose solutions on pain response in neonates. *Journal of Pain*. 2000;[cited 2017, Apr 6] 1(4):275-78. Available from: [https://www.ncbi.nlm.nih.gov/pmid:14622610](https://www.ncbi.nlm.nih.gov/pmid/14622610)
doi:10.1054/jpai.2000.8919
 8. Vashishtha VM and Kumar P. 50 years of Immunization in India. *Indian pediatrics*. 2013;[cited 2016, Jan 8] 50:111-18. Available from: <http://www.indianpediatrics.net/jan2013/jan-111-18>.
 9. Indian Academy of Pediatrics. 2017; 54:445-46. Available from: <https://indianpediatrics.net/june2017/june445-446.htm>
 10. Rouben N, Kaur R, Rao K L N. Effect of sucrose in pain relief during venipuncture in infants. *Nursing midwifery research journal*. 2013; 9(4): 152-59.

How to cite this article: Kaur M, Charan GS. Effectiveness of oral sucrose on level of pain among infants during pentavalent vaccination, SGRD Hospital, Amritsar, Punjab. *Int J Health Sci Res*. 2018; 8(6):171-175.
