

Effectiveness of cold application on pain during IM injection among infants attending immunization clinic

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Abstract

Introduction: Pain is highly unpleasant and very personal sensation. Infants have Pain during intramuscular immunization. Cold application is a simple procedure to reduce pain due to intramuscular immunization. **Objective:** To evaluate the effectiveness of cold application on level of pain associated with intramuscular immunization. **Design:** A quantitative approach using quasi-experimental post only test design. **Participants:** 50infants undergoing intramuscular immunization. **Sampling technique:** A non-probability purposive sampling technique is used to selected hospital Narayan medical college and hospital Jamuhar, Rohtas". **Intervention:** Cold application is applied for 30 seconds just prior to inserting the needle. **Tools:** Standardized Neonatal Infant Pain Scale is used to assess the level of pain associated with intramuscular immunization. **Results:** Analysis among Experimental group by using independent t test found significant value 9.13 at $p<0.05$ level. **Conclusion:** Cold application is effective on reducing the pain associated with intramuscular immunization among infants.

Keywords: local cold application, infants, intramuscular injection, immunization, pain.

INTRODUCTION

Pain is defined by the International Association for the Study of Pain (IASP) as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage.” It occurs with many disorders, diagnostic tests, and treatments. Pain associated with treatment includes the needle stick pain, postoperative pain and so on. Although we cannot adequately describe pain, we have developed effective ways of treating it.^[1]

Intramuscular injections (IM) are a common yet complex technique used to deliver medication deep into the large muscles of the body. More than 12 billion IM injections are administered annually throughout the world. However, it is not a benign procedure, and unsafe injection practices are estimated to have significant impacts on patient morbidity and mortality and result in millions of dollars in direct medical costs on an annual basis. Although there is significant research, spanning 8 decades, on the procedure and techniques of administering medications by the IM route, instruction materials and clinician practice do not always reflect research-based practice.^[2]

US census bureau (2011) estimated that injections are among the most frequently used medical procedures with an estimated 12 billion intramuscular injections administered throughout the world on an annual basis, of these 5% or less are for immunization and rest are given for curative purposes. In developing countries alone, some sixteen thousand million injections are administered annually, over 90%, are administered for therapeutic aims whereas 5 to 10% are administered for disease prevention, the foremost important side-effect associated with injections is that the related pain. Injection pain is associated with the penetration of the skin by the needle and to the mechanical and chemical effects of the drug during and after its injection.^[3]

Cold application is the use of an object that provides cooling to any part of the body. The effect of applying cold in alleviating pain may take place directly or indirectly. Cold directly affects the peripheral nerves by slowing down or entirely stopping pain transmission. It is thought that the application of cold increases the pain threshold by causing vasoconstriction.^[4]

Injections are considered the gold standard in the parenteral application of various drugs. Intramuscular (IM) injection, which is one of the parenteral applications, is used worldwide commonly. IM injection is often preferred in the application of drugs such as antibiotics, vitamins, and painkillers. However, if the area is not appropriately determined in IM injection treatments or if the injection is not performed with the appropriate technique, serious complications may arise. The most common among these complications is pain, and this may arise as a result of not choosing the appropriate area, the injector penetrating the skin, and the mechanic and chemical effects of the drug during and after injection.^[5]

NEED FOR THE STUDY

Children are building block of nation. This means they can do something in future. It is significant to be healthy from the beginning of life. To prevent from certain communicable disease, it is necessary to administer vaccine, during vaccine period, children feel pain is common in children. Pain is the most important single cause leading to temper tantrums and untow to prevent from certain communicable disease, it is necessary to administer vaccine, during vaccine period, children feel pain is common in children. Pain is the most important single cause leading to temper tantrums and untoward behavioural changes in children. Everyone has right to get relief from pain. It is only possible either from pharmacological or no pharmacological measures.^[6]

The most common cause for procedural pain is injections. So as the part of nursing profession, it is our responsibility to use effective strategies to reduce procedural pain. Undoubtedly procedural pain (injections) is an important source of discomfort for clients, from which all instinctively try to escape. Intramuscular injection are a fairly uncomfortable invasive procedure requiring numerous decisions regarding the injection site, volume of drug to be injected, position of the client during injection and methods to keep the site relaxed to reduce pain.^[7]

STATEMENT OF THE PROBLEM

“A study to assess the effectiveness of local cold application on pain during IM injection among infants attending immunization clinic in a selected hospital Jamuhar, Rohtas.”

OBJECTIVE

1. To compare the pain during IM injection between study and control group.
2. To find association between the pains of infants during IM injection in study group with selected base line variable.
3. To assess the association between the pains of infants during IM injection in control group with selected baseline variables.

RESEARCH METHODOLOGY

Research design

The research design is the overall plan for obtaining answer to the research question. It is indicating how to often data will be collected, what type of comparisons will be made and where the study will take place.

In this study, Quasi experimental research design is used.

SETTING OF THE STUDY

This study will be conduct Narayan Medical college And Hospital (NMCH).

ACCESSIBLE POPULATION

The accessible population of this study infants whose age is between 0 to 12 months

SAMPLE

All the infants attended the immunization clinic of NMCH, Jamuhar. Age group: - 0-4months, 5-8months, 9-12months
Gender: - Male, Female

SAMPLE SIZE

In this study, total sample size is 50 infants

SAMPLING TECHNIQUE

In this study the samples were selected by purposive sampling technique.

CRITERIA FOR SAMPLE SELECTION

INCLUSION CRITERIA: -

- All the infants undergoing IM Injection

- Infants who are healthy and attending OPD for routine Immunizations.

EXCLUSION CRITERIA: -

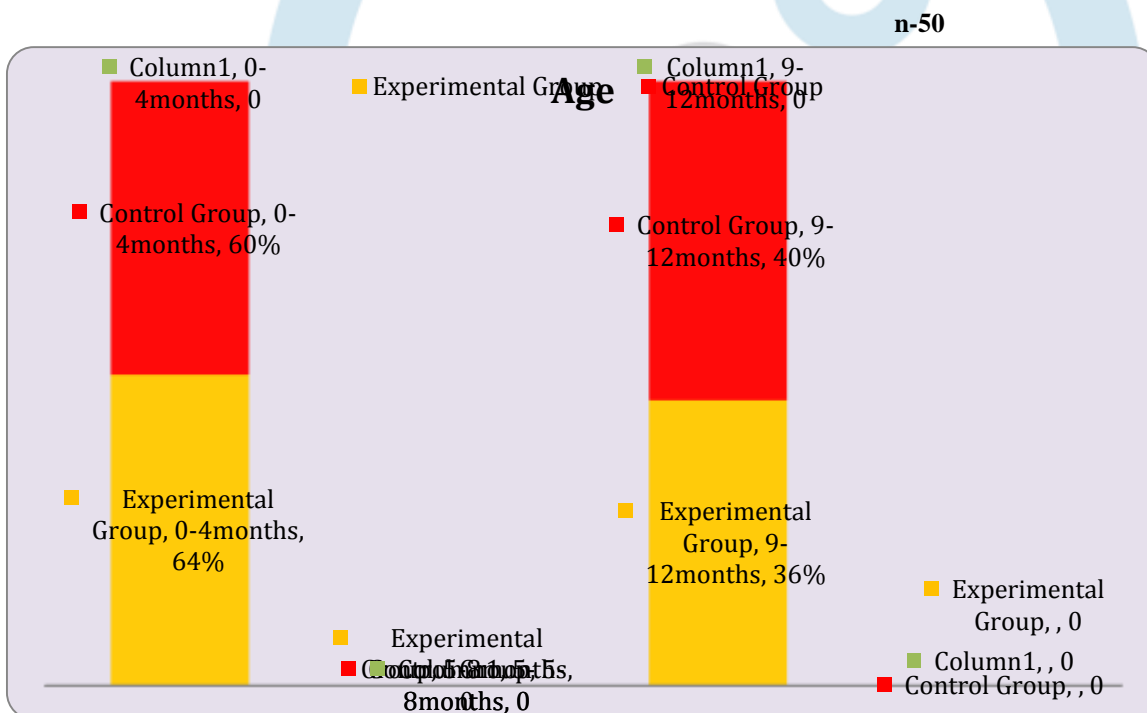
- Infants of mothers who were not willing to participate in the study.
- Infants with neurological deficit
- Congenital deformities.
- Infants with fever and other distress during immunization process.

DATA COLLECTION PROCEDURE

The data collection procedure was done for a stipulated period of 1 Weeks in Narayan medical hospital Jamuhar Sasaram. Permission to conduct the study was Obtain from the Superintendent of the hospital. The Sample were informed by the researcher about the nature and the purpose of the study. Informed consent was taken from the mother or caregiver. After explaining the study, ice pack was applied for 30 second prior to intramuscular immunization. At the end of this period intramuscular immunization was given during which pain assessment will be done among infants pain scale. The pain assessment among control group was done without the intervention.

MAJOR FINDING OF THE STUDY

Age distribution among Study group and Control group



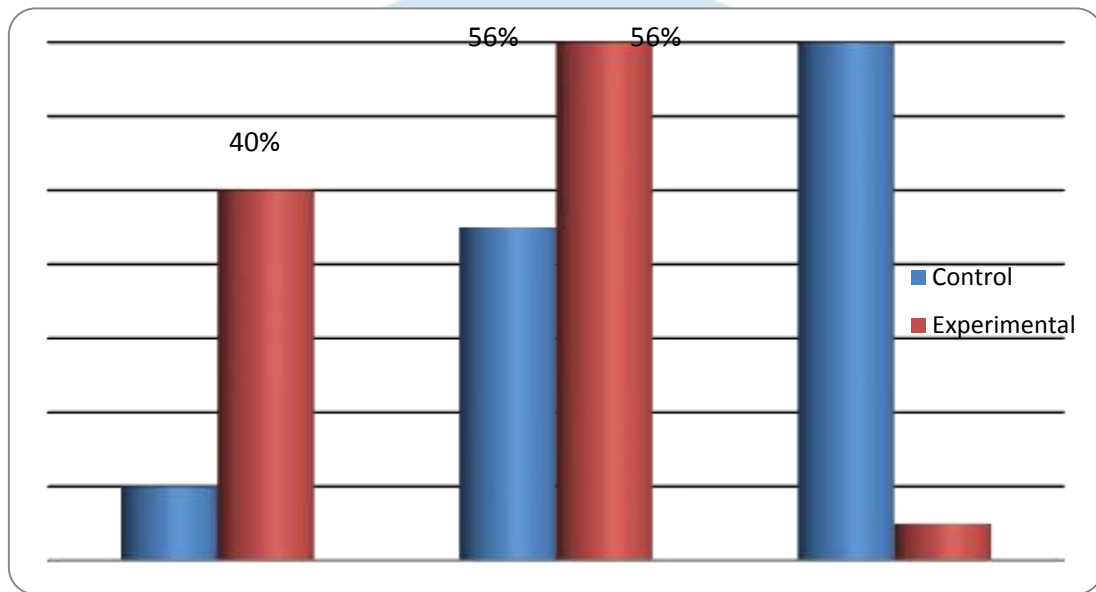
Shows in both of the group majority of the infants were between the age group of 0-4 months that is in experimental group 64% and in Control group 60%. There were no infants between the age group of 5-8months. In experimental group 36% and in Control group 40% infants were between the age group of 9-12

Objective 1: To compare the pain during IM injection between study and control group.

The first objective was to assess the post-test level of pain during intramuscular immunization among infants in experimental group and control group. The study revealed that during post- test, in experimental group 40% infants had mild pain and 56% infants had moderate pain and 4% infants had severe pain. In control group (8%) mild pain and (36%) infants had moderate pain and (56%) infants had severe pain.

Table 4 shows that pain during IM injection in control and experimental group

Pain Scale	Control		Experimental		‘t’test	P
	N	%	N	%		
Mild	2	8%	10	40%	6.39	0.505
Moderate	9	36%	14	56%	0.76	0.11
Severe	14	56%	1	4%	29.24	0.99



The majority of mild pain is shown in experimental group that is 10(40%) in experimental group.

Also highest proportion of participants is shown in moderate pain that is 14(56%) in experimental group.

And the highest proportion of severe pain is 14 (56%) in control pain.

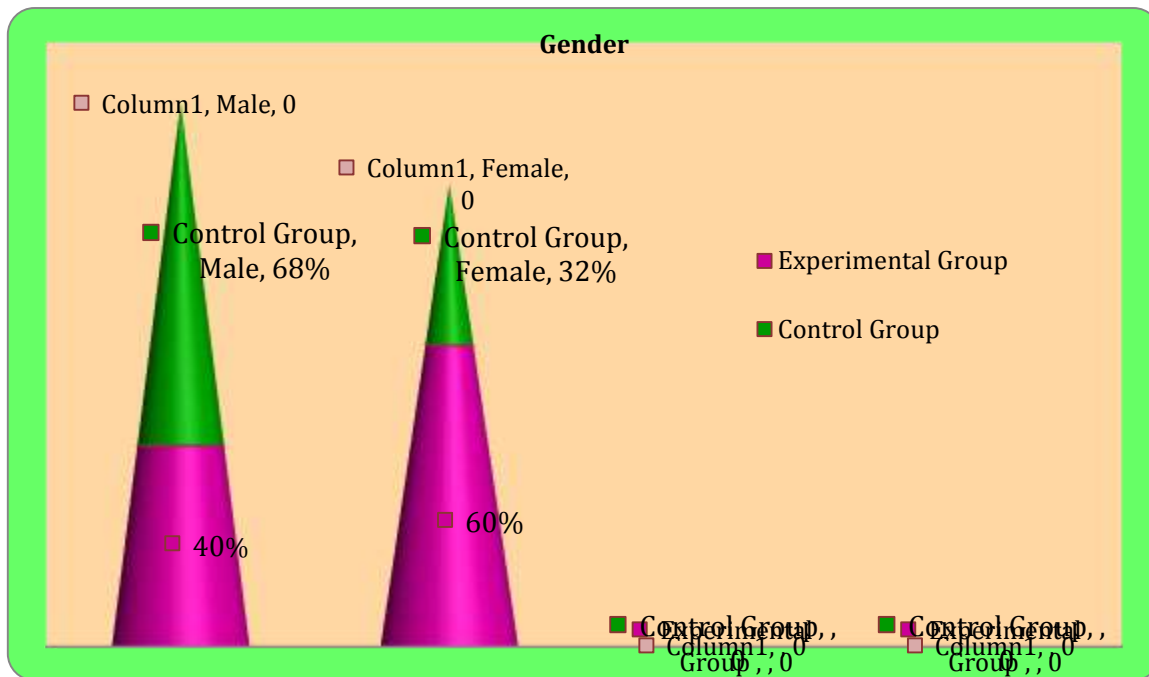
In age group 0-4 month of infant has moderate pain during IM injection

In age group 9-12 month of infants has mild pain during IM injection with p value is 0.417

Objective 2: To find association between the pain of Infants during IM injection in study group with selected baseline variables.

Fig. no-4 : Gender distribution among Study group and Control group

n-50



Presents in experimental group majority of the infants were female 60% and 40% were male while in control group majority infants were male 68% and only 32% were female.

Age

Among 16 infant age group of (0-4 months) 10 infants were having moderate pain while 1 infant having severe pain. And in 9 infants age group of (9-12) 5 infants were having mild pain and 5 having moderate pain.

Gender

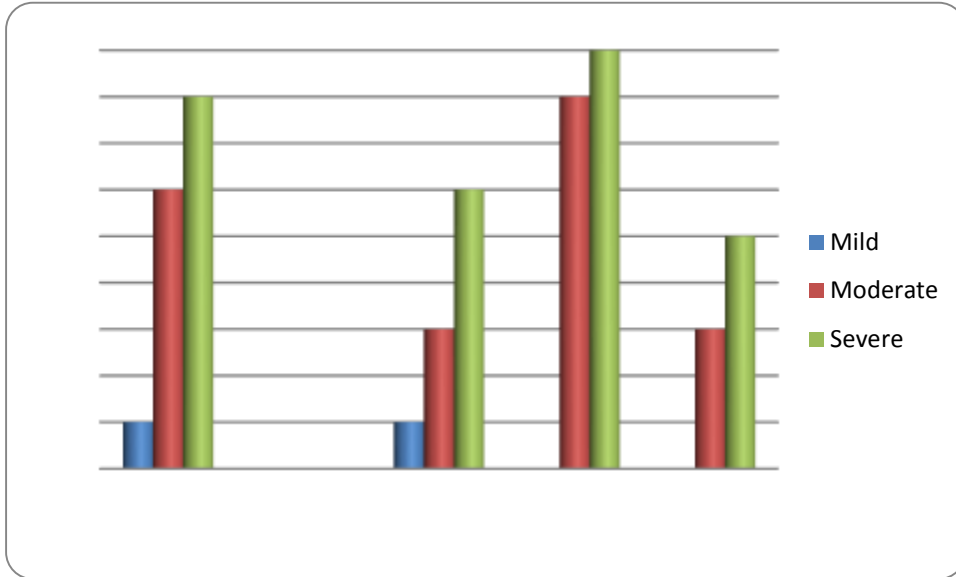
Among 25 infants 15 infants are male were 8 infants having moderate pain while 10 infants are female were 5 infants having mild pain.

Table shows that baseline variable of experimental group

Baseline	experimental group	X ²	P	Df
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	N	Mild	moderate	severe			
AGE					1.748	0.417	2
0-4	16	5	10	1			
5-8	0	0	0	0			
9-12	9	5	4	0			
GENDER					0.026	0.87	1
Male	15	7	8	0			
Female	10	5	5	0			

PREVIOUS HISTORY OF IM INJ		1.96	0.161	1
Yes	9			
No	16			



AGE

In age group 0-4 months infants have moderate pain

In age group 9-12 months mild pain with p value is 0.417

GENDER

In gender male have moderate pain

Female have mild pain with p value is 0.87

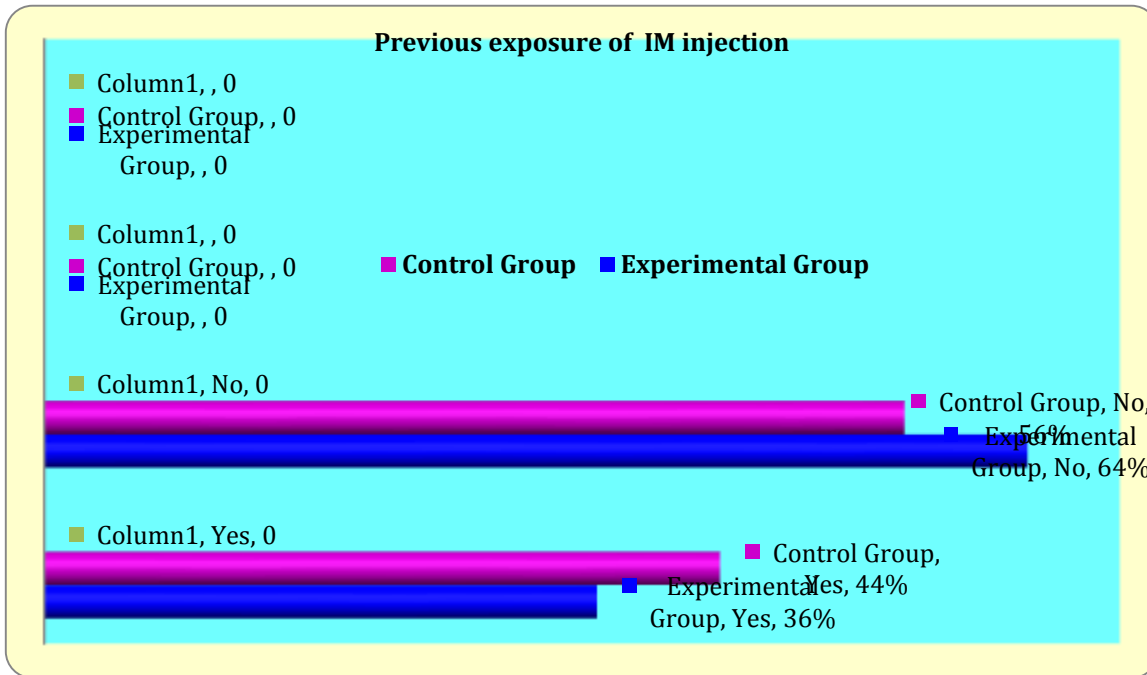
PREVIOUS HISTORY OF IM INJECTION

The value is 0.161

Objective 3: To assess the association between the pain of infants during IM injection in control group with selected baseline variables.

Figure no- 5: previous exposure of IM Injection among Study group and Control group

n-50



Shows in both the groups majority of the infants had the first exposure of IM Injection, in experimental group 64% and control group 56%. In experimental group 36% and in control group 40% had previous exposure on IM Injection

Age

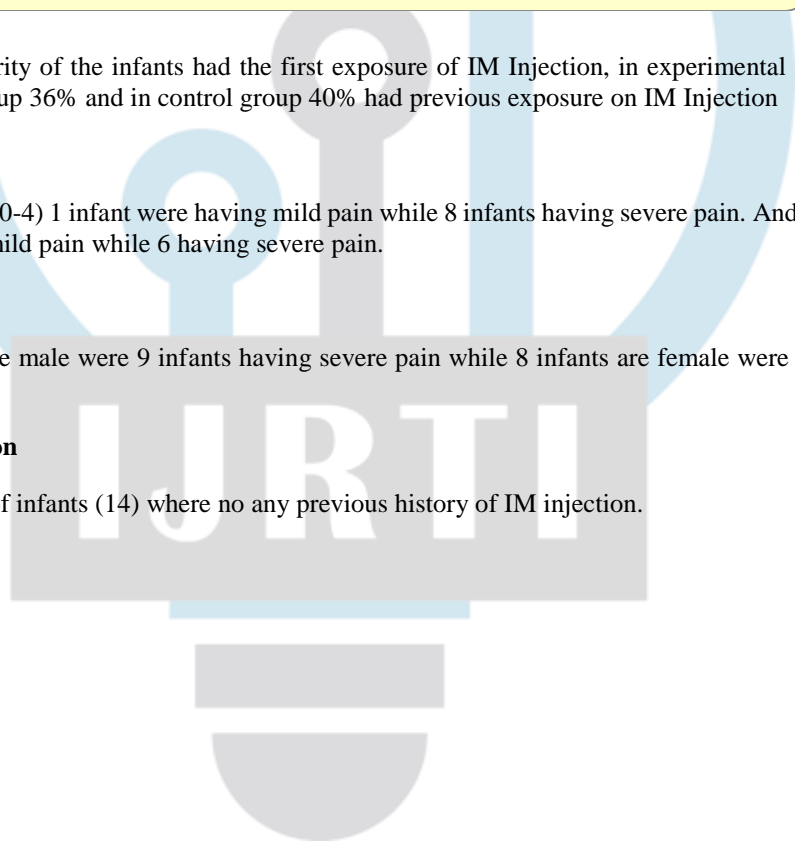
Among 15 infants age group of (0-4) 1 infant were having mild pain while 8 infants having severe pain. And in 10 infants age group of (9-12) 1 infant were having mild pain while 6 having severe pain.

Gender

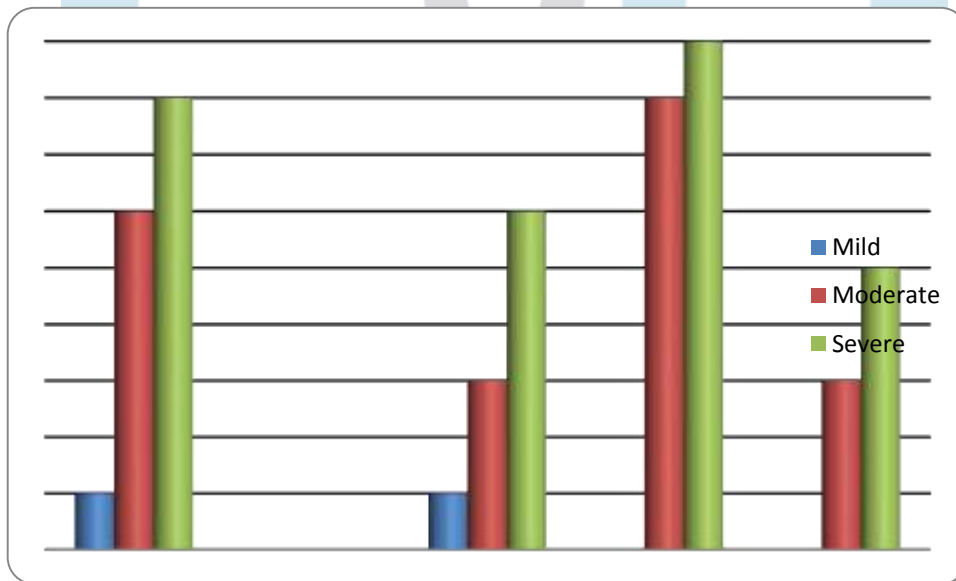
Among 25 infants 17 infants are male were 9 infants having severe pain while 8 infants are female were 5 infants having severe pain.

Previous history of IM injection

Among 25 infant majority of infants (14) where no any previous history of IM injection.



Baseline	Control Group				X ²	P	Df
	N	mild	moderate	severe			
AGE					0.2976	0.86	2
0-4	15	1	6	8			
5-8	0						
9-12	10	1	3	6			
GENDER					0.335	0.5623	1
Male	17	0	8	9			
Female	8	0	3	5			
PREVIOUS HISTORY OF IM INJ					0.36	0.54	1
Yes	11						
No	14						



DISCUSSION

Mary geen (2015) conducted a study to evaluate the effectiveness of cold application on level of pain associated with intra muscular immunization among infants in selected hospitals pain is highly unpleasant and very personal sensation. Infants have pain during intramuscular immunization. Cold application is a simple procedure to reduce pain due to intramuscular immunization At Ernakulum sample size 60 Analysis among Experimental group by using independent μW¶ test found significant value 9.13 at p<0.05 level. Cold application is effective on reducing the pain associated with intramuscular immunization among infants.^[7]

Joselin Annabel P.C (2013) conducted A true experimental study on effectiveness of ice cube application upon pain perception of children during intra muscular injection Randomization was carried out to select 60 samples and to assign them in the control and experimental group. Ice Cube application was given as intervention in the experimental group. In this study, post test only design was adopted. The researcher manipulated the independent variable i.e., ice application to the experimental group of children. The effectiveness of ice cube application upon the independent variable.^[8]

Kavita Kalyan , Jicy Shahji, et all (2019), A true experimental study was conducted to assess the effectiveness of local cold application prior to intramuscular injection to reduce the intensity of the pain. The sample size consisted 60.cold application was applied for 5 second just prior to inserting the needle standardized Numerical pain scale was used to assess the pain level . The

obtain data was analysed in the term of the objective of the study using descriptive and inferential statistics .analysis among Experimental group by using Non- paired “t” test found significant value 10.8 at $p < 0.05$ level. To compare the pain level in both groups the control group mean (5.8) is higher than the experimental group (3.2), mean difference is 2.6, obtained “t” value is 10.8 significant at $p < 0.05$ level. The ice application had effect on reducing the pain during intramuscular injection cold application is effective on reducing the pain associated with intramuscular injection.^[9]

Conclusion

In Age distribution among Study group and Control group infants were between the age group of 0-4 months that is in experimental group 64% and in Control group 60%. There were no infants between the age group of 5-8months. In experimental group 36% and in Control group 40% infants were between the age group of 9-12 months

Gender distribution among Study group and Control group in experimental group majority of the infants were female 60% and 40% were male while in control group majority infants were male 68% and only 32% female.

previous exposure of IM Injection among Study group and Control group the infants had the first exposure of IM Injection, in experimental group 64% and control group 56%. In experimental group 36% and in control group 40% had previous exposure on IM Injection.

In pain during intramuscular immunization among infants in experimental group and control group. The study revealed that in experimental group 40% infants had mild pain and 56% infants had moderate pain and 4% infants had severe pain. In control group (8%) mild pain and (36%) infants had moderate pain and (56%) infants had severe pain.

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