A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE.

By

Reg.No: 301916103

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIALFULFILLMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

OCTOBER 2021

A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE.

By

Reg.No: 301916103

Approved by

_____	_____
EXTERNAL	**INTERNAL**

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIALFULFILLMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

OCTOBER 2021

A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE.

CERTIFIED THAT THIS IS THE BONAFIED WORK OF

Reg.No: 301916103

P.P.G College of Nursing,

Coimbatore

SIGNATURE: _____ COLLEGE SEAL

Dr.P.MUTHULAKSHMI, M.Sc(N)., M.Phil., Ph.D.,

Principal,
P.P.G College of Nursing,
Coimbatore -35

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIALFULFILLMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

OCTOBER 2021

A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE.

APPROVED BY THE DISSERTATION COMMITTEE ON APRIL 2020

RESEARCH GUIDE: _____

Dr.P.MUTHULAKSHMI, M.Sc (N)., M.Phil., Ph.D.,
Principal,
P.P.G College of nursing,
Coimbatore -35.

SUBJECT GUIDE: _____

Dr. K.JEYABARATHI, M.Sc(N)., Ph.D.,
HOD, Child Health Nursing,
PPG College of Nursing,
Coimbatore

MEDICAL GUIDE : _____

Dr. ASHOK, M. D
Consultant Paediatrician,
Ashwin Hospital,
Coimbatore.

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY, CHENNAI IN PARTIALFULFILLMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

OCTOBER 2021

PLAGIARISM CERTIFICATE

This is to certify that the dissertation work titled **"A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE.**" of the candidate with registration number **301916103** for the award of M. Sc Nursing in the Branch of Child Health Nursing. I personally verified the **PLAGARISM CHECKER X. COM** website for the purpose of plagiarism check. I found that the uploaded thesis file contains from introduction to conclusion pages and results shows **17 %** of plagiarism in the dissertation**.**

Signature of the
Subject Guide

Dr.P.MUTHULAKSHMI, M.Sc(N)., M.Phil.,Ph.D.,
Principal,
P.P.G College of Nursing,
Coimbatore -35.

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

I heartily thank a lot **my Lord** for helping me fully, He gave me the strength and courage to overcome all difficulties and for making me to do this thing with works in his hands.I thank him whole heartedly.

Words are beyond expression for their commendation and meticulous care, fervent prayer and faith of **my family** for my nitrating my cherished dream in to a reality through their continuous challenging encouragement, and financial support.

I extend my deep sagacity of gratitude uncut heartedly to **Dr. L. P. Thangavelu, M.S., F.R.C.S.,** Chairman and **Mrs. Shanthi Thangavelu**, M.A., Correspondent P.P.G Group of Institutions, Coimbatore, who abetted me in making the project a great triumph.

It is my extensive felt desire to express my insightful gratitude an elite thanks to **Dr.P. MuthuLakshmi, M.Sc. (N), M.Phil., Ph.D.**, **Principal** PPG College of Nursing and research guide. It is a matter of fact that without her admired propositions, high scholarly touch and intense acumen from the inception till the accomplishment of the study, and the cherished guidance, thought provoking spur, creative suggestion, timely help perpetual cheer, this work could not have been presented in the manner it has been made and would have never taken up silhouette.

The present study has been accomplished under the expert guidance and sustenance of **Dr. K. Jeyabarathi, M.Sc. (N), Ph.D**., and **HOD, Child Health Nursing**. If not my guide, the present study would have squandered much of its existence and affluence. Her ardent support, cherished guidance, alleged provoking stimulation, timely help, relentless encouragement, valuable suggestions and constrictive evaluation have enabled me to contour up this research as a pedestrian contribution to the field.

I express my sincere thanks to Dr **Dr.Ashok, M.D., Consultant of paediatrician**, Ashwin Hospital, and Coimbatore - 12. For his relentless support, treasured suggestions and guidance, and all staff of Masonic Hospital, Coimbatore for yielding me acquiescence toconduct the study in the hospital.

I express my thanks to **Prof. Uma Maheshwari, M.Sc. (N).** Medical surgical nursing department, class coordinator and all other **Faculty Members** of P.P.G College of Nursing.

Mrs. Blessy Pramila, M.Sc. (N), and **Ms. Arunima Mohan, M.Sc. (N)**, Department of Child Health Nursing for their revered propositions, relentless support, timely help and guidance till completion of the study.

I am beholden to **Prof. Venugopal**, Statistician for his scientific advice and help in research and biostatistics without which the course of work would have been futile.

I would like to thanks to Medical officer, Ashwin Hospital, Coimbatore, who gave opportunity to conduct a study.

My truthful thanks to all the Experts who have done the content validity and valuable suggestions in the modification of tool.

I protracted my thanks to the Dissertation Committee Members for their healthy condemnation, compassionate suggestions which model the research.

I would like to thank The Library Staffs for extending help in research for the reference material for the study.

I express my thanks to for his serenity and timely co-operation in typing and aligning the manuscript.

I extended my thanks to all The Participants and their parents in the study.

My fondest thanks are expressed from my heart to my Dear Most Colleagues for their support given to me throughout my study

DEDICATED TO ALMIGHTY GOD, LOVABLE PARENTS, BROTHERS, SISTERS & THEIR FAMILY, FRIENDS & WELL WISHERS

ABSTRACT

Statement of the problem: A study to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in Ashwin hospital, Coimbatore. **Objectives of the study: a)** To provide cough trick method during intra muscular injection among 4-12 years children in experimental group. b) To assess the intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group. c) To assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection in experimental group. d) To find out the association between intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental with their selected demographic variables. **Methodology**: The research design used was Quasi experimental post test only design. Sample size of 60 was taken for in the present study. This 30 children has taken us experimental group and other 30 children taken us in control group. Wong baker faces pain scale to assess the intensity of pain scoring, the data collection tool was valued by five expert. The main study was conducted in Ashwin hospital at Coimbatore. The data collections were tabulated and analyzed. **Results:** The post test means score 7.9 in Control group and post test mean score was 3.5 in Experimental group. The calculated 't' value 12, which is significant at $p<0.05$ level. The finding implies that the cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children. **Conclusion :** According to the statistical results of this study, subjects the children's who received Cough Trick method prior to intramuscular injection is effective in reducing the level of pain. Because cough trick method was no cost effective, non invasive and highly feasible, the researcher concluded that it can be used as an effective intervention to cough trick method to reduce the intensity of pain.

CONTENTS

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXURES

LIST OF ABBREVATIONS

ABBREVIATIONS	EXPANSION
CT	Cough Trick
IMP	Intra Muscular Prick
IV	Intravenous
IM	Intramuscular Injection
VAS	Visual Analogue Scale
SMD	Standarized Mean Difference

CHAPTER - I

CHAPTER I

INTRODUCTION

1.1 Background of the Study

According to National Policy for Children's (2015) reported that India is home to the largest child population in the world. The Constitution of India guarantees Fundamental Rights to all children in the country and empowers the State to make special provisions for children. The Directive Principles of State Policy specifically guide the State in securing the tender age of children from abuse and ensuring that children are given opportunities and facilities to develop in a healthy manner in conditions of freedom and dignity. The State is responsible for ensuring that childhood is protected from exploitation and moral and material abandonment. (Ramandeep, 2018).

Every child is an individual and should never be considered a typical boy or girl, one unit of a group who are all alike. Each child has his own rate of growth, but the patterns of growth shows less variability. Although growth and development – physical, mental, social, emotional, and spiritual-proceed at different rates, they are also interrelated in the majority of children that the result is a progressive development of the whole child, from infancy to childhood (Vandna, 2016).

The International Association for the Study of Pain (2017) defines pain as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage. Pain is a distressing feeling often caused by intense or damaging stimuli.

Gordon (2017) states that pain is a universal experience. The American Pain Society labelled it as the fifth vital sign to emphasize the importance of assessing pain frequently and providing appropriate care. Pain is highly subjective. Pain is a complex and multi dimensional phenomenon. It comprises of five components such as affective, behavioural, cognitive, sensory and Physiological. Each dimension is implemented in the assessment and management to alleviate pain.

Gupta et al. (2016) stated that Pain is one of the most common adverse stimuli experienced by children occurring as a result of injury, illness and necessary medical procedures. It is associated with increased anxiety, avoidance, somatic symptoms and increased parent distress. Despite the magnitude of effects that acute pain can have on a child, it is often inadequately assessed and treated. Pain is an inherently subjective multi-factorial experience and should be assessed and treated.

Harsh et al. (2014) reported that the pain message is transmitted by the spinothalamic pathways to centres in the brain, where it is perceived. Pain sensation transmitted by the neospinothalamic pathway reaches the thalamus, and the pain sensation transmitted by the paleospinothalamic pathway reaches brainstem, hypothalamus and thalamus. These parts of the central nervous system contribute to the initial perception of the pain.

Number of non pharmacological techniques such as distraction, relaxation, guided imagery and cough trick techniques that may help to reduce intensity of pain, make pain more tolerable, decrease fear and anxiety for the children's (Hermann, 2019).

The 'cough trick' (CT) technique is used in reducing intramuscular prick (IMP) pain during vaccinations and also for brief painful procedures like subcutaneous injection, intravenous cannulation, and so forth. Cough trick," requires that the patient be prompted to give a single "warm-up" cough of moderate force, followed by a second cough that coincides with needle puncture. Cough trick' (CT) technique could be a distraction at the moment of intra muscular injection, which is a well-known method of pain reduction through the shift of attention to a nonnoxious stimulus in the immediate environment and it could be the activation of the segmental pain inhibitory pathways due to the increased pressure in the subarachnoid space during coughing mediated by vagal afferents.

Nellie (2018) states an intramuscular injection is the favourable route of administering medication where, fairly rapid-acting and long-lasting dosage of medication is required. Administration of intramuscular injection is the injection of medication into central area of specific muscle tissue that forms a deposit of medication. From the tissues through the blood

vessels the injected medications are distributed via cardio vascular system. An intramuscular injection is the safest, easiest and best tolerated route of injection.

Taddio et al. (2017) described that the deltoid is the preferred site for Intra Muscular injections in children ages 3 to 18, once adequate muscle mass has developed there, usually around the age of 3 years. To identify this site properly, nurses should expose the entire arm from the shoulder to the elbow and palpate the acromion process. Injections should be given 3 to 5 cm below this landmark. The deltoid is best for low-volume medications and Intra Muscular injections not exceeding a maximum volume of 1 ml. If the deltoid cannot be used, the vastus lateralis may be utilized in this age group.

According to National Policy for Children's (2015), revealed that in India, with a population of 121.1 Core, has 13.59% (16.45 Core) of its population in the age group 0-6 years and 30.76% (37.24 Core) in the age group 0-14 years. The gender wise composition of the child population is nearly the same as that of the total population. 48% of the child population (both 0-6 years and 0-14 years) is female which is slightly lower than the overall proportion of females in the country.

According to Ministry of Statistics and Programme Implementation (2015) showed that In rural India, 33% of its population belonged to the age group 0-14 years whereas in urban areas, 26% of the total population is in age group 0 -14 years.

According to Childrens in India (2016), revealed that at the National level, the death rate for age group 5-14 years is estimated at 0.6. Rural-urban differentials exist with the urban areas registering lower death rates as compared to that in rural areas in majority of the States. Among the bigger States/UTs, the lowest death rate in this age group is registered in Kerala (0.2) and the highest in Jharkhand (1.4).

According to Social and Rural Survey (2016) reported that the highest proportion of out of school children within 6-13 years is estimated in the East zone (4.02%) and the lowest within

South zone (0.97%). Odisha has the highest proportion of out of school children in India (6.10%).

According to World Health Organization (2015) enumerated that, 78% of children's experiencing pain during their emergency department stay, effective pediatric pain management should be an essential component of care. The most common painful procedures in the emergency department include venipuncture, intravenous (IV) insertions and Intramuscular Injections.

Zengerle (2016) quoted that more than 12 billion injections are administered each year worldwide. In India, a survey found that 96% of all injections given by health care providers were of antibiotics, vitamins and analgesics. 48% of patients mentioned needle injection as disturbing and 62% had fear about intramuscular injection. Needle phobia affects at least 10% of the total population and it also lead to avoidance of medical care.

Desiree (2020) conducted a study on minimizing needle pain in children. Survey suggested that Intra Muscular Injection is associated with considerable distress among children. Between 34% and 64% of children experience stress on pain from the procedure. The study suggested that 50% of children report needle stick experiences as unpleasant and painful, which causes subsequent high levels of anticipatory fear and distress. The fear of pain and needle phobia in children can lead to poor health consequences, including medical treatment.

According to International Association of Pain (2018) despite ready availability, however only 6% of paediatric hospitals use pain control for shots, and 2.1% of an estimated 18 million injections are performed each year with pain control. Distraction for minor to moderate procedural pain is free or inexpensive, easy to perform and is an effective method of pain control.

1.2 Need for the Study

Pain is a subjective experience. Thus self-report of pain is a critical component of pain assessment. Subjective reports of pain may include verbalization or nonverbal reports such as coloring the parts of the body that hurt on a body outline tool. Children in pain have consistently reported that needles and shots are what they fear the most (Broome, 2014).

Malviya et al. (2016) revealed that 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.

Voepel (2018) stated that a combination of pharmacological and non-pharmacological interventions can ensure the highest standard of care in the management of pain in children. In infants, cough trick method prior to intramuscular injection has drastically reduced pain while doing invasive procedures.

Hart et al. (2017) reported that Cough trick technique effectiveness of the procedure may result from distraction (concentrating on coughing on cue), competing sensory stimuli (noise and feeling of the cough), competing physiologic stimuli (e g: increased pressure in the subarachnoid space or increased blood pressure), or some combination of these factors. The strategy can be taught easily and requires no additional cost, equipment, or staff time.

Kimmel et al. (2019) revealed that assessing and managing the children with pain is a daily responsibility for nurses. They are the responsible persons who not only implement the doctor's orders, but also the ones who work closely with patients to facilitate healing processes. So nurse can use simple interventions to relieve procedural pain in children and promote comfort for them.

Rachal et al. (2021) conducted a study on the effect of intramuscular injection technique on injection associated pain. A systematic review and meta-analysis was adopted for this study. the result showed that 13 Intramuscular Injection techniques were identified. 10 studies applied local pressure to the injection site. Of these, applying manual pressure and Helfer (rhythmic) tapping to the injection site reduced injection pain, whereas the use of a plastic device to apply local pressure to the skin did not significantly reduce pain. Acupressure techniques which mostly involved applying sustained pressure followed by intermittent pressure (tapping) to acupressure points local to the injection site reduced pain, as did injections to the ventrogluteal site compared to the dorsogluteal site. The study concluded that Manual pressure or rhythmic tapping over the injection site and applying local pressure around the injection site reduced Intramuscular Injection pain.

Clancy et al. (2017) reported that paediatric intramuscular injections for developing world settings. Giving intramuscular injections is considered a core nursing skill, and millions are performed around the world every day. Intramuscular injections are more commonly used in resource-poor environments, but there is limited education of nurses on its proper administration. The findings in the literature conclude that the vastus lateralis muscle is the preferred site for intramuscular injections, particularly in resource-poor settings.

The researcher while working in the pediatric department has assessed that the pain is one of the common problem of the paediatric invasive procedures like intra muscular injection. These are inevitable in the life of the child but which can be managed by methods like cough trick method. So the researcher was interested to a study to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years childrenin selected hospital, Coimbatore.

1.3 Statement of the Problem

A study to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in Ashwin hospital, Coimbatore.

1.4 Objectives

1. To provide cough trick method during intra muscular injection among 4-12 years children in experimental group.
2. To assess the intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group.
3. To assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection in experimental group.
4. To find out the association between intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group with their selected demographic variables.

1.5 Hypothesis

H_1 - There will be significant effect on 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children between experimental and control group.

H_2 -There will be a significant association present between the selected variables on the 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group.

1.6 OPERATIONAL DEFINITION

Assess

This study it refers to the measurement of post test 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years childrenas measured by Wong baker faces pain scale.

Effectiveness

It refers to the outcome of cough trick method in reducing Intramuscular Injection pain among 4 to 12 years childrenin experimental and control group.

Cough trick Method

It refers to the process in which the child is asked to have a single warm cough of moderate force followed by a second cough that coincide with the needle puncture.

Intensity of Pain

Pain intensity defined as the magnitude of experienced pain of Intramuscular Injection.

Intramuscular Injection

An intramuscular injection is a technique used to deliver a medication deep into the muscles.

Children

A young person especially between infancy and puberty a play for both children and adults. In this study it refers to the age group of the 4 to 12 years.

1.7 Assumption

- ❖ Pain is a common phenomenon during Intra Muscular Injection.
- ❖ Implementation of cough trick method may help to reduce the pain during Intra Muscular Injection among 4 to 12 years childrenin experimental and control group.

1.8 Delimitation

The study was delimitated to

- The present study is delimited to 4 weeks of data collection period.
- The study is delimited to sample size of 60 children only.
- The study is delimited to children admitted in Ashwin Hospital, Coimbatore.

1.9 Projected outcome

The result of the study will prove whether the application of Cough Trick method prior to intramuscular injection is effective in reducing the 4 to 12 years children pain.

1.10 Conceptual Framework

Conceptual framework is a network of inter-related concepts that provide a structure for organizing and describing the phenomenon of interest. Research studies are based on a theory or conceptual framework that facilitates visualizing the problem and places the variables in a logical context. This study was based on the concept of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years childrenin selected hospital. The investigator adopted a Widenbach's prescriptive theory (1964) as the foundation for developing the conceptual framework.

Widenbach's prescriptive theory is made up of three factors as follows:

- The central purpose
- Prescription
- Realities

Central purpose:

The nurse's central purpose defines that quality of health she desires to effect and she recognizes to be her special responsibility in caring for the patient. In this study the central purpose is to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years childrenin selected hospital, Coimbatore.

Prescription:

Once the nurse identified needs of the patient, she develops a prescription or plan of care. In this study, the investigator planned to provide Cough trick method for experimental groups.

Realities:

The realities are:

- ❖ Agent
- ❖ Recipient
- ❖ Goal
- ❖ Framework

The conceptual framework of this nursing theory consists of following steps:

- Identification of the patients need for help.
- Ministering of the help.
- Validation that the action taken was helpful to patient.

Identification:

The nurse identifies the patient need. In this study, the need was pain reduction during Intramuscular injection among children 4 to 12 years.

Ministration:

Ministering to the patient, the nurse applies a comfort measure, or therapeutic procedure.

Ministering has two components:

Prescription:

The nurse provides care to the patient. Cough trick method was given to experimental group.

Realities:

Agent: It means who is the practicing nurse.In this study the researcher is the agent.

Recipient: The patient's are the recipients of the nurse's action. In this study the 4 to 12 years childrenwere the recipients.

Goal: The goal is the desired outcome the nurse wishes to achieve. In this study the goal is to reduce the pain during Intramuscular injection.

Framework: Framework consists of human, environmental, professional and organization facilities. In this study the framework is Ashwin Hospital.

Validation:

After help has been ministered the nurse validated that the actions were indeed helpful. At the end the 4 to 12 years childrenwere assessed for the intensity of pain using the Wong Baker's faces Pain Scale.

CHAPTER - II

CHAPTER II

REVIEW OF LITERATURE

The review of literature is a key step in research process. Review of literature refers to an extensive, exhaustive and systematic examination of publications relevant to the research project. The review of literature is defined as a broad, comprehensive, in depth, systematic and critical review of scholarly publications, unpublished scholarly print material, audiovisual materials and personal communications. A literature review is an account of the previous efforts and achievements of scholars and researchers on a phenomenon.

The available literatures are organized in the following headings:-

Section A: Literature related to pain perception during intra muscular injection
Section B: Literature related to non pharmacological pain management technique during intramuscular injection
Section C: Literature related to effectiveness of cough trick method during intramuscular injection.

2.1 Section A: Literature related to pain perception during intra muscular injection

Kara et al. (2019) conducted a randomized controlled study among 75 patients receiving diclofenac sodium intramuscularly at a university hospital in Zonguldak, Turkey. The primary outcome measure collected was pain intensity, measured on a visual analogue scale. Each subject received three injections by the same investigator using three different techniques. The three techniques were randomly allocated and the subjects were blinded to the injection technique being used. After each injection, another investigator, who had no prior knowledge of which injection technique was used assessed pain intensity using the visual analogue scale. Research findings demonstrated that the Z-track and internally rotated foot techniques significantly reduced pain intensity during intramuscular injection. Statistically significant differences in pain intensity were observed between the three injection techniques.

Ulkii (2019) conducted a study to examine the effect on intramuscular injection pain to the dorsogluteal and ventrogluteal sites and to investigate gender and body mass index differences in pain perception between the sites among 70 patients receiving at least two doses of diclofenac sodium intramuscularly in a state hospital in Bursa, Turkey. After each injection, the pain felt by patients during the injection was immediately assessed using a visual analogue scale by another researcher. The Wilcox on signed rank test was used to explore determine the statistical differences in perceived pain intensity between the two injection sites. The result showed that average pain score of patients after injections to the ventrogluteal site was 1.24±1.18, while that for injections to the dorsogluteal site was 1.89±1.49. The difference in average pain scores from injections administered to the two different sites was found to be statistically significant (p<0.05). The study concluded that supported the hypothesis that intramuscular injections of diclofenac sodium administered to the ventrogluteal site would feel less painful than those administered to the dorsogluteal site.

Francis et al. (2018) evaluated the influences of patient characteristics on pain perception due to intramuscular vaccine injection among 160 volunteers (65 males, 95 females). The injection of hepatitis B vaccine using a, 24 Gauge needle was performed as a uniform stimulus and the intensity of pain was measured immediately after the injection using a 100-mm visual analogue scale (VAS). The influences of patient characteristics on pain intensity were investigated. The average VAS score was 20.8 ± 17.1 (range 0 to 67) in males and 34.4 ± 19.7 (range 2 to 76) in females (P < 0.001). Gender appeared to be the only major factor that influenced the pain of intramuscular vaccine injection (P < 0.05).

Emine (2018) conducted an experimental randomized controlled trial to determine whether changing the needle before administering an intramuscular injection could reduce pain, and to investigate gender differences in pain perception among 100 patients receiving diclofenac sodium intramuscularly in an emergency and traffic hospital in Izmir, Turkey. Pain intensity was measured on a numerical rating scale. Each patient received two injections by the same investigator using two different techniques. The two techniques were randomly allocated and the patients were blinded to the injection technique being administered. After each injection, another investigator who had no prior knowledge of which injection technique was used immediately

assessed pain intensity using a numerical rating scale. Descriptive statistics, paired t-test and t-test were used to evaluate the data. Findings demonstrated that changing the needle prior to intramuscular injection significantly reduced pain intensity. A statistical difference in pain intensity was observed between the two injection techniques. The results supported the hypothesis that changing the needle prior to administering the medicine significantly reduced pain intensity.

Gideon et al. (2017) conducted a study to determine pain following depot intramuscular injection of oil vehicle based drugs. This study aimed to determine prospectively the prevalence, determinants, severity and functional consequences of pain during the week after intramuscular injection of 1000mg testosterone undecorated (TU) in a 4ml castor oil vehicle at an academic anthology clinic. The time course and co-variables influencing pain scores were analysed by mixed model analysis of variance. Following 168 injections in 125 men, pain was reported by 80% of men, peaking immediately after injection, reaching only moderate severity, lasting 1- 2 days and returning to baseline by day 4. The pain required little analgesic use and produced minimal interference in daily activities. The time course of pain scores was reproducible in 43 men who underwent two consecutive injections. Pain was more severe in men who had an earlier painful injection, but less severe in elderly and more obese men. There were negligible differences in post-injection pain experience between experienced nurses administering injections. Deep intramuscular injection Gluteal injection of depot TU in 4ml castor oil was well tolerated and post injection pain was influenced by earlier painful injection experience as well as age and obesity.

Kusumadevi et al. (2016) conducted a comparative study to estimate the perception of intramuscular injection pain in men versus women in Bangalore College and Victoria hospital among 300 subjects in which 140 men and 160 women. The pain was assessed for giving intramuscular injections of multivitamin 3ml in gluteal region using 23 gauze needles and subjective pain was assessed by Visual Analogue Scale. Moderately significant higher pain score was associated with women (1.94±1.10) as compared to men (1.74±1.24) (P =060). The study revealed that the moderately significant higher pain scores are associated with women.

Gagliese (2016) conducted a study to assess age differences in pain intensity and quality. They predicted that in a diverse sample of patients at a pain clinic, there would be no age differences in numeric ratings of pain intensity but the elderly people obtained lower scores in a pain questionnaire compared with younger adults. The older group samples had significantly lower total and sensory scores and choose fewer words to describe their pain than the younger group.

Layla et al.(2015) conducted a one-group quasi experimental study to assess the perception of pain among 25 patients from a 32 bedded dermatology clinic in Turkey. Data were collected using the "Patient Characteristics Form" and the visual analogue scale (VAS). The mean difference in pain levels according to the VAS in the post injection period was significantly higher with administration of IM methylprednisolone in 10 seconds compared with 30-second administration (VAS 1.9 vs. 1.3; $p < .05$). The severity of pain peaked at 0 minutes for both injection speeds. But the duration of pain was longer with 10- second injections. The data showed that at multiple time points after 10-second injections, men and patients >40 years experienced greater pain severity. Pain severity after 30-second injections was greater for patients of normal or low weight who had completed higher levels of education. In conclusion, slow IM injection of steroids improved pain management.

Mitchell et al. (2015) conducted that the purpose of this study was to examine the effect of varying injection speed on the perception of pain in an industrial area. Fifty workers were given intramuscular hepatitis B vaccine at injection speeds of 10 and 30 seconds per cubic centimetre (s/cc). The perception of pain was measured on a visual analogue scale and reported post-injection at three different time intervals. The results showed that no difference in pain was perceived by participants between the two injection speeds. Results also revealed that women consistently had higher mean pain scores than men and significantly more pain at the 0 hour measurement of the 10 s/cc injection. While the results of this study indicated that no need to administer an intramuscular injection slower than 10 s/cc.

Johnson (2015) conducted, a comparative study to determine the difference and similarities in pain perception among 32 elderly African Americans and 32 elderly Caucasian

subjects using Mc Gill Melzack pain questionnaire and a 2 by 2 analysis of variance was done and identified a statistical significant (f = 6 .30, df =1, p = 0.015) difference between the subjects in terms of pain intensity. Pearson‘s product moment correlation(r =0.3, p=0.01).

Thomas (2015) conducted an experimental study to test whether muscle pain was influenced by temporal and spatial summation sequential noxious muscle stimuli applied at hourly inter stimulus-intervals among eleven healthy men. A comparative study was conducted to assess the perception of intramuscular injection pain in men and women among 300 samples. The intensities of local and referred pain were assessed by recordings on visual analogue scales (VAS) and the areas of local pain and referred pain were localized by the subject. Moderately significant higher pain scores was associated with women (1.94±1.10) as compared to men (1.74±1.24)(P=0.060).Statistically significant higher pain scores were observed in women (2.24+±1.19) as compared to men (1.71±1.06) in age group of 21-30 (P=0.036). The study concluded that experimental muscle pain was influenced by temporal and spatial summation.

2.2 Section B: Literature related to non pharmacological pain management technique during intramuscular injection

Taddio et al. (2019) conducted a study to determine the effectiveness of physical interventions and ice application in injection techniques for reducing pain during vaccine injection in children. Nineteen randomized control trail involving 2814 infants and children (0-18 years of age) were included in the systematic review. One study included children more than sixteen years and adults (n = 150). In 2 trials that used child self-reports of pain during administration of measles-mumps-rubella vaccine (total, 680 children with complete data), the Priorix vaccine caused less pain than the MMR (II) vaccine (standardized mean difference [SMD], -0.66; 95% CI, -0.81 to -0.50; P < 0.001). In 3 trials (404 children), the number needed to treat (NNT) with Priorix to prevent 1 child from crying was 3.2 (95% CI, 2.6-4.2). In 4 trials (281 infants and children), sitting children up or having parents hold infants appeared to cause less pain than the sucough tricke position, but the difference was not statistically significant.

Chambers et al. (2019) conducted a systematic review to determine the efficacy of various psychological strategies for reducing pain and distress in children during routine

immunizations. Twenty randomized control trail involving 1380 infants and children (1 month to 11 years of age) were included in the systematic review. Breathing exercises were effective in reducing children's self-reported pain (standardized mean difference [SMD], -0.43; 95% CI, -0.76 to -0.09; P = 0.01), observer-rated distress (SMD, -0.40; 95% CI, -0.68 to -0.11; P = 0.007), and nurse reported distress (SMD, -0.57; 95% CI, -0.98 to -0.17; P = 0.005. the study concluded that although additional well-designed trials examining psychological interventions were needed, parents and health care professionals should be advised to incorporate psychological interventions to reduce the pain and distress experienced by children during immunization.

Serena et al. (2018) conducted a study on rhythmic skin tap cough trickg to reduce procedural pain during intramuscular injection on 60 adults who received intramuscular injection. Injection Tramadol 50mg or Injection Piroxicam 40mg was given for patients who were selected as samples. Baseline information was collected from structured interview schedule. Each sample given 4 injections was taken as samples. In that 2 injections given by normal standard method and 2 injections by using skin tap technique. Pain assessment was done soon after each injection by using Numerical Rating Scale. The result revealed that the overall mean pain in tensing by using skin tap technique (1.5±1.1) was much lower than the pain level by the usual technique (2.5±1.3).

Jaffrey et al. (2018) conducted a randomized controlled trials to show systematic review of efficacy of music therapy on pain and anxiety of children aged from one month to 18 years of age. Active music therapy which involves music with music therapist and passive music therapy was without music therapist. The result showed that music therapy was effective in reducing anxiety and pain in children also it was considered as adjunctive therapy in clinical situations that reduce pain or anxiety. The effects of music on human emotional and physiological responses and ease the pain and anxiety by moving conscious thought away from the symptoms.

Azadeh (2017) conducted an experimental randomized control study on touch therapy at Bangalore among 60 samples by using probability random sampling identified that the overall mean percentage for control group without touch therapy was 57.4 % and for experimental group

with touch therapy and massage was 25.7% (t= 5.68, p < 0.05) and concluded that touch therapy before and during painful nursing intervention reduced 4 to 12 years children pain experienced by the clients.

Sr. Serena (2017) conducted a study on rhythmic skin tapcough trickg technique to reduce pain during intramuscular injections. One group pre-test post-test design was adopted for this study. A purposive sampling technique guided by inclusion criteria was used to select 60 adult patients from orthopaedic and trauma ward. Data collection tool included Interview schedule for the collection of baseline information, 0-10 numerical pain intensity scale to assess pain level after each injection, a table to record pulse rate the overall mean pain intensity by using skin tap technique was (1.5±1.1). The mean value of pain level was greater in females than in males with both techniques. There was no significant association between pain level and other baseline variables like age, diagnosis, previous hospitalization and education The above observations highlighted the effectiveness of ' skin tap technique' on reduction of procedural pain.

Negin (2017) conducted a crossover single blind study to assess effectiveness of acupressure to reduce pain in intramuscular injection among 64 patients. The patients who were prescribed penicillin for at least two daily doses were included in the study. Each subject received an injection with acupressure applied to one buttock and an injection without acupressure to the other buttock or vice versa. The perception of pain was measured on a visual analogue scale. The mean age was 28 ± 9.9 years old. Fifty patients were injected with penicillin 6.3.3 (78%) and 14 patients received penicillin G plus procaine (22%). The mean score for perceived pain intensity for the acupressure injection was 3 ± 2 and the mean score for the injection without acupressure was 5 ± 2. The result showed that the perceived pain intensity as at average 2.5 lower in the acupressure group comparing to ordinary injection ($P < 0.000$).

Farhadi (2016) conducted a study in University of Islamic Azad, Iran to determine the effect of local cold (ice application) on severity of pain during intramuscular injection among 60 patients using randomized sampling method. The post-test assessment done by using Visual

Analog Scale showed that local cold (ice) application decrease the pain during intramuscular injection when compared with control group without cold application.

Barnhil et al. (2015) conducted a study to decrease the pain of intramuscular injection by using manual pressure among 93 patients who had dorsogluteal intramuscular injection of immunoglobulin at a country health department. Forty eight received the pressure treatment and 45 received a standard injection in which no pressure was applied. Mean pain intensity on a 100mm Visual Analogy Scale adjusted for differences in injection volume was 13.6mm for the experimental group and 21.5mm for the control group (P=0.03).

Chung (2015) conducted an experimental study on the use of manual pressure to reduce pain in intramuscular injections at a Hong Kong University among 74 participants between 18 and 42 years of age (mean age 21 years, 55% women). The left and right arms of the participants (intra subject comparison) were randomised to receive an intramuscular injection of hepatitis A and hepatitis B vaccine with (intervention condition) and without (control condition) the application of pressure at the injection site. A mechanical pressure detection device was placed between the participant's arm and the investigator's thumb. Manual pressure was applied in a standardised way to the deltoid region of the participant's arm for 10 seconds prior to the delivery of vaccination. The mean pain score was lower among patients who received manual pressure prior to injection. Women scored higher for perceived pain intensity for both the intervention ($p<0.001$) and control conditions ($p<0.001$).

Appletone (2014) conducted an experimental study to assess the effect of needle temperature on pain ratings after injection in the United States among eighty participants. Samples received an injection of influenza vaccine in one arm and a saline injection in the other using a cold or room temperature needle in a double blinded fashion. The mean pain score for influenza vaccine with the two injections was cold needle 32.2mm±3.2 and room temperature needle 36.0mm±3.8.For saline injections it was 25.2mm±2.95 and 23.7mm±3.19 for the cold needle and room temperature needle respectively. The study concluded that the use of cold needles may not be worth pursuing for injections with mild pain, but may be worthwhile to explore using more painful injections.

Holbert et al. (2014) conducted an experimental study among 93 patients at a country health department to assess the effectiveness using pressure to decrease the pain of intramuscular injections. The purpose of this study was to determine whether applying pressure to the site for 10 sec prior to an intramuscular injection reduce pain. Mean pain intensity on a 100-mm visual analogue scale adjusted for differences in injection volume was 13.6 mm for the experimental group and 21.5 mm for the control group (P = 0.03). The findings suggested that simple manual pressure applied to the site was a useful technique to decrease injection pain.

2.3 Section C: Literature related to effectiveness of cough trick method during intramuscular injection.

Kumar et al. (2020) conducted a study to assess the effectiveness of 'cough trick' (CT) technique to reduce intramuscular prick (IMP) pain during vaccinations and also for brief painful procedures like subcutaneous injection, intravenous cannulation among 50 patients from four outpatient clinics. The strategy required a single "warm-up" cough of moderate force, followed by a second cough that coincided with needle puncture. The principle outcome was self reported pain. Paired ‘t’ test revealed that the procedure was effective at a statistically and clinically significant level for participants. The results of this study suggested that the 'cough trick' can be an effective strategy for the reduction of pain.

Betty et al. (2019) conducted a study Assess the effectiveness of cough trick method in reducing immunization pain among children in NMCH, Nellore. Quasi experimental post only design was adopted for this study. The sample size of the present study was 60 children who are undergoing immunization. The result showed that in experimental group 2 (6.7%) were experienced no pain, 18(60%) were experienced mild pain, 6(20%) were experienced Moderate pain, 4(13.3%) were experienced severe pain. In control group 1(3.3%) were experienced mild pain, 8(26.7%) were experienced moderate pain, 21(70%) were experienced severe pain. The study concluded that the cough trick can be an effective strategy for the reduction of pain for some children undergoing routine immunizations.

Taras et al. (2019) conducted a study on Mechanisms of “Cough-Trick” for Pain Relief during Venipuncture: An Experimental Cross over Investigation in Healthy Volunteers. 54

healthy male volunteers participated in 3 investigations. Pain was assessed using a 100 mm visual analogue scale. Result showed that Pain intensity at venipuncture with “cough-trick” was lower than under “weak” distraction (mean difference 5 mm; 95% CI: 0.5 to 9.6;). Pain levels under “cough-trick” and “strong” distraction were comparable. There was no difference between pain under “cough-trick” after naloxone infusion and pain without intervention. The study concluded that Pain-reducing effect of “cough-trick” during venipuncture is superior to that of simple motor distraction and equivalent to a complex distraction method. This might be due to the activation of segmental pain inhibitory pathways during coughing indicated through the lack of pain reduction due to “cough-trick” under opioid antagonist blockage.

Ramandeep et al. (2018) conducted a study A study to assess the effectiveness of cough trick method in reducing pain among (6-12yrs) old children undergoing intravenous cannulation. Study design used is Quasi-experimental post test control design. Study setting includes pediatric ward of G.G.S. Medical Hospital, Faridkot. Study population is 60 children from the age group of 6-12years.The result showed that Majority 26.7% of the children in the experimental group perceived moderate pain, 18.3% perceived mild pain and only 5.0% had severe pain during intravenous cannulation using cough trick method. The study concluded that there is significant difference in the severity of pain during intravenous cannulation using cough trick method. This reduction in the pain results in judicious application of this intervention as it is one of easiest non-pharamacological method in managing pain due to intravenous cannulation.

Mohammad et al. (2017) conducted a single-blind randomized clinical trial at Kamkar-Arabnia Hospital. In this Study, 50 children aged from 6 to 12 years who had intramuscular injection of penicillin were randomly assigned to two equal groups. The first group received intramuscular injection using, an oval disc that supports multiple blunt cough tricks and in the control group routine injection was performed. Pain was measured using a visual analogue scale. The mean pain intensities in experimental and control groups were 27.04±8.6 and 36.6±14.1, respectively. After intramuscular injection, the pain intensity significantly decreased in the experimental group compared to control group ($p<0.006$). The study concluded that there was no significant statistical difference between the two groups in age and Body Mass Index. The

pressure on the skin with multiple blunt cough tricks was highly effective in reducing the pain of intramuscular injection.

Romano et al. (2016) conducted a study to reduce cough trick-prick pain through the pressure of multiple blunt cough tricks at the injection site. Two-hundred and twelve patients were randomly assigned to 2 groups. The treated group (n= 106) received intramuscular and subcutaneous injections with the application of the blunt cough tricks and the control group (n= 106) with a placebo device. Pain was tested with the visual analogue scale on a 0 (no pain)-10 (maximum pain) scale. After intramuscular injections a significant (P< 0.0001) pain reduction in the treated group compared to placebo was observed: 1.90±1.27 versus 5.16±1.37 (mean pain reduction: 63.2%); 88.5% of the patients in the treated group and 11.4% in placebo group rated the pain as = or < 3. After subcutaneous injections mean reported pain in the treated group compared to placebo was: 0.32±0.51 versus 2.61±0.77 (mean pain reduction: 87.7%) (P< 0.0001); 95.1% of the patients in the treated group and 9.8% in the placebo rated the pain as = or <1. No side effects were observed. The study concluded that multiple blunt cough tricks pressure on the skin, at the time of intramuscular or subcutaneous injection was able to significantly reduce cough trick-prick pain.

Jayanthi (2015) conducted a quasi experimental post test design of cough trick –trick method at Salem to assess the effectiveness of pain during intra muscular injection. Among 60 patients participated (30 as experimental groups and 30 as control group). In post test mean score in experimental group was 1.60±1.09 and in control group the post test mean score was 2.33±1.82. The mean difference was 0.73. The calculated value was 5.21 was greater than the table value 2.05. Hence the research hypothesis H1 was retained. It was evident that cough trick method was effective in reducing the 4 to 12 years children intramuscular injection pain.

Vikram et al. (2015) conducted a study of 'cough trick' technique in reducing vaccination prick pain in adolescents. A Randomized Crossover Volunteer Study of 50 early adolescent male children (age 11-13) receiving immunizations was performed. Participants were recruited from four outpatient pediatric clinics. The strategy required a single "warm-up" cough of moderate force, followed by a second cough that coincided with needle puncture. Results

showed that Paired '*t*' test revealed that the procedure was effective at a statistically and clinically significant level for participants. Children found the procedure acceptable and effective. The study concluded that 'cough trick' can be an effective strategy for the reduction of pain for male adolescent children undergoing routine immunizations. However, additional research is needed with a larger sample size with different age groups and also including girl children.

CHAPTER - III

CHAPTER III

METHODOLOGY

The methodology of the research indicates the general pattern of organizing the procedure for gathering valid and reliable data for investigation. This chapter provides a brief description of the method to be adopted by the investigator in this experimental it includes the research approach ,research design , setting ,sample size, sampling technique, description of the tool, pilot experimental, data collection procedure and plan for data analysis.

3.1 RESEARCH APPROACH

A Quantitative approach was used to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children.

3.2 RESEARCH DESIGN

The research design provides an overall plan for conducting the study. Quasi experimental post tests only design was used for the study.

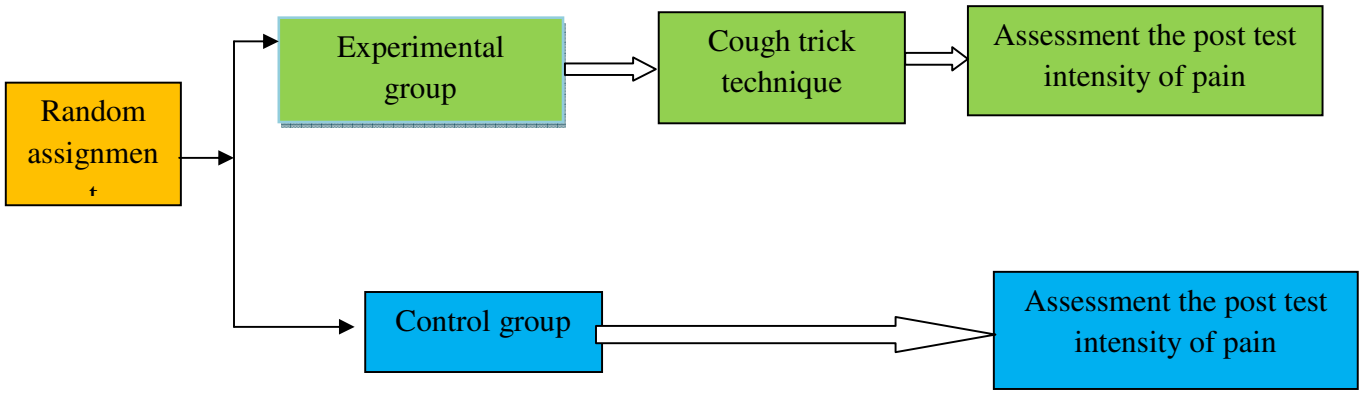


Figure 3.1 Diagrammatic Representation of Research Design

3.3 VARIABLES

Independent variable was cough trick method and the dependent variable is the intensity of pain children undergoing intramuscular injection. The influencing variables are demographic variables such as age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication, type of injection.

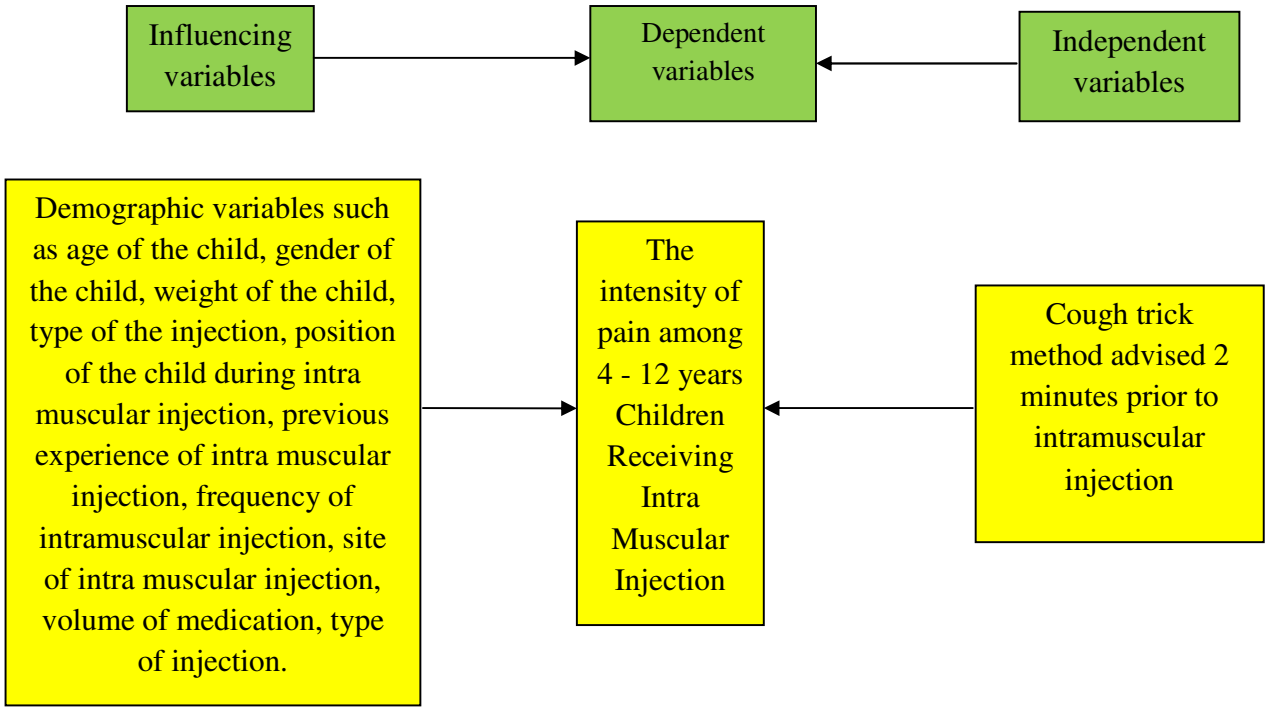


Figure 3.2 The Schematic Representation of Variables

3.4 SETTING OF THE STUDY

The study was conducted in Ashwin Hospital, Coimbatore. The Department of pediatric unit consists with different departments like medical surgical, pediatrics, gynecology,

orthopedics, neurology, gastroenterology and urology. The hospital has separate operation theater and a well-equipped laboratory.

3.5 POPULATION

3.5.1 Target Population

The target population is the aggregation of cases about which the researcher would like to make generalization. In this study the target population was4-12 years children receiving intramuscular Injection.

3.5.2. Accessible Population

An accessible population is the section of the target population to which the researcher has reasonable access. The accessible population was children receiving intramuscular injection in Ashwin Hospital, Coimbatore.

3.6 SAMPLE

Sample of the study was children of age 4 to 12 years who are receiving Intramuscular Injection.

3.7 SAMPLE SIZE

Sample size of 60 was taken for experimental, in this 30 children has taken us experimental group and other 30 children taken us in control group.

3.8 SAMPLE TECHNIQUE

Sampling is the process of selecting a portion of the population to obtain data regarding a problem. In this experimental the investigator had used Purposive sampling technique of the subjects.

3.9 CRITERIA FOR SAMPLE SELECTION

3.9.1 Inclusive criteria

- Children undergoing Intramuscular Injection admitted in pediatric ward of Ashwin Hospital, Coimbatore.
- Children in the age group of 4 to12 years.
- Children available at the time of sampling
- Children who will cough moderately
- Children whose parents are willing to participate and given written informed consent for the same.

3.9.2 Exclusive criteria

- Children below the 4 year of age and above 12year.
- Children who will not cough moderately and are critically ill.
- Non-cooperative children.

3.10 DESCRIPTION OF THE TOOL

The research tool had three sections.

3.10.1 Part I: Demographic variables

This part deals with demographic variables such as age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection.

3.10.2 Part II: Wong baker faces pain scale

Wong baker faces pain scale to assess the intensity of pain scoring was given as mentioned below.

0 = No Pain

1 - 3= Mild Pain

4-6 = Moderate Pain

7-10 = Severe Pain

3.11 CONTENT VALIDITY

The Research tool developed by the investigator was sent along with the request letter for validation to five experts of in the field of Child Health Nursing and one Medical expert. The experts were requested to check for the relevance, sequence and adequacy of language of the tool. The expert's suggestions were incorporated in the tool. Then the tool was finalized and used for the main study.

3.12 RELIABILITY

The reliability of the tool Wong baker faces pain scale was determined by using inter rater reliability method. It was using spearman rank coefficient method.

3.13 PILOT STUDY

Pilot study was done among 10 children those who were receiving intramuscular injection, at Ashwin Hospitals, Coimbatore. After obtaining written permission from the higher authority. The samples were selected by purposive sampling technique after getting verbal consent. Among10 children, 5 samples were considered as experimental group and 5 samples were considered as control group. Samples in experimental group received intramuscular injection by using Cough trick method while the samples in control group received only routine Intramuscular injection. The pain was assessed by Wong baker faces pain scale for both groups immediately after the intramuscular injection. The collected data was analysed and tabulated by descriptive and inferential statistics.

3.14 DATA COLLECTION PROCEDURE

The data collection was done for a period of 4 weeks in Ashwin Hospital, Coimbatore. A formal permission from Medical Superintendent was collected before the intervention. 60 samples were selected based on the inclusion criteria and by purposive sampling method sorted into experimental and control group.

Wong baker faces pain scale was assessed in both experimental and control group prior to intervention. The selected samples was randomly assigned under experimental and control group. In experimental group the cough trick method was practiced, the children who are

undergoing Intramuscular Injection the child was asked to have a single warm cough of moderate force followed by a second cough that coincide with the needle puncture. In control group received only routine Intramuscular injection. The intensity of pain was assessed by Wong baker faces pain scale for both groups immediately after the intramuscular injection in both the experimental and control group.

3.15 PLANS FOR DATA ANALYSIS

Data is analyzed using both descriptive and inferential statistics. Data analysis was done by using inferential and descriptive statistical methods. Descriptive statistics such as frequency distribution, mean and standard deviation were used to assess the intensity of pain Inferential statistical method such as paired‘t’ test was used to find out the effectiveness of cough trick method. The association between variables was analyzed by using chi-square test.

3.16 ETHICAL CONSIDERATION

The proposed experimental was conducted after the approval of the ethics committee of PPG College of Nursing. Permission was obtained from Medical Superintendent of Ashwin Hospital, Coimbatore. Verbal assurance was given to children’s, parents consent was obtained.

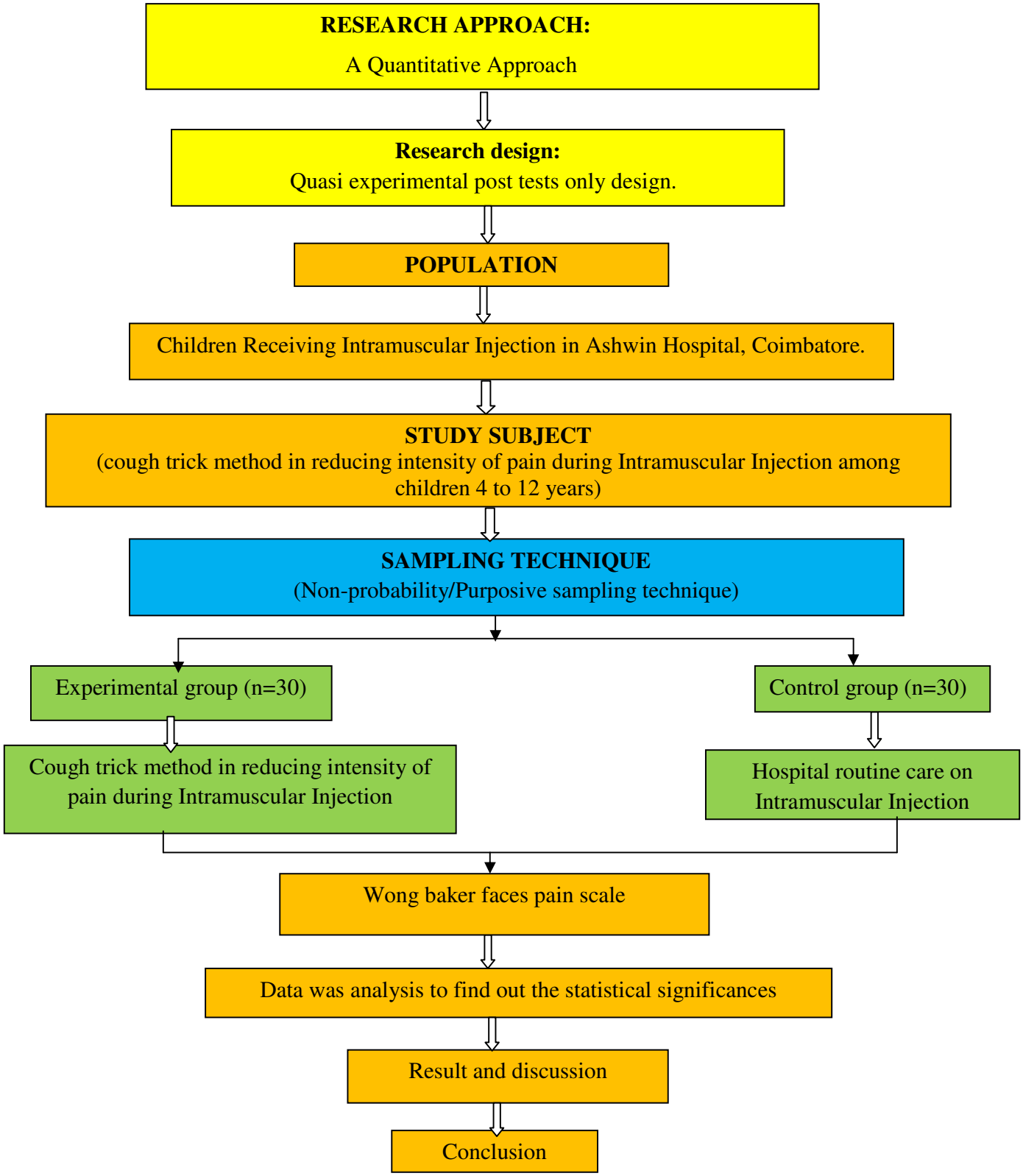


Figure.3.3 Overall View of Research Methodology

CHAPTER - IV

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Analysis is the process of the organizing and synthesizing data in such a way that question can be answered and hypothesis tested.

This chapter deals with analysis and interpretation of data collected to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in selected hospital. The collected data was tabulated, organized and analyzed by using descriptive and inferential statistics.

Section I: Frequency and percentage distribution of 4 to 12 years children according to their selected demographic variables.

Section II: Distribution of 4 to 12 years children according to post test score of 4 to 12 years children intensity of pain during Intramuscular Injection.

Section III: Compare the effectiveness of Cough Trick Method on 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in Experimental and Control Group.

Section IV: Association of demographic variables with the post test score of 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group.

SECTION – I

Table.4.1 Frequency and percentage distribution of 4 to 12 years children according to their selected demographic variables.

(N=60)

S.No	Demographic Data	Experimental Group n=30		Control Group n=30	
		f	%	f	%
1	Age of the child				
	a) 4-6 years	8	27	11	37
	b) 7-9 years	6	20	9	30
	c) 10-12 years	16	53	10	33
2	Gender of the child				
	a) Male	18	60	16	53
	b) Female	12	40	14	47
3.	Weight of the child				
	a) 10-15 kg	12	40	14	46
	b) 16-20 kg	9	30	8	27
	c) 21-25kg	9	30	8	27
4.	Type of the injection				
	a) Antibiotics	15	50	14	47
	b) Analgesic	8	27	7	23
	c) Antipyretic	7	23	9	30
5.	Position of the child during intra muscular injection				
	a) Prone position	10	33	7	23
	b) Left lateral position	6	20	9	30
	c) Right lateral position	8	27	5	17
	d) Sitting position	6	20	9	30
6.	Previous experience of intra muscular injection				
	a) Yes	17	57	18	60
	b) No	13	43	12	40
7.	Frequency of intramuscular injection				
	a) OD	8	27	9	30
	b) BD	14	46	12	40
	c) TDS	8	27	9	30

8.	Site of intra muscular injection a) Deltoid muscle b) Gluteal muscle	 5 25	 17 83	 7 23	 23 77
9.	Volume of medication a) 1 ml b) 2 ml c) 3 ml	 8 13 9	 27 43 30	 11 9 10	 37 30 33
10.	Type of injection a) Oil based injection b) Water based injection	 13 17	 43 57	 14 16	 47 53

Table 4.1.Represents the distribution of children 4 to 12 year 4 to 12 years children intensity of pain during Intramuscular Injection. According to the age of the children in experimental group 8 (27%) of them belongs to age group between 4 to 6 years, 6 (20%) of them belong to the age group between 7 to 9 years and 16 (53%) of them belong to the age group between 10 to 12 years. In control group 11 (37%) of them belongs to age group between 4 to 6 years, 9 (30%) of them belong to the age group between 7 to 9 years and 10 (33%) of them belong to the age group between 10 to 12 years.

Distributions of children regarding the sex in experimental group, 18 (60%) were male and 12 (40%) were in female. In control group 16(53%) were male and 14(47%) were female.

Distribution of children according to their weight depicts those children in experimental group 12 (40%) were 10 to 15 kg, 9(30%) were 16 to 20 kg and 9(30%) were 21 to 25 kg. In control group 14 (46%) were 10 to 15 kg, 8(27%) were 16 to 20 kg and 8(27%) were 21 to 25 kg.

Distribution of children's according to their type of the injections depicts that in experimental group 15(50%) were receiving antibiotics, 8(27%) were receiving analgesics and 7(23%) were receiving antipyretic injections. In control group 14(47%) were receiving antibiotics, 7(23%) were receiving analgesics and 9(30%) were receiving antipyretic injections.

Regarding position of children during intramuscular injection in experimental group, 10(33%) were maintaining prone position, 6(20%) were maintaining left lateral position, 8(27%) were maintaining right lateral position and 6(20%) were maintaining sitting position. In control group 7(23%) were maintaining prone position, 9(30%) were maintaining left lateral position, 5(17%) were maintaining right lateral position and 9(30%) were maintaining sitting position

Distribution of children according to their previous experience of intramuscular injection in experimental group, 17(57%) have previous experience and 13(43%) of them have no previous experience in intramuscular injection. In control group 18(60%) have previous experience and 12(40%) of them have no previous experience in intramuscular injection.

Regarding frequency of intramuscular injection on children in experimental group, 8(27%) were often receiving injection, 14(46%) were rarely receiving injection and 8(27%) were never before receiving injection. In control group 9(30%) were often receiving injection, 12(40%) were rarely receiving injection and 9(30%) were never before receiving injection.

Distribution of children according to their site of intramuscular injection in experimental group, 5(17%) were using deltoid muscle and 25(83%) were using Gluteal muscle. In control group 7(23%) were using deltoid muscle and 23(77%) were using Gluteal muscle.

Distribution of children according to their volume of medication in experimental group, 8(27%) were OD dose, 13(43%) were BD dose and 9(30%) were TDS dose. In control group 11(37%) were OD dose, 9(30%) were BD dose and 10(33%) were TDS dose.

Regarding type of injection of children in experimental group, 13(43%) were receiving oil based injection and 17(57%) were receiving water based injection. In control group 14(47%) were receiving oil based injection and 16(53%) were receiving water based injection.

SECTION II

Table 4.2: Distribution of intensity of pain during Intramuscular Injection among 4 to 12 years children in post test

(N=60)

S. No	4 to 12 years children intensity of pain	Experimental Group n=30		Control Group n=30	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	Mild Pain	18	60	0	0
2	Moderate Pain	12	40	6	20
3	Severe Pain	0	0	24	80

Table 4.2, represents that during post test 4 to 12 years children intensity of pain score in experimental group 18 (60%) had mild pain, 12 (40%) had moderate pain and none of them had severe pain. In post test score of control group none of them had mild pain, 6 (20 %) had moderate pain and 24 (80%) severe pain.

SECTION-III

Table.4.3: Compare the effectiveness of Cough trick Method on 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years of children in Experimental and Control Group.

(N=60)

S. No	4 to 12 years Children Intensity of Pain	Mean	S.D	Mean Differences	't' value
1.	Control Group	7.9	1.35	4.4	12
2.	Experimental Group	3.5	1.58		

***Significant, Table value=2.034**

Table 4.3: shows that the post test means score 7.9 in Control group and post test mean score was 3.5 in Experimental group. The calculated 't' value 12, which is significant at $p<0.05$ level. The finding implies that the cough trick method in reducing intensity of pain during Intramuscular Injection among children 4 to 12 years.

SECTION –IV

Table.4.4: Association of demographic variables with the post test score of 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years in children in experimental group.

N=30

S. No	Demographic and clinical variables	df	X^2	Table value
1	Age of the child	4	0.1196	9.488
2	Gender of the child	2	0.1053	5.991
3.	Weight of the child	4	0.2466	9.488
4.	Type of the injection	6	0.8748	12.592
5.	Position of the child during intra muscular injection	6	0.668	12.592
6.	Previous experience of intra muscular injection	4	1.1805	9.488
7.	Frequency of intramuscular injection	6	0.4359	12.592
8.	Site of intra muscular injection	4	1.1805	9.488
9.	Volume of medication	6	0.8748	12.592
10.	Type of injection	3	0.1041	7.815

The table 4.4: shows that calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection.

Table.4.5: Association of demographic variables with the post test score of 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in control group.

N=30

S. No	Demographic and clinical variables	Df	X^2	Table Value
1	Age of the child	4	2.8796	9.488
2	Gender of the child	2	0.1681	5.991
3.	Weight of the child	4	1.5185	9.488
4.	Type of the injection	6	0.8748	12.592
5.	Position of the child during intra muscular injection	6	1.3967	12.592
6.	Previous experience of intra muscular injection	4	0.5159	9.488
7.	Frequency of intramuscular injection	6	0.2816	12.592
8.	Site of intra muscular injection	4	0.1053	9.488
9.	Volume of medication	6	1.5099	12.592
10.	Type of injection	3	0.882	7.815

The table 4.5: shows that calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection.

CHAPTER - V

CHAPTER V

RESULTS AND DISCUSSION

This chapter deals with the discussion of the study with appropriate literature review, statistical analysis and findings of the study based on objective of the study. The aim of the study was on assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in selected hospital, Coimbatore. A quantitative approach was adopted for this study and purposive sampling techniques were used to collect the samples. The data was collected from 60 children 4 to 12 years.

5.1 The first objective to provide cough trick method during intra muscular injection among 4-12 years children in experimental group.

The present study referred to as the cough trick requires that the child be prompted to give single warm up cough of moderate force, followed by second cough that coincides with intra muscular injection. So that the cough trick method was reduce pain perception.

5.2 The second objective to assess the intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group.

To children in experimental group cough trick method was 2 minutes prior to injection. Pain perception was assessed after the intervention while giving injection. Among experimental group the majority 18 children (60%) perceived had mild pain, and the least 12 children (40%) had moderate pain. No children perceived severe pain after cough trick method. Among control group the majority 24 children (80%) perceived severe pain and the least 6 children (20 %) perceived moderate pain. It was inferred that the intensity of pain was reduced after the cough trick method prior to intramuscular injections.

The similar study conducted by Pragya (2017) to assess the effectiveness of cough trick method prior to intramuscular injection in reduction of pain among adolescent in Toronto Canada. Childrern aged 4 to 12 years were selected randamily and cough trick method was given for the experimental group children 2 minutes before to intramuscular injection. The study

findings revealed that 70% of children's in experimental group had mild pain perception of the administering cough trick method and children's in control group had moderate to severe pain.

5.3 The third objective to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection in experimental group.

The present study revealed that the post test mean difference was 4.4. The t value 12. The pain perception was comfortably less with cough trick method then with uaual procedure among children's. It could be inferred that cough trick method prior to intramuscular injection was effective in decreasing pain perception among children.

A similar study was conducted by Dustin (2018) to determine the effectiveness of cough trick method for pain relief in adolescents receiving IM injection. Data collected fro120 childrens controlled attending clinical in Jordan. Cough trick method was given before the procedure pain was measured with Modified behaviors pain scale. Childre's provided with cough tricks method has a lower degree of pain then who were not receiving in this intervention.

5.4 The fourth objective was to find out the association between with selected demographic variables with the 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group.

The calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection in experimental and control group.

William (2018) conducted a randomized controlled trial was done to determine the effects of cough trick method on pain relief in children of age group 1-4 years undergoing vaccine injections during the year 2018. Data were collected from 40 children attending an immunization clinic in a local hospital, Toronto. The subjects included 20 intervention group

members and 20 control group members. Cough trick method was applied to the intervention group members on the injection site immediately before the procedure (within 1 minute of injection). Pain was measured with a numeric rating scale and measuring vital signs. Soothe administration of cough trick was independently effective in reducing pain perception among children during intramuscular injection.

CHAPTER - VI

CHAPTER VI

SUMMARY, CONCLUSION, NURSING IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

This chapter summarizes the major findings, limitations, implications in the field of nursing education, nursing practice, nursing research and recommendations.

6.1 Summary

This study is to identify the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in selected hospital, Coimbatore. The study design was quasi experimental (post test with control group design). The data was collected for a period of thirty days at Ashwin Hospital, Coimbatore. The study was conducted on 60 childrens 4 to 12 years children , 30 each were randomly assigned to experimental and control group. Cough trick method was administered to the experimental group and routine interventions were given to the control group. The intensity of pain was assessed by Wong baker faces pain scale.

6.2 Major Findings of the Study

Distribution of children 4 to 12 years children intensity of pain during Intramuscular Injection. According to the age of the children in experimental group 8 (27%) of them belongs to age group between 4 to 6 years, 6 (20%) of them belong to the age group between 7 to 9 years and 16 (53%) of them belong to the age group between 10 to 12 years. In control group 11 (37%) of them belongs to age group between 4 to 6 years, 9 (30%) of them belong to the age group between 7 to 9 years and 10 (33%) of them belong to the age group between 10 to 12 years.

Distributions of children regarding the sex in experimental group, 18 (60%) were male and 12 (40%) were in female. In control group 16(53%) were male and 14(47%) were female. Distribution of children according to their weight depicts those children in experimental group 12 (40%) were 10 to 15 kg, 9(30%) were 16 to 20 kg and 9(30%) were 21 to 25 kg. In control group 14 (46%) were 10 to 15 kg, 8(27%) were 16 to 20 kg and 8(27%) were 21 to 25 kg.

Distribution of children's according to their type of the injections depicts that in experimental group 15(50%) were receiving antibiotics, 8(27%) were receiving analgesics and 7(23%) were receiving antipyretic injections. In control group 14(47%) were receiving antibiotics, 7(23%) were receiving analgesics and 9(30%) were receiving antipyretic injections. Regarding position of children during intramuscular injection in experimental group, 10(33%) were maintaining prone position, 6(20%) were maintaining left lateral position, 8(27%) were maintaining right lateral position and 6(20%) were maintaining sitting position. In control group 7(23%) were maintaining prone position, 9(30%) were maintaining left lateral position, 5(17%) were maintaining right lateral position and 9(30%) were maintaining sitting position

Distribution of children according to their previous experience of intramuscular injection in experimental group, 17(57%) have previous experience and 13(43%) of them have no previous experience in intramuscular injection. In control group 18(60%) have previous experience and 12(40%) of them have no previous experience in intramuscular injection. Regarding frequency of intramuscular injection on children in experimental group, 8(27%) were often receiving injection, 14(46%) were rarely receiving injection and 8(27%) were never before receiving injection. In control group 9(30%) were often receiving injection, 12(40%) were rarely receiving injection and 9(30%) were never before receiving injection.

Distribution of children according to their site of intramuscular injection in experimental group, 5(17%) were using deltoid muscle and 25(83%) were using Gluteal muscle. In control group 7(23%) were using deltoid muscle and 23(77%) were using Gluteal muscle. Distribution of children according to their volume of medication in experimental group, 8(27%) were OD dose, 13(43%) were BD dose and 9(30%) were TDS dose. In control group 11(37%) were OD dose, 9(30%) were BD dose and 10(33%) were TDS dose.

Regarding type of injection of children in experimental group, 13(43%) were receiving oil based injection and 17(57%) were receiving water based injection. In control group 14(47%) were receiving oil based injection and 16(53%) were receiving water based injection.

The post test 4 to 12 years children intensity of pain score in experimental group 18 (60%) had mild pain, 12 (40%) had moderate pain and none of them had severe pain. In post test score of control group none of them had mild pain, 8 (27 %) had moderate pain and 24 (73%) severe pain. The post test means score 7.9 in experimental group and post test mean score was 3.5 in control group. The calculated 't' value 12, which is significant at $p<0.05$ level. The finding implies that the cough trick method in reducing intensity of pain during Intramuscular Injection among children 4 to 12 years.

The calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection in experimental and control group.

6.3 CONCLUSION

According to the statistical results of this study, subjects the children's who received application of Cough Trick method prior to intramuscular injection is effective in reducing the 4 to 12 years children pain.. Because cough trick method was no cost effective, non invasive and highly feasible, the researcher concluded that it can be used as an effective intervention to cough trick method to reduce the intensity of pain.

6.4 Implications of the Study

The study has implications in nursing practice, nursing education, nursing research and nursing administration.

6.5 Nursing Practice

- Pain assessment is a basis to pain response. The nurses must be trained to assess the pain response of children according to their age.
- Nurses should practice the non pharmacological measures to assess the pain response during intramuscular injection.

- Nurses can utilize the evidence based practice in improving the quality and standard of care.
- Nurses must be trained in the aspect of cough trick method prior to intramuscular Injection and the technique to be implemented in day to day practice.
- Physical interventions and injection techniques to assess the pain response during intramuscular injection offer an advantage over other techniques because they can be easily incorporated into clinical practice without added cost or time.

6.6 Nursing Education

- Pain is the fifth vital sign. So pain assessment scales and non pharmacological measures for pain response should be included in the nursing curriculum.
- Nurse educators should formulate procedures regarding non pharmacologic measures on pain response.
- Orientation programmes for the nurses as regards the importance of non pharmacological measures on pain response.
- Updating the knowledge of the staff by proper and relevant in-service education programs to emphasize cough trick method prior to intramuscular immunization as an intervention for pain reponse among children receiving intramuscular injection.

6.7 Nursing Administration

- Nursing administrators can develop nursing practice standards, protocols and manuals of pain assessment and pain management in children of various ages, in which effectiveness of cough trick method prior to intramuscular immunization can be included as an important strategy to assess the pain response among children.
- The nurse administrator should plan for continuing service education regarding non pharmacologic strategies for pain response during intramuscular injection.
- Nurses play a major role in injection. So, efforts has to be made to enhance the capabilities of the nurses through the in- service education programmes on the new paradigm of assess the effectiveness of cough trick method prior to intramuscular injection on pain response among children, and other non pharmacologic strategy on pain.

6.8 Nursing Research

- ❖ Immunization is an important and universal experience for children and cough trick method prior to intramuscular injection is an effective means for pain response in children associated with intramuscular injection pain. Further research in this area will help the nurse to find out other non pharmacological intervention to assess the pain response of intramuscular injection pain.
- ❖ The nurse researcher should motivate the clinical nurses to apply the research findings in practice. And follow the evidence based practice in order to bring a quality nursing care.

6.9 Recommendation

- ✓ The study can be replicated with large samples in different settings to validate and generalize the findings.
- ✓ The study can be conducted on the other age groups and can compare with other interventions such as application of manual pressure over the injection site, pragmatic technique.
- ✓ Studies can be conducted regarding the knowledge and practice of cough trick method prior to intramuscular injection among health team members.
- ✓ Studies can be conducted to assess the parental emotional response during children's painful procedures.
- ✓ Similar studies can be conducted with adult and old age people.

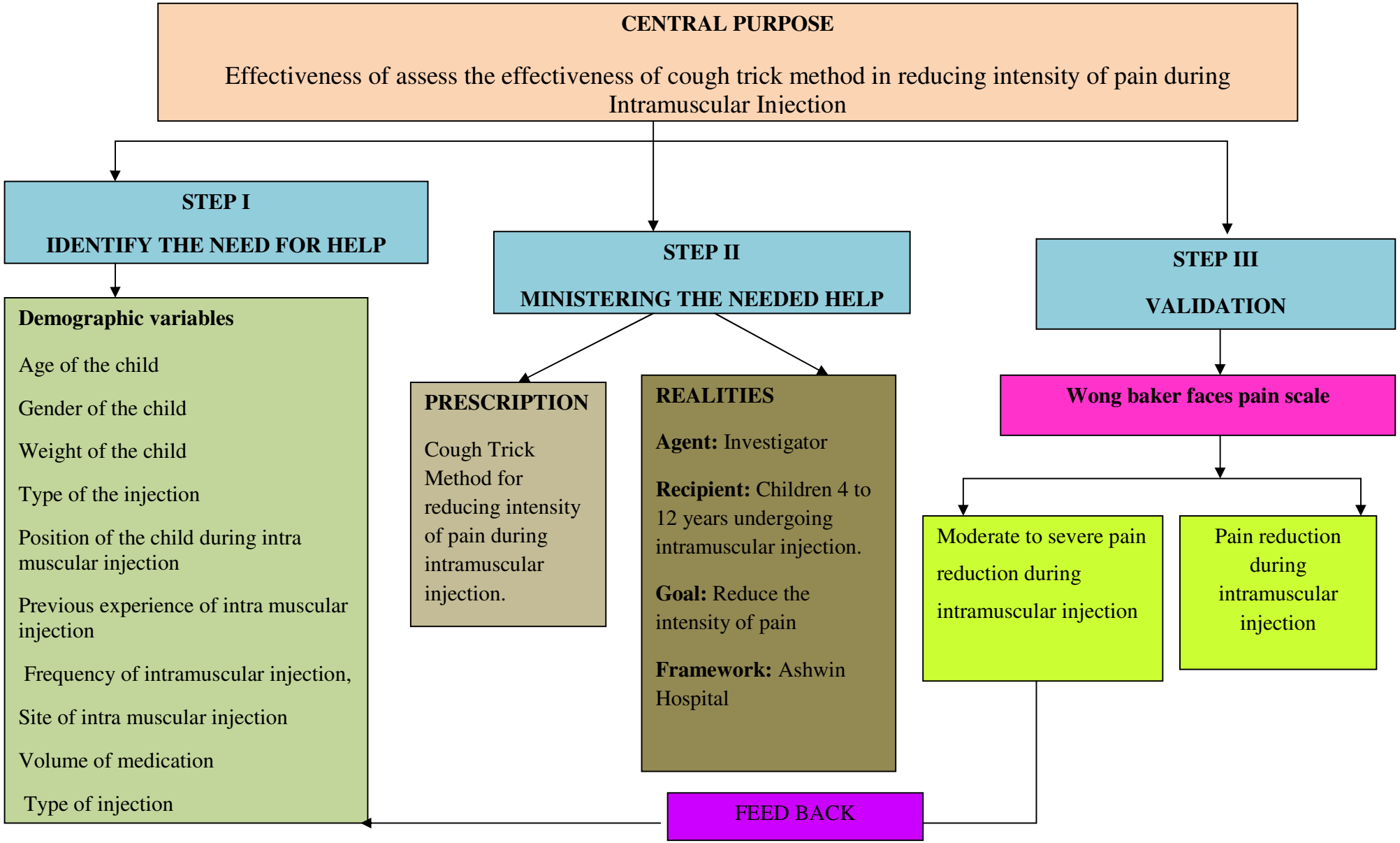


Figure.1.1 CONCEPTUAL FRAMEWORK BASED ON WIDENBACH'S HELPING ART OF CLINICAL NURSING THEORY (1969)

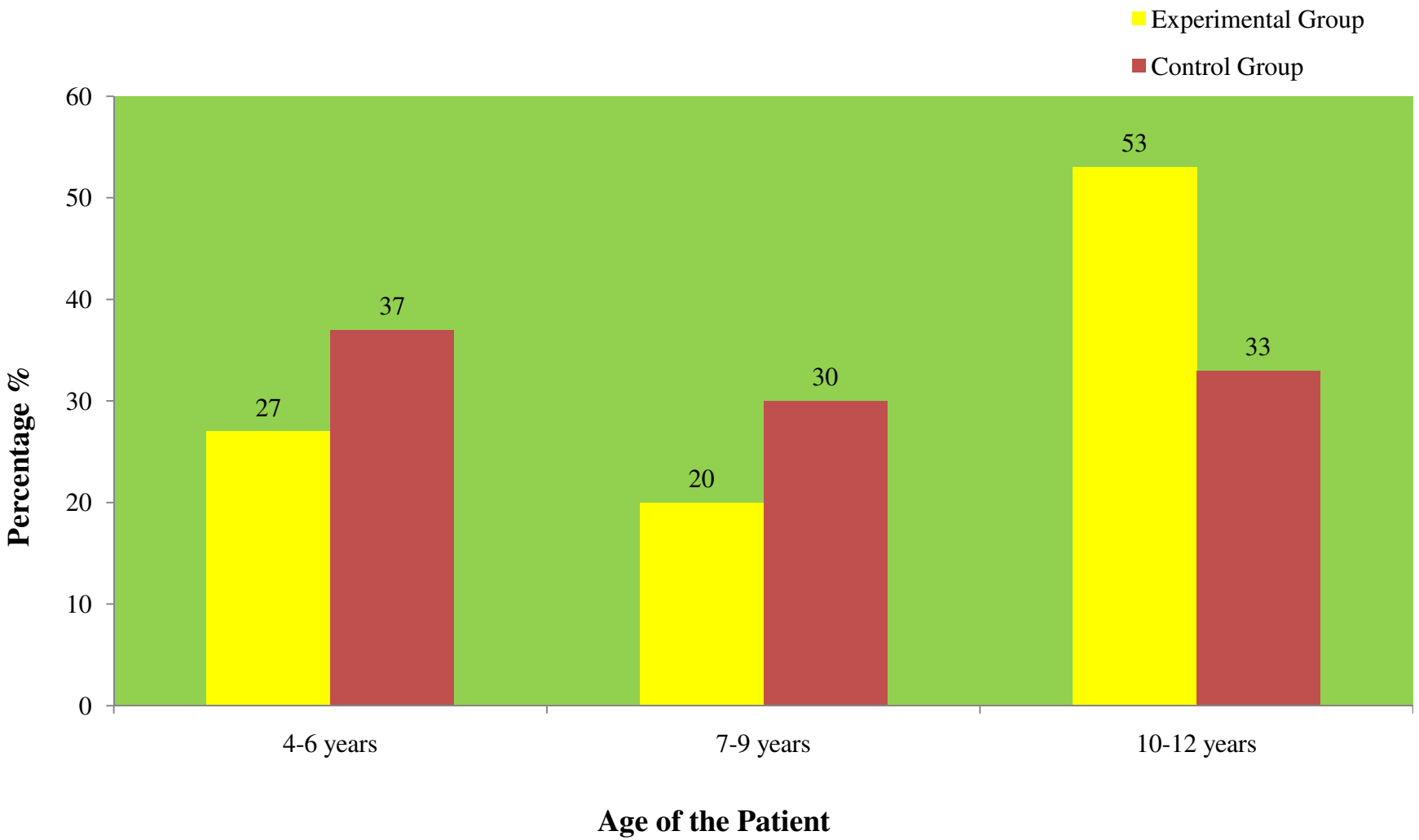


Figure 4.3 Frequency and Percentage Distribution of Demographic Variables According to the Age of the Patient

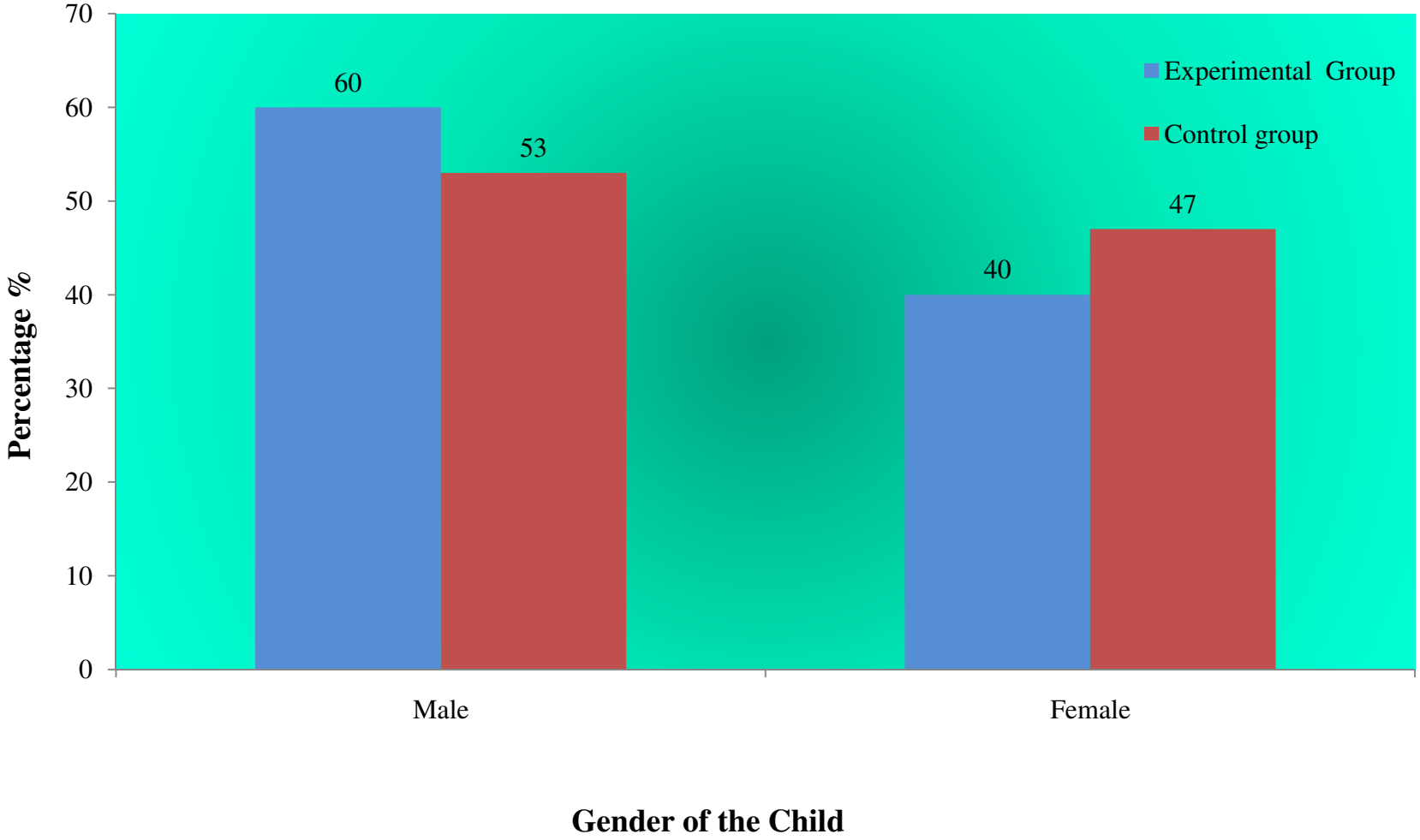


Figure 4.4 Frequency and Percentage Distribution of Demographic Variables According to the Gender of the Child

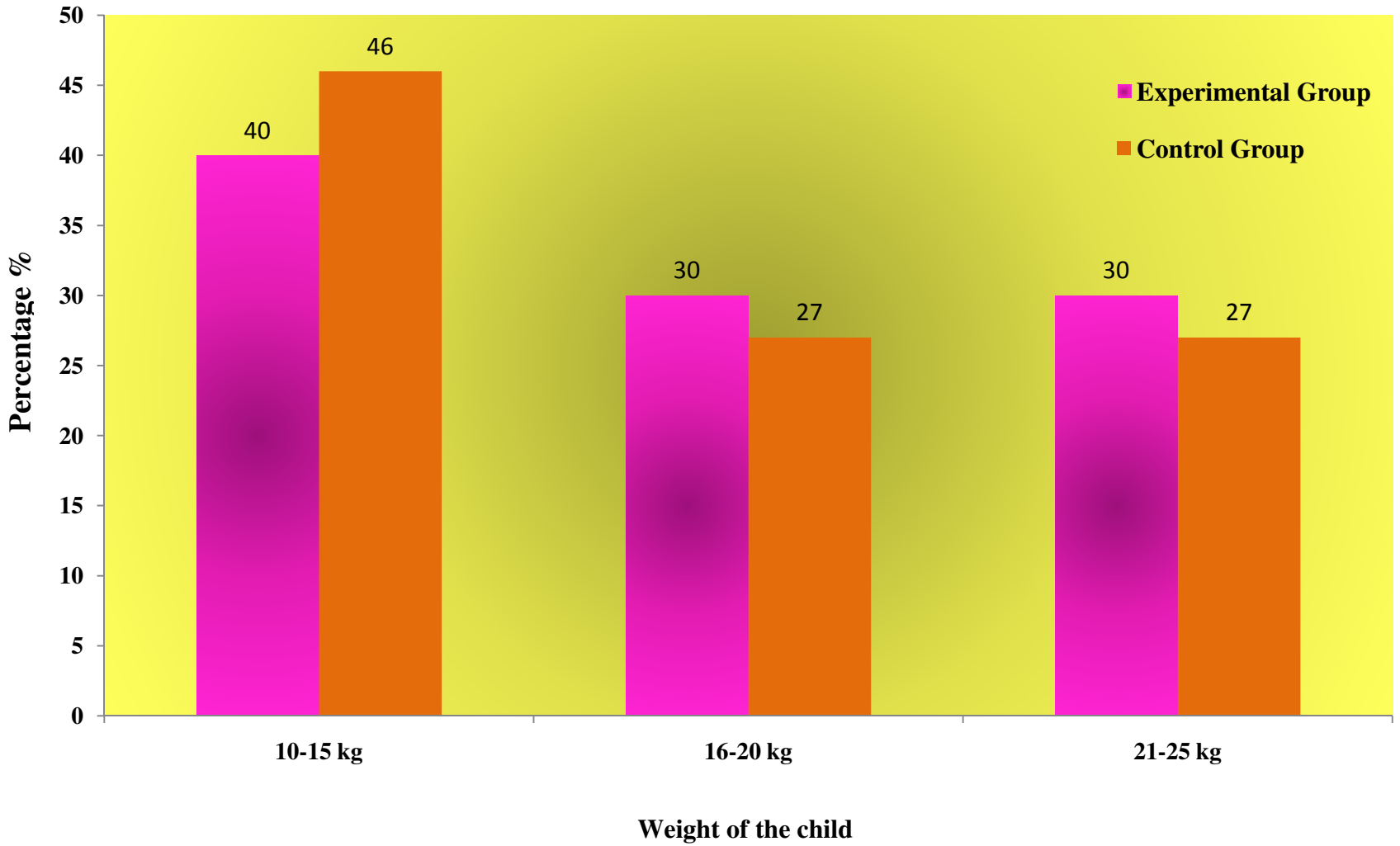


Figure 4.5 Frequency and Percentage Distribution of Demographic Variables According to the Weight of the child

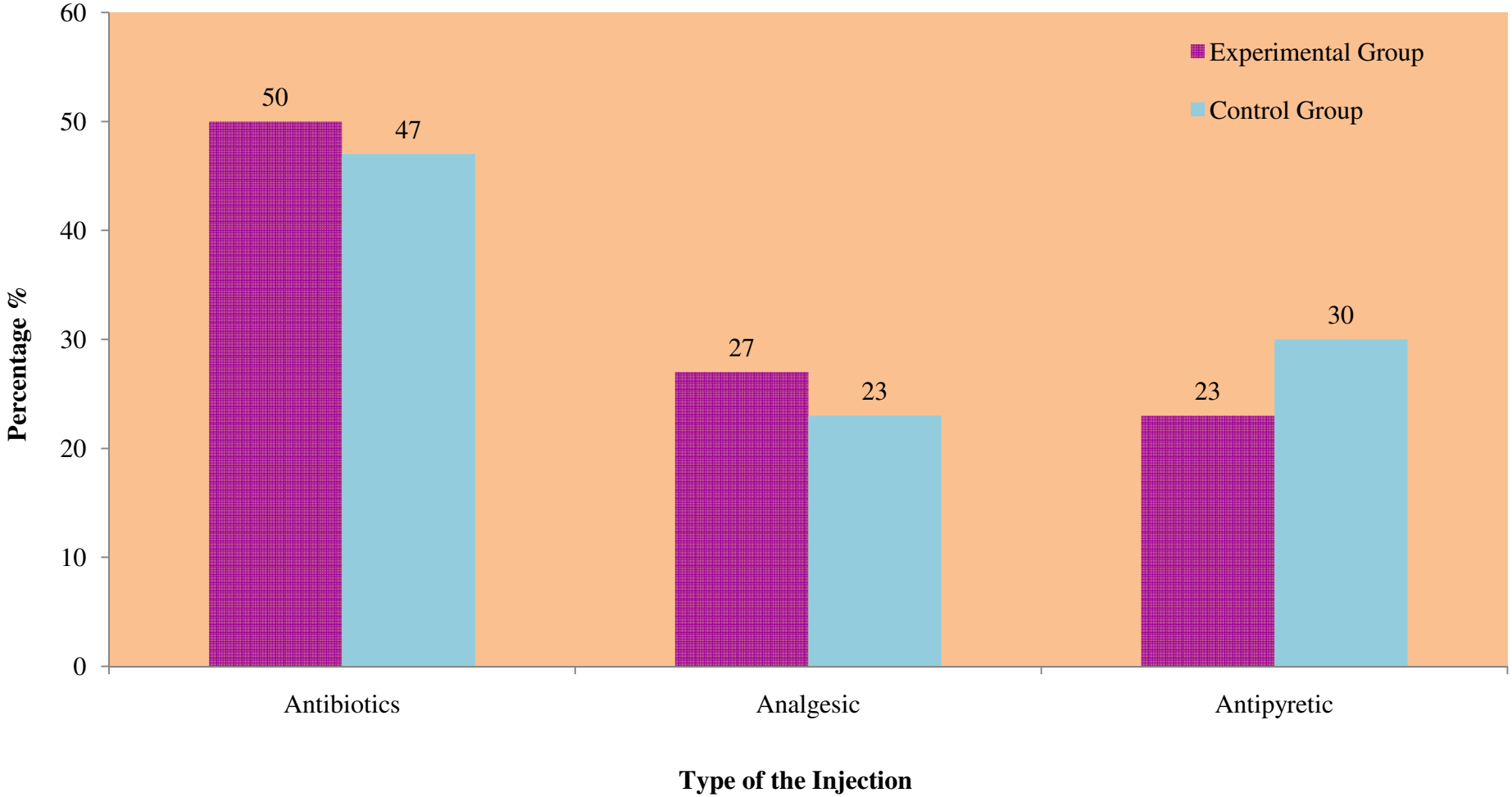


Figure 4.6 Frequency and Percentage Distribution of Demographic Variables According to the Type of the Injection

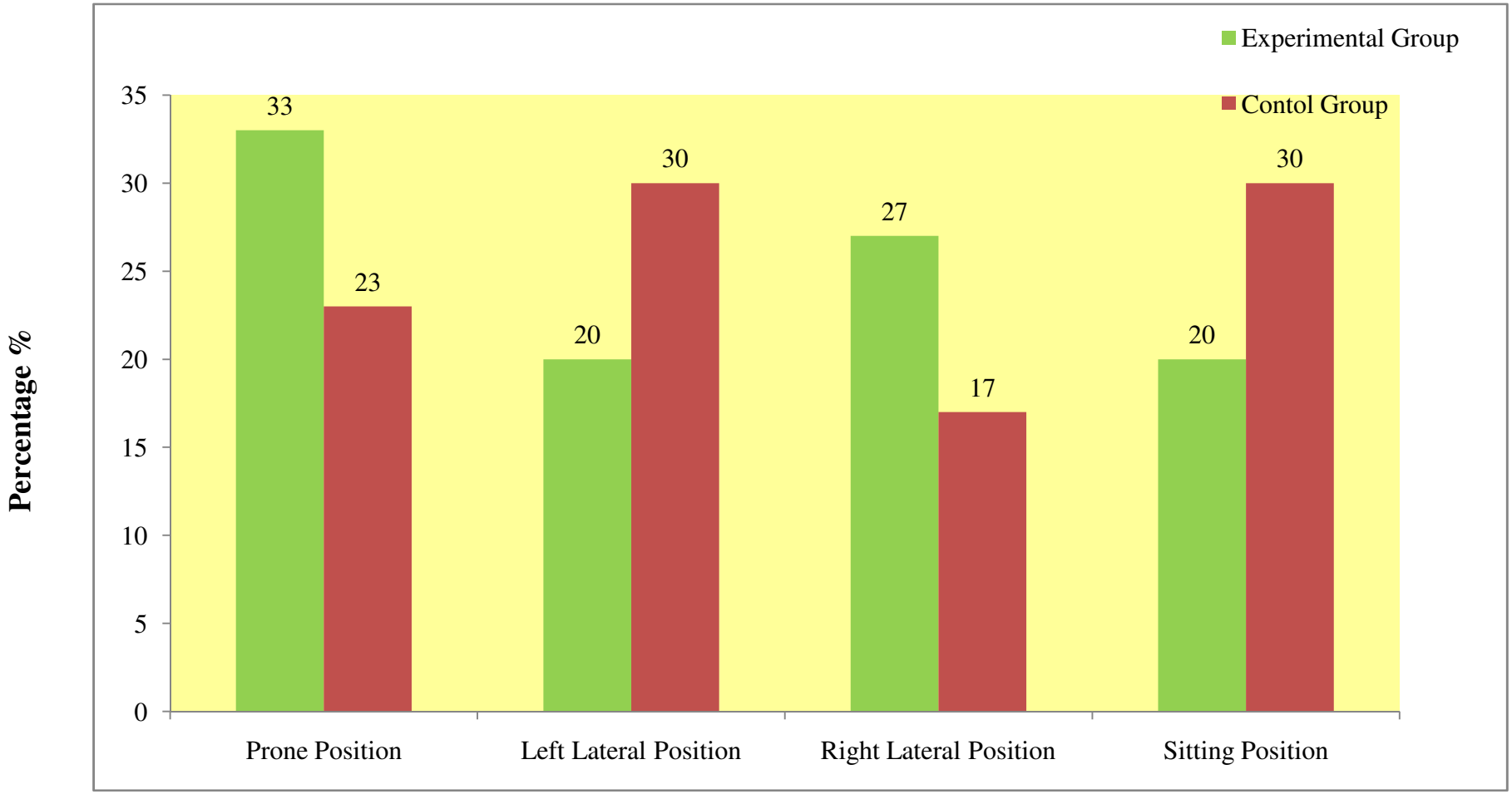


Figure 4.7 Percentage Distribution of Demographic Variables According to the Position of the Child During Intra Muscular Injection

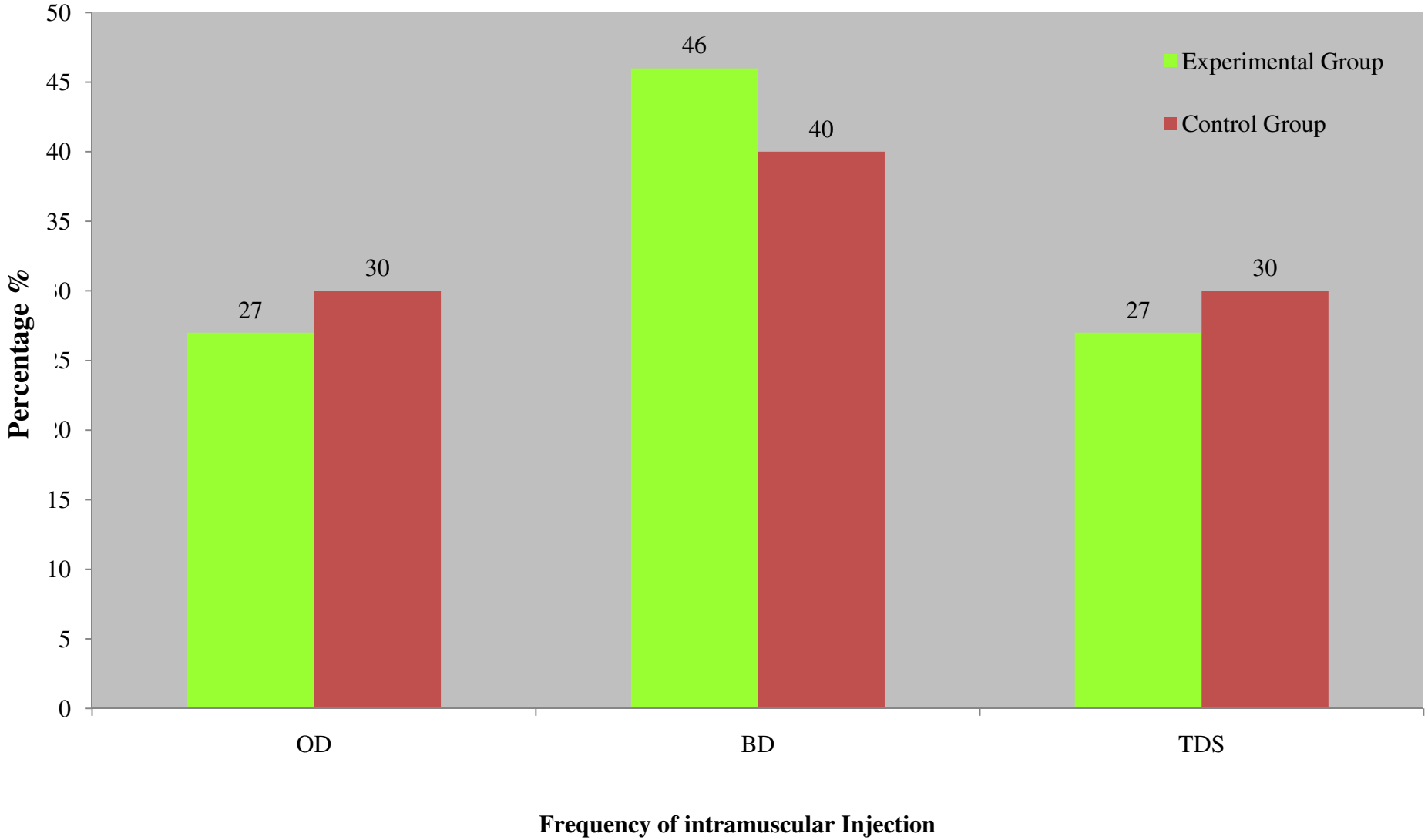


Figure 4.8 Frequency and Percentage Distribution of Demographic variables According to the Frequency of intramuscular Injection

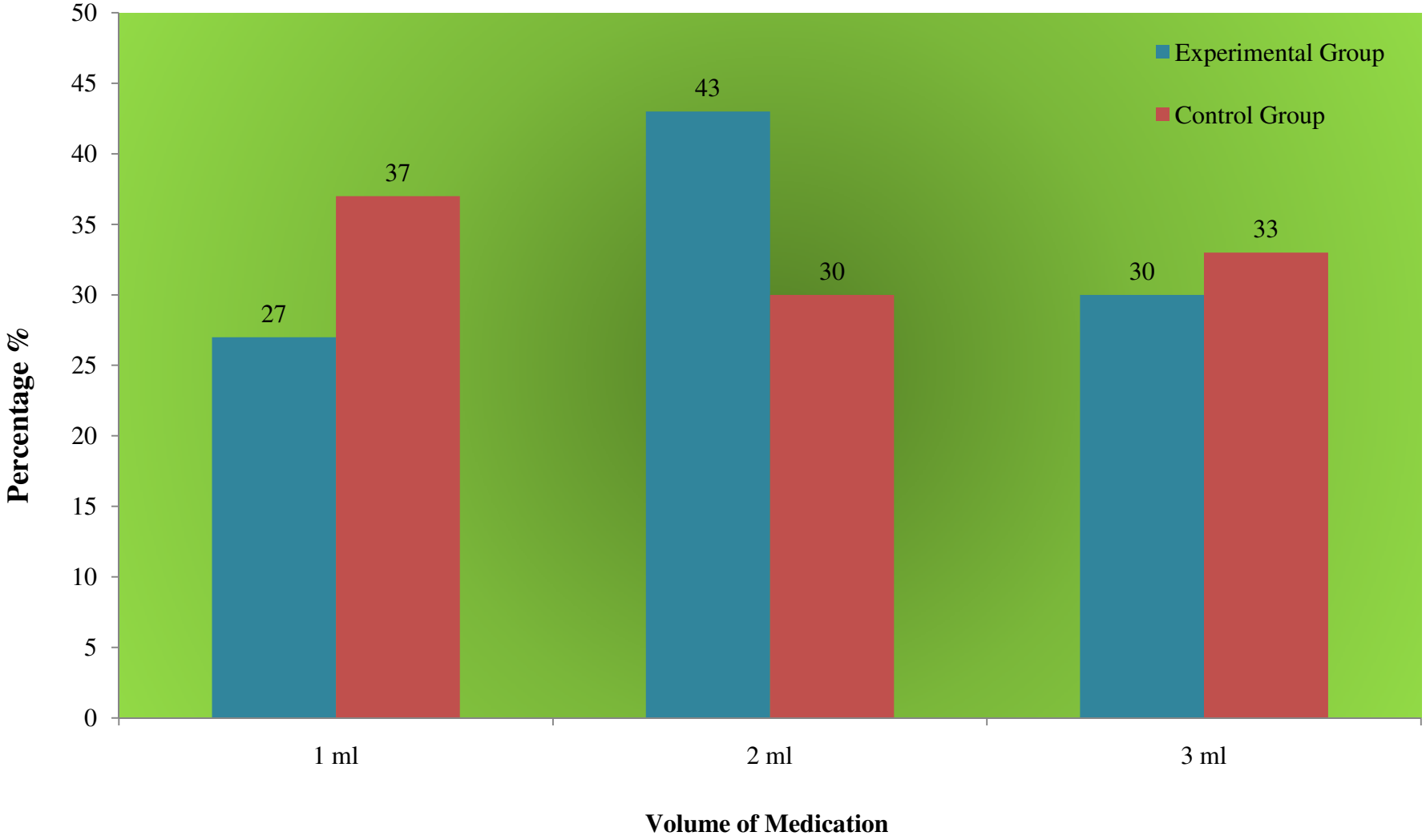


Figure 4.9 Frequency and Percentage Distribution of Demographic Variables According to the Volume of Medication

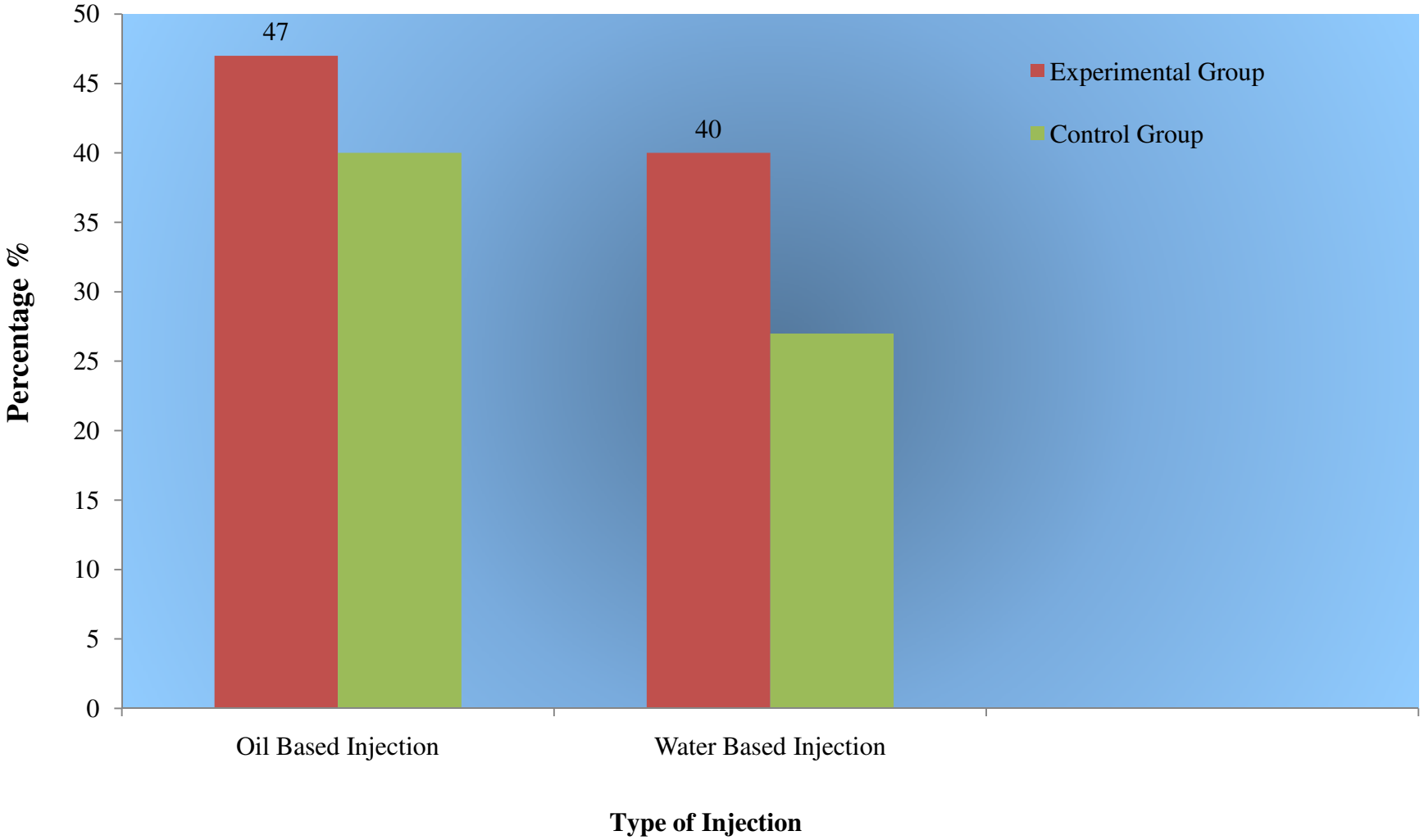


Figure 4.10 Frequency and Percentage Distribution of Demographic Variables According to the Type of Injection

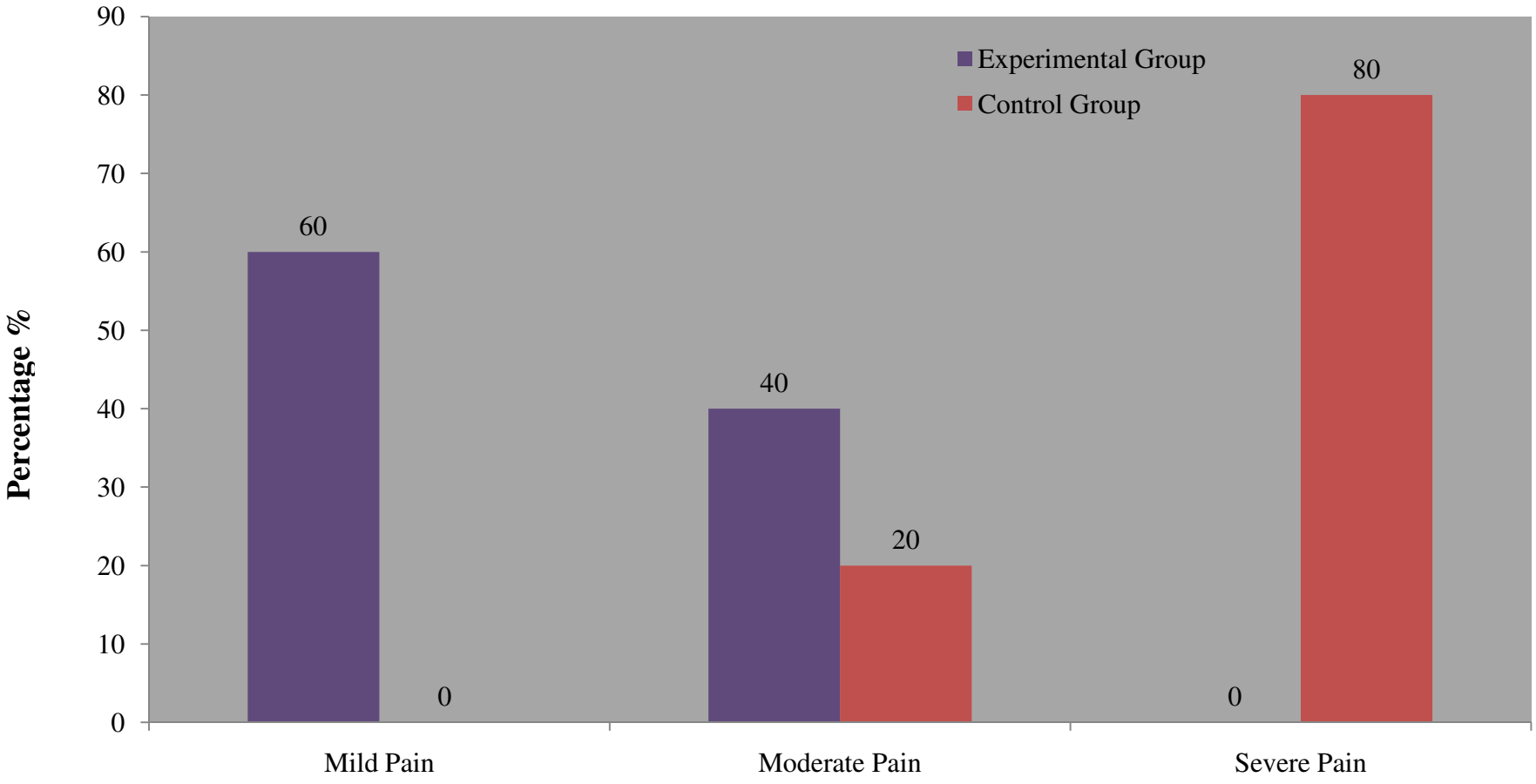


Figure 4.11 Distribution of children 4 to 12 years according to post test score of level of intensity of pain during Intramuscular Injection

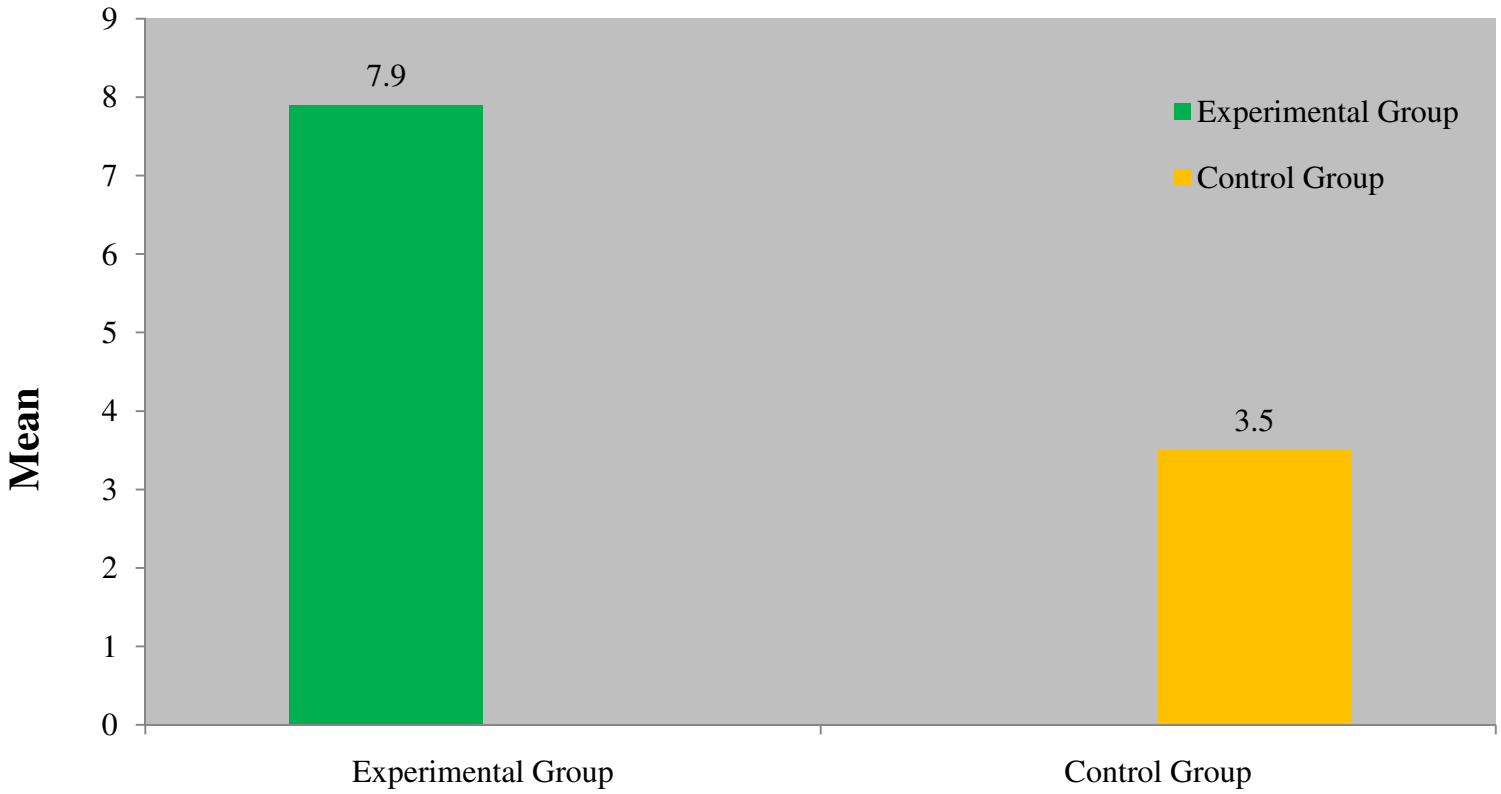


Figure 4.12 Compare the effectiveness of Cough Trick Method on level of intensity of pain during Intramuscular Injection among children 4 to 12 years in Experimental and Control Group.

REFERENCES

BIBLIOGRAPHY

BOOKS

- *Achar's **"Textbook of paediatrics",** (4th ed.) published by Universities press (India) pvt, Hyderabad. Pp. 24-25, 46*

- *A Parthasarathy **"IAP Textbook of paediatrics",** (3rd edition) Jaypee Publishers 2006. Pp. 28-29*

- *Adele Pillitery, (2005). "**Child health nursing",** (2st ed.). Philladelphia; J.B. Lippincott Company Publishers. Pp. 152*

- *Basavanthappa,B.T. (2006**). "Pediatric/child health nursing"**, (1st ed.). New Delhi: Ahuja publishing house. Pp. 1-1066*

- *Dorothy,R.M. (2006). **"Textbook of pediatric nursing", (**6th ed.). New delhi: Elsevier Publications. pp. 197-224*

- *Ghai,O.P. (2007). "**Essential pediatrics"**, (6th ed.). New delhi: Jaypee brothers publishers. pp. 115*

- *George.B, (2006). "**Nursing Theories**", (4th ed). California: A Pearson Education Company. Pp. 130*

- *Gupta D.C. (2000). **"Introduction to Statistics"**, New Delhi: Jaypee Brothers Publications. Pp. 25*

- *Gupta .P. (2005). **"Statistical Methods"**, (23rd ed). New Delhi, Sultan Chand and Sons Publications. Pp. 111*

- *Marriner Ann., (2002). "**Nursing theories and its Work**", (3rd ed). Philadelphia: Mosby Publication. Pp. 28*

- *Margaret.G.Marks, (2001). "**Introductory Paediatric nursing"**, (4th ed). Philladelphia: J.B. Lippincott Company Publishers. Pp 216-220.*

- *Nelson, (2004). "**Textbook of pediatrics",(**11th ed.). India: saunder Publishers.Pp 210.*

- *Park,K. (2009). **"Preventive and social medicine", (20t**h ed). Jabalpur: Bhanot Publishers. Pp. 113.*

- *Paruldutta, (2007). "**Paediatric nursing"**, (2nd ed). New delhi: Jaypee Brothers publishers. Pp. 86*

- *Polit O.F, Hungler B.P. (2005). **"Nursing Research Principles and Method"**, (6th ed). Philadelphia, Lippincot Publications. Pp. 200*

- *Potts, (2007). "**Pediatric Nursing caring for children and their families"** (2nd ed.). Thomson Delmar learning publishers. Pp. 150*

- *SuchitraRanjit, (2010). "**Manual of pediatric emergencies and critical care"** (1st ed.). Chennai: Paras medical publishers. Pp 123.*

- *SurajGupte, (2002). "**The short text book of pediatrics"**, (8th ed.). New Delhi: Jaypee brothers' publishers.Pp. 65.*

- *Tambulwadkar, (2000). "**Paediatric nursing"**, Bombay: vora medical publication. Pp. 27*

- *Waechter, (2003). "**Nursing care of children"**, (10th ed.). Philladelphia; J.B. Lippincott Company Publishers. Pp. 267*

- *Wong's, (2009). "**Nursing care of infants and children"**, (8th ed.). New Delhi: Elservier publishers. Pp. 95-100, 323-488*

- *H.P.S Sachdev, Panna Choudhury,* ***"Nutrition in children developing country concern"*** *BI Publication. Pp. 171-196*

- *Dr. Shrinandan Bansal (2008)* ***"Food and nutrition"*** *(1st edition) A.I.T.B.S publishers, India. Pp. 17-21*

- *Queen Mary Machendae (2011)* ***"Textbook on food and nutrition for nurses"*** *(1st edition) Emmess publishers. Pp. 65-85*

JOURNALS

- *Gangadhar. S. Isarannavar, (2017). "Efectiveness of structured teaching programme on Malnutrition and the Preparation of Hyderabadi and Davanagere Mix Recipe among Mothers of Under-Five Children", International Journal of Science and Healthcare Research Vol.2;Issue:2; April-June 2017.42-43*

- *Manda Shanka Mulik "Effectiveness of Krishna Poshak Mix on nutritional status among Anganwadi children" International Journal of Science and Research, vol. 3, 4 April 2014, 209.*

- *R. E. Black, S. S. Morris, and J. Beryce, "Where and why are 10 million children dying every yesr" The Lancet, vol. 361, no. 9376, pp. 2226-2234, 2003.*

- *L. E. Caulfield, M. De Onis, M. Blossner, and R. E. Black, "Undernutrition as an underlying cause of child deaths associated with diarrhea, pneumonia, malaria, and measles," The American Journal of Clinical Nutrition, vol.80, no.1,pp 193-198, 2004.*

- *A. L. Rice, L. Sacco, A. Hyder, and R. E. Black "Malnutrition as an underlying cause of childhood deaths associated infectious diseases in developing countries", Bulletin of the World Health Oranization, vol.78, no. 10, pp. 127-1221, 2000.*
- *D. L. Pelletier and E. A. Frongillo, " Changes in child survival are strongly associated with changes in malnutrition in developing countries", Journal of Nutrition, vol. 133, no. 1, pp. 107-119*

- *L. Jeyaseelan and M. Lakshmanan, 'Risk factors for malnutrition in south Indian children," Journal of Biosocial Science, vol. 29, no. 1, pp. 93-100, 1997.*

- *S. I. Odunayo and A. O. Oyewole, "Risk factors for malnutrition among rural Nigerian children," Asia Pacific Journal of Clinical Nutrition, vol. 15, no. 4, pp. 491-495, 2006*

- *Singh K, Badgaiyan N, et al. "Management children with severe acute malnutrition in India"; Experience of nutitional rehabilitation centre in Uttar Pradesh, India.*

- *Gio Huynh, et. al, "Malnutrition among 6-59 month old Children at District 2 hospital, Vietnam: Biomed Research International Volume 2019, Article ID 692132.*

WEBSITES

- *https://data.unicef.org/topic/nutrition/malnutrition*
- *www.impactguru.com/blog/national-nutrition*
- *unicef.in/story/1124/Nutrition*
- *www.gkpublication.in/ijshr*
- *www.google.co.in/search?q=who+growth+chart*
- *www.google.co.in/m?q=modified+wiedenbach's theory*
- *www.who.int/nutgrowthdb/about/introduction*
- *www.google.co.in/search?q=mid arm circumference*
- *www.shareyouressays.com/essays*
- *http://www.pubmed.com*
- *http://www.childinfo.org/malnutrition-nutritional-status.php*
- *http://www.who.int/nutgrowthdb/estimatest2012/en/.*
- *www.annalsofcommunityhealth.in/ojs/index.p*
- *www.healthline.com/nutrition/how-muchcalories*
- *http://www.ijponline.net/content/37/1/14*
- *www.parentcircle.com/article/nutrition-rehabilitation*

- *www.gkpublication.in*
- *www.healthline.com/nutrition/jaggery*
- *https://www.healthline.com>foods*
- *https:/doi.org/10.1155/2019/6921312*

APPENDICES

PPG COLLEGE OF NURSING
(A Unit of P. Perichi Gounder Memorial Charitable Trust)
An ISO 9001 : 2008 Certified Institution
Affiliated to The Tamilnadu Dr. MGR Medical University, Chennai
Recognised by Indian Nursing Council, New Delhi. (Cr. No. : 18-1183/2000, INC Resl. No.172) and Tamilnadu Nursing Council, Chennai.
9/1, Keeranatham Road, Saravanampatty, Coimbatore - 641 035.Tamilnadu, India
✆ : 0422 - 2669000 Fax : 0422 - 2669333 E-mail : ppgcollege@gmail.com Website : www.ppg.edu.in

Permission Letter for Research Study

To

Kavitha.L

M.Sc., Nursing II[nd] Year,

PPG College of Nursing,

Coimbatore -35

Through:

The Principal ,

PPG College of Nursing,

Coimbatore -35

Respected Sir / Madam.

Sub: Seeking Permission For Conducting Research Study.

I am student of II-year M.Sc Nursing, PPG College of Nursing, affiliated to the Tamilnadu Dr.M.G.R Medical University, Chennai. I have taken the specialization in Child Health Nursing. I am going to conduct the study on **"A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE."**

I request you to kindly permit me to conduct my study in hospital. Hope you will consider my requisition and do the needful.

Thanking you

Yours faithfully,

PPG COLLEGE OF NURSING
(A Unit of P. Perichi Gounder Memorial Charitable Trust)
An ISO 9001 : 2008 Certified Institution
Affiliated to The Tamilnadu Dr. MGR Medical University, Chennai
Recognised by Indian Nursing Council, New Delhi. (Cr. No. : 18-1183/2000, INC Resl. No.172) and Tamilnadu Nursing Council, Chennai.
9/1, Keeranatham Road, Saravanampatty, Coimbatore - 641 035.Tamilnadu, India
✆ : 0422 - 2669000 Fax : 0422 - 2669333 E-mail : ppgcollege@gmail.com **Website : www.ppg.edu.in**

Requisition Letter for Content Validity

From

Kavitha.L

II Year M.Sc. Nursing,

PPG College of Nursing,

Coimbatore – 35.

To

Through: PRINCIPAL, PPG College of Nursing.

Respected sir/ madam,

Sub: Requisition for expert opinion and suggestion for content validity of tool.

I am a student of M.Sc(N)., II year, PPG College of Nursing, affiliated to the TamilNadu Dr. M.G.R Medical University, Chennai. As a partial fulfilment of the M.Sc. (N) programme, I am conducting a research study on

TOPIC :"A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE."

Here with I have enclosed the developed tool for content validity and for the expert opinion and possible solution. I will be very kind of you to return the same as early as possible.

Thanking you,

Date: Yours Faithfully,

Place: Coimbatore

CERTIFICATE OF TAMIL EDITING

This is to certify that the study constructed by **Kavitha.L,** M.Sc. Nursing II year student, PPG College of nursing, Coimbatore-35. On the topic **"A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE."** Has been edited Tamil language appropriateness.

SIGNATURE

NAME:

INSTITUTION:

PLACE:

CERTIFICATE OF ENGLISH EDITING

This is to certify that the study constructed by **Kavitha .L,** M.Sc. Nursing II year student, PPG College of nursing, Coimbatore-35. On the topic **"A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE.".** Has been edited English language appropriateness.

SIGNATURE

NAME:

INSTITUTION:

PLACE:

FORMAT FOR THE CONTENT VALIDITY

Name of the expert:

Address:

Total content for the tool:

Kindly validate each tool and tick where ever applicable:

SI.No	No. of Tool/Section	Strongly Agree	Agree	OK	Not Applicable	Need Modification	Remarks

Signature of Expert with Date

LIST OF EXPERTS FOR CONTENT VALIDITY

1. Dr. ASHOK, M.D

Consultant paediatrician,

Ashwin Hospital.

Coimbatore.

2. Mrs. A. JEBAKUMARI SUTHA MSC.,(N)

Hod of Child Health Nursing

Ganga College of Nursing,

Coimbatore.

3. Mrs. ANNAL. JEBARATHINAM MSC.,(N)

Department of Child Health Nursing

RVS College of Nursing,

Coimbatore.

4. Dr. MANIBHARATHI MSC., (N), Ph.D

Department of Child Health Nursing

Kongunadu College of Nursing,

Coimbatore.

5. Dr. VIJAYALAKSHMI MSC., (N), Ph.D

Department of Child Health Nursing

Dhanvantri College of Nursing,

Erode

SECTION A

TOOLS

Demographic Data

1 Age of the child

a) 4-6 years ☐
b) 7-9 years ☐
c) 10-12 years ☐

2 Gender of the child

a) Male ☐
b) Female ☐

3. Weight of the child

a) 10-15 kg ☐
b) 16-20 kg ☐
c) 21-25kg ☐

4. Type of the injection

a) Antibiotics ☐
b) Analgesic ☐
c) Antipyretic ☐

5. Position of the child during intra muscular injection

a) Prone position ☐
b) Left lateral position ☐
c) Right lateral position ☐

6. Previous experience of intra muscular injection

   a) Yes
   b) No

7. Frequency of intramuscular injection

   a) OD
   b) BD
   c) TDS

8. Site of intra muscular injection

   a) Deltoid muscle
   b) Gluteal muscle

9. Volume of medication

   a) 3 ml
   b) 2 ml
   c) 1 ml

10. Type of injection

   a) Oil based injection
   b) Water based injection

WONG BAKER FACES PAIN SCALE

Wong baker faces pain scale to assess the level of intensity of pain scoring was Given as mentioned below.

0 = No Pain

1 - 3= Mild Pain

4-6 = Moderate Pain

7-10 = Severe Pain

பகுதி அ

1. குழந்தையின் வயது

அ) 4-6 வயது ☐

ஆ) 7-9 வயது ☐

இ) 10-12 வயது ☐

2. பாலினம்

அ) ஆண் ☐

ஆ) பெண் ☐

3. குழந்தையின் எடை

10-15 கி.கிராம் ☐

16-20 கி.கிராம் ☐

21-25 கி.கிராம் ☐

4. மருந்தின் வகைகள்

அ) ஆண்டிபயாடிக் ☐

ஆ) ஆனால்ஜசின் ☐

இ) ஆண்டிபயுரிட்டிக் ☐

5. ஊசி போடும் நிலைகள்

அ) குப்புற படுத்தல் ☐

ஆ) இடது பக்கம் சாய்வது ☐

இ) வலது பக்கம் சாய்வது ☐

6. ஊசி போட்ட முன் அனுபவம் உள்ளதா?

அ) ஆம் ☐

ஆ) இல்லை ☐

7. ஊசி போடும் நிலைகள்

அ) காலை மட்டும் ☐

ஆ) காலை மற்றும் இரவு ☐

இ) காலை, மதியம் மற்றும் இரவு ☐

8. ஊசி போடும் இடம்

அ) டேல்டாய்டு சதைபகுதி ☐

ஆ) குலுட்டியல் சதைபகுதி ☐

9. மருந்தின் அளவு

அ) 3 மில்லி ☐

ஆ) 2 மில்லி ☐

இ) 1 மில்லி ☐

10. மருந்தின் நிலை

அ) எண்ணை மருந்து ☐

ஆ தண்ணி மருந்து ☐

Section C

A study to assess the effectiveness of cough trick method on pain among children undergoing intramuscular injection in Ashwin hospital, Coimbatore.

A brief introduction on cough trick method will be given to the parents and children with adequate positive reinforcement. Cough trick method is help to reduce the intramuscular injection pain among children undergoing intramuscular injection.

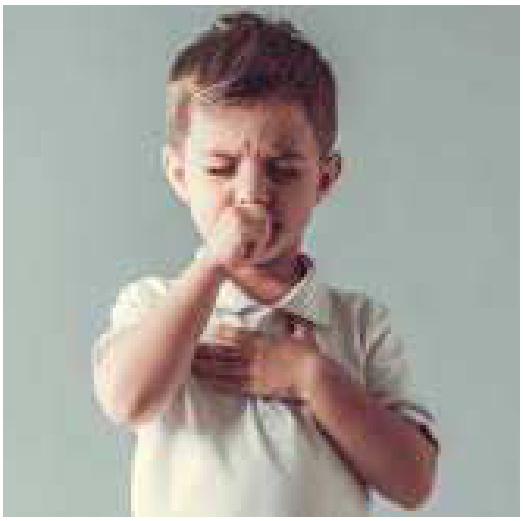
Cough trick method the children who are undergoing Intramuscular Injection the child was asked to have a single warm cough of moderate force followed by a second cough that coincide with the needle puncture intra muscular injection. So that the cough trick method was reduce pain perception.

Steps of Cough Trick Method:

Step 1 : Children were identified as per demographic criteria

Step 2 : Children were place in injection position what they want

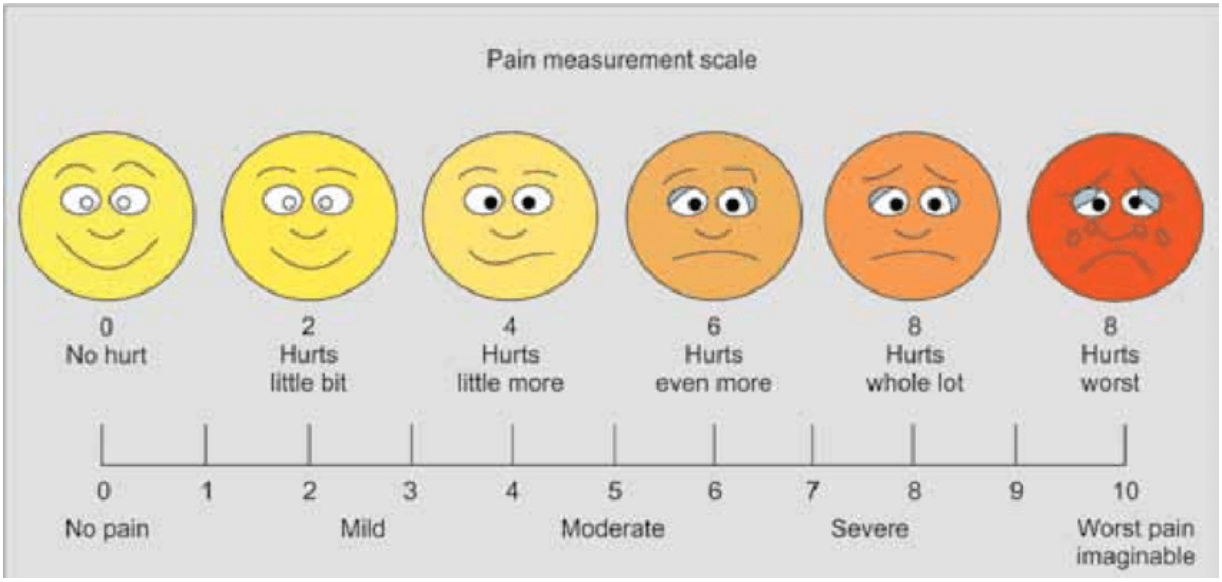
Step 3 : 2 minutes prior administered cough trick methods to the child



Step 4 : After identification the site of intramuscular injection site, explain to the child to cough

Step 5 : At the second cough the staff should inject the intramuscular injection

Step 6: Assess the pain during intramuscular injection using Wong baker faces pain scale



A STUDY TO ASSESS THE EFFECTIVENESS OF COUGH TRICK METHOD IN REDUCING INTENSITY OF PAIN DURING INTRAMUSCULAR INJECTION AMONG 4 TO 12 YEARS CHILDREN IN ASHWIN HOSPITAL, COIMBATORE.

Plagiarism Checker X Originality Report

Similarity Found: 17%

Date: Saturday, September 11, 2021
Statistics: 3181 words Plagiarized / 11969 Total words
Remarks: Medium Plagiarism Detected - Your Document needs Selective Improvement.

CHAPTER I INTRODUCTION 1.1 Background of the Study According to National Policy for Children‟s (2015) reported that India is home to the largest child population in the world. The Constitution of India guarantees Fundamental Rights to all children in the country and empowers the State to make special provisions for children. The Directive Principles of State Policy specifically guide the State in securing the tender age of children from abuse and ensuring that children are given opportunities and facilities to develop in a healthy manner in conditions of freedom and dignity.

The State is responsible for ensuring that childhood is protected from exploitation and moral and material abandonment. (Ramandeep, 2018). Every child is an individual and should never be considered a typical boy or girl, one unit of a group who are all alike. Each child has his own rate of growth, but the patterns of growth shows less variability. Although growth and development – physical, mental, social, emotional, and spiritual-proceed at different rates, they are also interrelated in the majority of children that the result is a progressive development of the whole child, from infancy to childhood (Vandna, 2016). The International Association for the Study of Pain (2017) defines pain as "an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage.

Pain is a distressing feeling often caused by intense or damaging stimuli. Gordon (2017) states that pain is a universal experience. The American Pain Society labelled it as the fifth vital sign to emphasize the importance of assessing pain frequently and providing appropriate care. Pain is highly subjective. Pain is a complex and multi dimensional phenomenon. It comprises of five components such as affective, behavioural, cognitive, sensory and Physiological. Each dimension is implemented in the assessment and management to alleviate pain. Gupta et al.

(2016) stated that Pain is one of the most common adverse stimuli experienced by children occurring as a result of injury, illness and necessary medical procedures. It is associated with increased anxiety, avoidance, somatic symptoms and increased parent distress. Despite the magnitude of effects that acute pain can have on a child, it is often inadequately assessed and treated. Pain is an inherently subjective multi-factorial experience and should be assessed and treated. Harsh et al. (2014) reported that the pain message is transmitted by the spinothalamic pathways to centres in the brain, where it is perceived.

Pain sensation transmitted by the neospinothalamic pathway reaches the thalamus, and the pain sensation transmitted by the paleospinothalamic pathway reaches brainstem, hypothalamus and thalamus. These parts of the central nervous system contribute to the initial perception of the pain. Number of non pharmacological techniques such as distraction, relaxation, guided imagery and cough trick techniques that may help to reduce intensity of pain, make pain more tolerable, decrease fear and anxiety for the children‟s (Hermann, 2019).

The 'cough trick' (CT) technique is used in reducing intramuscular prick (IMP) pain during vaccinations and also for brief painful procedures like subcutaneous injection, intravenous cannulation, and so forth. Cough trick," requires that the patient be prompted to give a single "warm-up" cough of moderate force, followed by a second cough that coincides with needle puncture. Cough trick' (CT) technique could be a distraction at the moment of intra muscular injection, which is a well-known method of pain reduction through the shift of attention to a nonnoxious stimulus in the immediate environment and it could be the activation of the segmental pain inhibitory pathways due to the increased pressure in the subarachnoid space during coughing mediated by vagal afferents.

Nellie (2018) states an intramuscular injection is the favourable route of administering medication where, fairly rapid-acting and long-lasting dosage of medication is required. Administration of intramuscular injection is the injection of medication into central area of specific muscle tissue that forms a deposit of medication. From the tissues through the blood vessels the injected medications are distributed via cardio vascular system. An intramuscular injection is the safest, easiest and best tolerated route of injection. Taddio et al.

(2017) described that the deltoid is the preferred site for Intra Muscular injections in children ages 3 to 18, once adequate muscle mass has developed there, usually around the age of 3 years. To identify this site properly, nurses should expose the entire arm

from the shoulder to the elbow and palpate the acromion process. Injections should be given 3 to 5 cm below this landmark. The deltoid is best for low-volume medications and Intra Muscular injections not exceeding a maximum volume of 1 ml. If the deltoid cannot be used, the vastus lateralis may be utilized in this age group.

According to National Policy for Children‟s (2015), revealed that in India, with a population of 121.1 Core, has 13.59% (16.45 Core) of its population in the age group 0-6 years and 30.76% (37.24 Core) in the age group 0-14 years. The gender wise composition of the child population is nearly the same as that of the total population. 48% of the child population (both 0-6 years and 0-14 years) is female which is slightly lower than the overall proportion of females in the country. According to Ministry of Statistics and Programme Implementation (2015) showed that In rural India, 33% of its population belonged to the age group 0-14 years whereas in urban areas, 26% of the total population is in age group 0 -14 years.

According to Childrens in India (2016), revealed that at the National level, the death rate for age group 5-14 years is estimated at 0.6. Rural-urban differentials exist with the urban areas registering lower death rates as compared to that in rural areas in majority of the States. Among the bigger States/UTs, the lowest death rate in this age group is registered in Kerala (0.2) and the highest in Jharkhand (1.4). According to Social and Rural Survey (2016) reported that the highest proportion of out of school children within 6-13 years is estimated in the East zone (4.02%) and the lowest within South zone (0.97%).

Odisha has the highest proportion of out of school children in India (6.10%). According to World Health Organization (2015) enumerated that, 78% of children‟s experiencing pain during their emergency department stay, effective pediatric pain management should be an essential component of care. The most common painful procedures in the emergency department include venipuncture, intravenous (IV) insertions and Intramuscular Injections. Zengerle (2016) quoted that more than 12 billion injections are administered each year worldwide.

In India, a survey found that 96% of all injections given by health care providers were of antibiotics, vitamins and analgesics. 48% of patients mentioned needle injection as disturbing and 62% had fear about intramuscular injection. Needle phobia affects at least 10% of the total population and it also lead to avoidance of medical care. Desiree (2020) conducted a study on minimizing needle pain in children. Survey suggested that Intra Muscular Injection is associated with considerable distress among children. Between 34% and 64% of children experience stress on pain from the procedure.

The study suggested that 50% of children report needle stick experiences as unpleasant and painful, which causes subsequent high levels of anticipatory fear and distress. The fear of pain and needle phobia in children can lead to poor health consequences, including medical treatment. According to International Association of Pain (2018) despite ready availability, however only 6% of paediatric hospitals use pain control for shots, and 2.1% of an estimated 18 million injections are performed each year with pain control.

Distraction for minor to moderate procedural pain is free or inexpensive, easy to perform and is an effective method of pain control. 1.2 Need for the Study Pain is a subjective experience. Thus self-report of pain is a critical component of pain assessment. Subjective reports of pain may include verbalization or nonverbal reports such as coloring the parts of the body that hurt on a body outline tool. Children in pain have consistently reported that needles and shots are what they fear the most (Broome, 2014). Malviya et al.

(2016) revealed that 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. Voepel (2018) stated that a combination of pharmacological and non-pharmacological interventions can ensure the highest standard of care in the management of pain in children.

In infants, cough trick method prior to intramuscular injection has drastically reduced pain while doing invasive procedures. Hart et al. (2017) reported that Cough trick technique effectiveness of the procedure may result from distraction (concentrating on coughing on cue), competing sensory stimuli (noise and feeling of the cough), competing physiologic stimuli (e g: increased pressure in the subarachnoid space or increased blood pressure), or some combination of these factors. The strategy can be taught easily and requires no additional cost, equipment, or staff time. Kimmel et al.

(2019) revealed that assessing and managing the children with pain is a daily responsibility for nurses. They are the responsible persons who not only implement the doctor‟s orders, but also the ones who work closely with patients to facilitate healing processes. So nurse can use simple interventions to relieve procedural pain in children and promote comfort for them. Rachal et al. (2021) conducted a study on the effect of intramuscular injection technique on injection associated pain.

A systematic review and meta-analysis was adopted for this study. the result showed that 13 Intramuscular Injection techniques were identified. 10 studies applied local pressure to the injection site. Of these, applying manual pressure and Helfer (rhythmic) tapping to the injection site reduced injection pain, whereas the use of a plastic device to apply local pressure to the skin did not significantly reduce pain. Acupressure techniques which mostly involved applying sustained pressure followed by intermittent pressure (tapping) to acupressure points local to the injection site reduced pain, as did injections to the ventrogluteal site compared to the dorsogluteal site. The study concluded that Manual pressure or rhythmic tapping over the injection site and applying local pressure around the injection site reduced Intramuscular Injection pain. Clancy et al.

(2017) reported that paediatric intramuscular injections for developing world settings. Giving intramuscular injections is considered a core nursing skill, and millions are performed around the world every day. Intramuscular injections are more commonly used in resource-poor environments, but there is limited education of nurses on its proper administration. The findings in the literature conclude that the vastus lateralis muscle is the preferred site for intramuscular injections, particularly in resource-poor settings.

The researcher while working in the pediatric department has assessed that the pain is one of the common problem of the paediatric invasive procedures like intra muscular injection. These are inevitable in the life of the child but which can be managed by methods like cough trick method. So the researcher was interested to a study to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years childrenin selected hospital, Coimbatore. 1.3

Statement of the Problem A study to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in Ashwin hospital, Coimbatore. 1.4 Objectives To provide cough trick method during intra muscular injection among 4-12 years children in experimental group. To assess the intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group. To assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection in experimental group.

To find out the association between intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group with their selected demographic variables. 1.5 Assumption Pain is a common phenomenon during Intra Muscular Injection. Implementation of cough trick method may help to reduce the pain

during Intra Muscular Injection among 4 to 12 years childrenin experimental and control group. 1.6 Hypothesis H1 - There will be significant effect on 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children between experimental and control group.

H2 -There will be a significant association present between the selected variables on the 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group. 1.7 Delimitation The study was delimitated to The present study is delimited to 4 weeks of data collection period. The study is delimited to sample size of 60 children only. The study is delimited to children admitted in Ashwin Hospital, Coimbatore. 1.8 OPERATIONAL DEFINITION Assess This study it refers to the measurement of post test 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years childrenas measured by Wong baker faces pain scale.

Effectiveness It refers to the outcome of cough trick method in reducing Intramuscular Injection pain among 4 to 12 years childrenin experimental and control group. Cough trick Method It refers to the process in which the child is asked to have a single warm cough of moderate force followed by a second cough that coincide with the needle puncture. Intensity of Pain Pain intensity defined as the magnitude of experienced pain of Intramuscular Injection. Intramuscular Injection An intramuscular injection is a technique used to deliver a medication deep into the muscles.

Children A young person especially between infancy and puberty a play for both children and adults. In this study it refers to the age group of the 4 to 12 years. 1.9 Projected outcome The result of the study will prove whether the application of Cough Trick method prior to intramuscular injection is effective in reducing the 4 to 12 years children pain. 1.10 Conceptual Framework Conceptual framework is a network of inter-related concepts that provide a structure for organizing and describing the phenomenon of interest.

Research studies are based on a theory or conceptual framework that facilitates visualizing the problem and places the variables in a logical context. This study was based on the concept of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years childrenin selected hospital. The investigator adopted a Widenbach‟s prescriptive theory (1964) as the foundation for developing the conceptual framework.

Widenbach‟s prescriptive theory is made up of three factors as follows: The central purpose Prescription Realities Central purpose: The nurse‟s central purpose defines that

quality of health she desires to effect and she recognizes to be her special responsibility in caring for the patient. In this study the central purpose is to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years childrenin selected hospital, Coimbatore. Prescription: Once the nurse identified needs of the patient, she develops a prescription or plan of care. In this study, the investigator planned to provide Cough trick method for experimental groups.

Realities: The realities are: Agent Recipient Goal Framework The conceptual framework of this nursing theory consists of following steps: Identification of the patients need for help. Ministering of the help. Validation that the action taken was helpful to patient. Identification: The nurse identifies the patient need. In this study, the need was pain reduction during Intramuscular injection among children 4 to 12 years. Ministration: Ministering to the patient, the nurse applies a comfort measure, or therapeutic procedure. Ministering has two components: Prescription: The nurse provides care to the patient. Cough trick method was given to experimental group.

Realities: Agent: It means who is the practicing nurse.In this study the researcher is the agent. Recipient: The patient‟s are the recipients of the nurse‟s action. In this study the 4 to 12 years childrenwere the recipients. Goal: The goal is the desired outcome the nurse wishes to achieve. In this study the goal is to reduce the pain during Intramuscular injection. Framework: Framework consists of human, environmental, professional and organization facilities. In this study the framework is Ashwin Hospital. Validation: After help has been ministered the nurse validated that the actions were indeed helpful.

At the end the 4 to 12 years childrenwere assessed for the intensity of pain using the Wong Baker‟s faces Pain Scale. CHAPTER II REVIEW OF LITERATURE The review of literature is a key step in research process. Review of literature refers to an extensive, exhaustive and systematic examination of publications relevant to the research project. The review of literature is defined as a broad, comprehensive, in depth, systematic and critical review of scholarly publications, unpublished scholarly print material, audiovisual materials and personal communications.

A literature review is an account of the previous efforts and achievements of scholars and researchers on a phenomenon. The available literatures are organized in the following headings:- Section A: Literature related to pain perception during intra muscular injection Section B: Literature related to non pharmacological pain management technique during intramuscular injection Section C: Literature related to effectiveness of cough trick method during intramuscular injection. 2.1 Section A: Literature related to pain perception during intra muscular injection Kara et al.

(2019) conducted a randomized controlled study among 75 patients receiving diclofenac sodium intramuscularly at a university hospital in Zonguldak, Turkey. The primary outcome measure collected was pain intensity, measured on a visual analogue scale. Each subject received three injections by the same investigator using three different techniques. The three techniques were randomly allocated and the subjects were blinded to the injection technique being used. After each injection, another investigator, who had no prior knowledge of which injection technique was used assessed pain intensity using the visual analogue scale.

Research findings demonstrated that the Z-track and internally rotated foot techniques significantly reduced pain intensity during intramuscular injection. Statistically significant differences in pain intensity were observed between the three injection techniques. Ulkii (2019) conducted a study to examine the effect on intramuscular injection pain to the dorsogluteal and ventrogluteal sites and to investigate gender and body mass index differences in pain perception between the sites among 70 patients receiving at least two doses of diclofenac sodium intramuscularly in a state hospital in Bursa, Turkey. After each injection, the pain felt by patients during the injection was immediately assessed using a visual analogue scale by another researcher.

The Wilcox on signed rank test was used to explore determine the statistical differences in perceived pain intensity between the two injection sites. The result showed that average pain score of patients after injections to the ventrogluteal site was 1.24±1.18, while that for injections to the dorsogluteal site was 1.89±1.49. The difference in average pain scores from injections administered to the two different sites was found to be statistically significant ($p<0.05$).

The study concluded that supported the hypothesis that intramuscular injections of diclofenac sodium administered to the ventrogluteal site would feel less painful than those administered to the dorsogluteal site. Francis et al. (2018) evaluated the influences of patient characteristics on pain perception due to intramuscular vaccine injection among 160 volunteers (65 males, 95 females). The injection of hepatitis B vaccine using a, 24 Gauge needle was performed as a uniform stimulus and the intensity of pain was measured immediately after the injection using a 100-mm visual analogue scale (VAS).

The influences of patient characteristics on pain intensity were investigated. The average VAS score was 20.8 ± 17.1 (range 0 to 67) in males and 34.4 ± 19.7 (range 2 to 76) in females ($P < 0.001$). Gender appeared to be the only major factor that influenced the pain of intramuscular vaccine injection ($P < 0.05$). Emine (2018) conducted an experimental randomized controlled trial to determine whether changing the needle before administering an intramuscular injection could reduce pain, and to investigate

gender differences in pain perception among 100 patients receiving diclofenac sodium intramuscularly in an emergency and traffic hospital in Izmir, Turkey. Pain intensity was measured on a numerical rating scale. Each patient received two injections by the same investigator using two different techniques.

The two techniques were randomly allocated and the patients were blinded to the injection technique being administered. After each injection, another investigator who had no prior knowledge of which injection technique was used immediately assessed pain intensity using a numerical rating scale. Descriptive statistics, paired t-test and t-test were used to evaluate the data. Findings demonstrated that changing the needle prior to intramuscular injection significantly reduced pain intensity.

A statistical difference in pain intensity was observed between the two injection techniques. The results supported the hypothesis that changing the needle prior to administering the medicine significantly reduced pain intensity. Gideon et al. (2017) conducted a study to determine pain following depot intramuscular injection of oil vehicle based drugs. This study aimed to determine prospectively the prevalence, determinants, severity and functional consequences of pain during the week after intramuscular injection of 1000mg testosterone undecorated (TU) in a 4ml castor oil vehicle at an academic anthology clinic. The time course and co-variables influencing pain scores were analysed by mixed model analysis of variance.

Following 168 injections in 125 men, pain was reported by 80% of men, peaking immediately after injection, reaching only moderate severity, lasting 1- 2 days and returning to baseline by day 4. The pain required little analgesic use and produced minimal interference in daily activities. The time course of pain scores was reproducible in 43 men who underwent two consecutive injections. Pain was more severe in men who had an earlier painful injection, but less severe in elderly and more obese men. There were negligible differences in post-injection pain experience between experienced nurses administering injections.

Deep intramuscular injection Gluteal injection of depot TU in 4ml castor oil was well tolerated and post injection pain was influenced by earlier painful injection experience as well as age and obesity. Kusumadevi et al. (2016) conducted a comparative study to estimate the perception of intramuscular injection pain in men versus women in Bangalore College and Victoria hospital among 300 subjects in which 140 men and 160 women. The pain was assessed for giving intramuscular injections of multivitamin 3ml in gluteal region using 23 gauze needles and subjective pain was assessed by Visual Analogue Scale. Moderately significant higher pain score was associated with women (1.94±1.10) as compared to men (1.74±1.24) (P =060). The study revealed that the

moderately significant higher pain scores are associated with women. Gagliese (2016) conducted a study to assess age differences in pain intensity and quality.

They predicted that in a diverse sample of patients at a pain clinic, there would be no age differences in numeric ratings of pain intensity but the elderly people obtained lower scores in a pain questionnaire compared with younger adults. The older group samples had significantly lower total and sensory scores and choose fewer words to describe their pain than the younger group. Layla et al.(2015) conducted a one-group quasi experimental study to assess the perception of pain among 25 patients from a 32 bedded dermatology clinic in Turkey. Data were collected using the "Patient Characteristics Form" and the visual analogue scale (VAS).

The mean difference in pain levels according to the VAS in the post injection period was significantly higher with administration of IM methylprednisolone in 10 seconds compared with 30-second administration (VAS 1.9 vs. 1.3; $p < .05$). The severity of pain peaked at 0 minutes for both injection speeds. But the duration of pain was longer with 10- second injections. The data showed that at multiple time points after 10-second injections, men and patients >40 years experienced greater pain severity.

Pain severity after 30-second injections was greater for patients of normal or low weight who had completed higher levels of education. In conclusion, slow IM injection of steroids improved pain management. Mitchell et al. (2015) conducted that the purpose of this study was to examine the effect of varying injection speed on the perception of pain in an industrial area. Fifty workers were given intramuscular hepatitis B vaccine at injection speeds of 10 and 30 seconds per cubic centimetre (s/cc). The perception of pain was measured on a visual analogue scale and reported post-injection at three different time intervals.

The results showed that no difference in pain was perceived by participants between the two injection speeds. Results also revealed that women consistently had higher mean pain scores than men and significantly more pain at the 0 hour measurement of the 10 s/cc injection. While the results of this study indicated that no need to administer an intramuscular injection slower than 10 s/cc.

Johnson (2015) conducted, a comparative study to determine the difference and similarities in pain perception among 32 elderly African Americans and 32 elderly Caucasian subjects using Mc Gill Melzack pain questionnaire and a 2 by 2 analysis of variance was done and identified a statistical significant ($f = 6.30$, $df = 1$, $p = 0.015$) difference between the subjects in terms of pain intensity. Pearson„s product moment correlation($r = 0.3$, $p = 0.01$). Thomas (2015) conducted an experimental study to test

whether muscle pain was influenced by temporal and spatial summation sequential noxious muscle stimuli applied at hourly inter stimulus-intervals among eleven healthy men.

A comparative study was conducted to assess the perception of intramuscular injection pain in men and women among 300 samples. The intensities of local and referred pain were assessed by recordings on visual analogue scales (VAS) and the areas of local pain and referred pain were localized by the subject. Moderately significant higher pain scores was associated with women (1.94±1.10) as compared to men (1.74±1.24)(P=0.060).Statistically significant higher pain scores were observed in women (2.24+±1.19) as compared to men (1.71±1.06) in age group of 21-30 (P=0.036).

The study concluded that experimental muscle pain was influenced by temporal and spatial summation. 2.2 Section B: Literature related to non pharmacological pain management technique during intramuscular injection Taddio et al. (2019) conducted a study to determine the effectiveness of physical interventions and ice application in injection techniques for reducing pain during vaccine injection in children. Nineteen randomized control trail involving 2814 infants and children (0-18 years of age) were included in the systematic review. One study included children more than sixteen years and adults (n = 150).

In 2 trials that used child self-reports of pain during administration of measles-mumps-rubella vaccine (total, 680 children with complete data), the Priorix vaccine caused less pain than the MMR (II) vaccine (standardized mean difference [SMD], -0.66; 95% CI, -0.81 to -0.50; P < 0.001). In 3 trials (404 children), the number needed to treat (NNT) with Priorix to prevent 1 child from crying was 3.2 (95% CI, 2.6-4.2). In 4 trials (281 infants and children), sitting children up or having parents hold infants appeared to cause less pain than the sucough tricke position, but the difference was not statistically significant. Chambers et al.

(2019) conducted a systematic review to determine the efficacy of various psychological strategies for reducing pain and distress in children during routine immunizations. Twenty randomized control trail involving 1380 infants and children (1 month to 11 years of age) were included in the systematic review. Breathing exercises were effective in reducing children's self-reported pain (standardized mean difference [SMD], -0.43; 95% CI, -0.76 to -0.09; P = 0.01), observer-rated distress (SMD, -0.40; 95% CI, -0.68 to -0.11; P = 0.007), and nurse reported distress (SMD, -0.57; 95% CI, -0.98 to -0.17; P = 0.005.

the study concluded that although additional well-designed trials examining

psychological interventions were needed, parents and health care professionals should be advised to incorporate psychological interventions to reduce the pain and distress experienced by children during immunization. Serena et al. (2018) conducted a study on rhythmic skin tap cough trickg to reduce procedural pain during intramuscular injection on 60 adults who received intramuscular injection. Injection Tramadol 50mg or Injection Piroxicam 40mg was given for patients who were selected as samples. Baseline information was collected from structured interview schedule. Each sample given 4 injections was taken as samples.

In that 2 injections given by normal standard method and 2 injections by using skin tap technique. Pain assessment was done soon after each injection by using Numerical Rating Scale. The result revealed that the overall mean pain in tensing by using skin tap technique (1.5±1.1) was much lower than the pain level by the usual technique (2.5±1.3). Jaffrey et al. (2018) conducted a randomized controlled trials to show systematic review of efficacy of music therapy on pain and anxiety of children aged from one month to 18 years of age.

Active music therapy which involves music with music therapist and passive music therapy was without music therapist. The result showed that music therapy was effective in reducing anxiety and pain in children also it was considered as adjunctive therapy in clinical situations that reduce pain or anxiety. The effects of music on human emotional and physiological responses and ease the pain and anxiety by moving conscious thought away from the symptoms.

Azadeh (2017) conducted an experimental randomized control study on touch therapy at Bangalore among 60 samples by using probability random sampling identified that the overall mean percentage for control group without touch therapy was 57.4 % and for experimental group with touch therapy and massage was 25.7% ($t= 5.68$, $p < 0.05$) and concluded that touch therapy before and during painful nursing intervention reduced 4 to 12 years children pain experienced by the clients. Sr. Serena (2017) conducted a study on rhythmic skin tapcough trickg technique to reduce pain during intramuscular injections. One group pre-test post-test design was adopted for this study.

A purposive sampling technique guided by inclusion criteria was used to select 60 adult patients from orthopaedic and trauma ward. Data collection tool included Interview schedule for the collection of baseline information, 0-10 numerical pain intensity scale to assess pain level after each injection, a table to record pulse rate the overall mean pain intensity by using skin tap technique was (1.5±1.1). The mean value of pain level was greater in females than in males with both techniques.

There was no significant association between pain level and other baseline variables like age, diagnosis, previous hospitalization and education The above observations highlighted the effectiveness of „ skin tap technique‟ on reduction of procedural pain. Negin (2017) conducted a crossover single blind study to assess effectiveness of acupressure to reduce pain in intramuscular injection among 64 patients. The patients who were prescribed penicillin for at least two daily doses were included in the study. Each subject received an injection with acupressure applied to one buttock and an injection without acupressure to the other buttock or vice versa. The perception of pain was measured on a visual analogue scale. The mean age was 28 ± 9.9 years old.

Fifty patients were injected with penicillin 6.3.3 (78%) and 14 patients received penicillin G plus procaine (22%). The mean score for perceived pain intensity for the acupressure injection was 3 ± 2 and the mean score for the injection without acupressure was 5 ± 2. The result showed that the perceived pain intensity as at average 2.5 lower in the acupressure group comparing to ordinary injection ($P < 0.000$).

Farhadi (2016) conducted a study in University of Islamic Azad, Iran to determine the effect of local cold (ice application) on severity of pain during intramuscular injection among 60 patients using randomized sampling method. The post-test assessment done by using Visual Analog Scale showed that local cold (ice) application decrease the pain during intramuscular injection when compared with control group without cold application. Barnhil et al. (2015) conducted a study to decrease the pain of intramuscular injection by using manual pressure among 93 patients who had dorsogluteal intramuscular injection of immunoglobulin at a country health department.

Forty eight received the pressure treatment and 45 received a standard injection in which no pressure was applied. Mean pain intensity on a 100mm Visual Analogy Scale adjusted for differences in injection volume was 13.6mm for the experimental group and 21.5mm for the control group ($P=0.03$). Chung (2015) conducted an experimental study on the use of manual pressure to reduce pain in intramuscular injections at a Hong Kong University among 74 participants between 18 and 42 years of age (mean age 21 years, 55% women).

The left and right arms of the participants (intra subject comparison) were randomised to receive an intramuscular injection of hepatitis A and hepatitis B vaccine with (intervention condition) and without (control condition) the application of pressure at the injection site. A mechanical pressure detection device was placed between the participant‟s arm and the investigator‟s thumb. Manual pressure was applied in a standardised way to the deltoid region of the participant‟s arm for 10 seconds prior to

the delivery of vaccination. The mean pain score was lower among patients who received manual pressure prior to injection.

Women scored higher for perceived pain intensity for both the intervention ($p<0.001$) and control conditions ($p<0.001$). Appletone (2014) conducted an experimental study to assess the effect of needle temperature on pain ratings after injection in the United States among eighty participants. Samples received an injection of influenza vaccine in one arm and a saline injection in the other using a cold or room temperature needle in a double blinded fashion. The mean pain score for influenza vaccine with the two injections was cold needle 32.2mm±3.2

and room temperature needle 36.0mm±3.8.For saline injections it was 25.2mm±2.95 and 23.7mm±3.19 for the cold needle and room temperature needle respectively. The study concluded that the use of cold needles may not be worth pursuing for injections with mild pain, but may be worthwhile to explore using more painful injections. Holbert et al. (2014) conducted an experimental study among 93 patients at a country health department to assess the effectiveness using pressure to decrease the pain of intramuscular injections.

The purpose of this study was to determine whether applying pressure to the site for 10 sec prior to an intramuscular injection reduce pain. Mean pain intensity on a 100-mm visual analogue scale adjusted for differences in injection volume was 13.6 mm for the experimental group and 21.5 mm for the control group ($P = 0.03$). The findings suggested that simple manual pressure applied to the site was a useful technique to decrease injection pain. 2.3 Section C: Literature related to effectiveness of cough trick method during intramuscular injection. Kumar et al.

(2020) conducted a study to assess the effectiveness of 'cough trick' (CT) technique to reduce intramuscular prick (IMP) pain during vaccinations and also for brief painful procedures like subcutaneous injection, intravenous cannulation among 50 patients from four outpatient clinics. The strategy required a single "warm-up" cough of moderate force, followed by a second cough that coincided with needle puncture. The principle outcome was self reported pain. Paired „t" test revealed that the procedure was effective at a statistically and clinically significant level for participants. The results of this study suggested that the 'cough trick' can be an effective strategy for the reduction of pain.

Betty et al. (2019) conducted a study Assess the effectiveness of cough trick method in reducing immunization pain among children in NMCH, Nellore. Quasi experimental post only design was adopted for this study. The sample size of the present study was 60

children who are undergoing immunization. The result showed that in experimental group 2 (6.7%) were experienced no pain, 18(60%) were experienced mild pain, 6(20%) were experienced Moderate pain, 4(13.3%) were experienced severe pain. In control group 1(3.3%) were experienced mild pain, 8(26.7%) were experienced moderate pain, 21(70%) were experienced severe pain.

The study concluded that the cough trick can be an effective strategy for the reduction of pain for some children undergoing routine immunizations. Taras et al. (2019) conducted a study on Mechanisms of "Cough-Trick" for Pain Relief during Venipuncture: An Experimental Cross over Investigation in Healthy Volunteers. 54 healthy male volunteers participated in 3 investigations. Pain was assessed using a 100?mm visual analogue scale. Result showed that Pain intensity at venipuncture with "cough-trick" was lower th an u n der "weak " distr action (mean differen ce 5?mm; 95% CI: 0.5 to 9.6;).

Pain levels under "cough-trick" and "strong" distraction were comparable. There was no difference between pain under "cough-trick" after naloxone infusion and pain without intervention. The study concluded that Pain-reducing effect of "cough-trick" during venipuncture is superior to that of simple motor distraction and equivalent to a complex distraction method. This might be due to the activation of segmental pain inhibitory pathways during coughing indicated through the lack of pain reduction due to "cough-trick" under opioid antagonist blockage. Ramandeep et al.

(2018) conducted a study A study to assess the effectiveness of cough trick method in reducing pain among (6-12yrs) old children undergoing intravenous cannulation. Study design used is Quasi-experimental post test control design. Study setting includes pediatric ward of G.G.S. Medical Hospital, Faridkot. Study population is 60 children from the age group of 6-12years.The result showed that Majority 26.7% of the children in the experimental group perceived moderate pain, 18.3% perceived mild pain and only 5.0% had severe pain during intravenous cannulation using cough trick method. The study concluded that there is significant difference in the severity of pain during intravenous cannulation using cough trick method.

This reduction in the pain results in judicious application of this intervention as it is one of easiest non-pharamacological method in managing pain due to intravenous cannulation. Mohammad et al. (2017) conducted a single-blind randomized clinical trial at Kamkar- Arabnia Hospital. In this Study, 50 children aged from 6 to 12 years who had intramuscular injection of penicillin were randomly assigned to two equal groups. The first group received intramuscular injection using, an oval disc that supports multiple blunt cough tricks and in the control group routine injection was performed. Pain was measured using a visual analogue scale.

The mean pain intensities in experimental and control groups were 27.04±8.6 and 36.6±14.1, respectively. After intramuscular injection, the pain intensity significantly decreased in the experimental group compared to control group (p<0.006). The study concluded that there was no significant statistical difference between the two groups in age and Body Mass Index. The pressure on the skin with multiple blunt cough tricks was highly effective in reducing the pain of intramuscular injection. Romano et al. (2016) conducted a study to reduce cough trick-prick pain through the pressure of multiple blunt cough tricks at the injection site. Two-hundred and twelve patients were randomly assigned to 2 groups.

The treated group (n= 106) received intramuscular and subcutaneous injections with the application of the blunt cough tricks and the control group (n= 106) with a placebo device. Pain was tested with the visual analogue scale on a 0 (no pain)-10 (maximum pain) scale. After intramuscular injections a significant (P< 0.0001) pain reduction in the treated group compared to placebo was observed: 1.90±1.27 versus 5.16±1.37 (mean pain reduction: 63.2%); 88.5% of the patients in the treated group and 11.4% in placebo group rated the pain as = or < 3. After subcutaneous injections mean reported pain in the treated group compared to placebo was: 0.32±0.51 versus 2.61±0.77 (mean pain reduction: 87.7%) (P< 0.0001); 95.1% of the patients in the treated group and 9.8% in the placebo rated the pain as = or <1. No side effects were observed.

The study concluded that multiple blunt cough tricks pressure on the skin, at the time of intramuscular or subcutaneous injection was able to significantly reduce cough trick-prick pain. Jayanthi (2015) conducted a quasi experimental post test design of cough trick –trick method at Salem to assess the effectiveness of pain during intra muscular injection. Among 60 patients participated (30 as experimental groups and 30 as control group). In post test mean score in experimental group was 1.60±1.09 and in control group the post test mean score was 2.33±1.82. The mean difference was 0.73. The calculated value was 5.21 was greater than the table value 2.05.

Hence the research hypothesis H1 was retained. It was evident that cough trick method was effective in reducing the 4 to 12 years children intramuscular injection pain. Vikram et al. (2015) conducted a study of 'cough trick' technique in reducing vaccination prick pain in adolescents. A Randomized Crossover Volunteer Study of 50 early adolescent male children (age 11-13) receiving immunizations was performed. Participants were recruited from four outpatient pediatric clinics. The strategy required a single "warm-up" cough of moderate force, followed by a second cough that coincided with needle puncture.

Results showed that Paired 't' test revealed that the procedure was effective at a statistically and clinically significant level for participants. Children found the procedure acceptable and effective. The study concluded that 'cough trick' can be an effective strategy for the reduction of pain for male adolescent children undergoing routine immunizations. However, additional research is needed with a larger sample size with different age groups and also including girl children.

CHAPTER III METHODOLOGY The methodology of the research indicates the general pattern of organizing the procedure for gathering valid and reliable data for investigation. This chapter provides a brief description of the method to be adopted by the investigator in this experimental it includes the research approach ,research design , setting ,sample size, sampling technique, description of the tool, pilot experimental, data collection procedure and plan for data analysis. 3.1 RESEARCH APPROACH A Quantitative approach was used to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children. 3.2

RESEARCH DESIGN The research design provides an overall plan for conducting the study. Quasi experimental post tests only design was used for the study. Figure 3.1 Diagrammatic Representation of Research Design 3.3 VARIABLES Independent variable was cough trick method and the dependent variable is the intensity of pain children undergoing intramuscular injection. The influencing variables are demographic variables such as age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication, type of injection. Figure 3.2 The Schematic Representation of Variables 3.4 SETTING OF THE STUDY The study was conducted in Ashwin Hospital, Coimbatore.

The Department of pediatric unit consists with different departments like medical surgical, pediatrics, gynecology, orthopedics, neurology, gastroenterology and urology. The hospital has separate operation theater and a well-equipped laboratory. 3.5 POPULATION 3.5.1 Target Population The target population is the aggregation of cases about which the researcher would like to make generalization. In this study the target population was4-12 years children receiving intramuscular Injection. 3.5.2. Accessible Population An accessible population is the section of the target population to which the researcher has reasonable access. The accessible population was children receiving intramuscular injection in Ashwin Hospital, Coimbatore. 3.6

SAMPLE Sample of the study was children of age 4 to 12 years who are receiving

Intramuscular Injection. 3.7 SAMPLE SIZE Sample size of 60 was taken for experimental, in this 30 children has taken us experimental group and other 30 children taken us in control group. 3.8 SAMPLE TECHNIQUE Sampling is the process of selecting a portion of the population to obtain data regarding a problem. In this experimental the investigator had used Purposive sampling technique of the subjects. 3.9 CRITERIA FOR SAMPLE SELECTION 3.9.1

Inclusive criteria Children undergoing Intramuscular Injection admitted in pediatric ward of Ashwin Hospital, Coimbatore. Children in the age group of 4 to12 years. Children available at the time of sampling Children who will cough moderately Children whose parents are willing to participate and given written informed consent for the same. 3.9.2 Exclusive criteria Children below the 4 year of age and above 12year. Children who will not cough moderately and are critically ill. Non-cooperative children. 3.10 DESCRIPTION OF THE TOOL The research tool had three sections. 3.10.1

Part I: Demographic variables This part deals with demographic variables such as age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection. 3.10.2 Part II: Wong baker faces pain scale Wong baker faces pain scale to assess the intensity of pain scoring was given as mentioned below. 0 = No Pain 1 - 3= Mild Pain 4-6 = Moderate Pain 7-10 = Severe Pain 3.11 CONTENT VALIDITY The Research tool developed by the investigator was sent along with the request letter for validation to five experts of in the field of Child Health Nursing and one Medical expert.

The experts were requested to check for the relevance, sequence and adequacy of language of the tool. The expert's suggestions were incorporated in the tool. Then the tool was finalized and used for the main study. 3.12 RELIABILITY The reliability of the tool Wong baker faces pain scale was determined by using inter rater reliability method. It was using spearman rank coefficient method. 3.13 PILOT STUDY Pilot study was done among 10 children those who were receiving intramuscular injection, at Ashwin Hospitals, Coimbatore. After obtaining written permission from the higher authority.

The samples were selected by purposive sampling technique after getting verbal consent. Among10 children, 5 samples were considered as experimental group and 5 samples were considered as control group. Samples in experimental group received intramuscular injection by using Cough trick method while the samples in control group received only routine Intramuscular injection. The pain was assessed by Wong baker faces pain scale for both groups immediately after the intramuscular injection. The

collected data was analyses and tabulated by descriptive and inferential statistics. 3.14 DATA COLLECTION PROCEDURE The data collection was done for a period of 4 weeks in Ashwin Hospital, Coimbatore. A formal permission from Medical Superintendent was collected before the intervention.

60 samples were selected based on the inclusion criteria and by purposive sampling method sorted into experimental and control group. Wong baker faces pain scale was assessed in both experimental and control group prior to intervention. The selected samples was randomly assigned under experimental and control group. In experimental group the cough trick method was practiced, the children who are undergoing Intramuscular Injection the child was asked to have a single warm cough of moderate force followed by a second cough that coincide with the needle puncture.

In control group received only routine Intramuscular injection. The intensity of pain was assessed by Wong baker faces pain scale for both groups immediately after the intramuscular injection in both the experimental and control group. 3.15 ETHICAL CONSIDERATION The proposed experimental was conducted after the approval of the ethics committee of PPG College of Nursing. Permission was obtained from Medical Superintendent of Ashwin Hospital, Coimbatore. Verbal assurance was given to children‟s parents consent was obtained. 3.16 PLANS FOR DATA ANALYSIS Data is analyzed using both descriptive and inferential statistics. Data analysis was done by using inferential and descriptive statistical methods.

Descriptive statistics such as frequency distribution, mean and standard deviation were used to assess the intensity of pain Inferential statistical method such as paired„t‟ test was used to find out the effectiveness of cough trick method. The association between variables was analyzed by using chi-square test. Figure.3.3 Overall View of Research Methodology from Research Approach CHAPTER IV DATA ANALYSIS AND INTERPRETATION Analysis is the process of the organizing and synthesizing data in such a way that question can be answered and hypothesis tested.

This chapter deals with analysis and interpretation of data collected to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in selected hospital. The collected data was tabulated, organized and analyzed by using descriptive and inferential statistics. Section I: Frequency and percentage distribution of 4 to 12 years children according to their selected demographic variables. Section II: Distribution of 4 to 12 years children according to post test score of 4 to 12 years children intensity of pain during Intramuscular Injection.

Section III: Compare the effectiveness of Cough Trick Method on 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in Experimental and Control Group. Section IV: Association of demographic variables with the post test score of 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group. SECTION – I Table.4.1 Frequency and percentage distribution of 4 to 12 years children according to their selected demographic variables. (N=60) S.No _Demographic Data _Experimental Group n=30 _Control Group n=30 _ _ _ _F _% _f _% _ _1 _Age of the child 4-6 years 7-9 years 10-12 years _ 8 6 16 _ 27 20 53 _ 11 9 10 _ 37 30 33 _ _2 _Gender of the child Male Female _ 18 12 _ 60 40 _ 16 14 _ 53 47 _ _3.

_Weight of the child 10-15 kg 16-20 kg 21-25kg _ 12 9 9 _ 40 30 30 _ 14 8 8 _ 46 27 27 _ _4. _Type of the injection Antibiotics Analgesic Antipyretic _ 15 8 7 _ 50 27 23 _ 14 7 9 _ 47 23 30 _ _5. _Position of the child during intra muscular injection Prone position Left lateral position Right lateral position Sitting position _ 10 6 8 6 _ 33 20 27 20 _ 7 9 5 9 _ 23 30 17 30 _ _6. _Previous experience of intra muscular injection Yes No _ 17 13 _ 57 43 _ 18 12 _ 60 40 _ _7. _Frequency of intramuscular injection OD BD TDS _ 8 14 8 _ 27 46 27 _ 9 12 9 _ 30 40 30 _ _8.

_Site of intra muscular injection Deltoid muscle Gluteal muscle _ 5 25 _ 17 83 _ 7 23 _ 23 77 _ _9. _Volume of medication 1 ml 2 ml 3 ml _ 8 13 9 _ 27 43 30 _ 11 9 10 _ 37 30 33 _ _10. _Type of injection Oil based injection Water based injection _ 13 17 _ 43 _ 14 _ 47 53 _ _ _ _ _57 _16 _ _ _ Table 4.1.Represents the distribution of children 4 to 12 year 4 to 12 years children intensity of pain during Intramuscular Injection. According to the age of the children in experimental group 8 (27%) of them belongs to age group between 4 to 6 years, 6 (20%) of them belong to the age group between 7 to 9 years and 16 (53%) of them belong to the age group between 10 to 12 years.

In control group 11 (37%) of them belongs to age group between 4 to 6 years, 9 (30%) of them belong to the age group between 7 to 9 years and 10 (33%) of them belong to the age group between 10 to 12 years. Distributions of children regarding the sex in experimental group, 18 (60%) were male and 12 (40%) were in female. In control group 16(53%) were male and 14(47%) were female. Distribution of children according to their weight depicts those children in experimental group 12 (40%) were 10 to 15 kg, 9(30%) were 16 to 20 kg and 9(30%) were 21 to 25 kg.

In control group 14 (46%) were 10 to 15 kg, 8(27%) were 16 to 20 kg and 8(27%) were 21 to 25 kg. Distribution of children‟s according to their type of the injections depicts that in experimental group 15(50%) were receiving antibiotics, 8(27%) were receiving analgesics and 7(23%) were receiving antipyretic injections. In control group 14(47%)

were receiving antibiotics, 7(23%) were receiving analgesics and 9(30%) were receiving antipyretic injections.

Regarding position of children during intramuscular injection in experimental group, 10(33%) were maintaining prone position, 6(20%) were maintaining left lateral position, 8(27%) were maintaining right lateral position and 6(20%) were maintaining sitting position. In control group 7(23%) were maintaining prone position, 9(30%) were maintaining left lateral position, 5(17%) were maintaining right lateral position and 9(30%) were maintaining sitting position Distribution of children according to their previous experience of intramuscular injection in experimental group, 17(57%) have previous experience and 13(43%) of them have no previous experience in intramuscular injection.

In control group 18(60%) have previous experience and 12(40%) of them have no previous experience in intramuscular injection. Regarding frequency of intramuscular injection on children in experimental group, 8(27%) were often receiving injection, 14(46%) were rarely receiving injection and 8(27%) were never before receiving injection. In control group 9(30%) were often receiving injection, 12(40%) were rarely receiving injection and 9(30%) were never before receiving injection.

Distribution of children according to their site of intramuscular injection in experimental group, 5(17%) were using deltoid muscle and 25(83%) were using Gluteal muscle. In control group 7(23%) were using deltoid muscle and 23(77%) were using Gluteal muscle. Distribution of children according to their volume of medication in experimental group, 8(27%) were OD dose, 13(43%) were BD dose and 9(30%) were TDS dose. In control group 11(37%) were OD dose, 9(30%) were BD dose and 10(33%) were TDS dose. Regarding type of injection of children in experimental group, 13(43%) were receiving oil based injection and 17(57%) were receiving water based injection.

In control group 14(47%) were receiving oil based injection and 16(53%) were receiving water based injection. / Age of the Patient Figure 4.3 Frequency and Percentage Distribution of Demographic Variables According to the Age of the Patient / Gender of the Child Figure 4.4 Frequency and Percentage Distribution of Demographic Variables According to the Gender of the Child / Weight of the child Figure 4.5

Frequency and Percentage Distribution of Demographic Variables According to the Weight of the child / Type of the Injection Figure 4.6 Frequency and Percentage Distribution of Demographic Variables According to the Type of the Injection Educa Position of the Child during Intra Muscular Injection Figure 4.7 Percentage Distribution of Demographic Variables According to the Position of the Child During Intra Muscular

Injection / Frequency of intramuscular Injection Figure 4.8

Frequency and Percentage Distribution of Demographic variables According to the Frequency of intramuscular Injection / Volume of Medication Figure 4.9 Frequency and Percentage Distribution of Demographic Variables According to the Volume of Medication / Type of Injection Figure 4.10 Frequency and Percentage Distribution of Demographic Variables According to the Type of Injection / During Intramuscular Injection Figure 4.11 Distribution of children 4 to 12 years according to post test score of level of intensity of pain during Intramuscular Injection / Figure 4.12 Compare the effectiveness of Cough Trick Method on level of intensity of pain during Intramuscular Injection among children 4 to 12 years in Experimental and Control Group. SECTION II Table 4.2: Distribution of intensity of pain during Intramuscular Injection among 4 to 12 years children in post test (N=60) S.

No _4 to 12 years children intensity of pain _Experimental Group n=30 _Control Group n=30 _ _ _ _Frequency (f) _Percentage (%) _Frequency (f) _Percentage (%) _ _1 _Mild Pain _18 _ 60 _0 _0 _ _2 _Moderate Pain _12 _ 40 _6 _20 _ _3 _Severe Pain _ 0 _0 _24 _80 _ _ Table 4.2, represents that during post test 4 to 12 years children intensity of pain score in experimental group 18 (60%) had mild pain, 12 (40%) had moderate pain and none of them had severe pain. In post test score of control group none of them had mild pain, 6 (20 %) had moderate pain and 24 (80%) severe pain. SECTION-III Table.4.3: Compare the effectiveness of Cough trick Method on 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years of children in Experimental and Control Group. (N=60) S.

No _4 to 12 years Children Intensity of Pain _Mean _S.D _Mean Differences _ „t" value _ _1. _Control Group _7.9 _1.35 _4.4 _ 12 _ _2. _Experimental Group _3.5 _1.58 _ _ _ _*Significant, Table value=2.034 Table 4.3: shows that the post test means score 7.9 in Control group and post test mean score was 3.5 in Experimental group. The calculated „t" value 12, which is significant at $p<0.05$ level. The finding implies that the cough trick method in reducing intensity of pain during Intramuscular Injection among children 4 to 12 years. SECTION –IV Table.4.4: Association of demographic variables with the post test score of 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years in children in experimental group. S.

No _Demographic and clinical variables _ df _ X2 _Table value _ _1 _Age of the child _4 _0.1196 _9.488 _ _2 _Gender of the child _2 _0.1053 _ 5.991 _ _3. _Weight of the child _4 _0.2466 _9.488 _ _4. _Type of the injection _6 _0.8748 _ 12.592 _ _5. _Position of the child during intra muscular injection _6 _0.668 _12.592 _ _6. _Previous experience of intra muscular injection _4 _1.1805 _9.488 _ _7. _Frequency of intramuscular injection _6

_0.4359 _12.592 _ _8. _Site of intra muscular injection _4 _1.1805 _ 9.488 _ _9. _Volume of medication _6 _0.8748 _ 12.592 _ _10. _Type of injection _3 _0.1041 _7.815 _ _ N=30 The table 4.4: shows that calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection. Table.4.5: Association of demographic variables with the post test score of 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in control group. S.

No _Demographic and clinical variables _Df _X2 _Table Value _ _1 _Age of the child _4 _2.8796 _ 9.488 _ _2 _Gender of the child _2 _0.1681 _ 5.991 _ _3. _Weight of the child _4 _1.5185 _ 9.488 _ _4. _Type of the injection _6 _0.8748 _ 12.592 _ _5. _Position of the child during intra muscular injection _6 _1.3967 _ 12.592 _ _6. _Previous experience of intra muscular injection _4 _0.5159 _ 9.488 _ _7. _Frequency of intramuscular injection _6 _0.2816 _12.592 _ _8. _Site of intra muscular injection _4 _0.1053 _9.488 _ _9. _Volume of medication _6 _1.5099 _ 12.592 _ _10. _Type of injection _3 _0.882 _ 7.815 _ _ N=30 The table 4.5: shows that calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection.

CHAPTER V RESULTS AND DISCUSSION This chapter deals with the discussion of the study with appropriate literature review, statistical analysis and findings of the study based on objective of the study. The aim of the study was on assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in selected hospital, Coimbatore. A quantitative approach was adopted for this study and purposive sampling techniques were used to collect the samples. The data was collected from 60 children 4 to 12 years. 5.1

The first objective to provide cough trick method during intra muscular injection among 4-12 years children in experimental group. The present study referred to as the cough trick requires that the patient be prompted to give single warm up cough of moderate force, followed by second cough that coincides with intra muscular injection. So that the cough trick method was reduce pain perception. 5.2 The second objective to assess the intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group.

To children in experimental group cough trick method was 2 minutes prior to injection.

Pain perception was assessed after the intervention while giving injection. Among experimental group the majority 18 children (60%) perceived had mild pain, and the least 12 children (40%) had moderate pain. No children perceived severe pain after cough trick method. Among control group the majority 24 children (80%) perceived severe pain and the least 6 children (20 %) perceived moderate pain. It was inferred that the intensity of pain was reduced after the cough trick method prior to intramuscular injections.

The similar study conducted by Pragya (2017) to assess the effectiveness of cough trick method prior to intramuscular injection in reduction of pain among adolescent in Toronto Canada. Childrern aged 4 to 12 years were selected randamily and cough trick method was given for the experimental group children 2 minutes before to intramuscular injection. The study findings revealed that 70% of children‟s in experimental group had mild pain perception of the administering cough trick method and children‟s in control group had moderate to severe pain. 5.3

The third objective to assess the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection in experimental group. The present study revealed that the post test mean difference was 4.4. The t value 12. The pain perception was comfortably less with cough trick method then with uaual procedure among children‟s. It could be inferred that cough trick method prior to intramuscular injection was effective in decreasing pain perception among children. A similar study was conducted by Dustin (2018) to determine the effectiveness of cough trick method for pain relief in adolescents receiving IM injection. Data collected fro120 childrens controlled attending clinical in Jordan.

Cough trick method was given before the procedure pain was measured with Modified behaviors pain scale. Childre‟s provided with cough tricks method has a lower degree of pain then who were not receiving in this intervention. 5.4 The fourth objective was to find out the association between with selected demographic variables with the 4 to 12 years children intensity of pain during Intramuscular Injection among 4 to 12 years children in experimental and control group. The calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection in experimental and control group.

William (2018) conducted a randomized controlled trial was done to determine the effects of cough trick method on pain relief in children of age group 1-4 years

undergoing vaccine injections during the year 2018. Data were collected from 40 children attending an immunization clinic in a local hospital, Toronto. The subjects included 20 intervention group members and 20 control group members. Cough trick method was applied to the intervention group members on the injection site immediately before the procedure (within 1 minute of injection). Pain was measured with a numeric rating scale and measuring vital signs.

Soothe administration of cough trick was independently effective in reducing pain perception among children during intramuscular injection. CHAPTER VI SUMMARY, CONCLUSION, NURSING IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS This chapter summarizes the major findings, limitations, implications in the field of nursing education, nursing practice, nursing research and recommendations. 6.1 Summary This study is to identify the effectiveness of cough trick method in reducing intensity of pain during Intramuscular Injection among 4 to 12 years children in selected hospital, Coimbatore.

The study design was quasi experimental (post test with control group design). The data was collected for a period of thirty days at Ashwin Hospital, Coimbatore. The study was conducted on 60 childrens 4 to 12 years children , 30 each were randomly assigned to experimental and control group. Cough trick method was administered to the experimental group and routine interventions were given to the control group. The intensity of pain was assessed by Wong baker faces pain scale. 6.2 Major Findings of the Study Distribution of children 4 to 12 years children intensity of pain during Intramuscular Injection.

According to the age of the children in experimental group 8 (27%) of them belongs to age group between 4 to 6 years, 6 (20%) of them belong to the age group between 7 to 9 years and 16 (53%) of them belong to the age group between 10 to 12 years. In control group 11 (37%) of them belongs to age group between 4 to 6 years, 9 (30%) of them belong to the age group between 7 to 9 years and 10 (33%) of them belong to the age group between 10 to 12 years. Distributions of children regarding the sex in experimental group, 18 (60%) were male and 12 (40%) were in female. In control group 16(53%) were male and 14(47%) were female.

Distribution of children according to their weight depicts those children in experimental group 12 (40%) were 10 to 15 kg, 9(30%) were 16 to 20 kg and 9(30%) were 21 to 25 kg. In control group 14 (46%) were 10 to 15 kg, 8(27%) were 16 to 20 kg and 8(27%) were 21 to 25 kg. Distribution of children‟s according to their type of the injections depicts that in experimental group 15(50%) were receiving antibiotics, 8(27%) were receiving analgesics and 7(23%) were receiving antipyretic injections.

In control group 14(47%) were receiving antibiotics, 7(23%) were receiving analgesics and 9(30%) were receiving antipyretic injections. Regarding position of children during intramuscular injection in experimental group, 10(33%) were maintaining prone position, 6(20%) were maintaining left lateral position, 8(27%) were maintaining right lateral position and 6(20%) were maintaining sitting position.

In control group 7(23%) were maintaining prone position, 9(30%) were maintaining left lateral position, 5(17%) were maintaining right lateral position and 9(30%) were maintaining sitting position Distribution of children according to their previous experience of intramuscular injection in experimental group, 17(57%) have previous experience and 13(43%) of them have no previous experience in intramuscular injection. In control group 18(60%) have previous experience and 12(40%) of them have no previous experience in intramuscular injection.

Regarding frequency of intramuscular injection on children in experimental group, 8(27%) were often receiving injection, 14(46%) were rarely receiving injection and 8(27%) were never before receiving injection. In control group 9(30%) were often receiving injection, 12(40%) were rarely receiving injection and 9(30%) were never before receiving injection. Distribution of children according to their site of intramuscular injection in experimental group, 5(17%) were using deltoid muscle and 25(83%) were using Gluteal muscle.

In control group 7(23%) were using deltoid muscle and 23(77%) were using Gluteal muscle. Distribution of children according to their volume of medication in experimental group, 8(27%) were OD dose, 13(43%) were BD dose and 9(30%) were TDS dose. In control group 11(37%) were OD dose, 9(30%) were BD dose and 10(33%) were TDS dose. Regarding type of injection of children in experimental group, 13(43%) were receiving oil based injection and 17(57%) were receiving water based injection. In control group 14(47%) were receiving oil based injection and 16(53%) were receiving water based injection.

The post test 4 to 12 years children intensity of pain score in experimental group 18 (60%) had mild pain, 12 (40%) had moderate pain and none of them had severe pain. In post test score of control group none of them had mild pain, 8 (27 %) had moderate pain and 24 (73%) severe pain. The post test means score 7.9 in experimental group and post test mean score was 3.5 in control group. The calculated „t" value 12, which is significant at $p<0.05$ level. The finding implies that the cough trick method in reducing intensity of pain during Intramuscular Injection among children 4 to 12 years.

The calculated value is less than table value, which indicates there is no significant association between age of the child, gender of the child, weight of the child, type of the injection, position of the child during intra muscular injection, previous experience of intra muscular injection, frequency of intramuscular injection, site of intra muscular injection, volume of medication and type of injection in experimental and control group. 6.3 CONCLUSION According to the statistical results of this study, subjects the children‟s who received application of Cough Trick method prior to intramuscular injection is effective in reducing the 4 to 12 years children pain..

Because cough trick method was no cost effective, non invasive and highly feasible, the researcher concluded that it can be used as an effective intervention to cough trick method to reduce the intensity of pain. 6.4 Implications of the Study The study has implications in nursing practice, nursing education, nursing research and nursing administration. 6.5 Nursing Practice Pain assessment is a basis to pain response. The nurses must be trained to assess the pain response of children according to their age. Nurses should practice the non pharmacological measures to assess the pain response during intramuscular injection.

Nurses can utilize the evidence based practice in improving the quality and standard of care. Nurses must be trained in the aspect of cough trick method prior to intramuscular Injection and the technique to be implemented in day to day practice. Physical interventions and injection techniques to assess the pain response during intramuscular injection offer an advantage over other techniques because they can be easily incorporated into clinical practice without added cost or time. 6.6 Nursing Education Pain is the fifth vital sign. So pain assessment scales and non pharmacological measures for pain response should be included in the nursing curriculum.

Nurse educators should formulate procedures regarding non pharmacologic measures on pain response. Orientation programmes for the nurses as regards the importance of non pharmacological measures on pain response. Updating the knowledge of the staff by proper and relevant in-service education programs to emphasize cough trick method prior to intramuscular immunization as an intervention for pain reponse among children receiving intramuscular injection. 6.7 Nursing Administration Nursing administrators can develop nursing practice standards, protocols and manuals of pain assessment and pain management in children of various ages, in which effectiveness of cough trick method prior to intramuscular immunization can be included as an important strategy to assess the pain response among children. The nurse administrator should plan for continuing service education regarding non pharmacologic strategies for pain response during intramuscular injection.

Nurses play a major role in injection. So, efforts has to be made to enhance the capabilities of the nurses through the in- service education programmes on the new paradigm of assess the effectiveness of cough trick method prior to intramuscular injection on pain response among children, and other non pharmacologic strategy on pain. 6.8

Nursing Research Immunization is an important and universal experience for children and cough trick method prior to intramuscular injection is an effective means for pain response in children associated with intramuscular injection pain. Further research in this area will help the nurse to find out other non pharmacological intervention to assess the pain response of intramuscular injection pain. The nurse researcher should motivate the clinical nurses to apply the research findings in practice. And follow the evidence based practice in order to bring a quality nursing care. 6.9

Recommendation The study can be replicated with large samples in different settings to validate and generalize the findings. The study can be conducted on the other age groups and can compare with other interventions such as application of manual pressure over the injection site, pragmatic technique. Studies can be conducted regarding the knowledge and practice of cough trick method prior to intramuscular injection among health team members. Studies can be conducted to assess the parental emotional response during children‟s painful procedures.

Similar studies can be conducted with adult and old age people.

INTERNET SOURCES:

<1% - https://eap.uonbi.ac.ke/sites/default/files/cees/education/eap/REPORT%20D%20final.pdf

<1% - https://www.slideshare.net/ramsdeepu22/national-policy-for-children-in-india

<1% - https://www.nhp.gov.in/national-charter-for-children-2013_pg

<1% - https://www.slideshare.net/jimcyjose/concepts-and-theories-growth-and-development-and-infancy

<1% - https://en.wikipedia.org/wiki/Painful

<1% - https://en.wikipedia.org/wiki/Pain_and_nociception

<1% - https://www.researchgate.net/publication/11515904_Pain_Management_Controlled_Substances_and_State_Medical_Board_Policy_-_A_Decade_of_Change

<1% - https://onlinelibrary.wiley.com/doi/10.1111/acem.12991

<1% - https://adc.bmj.com/content/archdischild/89/4/392.full.pdf
<1% - https://quizlet.com/568622539/chapter-8-flash-cards/
<1% - https://nursekey.com/pain-and-pain-management/
1% - https://core.ac.uk/display/153651138
1% -
https://www.researchgate.net/publication/263115980_A_study_of'cough_trick'technique_in_reducing_vaccination_prick_pain_in_adolescents
<1% -
https://www.researchgate.net/publication/12643223_Toward_a_pain_free_venepuncture
<1% - https://en.wikipedia.org/wiki/Intramuscular_injection
<1% -
https://www.researchgate.net/publication/283982160_Teaching_best-evidence_Deltoid_intramuscular_injection_technique
<1% - https://nursing.ceconnection.com/ovidfiles/00005721-201403000-00010.pdf
<1% - https://en.wikipedia.org/wiki/2011_Census_of_India
<1% -
https://bmcpregnancychildbirth.biomedcentral.com/articles/10.1186/s12884-019-2479-0
<1% - https://censusindia.gov.in/vital_statistics/SRS_Report_2013/11._Chap_4_2013.doc
<1% -
https://www.thehindu.com/opinion/op-ed/still-too-many-children-out-of-school/article24857149.ece
<1% -
https://www.researchgate.net/publication/8904342_Reducing_Venipuncture_Pain_by_a_Cough_Trick_A_Randomized_Crossover_Volunteer_Study
<1% -
https://www.ukessays.com/essays/psychology/children-are-precious-and-special-in-the-lives-of-the-parents-psychology-essay.php
<1% - https://www.medscape.com/viewarticle/732185_2
<1% -
https://www.researchgate.net/publication/47357769_Reducing_Neonatal_Pain_during_Routine_Heel_Lance_Procedures
<1% -
https://www.keyword-suggest-tool.com/search/aspirate+with+im+injections+cdc/
<1% -
https://www.semanticscholar.org/paper/Intramuscular-injection%3A-an-integrative-research-Nicoll-Hesby/a52247461a402d5940a168a784279f5c114f409c
<1% -
https://milnepublishing.geneseo.edu/nursingcare/chapter/management-of-pain-and-physical-symptoms/

<1% -
https://www.indianjpain.org/article.asp?issn=0970-5333;year=2014;volume=28;issue=2;spage=95;epage=98;aulast=Kumar
1% - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8092782/
<1% - https://pubmed.ncbi.nlm.nih.gov/33939726/
<1% -
https://www.keyword-suggest-tool.com/search/intramuscular+injections+best+practice+2017/
1% - https://pubmed.ncbi.nlm.nih.gov/22802298/
<1% -
https://www.researchgate.net/publication/257611951_Assessment_and_management_of_pain_in_infancy
<1% -
https://www.researchgate.net/publication/236125338_Effect_of_distraction_on_children's_pain_during_intravenous_catheter_insertion
<1% - http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N013_20449.doc
<1% - https://ijissh.org/storage/Volume3/Issue12/IJISSH-031211.pdf
<1% - http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N138_21393.doc
<1% - https://www.scribd.com/document/413826863/Special-Issue-1-3
<1% -
https://iarconsortium.org/articles/799_Feeling_Good_Rather_Than_Feeling_Better_Matters_More_To_Pain_in_Children_Considering_Intervention_Worthwhile_A_Randomized_Clinical_Trial
<1% - https://hrcak.srce.hr/153816
<1% - https://www.merriam-webster.com/dictionary/child
<1% -
https://www.researchgate.net/publication/278961764_Theoretical_and_Conceptual_Frameworks_in_the_Social_and_Management_Sciences
<1% - http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N108_31576.doc
<1% -
https://www.researchgate.net/publication/353775509_Effect_of_Cough_Trick_Technique_on_Vaccination_Prick_Pain_among_Preschool_Children
<1% -
https://www.scribd.com/presentation/92681003/TFN-Nursing-Theories-2011-2012
<1% -
https://zembin.info/sugarnonin/signs-of-low-blood-sugar-in-non-diabetics.bing?signsdiabeticssugar=signsdiabeticssugar
<1% -
https://www.uniassignment.com/essay-samples/health-social-care/stroke-cerebro-vascular-accident-health-and-social-care-essay.php

<1% - https://www.ncbi.nlm.nih.gov/books/NBK2658/
<1% -
https://www.uniassignment.com/essay-samples/health/the-growth-of-every-countrys-economy-health-essay.php
<1% - http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N161_16294.doc
<1% - https://www.slideshare.net/EnochSnowden/review-of-literature-125722112
<1% -
https://1library.net/document/wq2gvkry-effectiveness-helfer-technique-perception-injection-operative-orthopedic-patients.html
1% -
https://www.researchgate.net/publication/263858771_The_effect_on_pain_of_three_different_methods_of_intramuscular_injection_A_randomized_controlled_trial
<1% -
https://www.researchgate.net/publication/339048450_The_effect_of_duration_of_pressure_on_bruising_and_pain_in_the_subcutaneous_heparin_injection_site
<1% -
https://www.researchgate.net/publication/278783362_Using_Ventrogluteal_Site_in_Intramuscular_Injections_is_a_Priority_or_an_Alternative
<1% - https://www.sciedu.ca/journal/index.php/cns/article/viewFile/2759/1969
<1% -
https://www.researchgate.net/publication/304578962_The_comparison_of_pain_intensity_and_rate_of_bleeding_in_intramuscular_injection_in_Dorsogluteal_and_Ventrogluteal_area
<1% -
https://www.researchgate.net/publication/295845436_The_effect_of_air-lock_technique_on_pain_at_the_site_of_intramuscular_injection
<1% -
https://www.researchgate.net/publication/228082093_Pain_from_intramuscular_vaccine_injection_in_adults
<1% - http://core.ac.uk/display/27517724
<1% - https://pubmed.ncbi.nlm.nih.gov/22739948/
<1% -
https://www.semanticscholar.org/paper/Effect-on-pain-of-changing-the-needle-prior-to-a-A%C4%9Fa%C3%A7-G%C3%BCne%C5%9F/c724869022240e441db256a54807ea19d5eb806a
<1% - https://core.ac.uk/display/250231026
<1% - https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2648.2010.05513.x
<1% - https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2648.2010.05513.x
<1% - https://europepmc.org/article/MED/21198801
1% -

https://www.researchgate.net/publication/41192006_Factors_influencing_time_course_of_pain_after_depot_oil_intramuscular_injection_of_testosterone_undecanoate
<1% - http://europepmc.org/articles/PMC3739103
<1% - https://www.researchgate.net/publication/260283275_Effect_on_pain_intensity_of_injection_sites_and_speed_of_injection_associated_with_intramuscular_penicillin
<1% - https://www.researchgate.net/publication/308940104_The_Effect_of_the_Z-Track_Technique_on_Pain_and_Drug_Leakage_in_Intramuscular_Injections
<1% - https://www.researchgate.net/publication/311901595_Efficacy_of_Helfer_Skin_Tapping_Technique_on_Pain_Intensity_as_perceived_by_the_patients_receiving_Intramuscular_Injection
<1% - https://1library.net/title/effectiveness-helfer-technique-perception-injection-operative-orthopedic-patients
<1% - https://www.sciencedirect.com/science/article/abs/pii/S1462388906001062
<1% - https://europepmc.org/abstract/MED/23452521
<1% - https://pubmed.ncbi.nlm.nih.gov/23452521/
<1% - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2856657/
<1% - https://pubmed.ncbi.nlm.nih.gov/11760527/
1% - https://www.researchgate.net/publication/11596327_The_Effect_of_Injection_Speed_on_the_Perception_of_Intramuscular_Injection_Pain_A_Clinical_Update
<1% - https://journals.sagepub.com/doi/abs/10.1177/216507990104900606
<1% - https://www.researchgate.net/publication/23461271_Gender_and_site_of_injection_do_not_influence_intensity_of_hypertonic_saline-induced_muscle_pain_in_healthy_volunteers
<1% - https://www.researchgate.net/publication/267351980_Effectiveness_of_Helfer_Skin_Tap_Technique_and_Routine_Technique_on_Pain_Reduction_among_Patients_Receiving_Intramuscular_Injection_at_Government_General_Hospital_Puducherry
<1% - https://www.alliedacademies.org/articles/the-perception-of-intramuscular-injection-pain-in-men-vs-women.pdf
<1% - https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2729473
<1% - https://www.researchgate.net/publication/258148343_Oral_sucrose_for_pain_control_in_nonneonate_infants_during_minor_painful_procedures
<1% - https://www.scribd.com/document/284597025/2012-Paediatric-anaesthesia-pdf

<1% -
https://www.researchgate.net/publication/264937938_Differential_modification_of_genetic_susceptibility_to_childhood_eczema_by_two_probiotics
<1% - https://www.sciencedirect.com/science/article/abs/pii/S0149291809002628
<1% - https://www.sciencedirect.com/science/article/pii/S0887899415301004
<1% - http://rguhs.ac.in/cdc/onlinecdc/uploads/05_N293_45552.doc
<1% - https://pubmed.ncbi.nlm.nih.gov/32987321/
<1% - https://europepmc.org/article/MED/19781437
<1% - https://www.ijsr.net/archive/v4i4/SUB152873.pdf
<1% - https://www.journalcra.com/archive/201511
<1% -
https://www.crd.york.ac.uk/crdweb/ShowRecord.asp?ID=12008103367&ID=12008103367
<1% - https://www.santoshghatpande.com/best-music-therapy-in-depression
<1% -
https://www.researchgate.net/publication/299551454_Impact_of_Music_in_Reducing_Patient_Anxiety_During_Pediatric_Ultrasound
<1% -
https://owlcation.com/social-sciences/The-Effect-of-Music-on-Human-Health-and-Brain-Growth
<1% -
https://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-018-3444-8
1% - http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N236_31862.doc
<1% -
https://www.worldwidejournals.com/international-journal-of-scientific-research-(IJSR)/recent_issues_pdf/2016/July/July_2016_1467372210__77.pdf
<1% - http://rguhs.ac.in/cdc/onlinecdc/uploads/05_N324_38818.doc
<1% -
https://www.researchgate.net/publication/272855872_Your_Problem_is_Our_Problem
<1% - http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05__14031.doc
<1% - https://pubmed.ncbi.nlm.nih.gov/24849793/
<1% -
https://www.researchgate.net/publication/227808025_An_Experimental_Study_On_The_Use_Of_Manual_Pressure_To_Reduce_Pain_In_Intramuscular_Injections
<1% -
https://www.researchgate.net/publication/247771669_Skin-to-Skin_Contact_Diminishes_Pain_From_Hepatitis_B_Vaccine_Injection_in_Healthy_Full-Term_Neonates
1% - https://ebm.bmj.com/content/8/2/61
<1% - https://ebm.bmj.com/content/ebmed/8/2/61.full.pdf
<1% -

https://www.researchgate.net/publication/8890710_Electrical_Twitch-Obtaining_Intramuscular_Stimulation_in_Lower_Back_Pain_A_Pilot_Study
<1% -
https://ajner.com/HTML_Papers/Asian%20Journal%20of%20Nursing%20Education%20and%20Research__PID__2019-9-4-3.html
<1% - http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N002_20778.doc
<1% - https://europepmc.org/article/MED/8718917
<1% -
https://www.researchgate.net/publication/277070109_mqaysh_shdt_drd_w_myzan_khwnryzy_dr_tzryqat_dakhl_dlany_dr_dw_mhl_dwrswglwthal_w_wntrwglwthal
<1% -
https://www.researchgate.net/publication/26267691_Efficacy_of_ShotBlocker_in_reducing_pediatric_pain_associated_with_intramuscular_injections
<1% -
https://www.researchgate.net/publication/266020781_Topical_Application_of_Orasep_Verses_Honey_on_Radiation_Induced_Mucositis
1% - https://downloads.hindawi.com/journals/prm/2019/9459103.xml
<1% - https://www.scribd.com/document/428133179/3-3
<1% -
https://zembin.info/management-diabetes-type-2.usa?diabetesmanagement2=99515
<1% - https://core.ac.uk/display/28351293
<1% -
https://createatshirtdesign.info/warning-signs-of-diabetes-in-teens.asp?signsteensin=teensofsigns
<1% -
https://www.researchgate.net/publication/233931008_Comparison_of_the_use_of_the_Valsalva_maneuver_and_the_eutectic_mixture_of_local_anesthetics_EMLAR_to_relieve_venipuncture_pain_A_randomized_controlled_trial
<1% - https://pubmed.ncbi.nlm.nih.gov/16163151/
<1% -
https://www.researchgate.net/profile/Carlo-Romano/publication/7600151_A_new_method_to_reduce_pin-prick_pain_of_intra-muscular_and_subcutaneous_injections/links/5883c29392851c21ff44abcb/A-new-method-to-reduce-pin-prick-pain-of-intra-muscular-and-subcutaneous-injections.pdf
<1% - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6804376/
<1% -
http://duckmead.gallomanor.com/fnYFdWgv_chapter-3-research-methodology-table-of-contents.pdf
<1% - http://www.aetna.com/cpb/medical/data/100_199/0113.html
<1% - https://sites.kowsarpub.com/ijp/articles/106115.html

<1% - https://learningstatisticswithr.com/book/hypothesistesting.html
<1% - https://onlinelibrary.wiley.com/doi/10.1111/obr.13118
<1% -
https://www.researchgate.net/publication/313743291_A_novel_visual_facial_anxiety_scale_for_assessing_preoperative_anxiety
<1% -
https://www.researchgate.net/publication/234042795_The_Wong-Baker_pain_FACES_scale_measures_pain_not_fear
<1% - http://rguhs.ac.in/cdc/onlinecdc/uploads/05_N019_14292.doc
<1% -
https://www.researchgate.net/publication/8603014_Watch_Needle_Watch_TV_Audiovisual_Distraction_in_Preschool_Immunization
<1% -
https://www.researchgate.net/profile/Arul-Vimala/publication/225088883_effectiveness_of_strelnikova_breathing_exercises_on_respiratory_signs_and_parameters_among_children_with_Lower_respiratory_tract_infections_LRTI/links/09e414fc9cbf0273fe000000/effectiveness-of-strelnikova-breathing-exercises-on-respiratory-signs-and-parameters-among-children-with-Lower-respiratory-tract-infections-LRTI
<1% -
https://www.researchgate.net/publication/346570119_Pediatric_Nursing-Kalinga_Institute_of_Nursing_Sciences_KIIT_Deemed_to_Children_Undergoing_Vein-Puncture_in_a_Selected_Hospital
<1% - https://trandat.info/food-diabetes.premium?diabetesfood=16977
<1% - https://isindexing.com/isi//journalpapers.php?id=4184
<1% - http://virology.net/atvglossary.html
<1% - https://www.slideshare.net/amitgarg46/thesis97
<1% -
https://1library.net/document/wye8pmey-effectiveness-cryotherapy-ananesthetics-intravenous-cannulation-intravenous-chemotherapy-haematology.html
<1% - https://www.ijsr.net/archive/v9i7/SR20722150620.pdf
<1% - http://informaticsjournals.com/public/site/images/AJPRHC_Sample_copy.pdf
<1% - https://www.rsisinternational.org/IJRSI/Issue26/17-22.pdf
<1% -
https://www.academia.edu/14226847/Split_screen_video_demonstration_of_sonography_guided_muscle_identification_and_injection_of_botulinum_toxin
<1% -
https://www.researchgate.net/profile/Manju-Maharjan/publication/319207150_Effectiveness_of_Animated_Cartoon_as_a_Distraction_Strategy_on_Level_of_Pain_among_Children_Undergoing_Venipuncture_at_Selected_Hospital_Research_Officer_CREHPA/links/599bae6d45851574f4ac7730/Effectiveness-of-Animated-Cartoon-as-a-Distraction-Strategy-on

-Level-of-Pain-among-Children-Undergoing-Venipuncture-at-Selected-Hospital-Research-Officer-CREHPA.pdf
<1% - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3085298/
<1% -
http://www.tjprc.org/publishpapers/2-74-1481106057-6.%20Nursing%20-%20IJNPSC-%20A%20descriptive%20study%20to%20assess%20-%20Hema..pdf
<1% -
https://ejournal.manipal.edu/mjnhs/docs/Volume%201_Issue%201/04%20APS.PDF
<1% -
https://www.researchgate.net/publication/327218200_Assess_the_effectiveness_of_helfer_skin_tapping_techniques_on_pain_during_vaccination_intramuscular_injection_among_the_infants_in_primary_health_centre_neamam
<1% - https://www.ijsr.net/archive/v5i11/ART20162802.pdf
<1% - https://core.ac.uk/download/pdf/235671199.pdf
<1% -
https://www.researchgate.net/publication/336700176_PAIN_AND_INTRAMUSCULAR_INJECTION_HELFER_SKIN_TAP_SYSTEMATIC_ANALYSIS
<1% -
https://nrfninechd.com/helfer-skin-tap-technique-for-the-im-injection-pain-among-adult-patients/
<1% - https://www.medicines.org.uk/emc/product/8957/smpc
<1% - https://www.ijhsr.org/IJHSR_Vol.9_Issue.1_Jan2019/16.pdf
<1% -
https://www.academia.edu/11175354/Online_Dental_Reservation_with_SMS_Notification_Chapter_I_V_
<1% -
https://www.researchgate.net/publication/40907457_The_Cough_Trick_A_Brief_Strategy_to_Manage_Pediatric_Pain_From_Immunization_Injections
<1% -
https://megaroll.info/best-cough-medicine-for-type-2-diabetes.gift?medicinetypediabetes=2forcough
<1% - http://www.inderscience.com/info/ingeneral/forthcoming.php?jcode=ijbg
<1% -
https://www.researchgate.net/publication/221902594_Distracting_children_during_blood_draw_Looking_through_distraction_cards_is_effective_in_pain_relief_of_children_during_blood_draw
<1% -
https://www.researchgate.net/publication/38096485_External_Thermomechanical_Stimulation_Versus_Vapocoolant_for_Adult_Venipuncture_Pain
<1% - https://www.sciencedirect.com/science/article/pii/S1524904218305113

<1% -
https://1library.net/document/ky6xl5oy-effectiveness-structured-teaching-programme-knowledge-regarding-learning-disabilities.html
<1% - https://www.amrita.edu/school/nursing/research/publications
<1% -
https://www.alliedacademies.org/articles/assessment-and-treatment-of-pain-in-pediatric-patients.html
<1% -
https://www.researchgate.net/publication/6903136_Effect_of_Aromatherapy_on_Symptoms_of_Dysmenorrhea_in_College_Students_A_Randomized_Placebo-Controlled_Clinical_Trial
<1% - https://www.ncbi.nlm.nih.gov/books/NBK222651/
<1% - http://repository-tnmgrmu.ac.in/351/1/3001323dhanalakshmit.pdf
<1% - https://www.medscape.com/viewarticle/548016_1
<1% -
https://www.researchgate.net/publication/274259688_Effects_of_balloon_inflation_and_cough_trick_methods_on_easing_pain_in_children_during_the_drawing_of_venous_blood_samples_A_randomized_controlled_trial
<1% -
https://journals.lww.com/ajnonline/Fulltext/2015/05000/Research_in_Nursing_Practice.2.aspx
<1% - https://www.ijcmas.com/abstractview.php?ID=510