EFFECTIVENESS OF ORAL SUCROSE SOLUTION IN REDUCTION OF PAIN AMONG INFANTS UNDERGOING PAINFUL PROCEDURE AT GOVERNMENT HEAD QUATERS HOSPITAL, ERODE DISTRICT, TAMIL NADU.

A DISSERTATION SUBMITTED TO THE TAMILNADU Dr.M.G.R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF AWARD OF

MASTER OF SCIENCE IN NURSING

PEDIATRIC NURSING

BY

301217551

SRESAKTHIMAYEIL INSTIUTE OF NURSING &RESEARCH
(J.K.K. Nattaraja Educational Institutions)
Kumarapalayam (PO), Namakkal District – 638183

OCTOBER – 2014

EFFECTIVENESS OF ORAL SUCROSE SOLUTION IN REDUCTION OF PAIN AMONG INFANTS UNDERGOING PAINFUL PROCEDURE AT GOVERNMENT HEAD QUATERS HOSPITAL, ERODE DISTRICT, TAMIL NADU.

BY

301217551

Research Advisor: …….

Professor.Mrs. Jamunarani. R, M. Sc (N). Ph. D (N),
Principal,
Sresakthimayeil Institute of Nursing &Research,
Kumarapalayam, Namakkal (District).

Clinical specialty advisor: …….

Mrs.BEULAH P , M. Sc Nursing,
Reader,
HOD, Pediatric Nursing,
Sresakthimayeil Institute of Nursing &Research
Kumarapalayam, , Namakkal (Dt).

A dissertation submitted in partial fulfillment of the requirement for the Degree of Master of Science in Nursing to The Tamil Nadu Dr. M.G.R Medical University, Chennai.

OCTOBER - 2014

CERTIFIED THAT THIS IS THE BONAFIDE WORK OF

301217551

AT SREESAKTHIMAYEIL INSTITUTE OF NURSING AND RESEARCH

(JKK NATARAJA EDUCATIONAL INSTITUTIONS)

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

EXAMINERS,

1. ……..

2. ……..

DECLARATION

301217551, hereby declare that that this dissertation entitled "**Effectiveness of Oral Sucrose Solution in reduction of pain among infants under going painful procedure at Government Head Quarters Hospital, Erode"** has been prepared by me under the direct supervision of **Mrs.Jamunarani.R., M.Sc(N).,Ph.D.,** and **Mrs.Beulah.P.,M.Sc(N).,PGDSH.,** department of Pediatric Nursing, **Sresakthimayeil Institute of Nursing and Research, Kumarapalayam**, as the requirement for partial fulfillment of **MASTER OF SCIENCE IN NURSING DEGREE** under **The Tamilnadu Dr.M.G.R. Medical University, Chennai -32.** This dissertation has not been previously formed and this will not be used in future for award of any other degree/diploma. This dissertation represents independent work on the part of the candidate.

Place: Kumarapalayam **301217551**

Date: October 2014 **II Year M.Sc(N)**

Sresakthimayeil Institute of Nursing and Research,

Kumarapalayam.

Dedicated to My

Beloved family

Acknowledgement

ACKNOWLEDGEMENT

Fear of the Lord is the beginning of wisdom

I glorify and thank the **ALMIGHTY** who molded me with the source of His strength and power. His praise endures forever.

My heartfelt thanks to my ever loving and precious husband **Mr. G. Antony**,**MPEd,M.B.A,** for his constant support, Encouragement, motivation, loving care and prayers throughout the course of my study and who has made what I am now.

I express my gratitude to **Tmt.Mrs.N.Sendamarai, Chairperson** and **Mr.Omm Saravanan, Director, JKK NATTRAJAH EDUCATIONAL INSTITUTIONS** for their support throughout my study.

I deeply thank **Dr. Rajendran, DCH**, Erode Government Head Quarters Hospital, Erode, for granting me permission to conduct the study in their esteemed hospital and for giving his valuable suggestions to complete the study.

It is my privilege to owe my thanks to **Prof. Mrs.Jamuna Rani. R, MA.,Mphil.,M.Sc.(N),Ph.D.(N),** Principal, Sresakthimayeil Institute of nursing and research, for giving me an opportunity to fulfill this project work and for her valuable guidance.

I am greatly privileged to express my heartfelt gratitude to **Mrs. Beulah .P, M.Sc.(N),PGDSH** Reader and HOD – Child Health Nursing, Sresakthimayeil Institute of Nursing and Research, for her valuable guidance without whom this study would not been molded in this shape and for her efficient guidance which helped me to proceed the study in right direction. I feel extremely privileged to have her as my research guide.

I am abundantly fortunate to have **Prof. Dhanapal**, Statistician, Sresakthimayeil Institute of Nursing and Research, for offering his expert statistical assistance for my study and for giving his helping hand to complete my project successfully.

I would like to thank **Mrs. KALAIARASI,** Librarian, Sresakthimayeil Institute of Nursing and Research, for helping me to get reference books for my study.

I would like to thank the **Study Participants and parents** of the Erode Government Head Quarters Hospital, Erode, for their cooperation during my course of study.

I sincerely thank the **Librarians of The Tamilnadu Dr. M. G. R. Medical University,** Chennai for their assistance in building a sound knowledge basis for this study.

I express my heart full thanks to all the **Experts** for validating the tool and their suggestions and necessary corrections.

My heartfelt thanks goes to my ever loving parents **Mr. Muthusamy and Mrs. Sagaya Rani,** who made me a shining star in the path of nursing, and to my naughty loving brother **Mr. Arnold Thomas** for their full support, motivation and encouragement throughout the course of my study.

I wish to express my heart full special thanks to my in-laws **Mr. Gnanaprakasam and Mrs. Sahaya Rani** for their motivation and prayers throughout my study and for caring my daughter **Baby. Juan Shalom** and for bearing her naughtiness in my absence.

I wish to express my special thanks to **Mrs. Maheswari, M.Sc. (N), Ph.D.(N),** for her support, guidance and motivation throughout my course of study and without whom this study would not been molded in this shape.

I wish to express my sincere thanks to **Mrs**.S.**Sasirekha MA., MPhil., MEd.** who made me understand that English is just a language not a subject by her accurate edition of my work by her pen.

My gratefulness extend to all those who helped me directly and indirectly in the completion of my study.

"True well-wishers is the one talks about your weaknesses in-front of you, proudly talks about your strengths in -front of others"

ABSTRACT

ABSTRACT

BACKGROUND: Venepuncture is one of the commonest procedure under one by the children admitted in hospital. It is usually associated with pain. There are many non-pharmacological measures to reduce pain. 24% oral sucrose solution is one of the non-pharmacological measure which is effective in reduction of pain among infants under going venepuncture. This study assessed the effectiveness of 24% oral sucrose solution in reduction of pain among infants undergoing painful procedure (Venepuncture). **OBJECTIVE:** To assess the effectiveness of 24% oral sucrose solution in reduction of pain among infants undergoing painful procedure. **DESIGN:** Post test only with control group design was used. **SETTING:** Government Head Quarters Hospital, Erode. **SAMPLE SIZE:** Total Samples selected for the study was 40 (20- experimental group and 20- control group). **METHODS:** The FLACC behavioral scale was used to assess the level of pain among infants under going venepuncture. The data were collected after obtaining permission from the concerned authority of the Government Head Quarters Hospital, Erode. 2ml of 24% oral sucrose solution was administered to infants 2 minutes prior to venepuncture procedure. The pain interpretation was assessed. **RESULTS:** The highest percentage of 40% infants were in the age group of both 7 to 8 months and 9 to 10 months in experimental group, and in control group the highest percentage of infants were in the age group of 11 to 12 months. The highest percentage of 60% infants represented female sex in both experimental and control

group. The highest percentage of 55% represented the infants with the weight of 11 to 12 kgs in experimental group and 25% of infants represented the infants with the weight of 9 to 10 kgs in control group. The highest percentage of 55% infants represented second birth order in experimental group and 50% represented the first and second birth order in control group. The highest percentage of 70% represented the infants supported by parents in experimental group and 45% represented the infants supported by mothers in control group. 95% infants of experimental group suffered moderate pain and 5% suffered severe pain. 100% infants of control group suffered severe pain. The average mean and SD was 3 and ±0.95. There was a significant association between the demographic variable such as age and pain perception among infants of experimental group **($p<0.05$).** **CONCLUSION:** 24% oral sucrose solution was effective in reduction of pain among infants undergoing venepunture procedure.

LIST OF CONTENTS

LIST OF CONTENTS

Chapter No	Contents	Page No
	INTRODUCTION	**1-10**
	• Need for the study	5
	• Statement of the problem	7
	• Objectives	7
	• Hypothesis	7
	• Operational definitions	8
	• Delimitations	8
	• Conceptual framework	9-10
II	**REVIEW OF LITERATURE**	**11-29**
	• Studies related to pain perception among infants	12-14
	• Studies related to non pharmacological pain measures among infants	14-21
	• Studies related to effectiveness of sucrose solution on pain among infants	21-29
III	**METHODOLOGY**	**30-41**
	• Research Approach	30
	• Research Design	30
	• Variables	31-32
	• Settings	32
	• Population	32
	• Sample	32
	• Sample size	32
	• Sampling technique	32
	• criteria for sample selection	33
	• Description of the tool	33-34
	• Validity of the tool	34
	• Data collection procedure	34-35
	• Plan for data analysis	35
IV	**DATA ANALYSIS AND INTERPRETATION**	37-72
	• Descriptive analysis of demographic variables	38-51
	• Evaluation of pain perception among infants of experimental and control group.	52-58
	• Association between the selected demographic variables with the level of pain in infants of experimental and control group.	59-72
V	**DISCUSSION**	**73-76**

Chapter No	Contents	Page No
VI	SUMMARY,CONCLUSION,IMPLICATIONS AND RECOMMENDATIONS	77-84
VII	BIBLIOGRAPHY	85-89
VIII	ANNEXURE	I-XIV

LIST OF TABLES

LIST OF TABLES

S.No.	Title	Page no
3.1	Schematic representation of the research design	31
3.2	Score interpretation.	34
4.1	Frequency and percentage distribution of samples according to their demographic variables	39
4.2	Distribution of samples according to mean and standard deviation	52
4.3	Effectiveness of oral sucrose solution in pain reduction among infants of the experimental and control group	57
4.4	Associations between the demographic variables with the level of pain among infants of the experimental and control group	59

LIST OF FIGURES

LIST OF FIGURES

Figure No.	Title	Page No
1.1	Modified Kathryn Barnard Parent Care Giver- Child Interaction Model.	**10**
3.1	The Schematic Presentation Of Research Design	**36**
4.1	Pie diagram showing percentage distribution of infants according to their age in experimental group	42
4.2	Cylindrical bar diagram sowing percentage distribution of infants according to their sex in experimental group	43
4.3	Bar diagram showing percentage distribution of infants according to their weight in experimental group	44
4.4	Pie diagram showing percentage distribution of infants according to their birth order in experimental group	45
4.5	Cylindrical bar diagram showing percentage distribution of infants according to their supporting persons in experimental group	46
4.6	Doughnut diagram showing percentage distribution of infants according to their age in control group	47
4.7	Bar diagram showing the percentage distribution of infants according to their sex in control group	48
4.8	Doughnut diagram showing the percentage distribution of infants according to their weight in control group	49
4.9	Bar diagram showing the percentage distribution of infants according to their birth order in control group	50
4.10	Doughnut diagram showing the percentage distribution of infants according to their supporting persons in control group	51
4.11	The pyramidal diagram showing the percentage distribution of level of pain among infants of experimental group	54
4.12	The cylindrical bar diagram showing percentage distribution of level of pain among infants of control group	55
4.13	Multiple bar diagram showing comparison of the level of pain among the infants of experimental and control group	56
4.14	The pyramidal diagram showing the percentage distribution of pain perception among infants of experimental and control group	58
4.15	The multiple bar diagram showing the association of age of infants with the level of pain in experimental group	62

4.16	The cylindrical bar diagram showing the association between the sex and level of pain among infants on experimental group	63
4.17	The cylindrical bar diagram showing association between the weight and level of pain of infants in experimental group	64
4.18	The multiple bar diagram showing association between birth order and level of pain among infants in experimental group	65
4.19	The cylindrical bar diagram showing association between the supporting persons and level of pain among infants in experimental group	66
4.20	The pyramidal diagram showing association between age of infants and level of pain among infants of control group	67
4.21	The cylindrical bar diagram showing association between sex of infants and level of pain in control group	68
4.22	The multiple bar diagram showing association between the weight of infants and level of pain in control group	69
4.23	The pyramidal diagram showing association between birth order and level of pain in control group	70
4.24	The pyramidal diagram showing association between supporting persons and level of pain in control group	71

LIST OF ABBREVATIONS

ABBREVATION

H1,H2	Research hypothesis
No	Number
P	Probability
X2	Chi-square test
%	Percentage
SD	Standard deviation
FLACC	Face, Legs, Activity, Cry, Consolability
F	Frequency

LIST OF APPENDICES

LIST OF APPENDICES

No.	Title	Page No
I	Letter seeking permission to conduct pilot study.	**i**
II	Letter granting permission to conduct study.	**ii**
III	Letter seeking expert opinion for content validity.	**iii**
IV	Content validity certificate	**iv**
V	List of Experts	**vi**
VI	Data collection tool. ▪ Informed consent ▪ Demographic variables ▪ The FLACC Behavioral Pain Scale. ▪ Procedure for instillation of 24% oral sucrose solution	 **viii** **x-xi** **xii** **xiii-xiv**
VII	Photographs	**xv**

CHAPTER –I

INTRODUCTION

CHAPTER I

INTRODUCTION

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage

International association for study of pain (**IASP 1979)**

The term infants is typically applied to young children between the age of 1 month & 12 month however definitions may vary between birth and one year age are even between birth and two year of age. Around 164.5 million children are in India which is 660 thousand more than the number record in 2001**. (Census, 2011)**

Most of the hospitalized infants undergo venepuncture procedure.Infants may experience pain while they are undergoing painful procedure like venepuncture. So they start crying on seeing health personal as they associate hospitals health personnel with pain. Measures must be taken to reduce pain during painful procedure like venepuncture. All health professionals must give importance to the emotional status of the children undergoing painful procedure as they are the assets of the nation.

EMOTIONAL EXPRESSION OF INFANTS DURING PAIN

Some argue that pain is not an emotion. Yet, painful stimulation clearly causes a strong Negative emotional response and promotes other negative expressions. The developmental course of pain expression has been studied in some detail because of its theoretical interest and the more practical need for assessment and management of pain in pediatric procedures (**Grunau, Oberlander, Holsti, & Whitfield, 1998; Oberlander, 2001**).

Pain expressions can be also observed in situations of distress that are not physically painful Thus, the pain expression and those that follow it provide clues to emotional and regulatory responses to all forms of aversive stimulation**. (Oster, Hegley, & Nagel, 1992).**

Acute pain in response to tissue damage during standard pediatric procedures (e.g., circumcision, heel lance, or inoculation) provides a naturalistic and ethical way to observe how facially and behaviorally expressed pain responses change with the developmental and neurological status of the infant. Pain in response to such procedures is signalled by distinctive and intense facial actions including drawing together and lowering of the brows to create a mid brow bulge.130 infants and young children had pain in response to DPT inoculation in 4-month-olds show cupped tongue and lateral retraction of the mouth. Nasolabial furrow and tight squeezing of the eye orbit muscles, resulting in a strong squint. From the newborn period through 18 months, few changes occur in the pain expressions. **(Lilley, Craig, & Grunau, 1997).**

The facial response to acute pain reliably includes all of the upper face movements listed. Mouth movements are more variable but include lateral stretching of lips, especially in older infants and children. In young infants, one of the two common mouth variations can be observed. Prominent especially in newborns is a dropped jaw with taut or “cupped” tongue within an angular, wide mouth from 1 to 5 years; these facial movements cohere to form pain expressions in pediatric patients. **(Gilbert et al., 1999).**

The laterally stretched mouth also occurs commonly at newborn ages. Since few longitudinal investigations of pain followed infant’s pain expressions from the newborn period, these variations and age changes in the mouth components of pain

are unknown. We do not know if they reflect individual differences in pain sensitivity or in regulatory responses to pain. Surprisingly, increased crying in preterm's and newborns is not a reliable marker for pain in response to a heel lance **(Grunau& Craig, 1987).**

Young babies vary in their irritability and many will cry in response to handling prior to the actual procedure **(Grunau, Johnston, 1990 ;).**

Very low birth weight premature infants between 26–31 weeks gestational age, show the upper face pain actions when their heels are lanced to obtain blood. The upper facial response is specific to the piercing of the skin, rather than other potentially stressful aspects of handling that occur as a part of the medical procedure, and is accompanied by the maximum increase in heart rate. Noxious stimulation and the high negative arousal they produce appear to simultaneously activate many different negatively toned neurological systems in the young baby. Pain expressions are associated with a rise in cortisol levels in newborns, also suggesting that heel lancing is a highly stressful procedure for the young baby **(Chambers & O'Donnell, 1999 ;).**

The pain expression and its accompanying physiological response are related to the developmental age of the preterm appearing more consistent and robust in older babies. It is unclear if this age change reflects better neurological regulation of the pain response, or the gradual recovery from illness and trauma experienced by many of these sick babies. **(Johnston & Stevens, 1995).**

The expression of pain appears relatively invariant over the first 2 years of life, a number of important changes occur that possibly reflect a combination of neurophysiologic maturation, life experience, and growing ability to remember prior painful experiences. In contrast to newborns, in 2-month-olds, the expressive

components of pain occur at low frequency during a pre inoculation or baseline period. However, a significant and dramatic increase in all pain components is observed in response to inoculation, infants' pain response shows some specificity to skin trauma at every age studied **(Lilley et al., 1997).**

Healthy term infants between 2 and 4 months of age have the most robust response to pain. By 4 months, pain expressions are highly specific to inoculation, with very few pain signals occurring during the baseline period. Likewise, 4 month-old have quicker recovery from pain suggesting that CNS mechanisms inhibiting the transmission of pain become functional at this age. **(Lilley et al., 1997; Lewis & Thomas, 1990; Ramsay & Lewis, 1994),**

Following this important transition point, 6-month-old shows a shorter duration of pain response and less of a rise in cortisol in response to immunizations, suggesting better internal physiological regulation in response to pain **(Lewis & Thomas, 1990;)**.

The appearance of the pain expression may change little with age; older infants have more complex responses to pain. Typically, they display facial pain for a smaller proportion of time prior to quieting, displaying anger and blended expressions (**Hembree, & Heubner, 1987).**

By 18 months, pain specific expressions comprised only 10% of the post inoculation distress Thus, anger and other negative expressions become rapid after-reactions to the Initial pain response. This pain after-reaction is most likely to influence the appropriate soothing strategy and might also be stable across individuals. **(Izard et al., 1987).**

Post pain facial signals likely reflect some combination of differences in pain sensitivity and social experience among individuals. For, example, Japanese infants

seem to have less pain sensitivity and qualitatively different emotional responses to inoculation than do American infants; pain expressions are less intense and are not typically followed by anger and crying, but by surprise **(Lewis & Ramsay,1993).**

American Academy of Pediatrics and Canadian Pediatric Society stated the myths and misconceptions about children and pain as follows,

- New born do not feel pain
- Exposure to pain at an early age has little or no effect on the child
- Infants and small children have little memory of pain
- The intensity of child's behavioral reaction indicates the intensity of the child's pain
- Child who is sleeping is not in pain
- Children learn to adapt to pain & painful procedures

NEED FOR THE STUDY

Fear of injection is most common in children though it is a minor painful procedure. Accessing venous catheter to infants is not an easy task 90% of the children task in receiving little or no attempt to reduce the fear of pain. Although few studies have examined the efficacy of psychological approaches to pediatric pain, there is related task of studies that address the need for complementary therapy in pain reduction and little is known about the effectiveness of sucrose water as a pain reducing distraction technique for children undergoing venepuncture.

Sharifzadeh, (1997), supported the theory that sucrose and pain relief are interrelated through the body's endogenous system that provides natural analgesia.

Blass, Fitzgerald and Kehoe, (1987), first demonstrated the use of sucrose as analgesic using laboratory rats. Researchers demonstrated that rats receiving an oral

infusion of 7.5% sucrose experienced a significant elevation in pain thresholds compared with groups of rats that received an oral infusion of water or no infusion.

Barr et al., (1995), stated that the analgesic effect of sucrose is reversed with the administration of Naloxone, an opioid system with an action similar to that of opioid analgesics.

M. Yanina Pepino Ph.D and Julie.A.Mennela Ph.Dl, (2005) revealed that the sucrose induced analgesia is related to sweet preferences in children but not in adults.

American Academy of Pediatrics, (2006), stated on the basis of many studies as a coherence to review the efficacy of sucrose as an analgesic for procedural pain in infants. Sucrose becomes the focus of a potentially better practice for the pain and analgesia group. This study showed the efficacy in reducing pain behavior in infants with the use of oral sucrose solution via syringe drops that we administered on the anterior portion of the tongue over 30 seconds.

Anand Kujan Sharma, (2008) demonstrated that oral sucrose was effective in alleviating pain in infants under going painful procedures.

The Hindu, (2008) reported that a spoon full of sugar solution before getting injection seems to reduce the pain.

90% of the hospitalized children are exposed to minor procedure like venepuncture. Insertion of venous catheter is not an easy task for the nurses. More than one attempt is made for most of the children which disturb them emotionally, leading to less cooperation from their part. There are many myths regarding the use of sucrose.

Denies Margret Harrison revealed the myths on sucrose as;

- Sucrose is not baby friendly
- Sucrose grows bacteria
- Sucrose predisposes infants to dental decay
- Sucrose increases the risk of poor neurological outcomes in infants (<32 weeks)
- Increases the risk of necrotizing enterocolitis
- Results in hyperglycemia
- Sucrose is not effective in older babies
- Repeated doses of sucrose leads to development of tolerance to sucrose.

So the investigator got an idea to reduce the procedural pain and remove the myths regarding the use of sucrose. This motivated the investigator to use sucrose water for the study which was proved to be an effective non-pharmacological measure to reduce pain

STATEMENT OF THE PROBLEM

Effectiveness of oral sucrose solution in reduction of pain among infants under going painful procedure at Government Head Quarters Hospital, Erode.

OBJECTIVES OF THE STUDY

1. To assess the level of pain during venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode.
2. To evaluate the effectiveness of oral sucrose solution among infants under going painful procedure like venepuncture in experimental and control group.
3. To find out the association between the selected demographic variables and the post test scores of the experimental and control group infants undergoing venepuncture.

HYPOTHESIS

H1:- There is a significant level of pain during Venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode.

H2:- There is a significant effectiveness of oral sucrose solution among infants under going painful procedure like venepuncture in experimental and control group.

H3:- There is a significant association between the selected demographic variables and the post test scores of the experimental and control group infants undergoing venepuncture.

OPERATIONAL DEFINITIONS

EFFECTIVENESS:

It refers to significant reduction in pain during Venepuncture procedure.

SUCROSE SOLUTION:

It refers to 24% sucrose solution. It is prepared by adding 24 grams of sugar in 100 ml of distilled water.

PAIN:

It is an unpleasant sensory and emotional experience associated with actual and potential damage.

INFANTS:

It refers to children in the age group of 7 to 12 months.

PAINFUL PROCEDURE:

It refers to venepuncture. It is the insertion of venous catheter with the guidance of a needle into the vein for the introduction of fluids or drugs.

DELIMITATIONS

The study is limited to:

- ❖ 7-12 months aged infants only.
- ❖ Only Venepuncture procedure.
- ❖ Effectiveness of oral sucrose solution.
- ❖ Pain among infants under going painful procedure.
- ❖ Infants admitted in Government Head Quarters Hospital, Erode.

CONCEPTUAL FRAMEWORK

Conceptual frame work provides clear description of variables suggesting ways or methods to conduct the study and guiding the interpretation, evaluation and integration of study findings**, (Wood and Haber, 1994).**

The conceptual frame work is the device that helps to stimulate research and the extension of the knowledge by providing both direction and impetus, **(Polit and Hungler).**

The conceptual model selected for this study is based on "Kathryn Barnard Parent/Caregiver-Child interaction model". The theory components are as follows

- Care giver characteristics
- Newborn characteristics

Care giver characteristics:-

This includes the clarity of cues and alleviation of distress. Here the investigator identifies the infants under going venepuncture procedure, assess the level of pain and instill 24% oral sucrose solution for experimental group. In the control group the infants are not instilled with oral sucrose solution.

Infant characteristics:-

Interventions are carried out and monitored which implies infant's responsiveness to care givers. Here the responsiveness refers to a significant reduction in pain perception as positive response and no change in pain perception as negative response. The post test assessment refers to significant reduction in pain perception among after instillation of 24% oral sucrose solution.

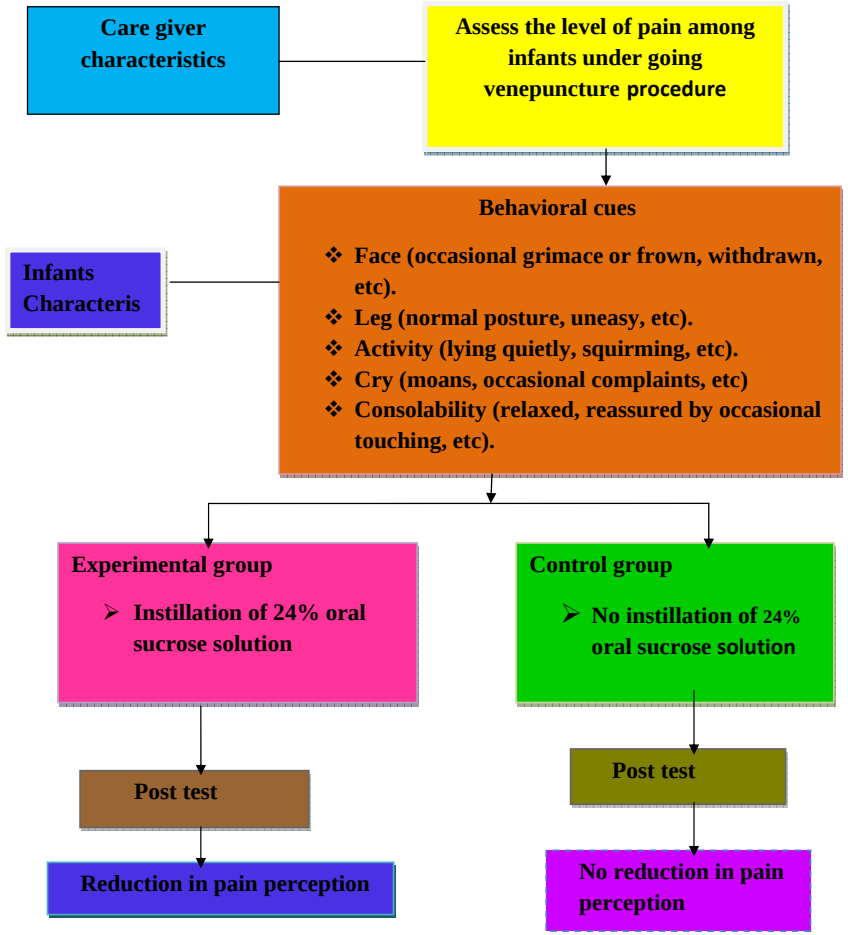


Fig. 1.1. MODIFIED KATHRYN BARNARD PARENT / CARE GIVER-CHILD INTERACTION MODEL

CHAPTER –II

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

The review of literature is a broad, comprehensive, in depth, systematic & critical review of scholarly print materials, audiovisual material & personal communication. A literature review is a written summary of the state of eristing knowledge on a research problem. The task of reviewing research literature inverses the identification, selection, critical analysis & written description of existing information on a topic,(polit and hungler,1999)

Review of literature provided the concept further to evolve understanding of the status in the problem area clues to research methods, interpretation and data analysis.

The review of literature organized under the following headings

I. Studies related to pain perception among infants pain perception during painful procedures.

II. Studies related to non pharmacological measures for pain among infants under going painful procedures.

III. Studies related to effectiveness of sucrose solution on pain among infants under going painful procedures.

I. STUDIES RELATED TO PAIN PERCEPTION AMONG INFANTS DURING PAINFUL PROCEDURES.

Subhashini FL, et al (2008), conducted a prospective descriptive correlation study to compare the Faces Pain Scale and Colour Analogue Scale among infants undergoing selected procedures (Venepuncture, Intravenous cannulation, Intramuscular injection, Lumbar puncture, and Bone marrow aspiration) was conducted at a tertiary care hospital in North India. The study samples were 181 infants undergoing painful procedures. They were evaluated for the perception of pain after obtaining informed consent from parents. They were assessed for their pain severity using Faces Pain Scale and Color Analogue Scale. The study result was that there was a significant positive correlation ($r = >0.8$) between both the pain scales. There was fair to moderate positive correlation ($r = 0.29$ to 0.58) of pain perception of child with parents and health care professionals. The study concluded that Faces Pain Scale and Colour Analogue Scales seem to be appropriate instruments for measuring pain intensity among Indian children undergoing selected procedures.

Duhn, et al (2004), conducted a systematic integrative review of the literature was conducted using the following databases: MEDLINE and CINAHL (through February 2004), and Health and Psychosocial Instruments, and Cochrane Systematic Reviews (through 2003). MeSH headings searched included “pain measurement,” with limit of “newborn infant”; “infant newborn”; and “pain perception to examine the issue of pain assessment in infants by acquiring all available published pain assessment tools and evaluating their reported reliability, validity, clinical utility, and feasibility. Thirty-five neonatal pain assessment tools were found and evaluated using predetermined criteria. Further, the population tested and reports of reliability, validity, clinical utility, and feasibility were reviewed. In these 35 measures, 18 were

uni dimensional and 17 were multidimensional. When choosing a pain assessment tool, one must also consider the infant population and setting, and the type of pain experienced. The decision should be made after carefully considering the existing published options. The instrument will assess pain in a reproducible way, and must be demonstrated with validity and reliability testing. Using an untested instrument is not recommended. Because pain is a multidimensional phenomenon, well-tested multidimensional instruments may be preferable.

Dr. Bonnie Stevens (2008), conducted a study to determine, the frequency of painful procedures, the types of pain management interventions associated with painful procedures and the influence of the type of hospital unit on procedural pain management for children in Canadian hospitals. We reviewed medical charts for infants and children up to 18 years of age who had been admitted to 32 inpatient units at eight Canadian paediatric hospitals between October 2007 and April 2008.Result of the 3822 children included in the study, 2987 (78.2%) had undergone at least one painful procedure in the 24-hour period preceding data collection, for a total of 18 929 painful procedures (mean 6.3 per child who had any painful procedure). For 2334 (78.1%) of the 2987 children who had a painful procedure, a pain management intervention in the previous 24 hours was documented in the chart: 1980 (84.8%) had a pharmacologic intervention, 609 (26.1%) a physical intervention, 584 (25.0%) a psychologic intervention and 753 (32.3%) a combination of interventions.

Reyes S (2003), examined a descriptive study to collect data about nurses belief and documentation practices related to pain assessment in infants was conducted. An anonymous subset of the unit nurses (n=24) responded to a questionnaire regarding infant pain assessment. Pain assessment documentation of the unit nurses was examined in a retrospective chart review (n=107). Results showed an

inconsistency between what nurses believe about infant pain assessment and the documentation practices in the unit. According to the questionnaire the nurses believed that the pain assessment was important in providing effective pain relief and that nurses are capable of assessing infant pain. However it was not evident in the documentation, whether nurses used pain tools or other means to document their evaluations of infant pain or the infant's response to pain medication interventions. The study concluded that greater consistency of nurses in documenting pain assessment, thereby improving care provider communication of an infant's pain experience is needed to improve the standard of care in managing infant's pain.

Bough Lon (2010), conducted a study to determine whether the regular assessment of children's pain would improve their pain management and Postoperative progress among children. Children (n=36) pain were measured every 4 hours post operatively, by using Wong baker faces rating scales. The Outcomes is based on the amount of analgesics given. The result subscribes the pain reports time and progress of ambulation and length of hospital stay were compared with data from a retrospective chart review of control group. The sample size was no statistically significant differences, in these variables were found an important clinical findings were that despite all children prescribed PRN analgesics orders.

Cheryl. A. Gilbert (1999), determined the pain level based on facial expression would be useful in assessment of post-operative pain in young children between the age 13-74 months are video-taped for a maximum of an hour, after arrival in the post-anesthetic care unit at British Columbia children hospital. Samples were randomly selected from each 2 minutes of time period lapsed during the hour following surgery. The result demonstrated that the face scale server as a valid measurement tool for persistent pain in children.

II. STUDIES RELATED TO NON PHARMACOLOGICAL MEASURES FOR PAIN AMONG INFANTS UNDER GOING PAINFUL PROCEDURES

Ayse Karakoç, PhD, Funda Türker, MSc (2014), conducted an experimental study on newborns to compare the effects of various atraumatic care procedures during an infant's crying response to pain. 120 newborns chosen from among healthy infants admitted to the Obstetrics Department of Çanakkale State Hospital between April 2010 and June 2010. The patients were divided into three physically homogeneous groups. Infants in group 1 were held on the mothers' laps, infants in group 2 were held on the mother's laps and listened to white noise, and infants in group 3 lay in their cribs and listened to white noise while undergoing a painful procedure. Data collection included the Neonatal Infant Pain Scale, which was used to evaluate the behavioral responses to pain during a heel prick blood draw and a newborn information sheet developed by the researcher. Changes in cardiac and respiratory rates recorded during the invasive procedure were statistically significant among the three groups ($p < .05$). The shortest crying period and the lowest behavioral reactions were among those infants lying in their cribs and listening to white noise. This group was then followed by the infants who listened to white noise while being held by their mothers. The highest behavioral reaction was reported by those infants who were held by their mothers but did not listen to white noise. The result showed, white noise as an effective nonpharmacologic method to control pain, reduce crying time, and positively affect vital signs. Therefore, it is recommended that the use of white noise be practiced on newborns when they undergo painful procedures.

Mary-Ellen Hogan (2011), conducted a study To determine the effectiveness of tactile stimulation when added to a combination of painreducing interventions in infants undergoing immunization. Healthy infants aged 4-6 months undergoing immunization in primary care were randomized to tactile stimulation or usual care. All infants also received pain-relieving interventions. A validated measure of acute pain in infants, the Modified Behavioral Pain Scale (MBPS), was the primary outcome. Altogether, 120 infants participated. Characteristics did not differ ($p > 0.05$) between those allocated to tactile stimulation and usual care groups. Mean MBPS pain scores did not differ between groups: 8.2 (1.1) vs. 8.0 (1.3), respectively; $p = 0.57$. the author concluded that parent-led tactile stimulation did not improve pain relief in infants when added to other interventions.

Jose, et al (2012), Skin tapping is an effective technique for reduction of pain response during injection. The present study used this technique during DPT injection. A post test only to control group design was adopted for the study. The sampling design was purposive sampling with random allocation of treatment using chit method with non replacement technique. The sample size was sixty; thirty each in experimental and control group. The study revealed that the pain response was less in experimental group. Majority, i.e. 24 (80%) of the infants in experimental group had mild pain whereas only 5(16.66%) of the infants in control group experienced mild pain. Independent t test was done to establish the effectiveness of skin tap technique. The t value was found to be 7.401 at $p<0.001$. It also revealed the association between the pain scores and selected variables like gender and weight of the child. The Ã·2 value for gender was 0.033 and weight was 3.032 in experimental group while it was 1.356 for gender and 9.710 for weight in control group. The study concluded that the pain scores in experimental group was independent of the selected variables such as

gender and weight, while gender was independent and weight was dependent in control group.

Eunsook Park (2007), conducted a study on pain reduction of heel stick procedure among ninety-nine healthy neonates. The purpose of this study was to find the effect of Yakson (i.e. a traditional Korean touching method) and non-nutritive sucking (NNS) on reducing the pain that neonates experience when undergoing the heel stick procedure for blood testing. The study samples were assigned into three groups: group I Yakson (n = 33), group II NNS (n = 33), and group III control group (n = 33). Intervention was provided to the Yakson and NNS groups one minute prior to heel stick till the completion of the heel stick. For the Yakson group, a researcher caressed the belly of a neonate with one hand while supporting the back with the other hand. For the NNS group, a pacifier packed with sterile gauze was put in the neonate's mouth. The oxygen saturation levels in the Yakson and NNS group neonates were maintained significantly better than in the control group neonates. There was no significant difference between the groups with regard to heart rate and neonatal infant pain, which was measured using Neonatal Infant Pain Scale. Findings indicated that Yakson can be used during heel stick to help neonates to maintain their oxygen saturation level following the heel stick procedure.

Manizheh Mostafa, et al (2007), conducted a study on the effect of oral dextrose on pain relief of newborn infants. In a randomized controlled clinical trial, 60 term neonates were enrolled in the study. They were randomized to receive oral dextrose (25%) or sterile water two minutes before venepuncture. Pain reactions were scored with CRIES pain scoring system, crying time and heart rate at five minutes after venepuncture were recorded. There were significantly lower pain score and

shorter crying time in dextrose group after venepuncture (CRIES pain score: 2.23 ± 1.45 vs 6.17 ± 1.66 P=0.001), (Duration of crying (sec): 2.83 ± 1.64 vs. 16.97 ± 8.49 P=0.001) respectively. Using oral dextrose solution is a useful, non expensive and non pharmacologic method for managing pain of venepuncture in neonates.

Karen Corff (2006), performed a prospective trial to identify the effectiveness of facilitated tucking, a non-pharmacologic nursing intervention, as a comfort measure in modulating infants physiologic and behavioral responses to minor pain among thirty infants belonging to the age group of 6 to 12 months at Edmond. The objective of the study was that the infants will have less variation in heart rate, hemoglobin, oxygen saturation, shorter crying, sleep disruption times, and less fluctuation in sleep states in response to the painful stimulus of a heel-stick with facilitated tucking than without facilitated tucking. In this study, heart rate, oxygen saturation, and sleep state were recorded 12 minutes before, during, and 15 minutes after two heel-sticks, one with and one without facilitated tucking. Infants demonstrated a lower mean heart rate six to ten minutes post-stick ($p < 0.04$), shorter mean crying time ($p < 0.001$), shorter mean sleep disruption time ($p < 0.001$), and fewer sleep-state changes ($p = 0.003$) after heel-stick with facilitated tucking than without facilitated tucking. The study had shown that facilitated tucking was an effective comfort measure in attenuating infant's psychological and behavioral responses to minor pain.

Shah, et al (2006), evaluated the effectiveness of breastfeeding and expressed breast milk administration in minimizing the impact of procedural pain in neonates. This review highlighted 11 randomized and quasi-randomized trials of which five trials compared breastfeeding, whilst the effects of the expressed breast milk were

studied in six trials, with no treatment or other treatment in both full term and pre-term neonates undergoing a single painful procedure (venepuncture or heel lancing). Neonates who were breastfed whilst undergoing a painful procedure showed greater reduction in behavioral and physiological responses to pain, when compared to neonates that either received placebo, no intervention or positioning. Therefore, he recommended that breastfeeding should be used when available as a non-pharmacological intervention as it provides some analgesic relief during single painful procedures. Although the researchers emphasize that none of the studies claimed that breastfeeding eliminates procedural pain completely, it is beneficial and has a hidden benefit of being cost-effective

Aliwalas L, et al (2007), conducted a prospective study on 180 term newborn infants who were undergoing routine heel prick testing for neonatal screening of phenylketonuria and hypothyroidism. Newborns were assigned to 6 groups: (1) control (no pain relief intervention); (2) non-nutritive sucking; (3) holding by mother; (4) oral glucose solution; (5) oral formula feeding; or (6) breastfeeding. Outcome measures included the Neonatal Facial Coding System score; cry duration; and autonomic variables obtained from spectral analysis of heart rate variability before, during, and after heel-lancing. Infants who breastfed or received an oral formula showed the lowest increase in heart rate (21 and 23 beats per minute, respectively, vs. 36; $P < .01$), lowest neonatal facial score (2.3 and 2.9, respectively, vs. 7.1; $P < .001$), lowest cry duration (5 and 13 seconds, respectively, vs. 49; $P < .001$), and lowest decrease in parasympathetic tone (−2 and −2.4, respectively, vs. 1.2; $P < .02$) compared with the other groups. The authors conclude that any method of pain control is better than none. Feeding and in particularly breastfeeding during heel prick testing were found to be the most effective methods of pain relief.

Mohammadn Hasan Sahebihagh, et al (2011), conducted a quasi-experimental study on, 120 infants under 3 months of age who referred to Tabriz Health Centres; 25%oral sucrose, breastfeeding, combined method and control groups. Neonatal Infant Pain Scale (NIPS) was used to determine the pain score at 0, 5 and 10 minutes after the vaccination. The findings of the present study indicated that in breastfeeding group the mean pain score was the lowest immediately after the vaccination ($p = 0.007$). According to the findings of the present study, the lowest pain score and crying time was in breastfed neonates. Considering the fact that breastfeeding is a natural, useful and free intervention and does not need any special facility, this method is suggested in pain management and control during painful procedures for infants.

C. Celeste Johnson, et al (2003), studied that either skin-to-skin contact, or kangaroo mother care (KMC) has been efficacious in diminishing pain response to heel lance in full term and moderately preterm neonates. The purpose of this study was to determine if KMC would also be efficacious in very preterm neonates. Preterm neonates ($n = 61$) between 28 0/7 and 31 6/7 weeks gestational age in three Level III NICU's in Canada comprised the sample. A single-blind randomized crossover design was employed. In the experimental condition, the infant was held in KMC for 15 minutes prior to and throughout heel lance procedure. In the control condition, the infant was in prone position swaddled in a blanket in the incubator. The primary outcome was the Premature Infant Pain Profile (PIPP), which is comprised of three facial actions, maximum heart rate, and minimum oxygen saturation levels from baseline in 30-second blocks from heel lance. The secondary outcome was time to recover, defined as heart rate return to baseline. Continuous video, heart rate and oxygen saturation monitoring were recorded with event markers during the procedure

and were subsequently analyzed. Repeated measures analysis-of-variance was employed to generate results. PIPP scores at 90 seconds post lance were significantly lower in the KMC condition (8.871 (95%*CI* 7.852–9.889) versus 10.677 (95%*CI* 9.563–11.792) $p < .001$) and non-significant mean differences ranging from 1.2 to1.8. Favoring KMC condition at 30, 60 and 120 seconds. Time to recovery was significantly shorter, by a minute (123 seconds (95%*CI* 103–142) versus 193 seconds (95%*CI* 158–227). Facial actions were significantly lower across all points in time reaching a two-fold difference by 120 seconds post-lance and heart rate was significantly lower across the first 90 seconds in the KMC condition.

***Ambika Gnanam Chidambaram,* et al (2014),** performed a study on Effect of Kangaroo mother care in reducing pain due to heel prick among preterm neonates: a crossover trial. This crossover trial was conducted at a tertiary care teaching hospital in south India. Premature Infant Pain Profile (PIPP) related to heel prick was assessed in 50 preterm neonates undergoing KMC and compared with 50 preterm babies significantly less in KMC group compared to control group. Mean PIPP difference between baseline and 30 minutes after heel prick was also significantly low in KMC group compared to control group. KMC is effective in reducing pain due to heel prick among preterm babies.

***Gray L, et al (*2000)**, *studied* **skin-to-skin contact as analgesic in healthy newborns, a** randomized (unclear allocation concealment), blinded (assessors of heart rate and crying), controlled trial. Setting of the study was a medical centre in Boston, Massachusetts, USA. 30 healthy, full term, newborn infants (33–55 hours old, 63% girls, mean birth weight 3.3 kg). None of the infants had evidence of congenital abnormalities, medical complications, or drug exposure, and none required oxygen administration or ventilatory support. This was the initial heel lance for all of the

infants. Follow up was complete. 3 infants, for whom data on grimacing could not be ascertained from the videotape, were not included in the analysis. During the blood collection phase, infants who received skin to skin contact cried less (82% reduction) and grimaced less (65% reduction) than infants who received no contact. During the 3 minute recovery period, infants who had skin to skin contact cried less (mean 1 *v* 32 sec) and grimaced less (mean 2 *v* 30 sec) than those who had no contact. Infants in the skin to skin contact group had stable heart rates during the collection and recovery phases (increase of 8–10 beats/min), whereas infants in the no contact group had a linear increase of 36–38 beats/min to a plateau of 160 beats/min, which was sustained during the first minute of the recovery phase. The author concluded that skin to skin contact with their mother reduced pain reactions in healthy newborn infants during a heel lance.

III. STUDIES RELATED TO EFFECTIVENESS OF SUCROSE SOLUTION ON PAIN AMONG INFANTS UNDER GOING PAINFUL PROCEDURES.

Dr Boyle (2006), Conducted a randomized trial to evaluate the use of oral sucrose and/or pacifier for reducing pain responses during eye examinations. Forty infants <32 weeks gestation or <1500 g birth weight, in two neonatal units, were randomized to one of four interventions administered two minutes before their first screening examination: 1 ml sterile water as placebo (group 1, n=10), 1 ml 33% sucrose solution (group 2, n=10), 1 ml sterile water with pacifier (group 3, n=9), or 1 ml 33% sucrose solution with pacifier (group 4, n=11). Examinations were videotaped. Two observers, blind to the intervention, assessed recordings. Pain responses were scored using the premature infant pain profile (PIPP). The groups were similar in gestation, birth weight, and age at examination. Mean PIPP scores

were 15.3, 14.3, 12.3, and 12.1 for groups 1, 2, 3, and 4 respectively. Analysis of variance showed a significant difference in PIPP score between groups (p=0.023). Infants randomized to pacifiers scored lower than those without pacifiers (p=0.003). There was no difference between groups receiving sucrose and those receiving water (p=0.321).Non-nutritive sucking reduced distress responses in infants undergoing screening for retinopathy of prematurity. The difference in response was large enough to be detected by a validated assessment tool. No synergistic effect of sucrose and pacifier was apparent in this group.

Ors (1999), compared the effects of supplemental breast milk to water and 25% sucrose in procedural pain. This was a randomized controlled trial of 102 healthy term neonates. The neonates were randomized into three groups. Group I received supplemental breast milk, group II received sterile water and group III received 25% sucrose. All neonates underwent heel lance blood sampling by a single performer. The allocated solution was given by syringe into the baby's mouth over one minute. The heel prick was performed two minutes after administration of the solution. Crying duration and heart rate at three minutes were recorded from the time of the heel prick. The outcomes measured were crying time, percentage change in heart rate and recovery time for the heart rate. The supplemental breast milk had shown significant reduction in crying time, percentage change in heart rate than the other two groups.

Skogsdal (1997), performed a randomized controlled trial among 120 neonates to compare the effects of no intervention to 30% oral glucose, 10% oral glucose and breast milk in procedural pain. The neonates were randomly assigned to one of the following groups (30 neonates in each group).The neonates were studied on mean and standard deviation of fifth neonatal age at the time of blood collection for

their routine care using the heel lance procedure. One ml of allocated solution was given via syringe by a nurse not aware of allocation. Prior to the procedure, baseline data were obtained and continuous monitoring was done throughout and after the procedure during the recovery time. The blood collection was performed two minutes after administration of solution. The outcomes measured were heart rate change and duration of crying. The study results showed that breast milk was effective on procedural pain than the glucose solution in newborns.

Manizeheh Mustafa Gharehbaghi, Peirovifar Ali (2007), conducted a study on the effect of oral dextrose on pain relief of newborn infants. In a randomized controlled clinical trial, 60 term neonates were enrolled in the study. They were randomized to receive oral dextrose (25%) or sterile water two minutes before venepuncture. Pain reactions were scored with CRIES pain scoring system, crying time and heart rate at five minutes after venepuncture were recorded. The result showed significant lower pain score and shorter crying time in dextrose group after venepuncture (CRIES pain score: 2.23 ± 1.45 vs. 6.17 ± 1.66 P=0.001), (Duration of crying (sec) : 2.83 ± 1.64 vs 16.97 ± 8.49 P=0.001) respectively. He concluded that using oral dextrose solution is a useful, non expensive and non pharmacologic method for managing pain of venepuncture in neonates.

McCullough S, et al (2008), conducted a randomized, double- blind, placebo controlled clinical trial to determine whether lingual sucrose modifies the pain response to nasogastric tube insertion in preterm infants. Special care baby unit was the setting for the study. 20 stable preterm infants, who required nasogastric tube insertion for feeding, randomized on 51 occasions and lingual 24% sucrose or water placebo (0.5-2 ml varying with body weight) administered 2 minutes before

nasogastric tube insertion. The infants who received sucrose demonstrated a significantly lower Neonatal Facial Coding Score during nasogastric tube passage compared with the placebo group (median 1 (range 0-4) vs. 3 (0-4), p = 0.004). There was a trend for sucrose-treated infants to have little change in heart rate during nasogastric tube passage compared with the placebo group (mean (SD) -0.73 (23) vs. +11 (17), p = 0.055). Mean SaO2 did not change significantly. Pain response measurements quickly returned to baseline after nasogastric tube insertion. The result of the study was single-dose lingual 24% sucrose is effective in reducing the behavioral and physiological pain response to nasogastric tube insertion in infants.

Curtis SJ, et al (2007), conducted a randomized double and single blind, placebo-controlled trial to investigate the effectiveness of sucrose and/or pacifier as analgesia for infants receiving venepuncture was conducted in a peadiatric emergency department. Eighty-four infants aged 0-6 months were randomly assigned to one of four groups: a) sucrose b) sucrose & pacifier c) control d) control & pacifier. Each child received 2 ml of either 44% sucrose or sterile water, by mouth. The primary outcome measure was FLACC pain scale score change from baseline and the secondary outcome measures was crying time and heart rate change from baseline. The result was sucrose did not significantly reduce the FLACC score, crying time or heart rate. Subgroup analysis revealed a mean crying time difference of 76.52 seconds ($p < 0.0171$) (0-1 month) and 123.9 seconds ($p < 0.0029$) (1-3 month). For subgroup age > 3 months pacifier did not have any significant effect on crying time. Age adjusted regression analysis revealed that both sucrose and pacifier had significant effects on crying time. Crying time increased with both increasing age and increasing gestational age. The conclusion was pacifiers are inexpensive, effective analgesics and are easy to use for venepuncture in infants.

Thyr M, et al (2006), conducted a study to assess the efficacy of 30% oral glucose during intramuscular injections in infants was conducted.. Samples were 64 healthy term infants. The intervention consists of administration of either 2ml of oral glucose or 2ml of sterile water 2 minutes before injection. The primary outcome measure was the cumulative Neonatal Infant Pain Scale score at 33minutes after injection. 32 neonates received 30% glucose and 32 neonates received sterile water. The results of the study were that the cumulative NIPS score at 3 minutes after injection for neonates given 30% glucose was significantly ($P = 0.000$) lower than for neonates given sterile water. The heart rate immediately after injection for neonates given 30% glucose was significantly ($P = 0.002$) lower than for neonates given sterile water. Oral 30% glucose given 2 minutes before injection was effective in reducing neonatal pain following injection. The study concluded that oral glucose is a simple, safe and fast acting analgesic.

Sajedi F, et al (2006), studied a double blind randomized controlled trial to evaluate the efficacy of sucrose for the relief of pain associated with immunization injections in infants was conducted. A total of 50 healthy infants (mean age 3.3 ± 1.7 months) brought to the pediatric OPD of our tertiary hospital for their routine 6, 10 and 14 wk oral polio vaccine (OPV) and diphtheria pertusis tetanus (DPT) intramuscular immunization were the samples. The infants were randomized to receive by mouth 2 ml of sucrose solution (75% w/v) or distilled water (placebo) before the injection. A blinded observer analyzed video recordings of each injection procedure to measure the duration of crying and to score the Modified Behavioral Pain Scale (MBPS), an infant pain assessment tool. The results of the study were a significant reduction in crying times and pain scores in the group receiving sucrose as against the controls. The MBPS score after injection for sucrose was 6.80 ± 0.71 vs.

7.24 ± 0.66 for controls (P=0.0344) by the Mann-Whitney U test. The study concluded that oral sucrose solution can be used as an analgesic in infants undergoing immunization by intramuscular injection.

Meek J, et al (2010), conducted a double-blind, randomised controlled trial, 59 newborn infants at University College Hospital (London, UK) were randomly assigned to receive 0·5 mL 24% sucrose solution or 0·5 mL sterile water 2 min before undergoing a clinically required heel lance. . The primary outcome was pain-specific brain activity evoked by one time-locked heel lance, recorded with electroencephalography and identified by principal component analysis. Secondary measures were baseline behavioral and physiological measures, observational pain scores (PIPP), and spinal nociceptive reflex withdrawal activity. 29 infants were assigned to receive sucrose and 30 to sterilised water; 20 and 24 infants, respectively, were included in the analysis of the primary outcome measure. Nociceptive brain activity after the noxious heel lance did not differ significantly between infants who received sucrose and those who received sterile water (sucrose: mean 0·10, 95% CI 0·04-0·16; sterile water: mean 0·08, 0·04-0·12; p=0·46). No significant difference was recorded between the sucrose and sterile water groups in the magnitude or latency of the spinal nociceptive reflex withdrawal recorded from the biceps femoris of the stimulated leg. The PIPP score was significantly lower in infants given sucrose than in those given sterile water (mean 5·8, 95% CI 3·7-7·8 vs 8·5, 7·3-9·8; p=0·02) and significantly more infants had no change in facial expression after sucrose administration (seven of 20 [35%] vs. none of 24; p<0·0001).

Dr. Rima Zahr, DO (2011), conducted a study on parent satisfaction with sucrose in vaccine administration in newborns, 2 and 4 months Data was collected over three month period from August through November 2011. Nurses were

instructed to administer 2 ml of 24% oral sucrose solution prior to administering 2 and 4 month vaccinations. During the study period (August 2011 to November 2011) a total of 111 patients received oral sucrose. Data from sixty-four 2 month old infants and forty- seven 4 month old infants were analyzed. Data was not reviewed from the primary survey as this survey only lasted one week in duration and did not collect sufficient data. Data collected from the 2 month old surveys, 41% of parents strongly agreed that there child was more comfortable with administration, 42% felt that the solution was useful and 48% would consider use with future vaccinations. Data from 4 month old infants showed parents strongly agreed 51% that solution made child more comfortable, 49% thought solution was useful and 49% would consider oral sucrose for future Immunizations. Combining all patients 45% of parents strongly agreed that oral sucrose made child more comfortable, 44% felt solution was useful and 48% would consider solution for future use.

Teeland L, et al (2007), conducted a prospective controlled trial to evaluate oral glucose as an analgesic to reduce infant distress after immunization during the first year of life was conducted. A sample a total of 110 infants was consecutively randomized according to closed envelope technique, to receive 2 ml of 30% glucose or water. Crying was registered from onset of the injection up to 120 seconds. Infanrix Polio Hib was administered intra-muscular in the thigh. The results of the study was among children of experimental group 28.8% cried on all three occasions compared to 36.0% in the water group, and at each immunization more girls (72.7%) were crying than were boys (60.9%). In the water group there was a correlation between the children who cried at 3 months and whom subsequently cried at (r=0.515) and at 12 months (r=0.332), these correlations were significant (p=<0.001 and p=0.018). Administration of glucose reduced the mean crying time by 22% at 3 months, 62% at

5 months and 52% at 12 months. The difference was significant at 5 and at 12 months. The study concluded that the sweet solution can be used as a simple and safe method to reduce the distress following immunization.

Cebeci D, et al (2010), conducted a study to test analgesic effects of double- versus single-dose breast milk and compare this effect with efficacy of double- versus single-dose sucrose in a group of healthy term newborns during heel prick blood sampling. Healthy newborns(n= 142) were consecutively allocated to one of the six groups: group 1, single-dose breast milk; group 2, single-dose sterile water; group 3, single-dose 12.5% sucrose; group 4, two doses breast milk; group 5, two doses sterile water; and group 6, two doses 12.5% sucrose before the heel prick. The medians for crying time and the pain scores according to the neonatal facial coding system were recorded. This study concludes that neither single nor double doses of breast milk were effective in relieving pain in neonates.

Valérie Biran, et al (2011), conducted a randomized, double-blind prospective study included infants younger than 37 weeks' gestational age during 1 routine venepuncture for blood sampling. Each child randomly received either sucrose plus application of a placebo cream (S group) or sucrose plus EMLA cream (S-E group) before venepuncture. Pain was assessed at 2 phases: during venepuncture (from needle introduction to its removal) and during the recovery period (30 seconds after needle removal). The study included 76 children (37 in the S group, 39 in the S-E group). Mean (SD) DAN pain scores for the S group and the S-E group were 7.7 (2.1) and 6.4 (2.5), respectively, during venepuncture and 7.1 (2.8) and 5.7 (3.3) during the post injection period. A significant time and treatment effect in favour of the S-E group was observed the combination of sucrose and EMLA cream revealed a

higher analgesic effect than sucrose alone during venepuncture in these preterm infants.

Jasmine Chen Gatti (2003), conducted a study on the effectiveness of oral sucrose solution in providing analgesia during painful procedures in neonates. The authors used standard methods as per the Neonatal Collaborative Review Group. RCTs in which term and/or preterm neonates (postnatal age, maximum of 28 days after reaching 40 weeks' corrected gestational age) received sucrose via oral syringe, nasogastric tube, dropper, or pacifier for procedural pain from heel lance or venepuncture. In the control group, water, pacifier, or positioning/containing was used. scores were significantly reduced in infants who were given sucrose (dose range, 0.012 g to 0.12 g) compared with the control group at 30 seconds (WMD, −1.64 [95 percent CI, −2.47, −0.81]; P = 0.0001) and at 60 seconds (WMD, −2.05 [95 percent CI, −3.08, −1.02]; P = 0.00010) after heel lance. There were no significant differences in infants given sucrose (dose range, 0.5 g to 0.6 g) compared with the control group at one minute (WMD, 0.90 [95 percent CI, −5.81, 7.61]; P = 0.8) and at three minutes (WMD, − 6. 20 [95 percent CI, −15.27, 2.88]; P = 0.18) after heel lance.

CHAPTER-III

METHODOLOGY

CHAPTER III

METHODOLOGY

This chapter deals with the methodological approach adopted for the study. The purpose of this study is to evaluate the effectiveness of oral sucrose solution in pain reduction among infants under going venepuncture.

It deals with the research approach, research design, setting, population, sample size, sampling technique, description of tool, validation of the instrument and its reliability, methods of data collection, pilot study and plan for statistical analysis.

Research approach

The research approach adopted for this study is quantitative approach.

Quantitative approach - manipulative and evaluative approach

Research design

The research design is the plan, structure and strategy of investigator to answer the research question. The research design provides an explicit blue print of how research activities will be carried out.

The research design chosen for this study is **Quasi Experimental Design** which includes,

M-Manipulation

C-Control

The design for the study is **post test only with control group design.**

The design was used to evaluate the effectiveness of oral sucrose solution in pain reduction among infants. It was achieved through the comparison of level of pain between the experimental and control group.

Schematic representation of the research design

A quasi experimental design which includes manipulation and control.

Table-3.1 schematic representation of the research design

Group	**Pre-assessment**	**Intervention**	**Post-assessment**
Experimental	----------	X	O1
Control	----------	----------	O1

Key:-

O1-Post test levels of pain.

X -Administration of 24% oral sucrose solution (2 ml).

Variables

Variables are the attribute of a person or object that varies and that is taken on different values.

Independent variable

It is the intervention or treatment that the investigator performs to see the resulting change in the dependent variable. The independent variable in this study refers to 24% oral sucrose solution.

Dependent variable

It is the presumed cause for the resulting effect on the dependent variable. The dependent variable in this study refers to the level of pain among infants.

Settings

The site selected for the study was the **Government Head Quarters Hospital, Erode.**

Population

All the infants undergoing Venepuncture procedure at the Government Head Quarters Hospital, Erode**.**

Sample

All the infants undergoing Venepuncture in the Pediatric ward at the Government Head Quarters Hospital, Erode.

Sample size

The sample used for this study was 40 infants. (Experimental group- 20, Control group-20)

Sampling technique

Sampling is the process of selecting a group of people to conduct the study. In this study, the infants were selected by using purposive sampling [non- probability] technique.

Criteria for sample selection

Inclusion criteria:

Infants with

- Age of 7 to 12 months of age
- Under going venepuncture procedure
- Both the sex
- Whose parents are giving consent to participate in the study

Exclusion criteria:

- Infants who are under nil-per oral.
- Infants who has recent history of glucose fructose intolerance
- Infants suffering from gastro enteritis and enterocolitis

Description of the instrument

The instrument was organized into two sections

Section I: Demographic Variables of the Infants.

It consists of the selected demographic variable like age, sex, weight, birth order & supporting person.

Section II: The FLACC Behavioral Pain Scale.

The FLACC behavioral scale consists of five behavioral cues like face, legs, activity, cry and consolability. The maximum score for each cue is 2 and the minimum score is 0. The total score for the scale is 10. The score interpretation is given below in the table.

Table 3.2 Score interpretation

Score	Level of pain
0	No pain
1 - 4	Mild pain
5 - 7	Moderate pain
8 - 10	Severe pain

VALIDATION OF THE INSTRUMENT

The content validity was obtained from five experts, of which three are from the nursing field and two from the medical specialist.

PILOT STUDY

Pilot study is the small scale version of trial run of the major study. Pilot study was conducted at the Erode Government Head Quarters Hospital, Erode, after getting formal permission from the Hospital Superintendent. 4 infants were selected for the pilot study by purposive sampling technique, of which 2 were grouped as experimental and 2 were grouped as control group. Pain perception was estimated after instillation of 24% oral sucrose solution followed by recording the scores on FLACC scale.

DATA COLLECTION PROCEDURE

After completion of the pilot study, a written permission was obtained from the Hospital Superintendent and Head of the Department [Pediatric Unit] for conducting the research study. Data collection was started by establishing good relationship with the hospital worker and the parents of the infants who were the participants of the study. The investigator had obtained individual informed consent from the parents of each infant who were included in the study. The information pertaining to the demographic data was collected. 24% oral sucrose solution was prepared manually by adding 24 gram ordinary sugar with 100 ml of distilled water. Data was collected in the Pediatric Ward. The 24% oral sucrose solution was instilled to 20 samples of the experimental group just before 30 seconds of venepuncture which was administered for about 2 minutes, whereas 20 samples of the control group was not instilled 24% oral sucrose solution. The pain perception of the experimental group and control group infants were obtained by using the FLACC Behavioral scale and compared with one another to evaluate the pain level over of 5 minutes. The recordings were made in the FLACC scale.

PLAN FOR STATISTICAL ANALYSIS

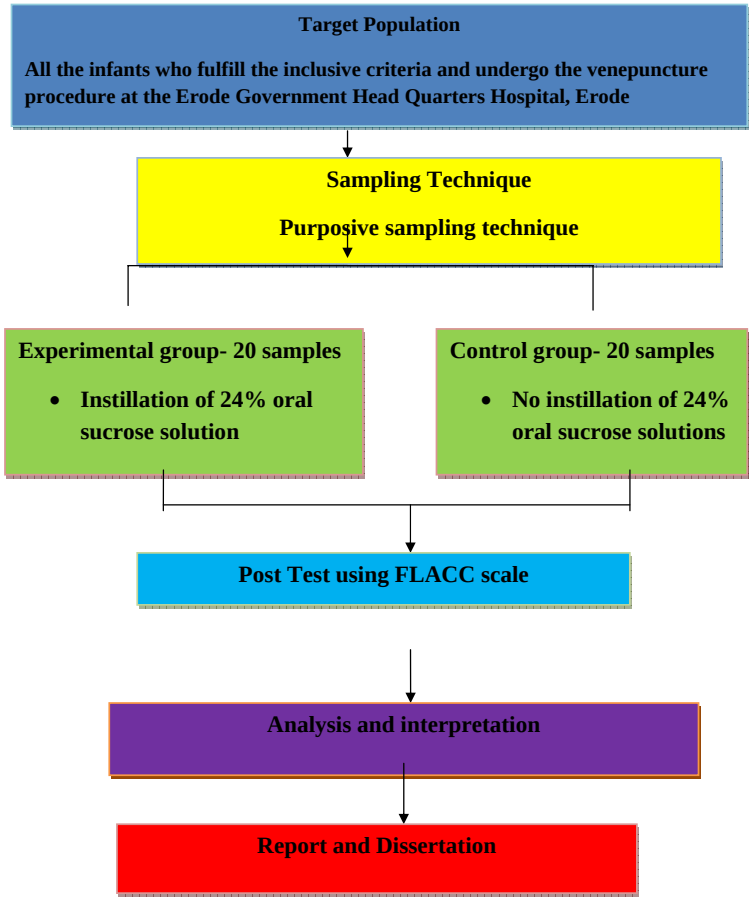
1. Description of sample characteristics of experimental & control group according to their demographic variables was analyzed by using frequency & percentage.

2. Level of pain during venepuncture among infants of experimental & control group after administration of 24% oral sucrose solution was analyzed by using frequency & percentage.

3. Determine the effectives of oral sucrose solution in reduction of pain among infants of experimental & control group undergoing venepuncture was analyzed by using mean, SD, unpaired‘t’ test & mean percentage.

4. Association between the post test scores during venepunture among infants of experimental & control group with their demographic variables was analyzed by using chi-square test.

(Fig 3.1).THE SCHEMATIC PRESENTATION OF RESEARCH DESIGN



CHAPTER IV

ANALYSIS AND INTERPRETATION

CHAPTER IV

ANALYSIS AND INTERPRETATION

Introduction

This chapter deals with the quantitative results of the effectiveness of 24% oral sucrose solution in reduction of pain among infants under going venepuncture at Government Head Quarters Hospital, Erode.

Kerlinger (1995) defines "analysis as the categorizing, ordering, manipulating and summarizing of data to obtain answers to research questions."

The results obtained were classified, tabulated and the following analysis was made to fulfill the objectives of the study.

Objectives of the study

1. To assess the level of pain during Venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode.
2. To evaluate the effectiveness of oral sucrose solution among infants under going painful procedure like Venepuncture in experimental and control group.
3. To find out the association between the selected demographic variables and the post test scores of the experimental and control group infants undergoing venepuncture.

Organization of the findings

Section 1:- Descriptive analysis of demographic variables

Section 2:- Evaluation of pain perception among infants of experimental and control group.

Section 3:- Association between the selected demographic variables with the level of pain in infants of experimental and control group.

Hypothesis

H1:- There is a significant level of pain during Venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode.

H2:- There is a significant effectiveness of oral sucrose solution among infants under going painful procedure like Venepuncture in experimental and control group.

H3:- There is a significant association between the selected demographic variables and the post test scores of the experimental and control group infants undergoing venepuncture.

Section I: Descriptive analysis of demographic variables

This section deals with the percentage distribution of the selected demographic variables in the experimental and control group of infants

Table 4.1 Showing Frequency and Percentage Distribution Of Samples According To Their Demographic Variables

S.no	Demographic variables	Experimental group		Control group	
		Frequency	Percentage	Frequency	Percentage
1.	**Age In Months**				
	7-8	8	40%	3	15%
	9-10	8	40%	5	25%
	11-12	4	20%	12	60%
2.	**Sex**				
	Male	8	40%	8	40%
	Female	12	60%	12	60%
3.	**Weight In Kgs**				
	Below 8 kgs	5	25%	2	10%
	9-10 kgs	10	50%	5	25%
	11-12 kgs	5	25%	11	55%
	above 12kgs	0	0%	2	10%
4.	**Birth Order**				
	First	8	40%	10	50%
	Second	11	55%	10	50%
	Third	1	5%	0	0%
5.	**Supporting persons**				
	Mother only	5	25%	9	45%
	Parents	14	70%	8	40%
	Others	1	5%	3	15%

According to the age of the infants, 40% of the infants are in the age group of 7-8 months, 40% of the infants are in the age group of 8-10 months and 20% of the infants are in the age group of 11-12 months. Thus it can be interpreted that the highest percentage of infants belongs to the age group of 7-8 months and 9-10 months with the percentage of 40% and 40% respectively in experimental group. (Fig **4.1)**

According to the sex of the infants 40% of them belong to male sex and 60% belong to female sex. It interprets that the highest percentage of infants belongs to female sex 60% in experimental group. (**Fig 4.2)**

According to the weight of the infants in experimental group 25% of them belongs to the weight of below 8 kgs, 50% of them belong to the weight ranging from 9-10 kgs and 25% of them are in the weight ranging from 11-12kgs. It interprets that the highest percentage of the infants belongs to the weight ranging from 9-10 kgs with the percentage of 50% in experimental group. (**Fig 4.3).**

According to the birth order of the infants in the experimental group, 40% of them represent first birth order, 55% of them represent second birth order and 5% of them represent third birth order. It represent that the highest percentage of infants belongs to second order with the percentage of 55% in experimental group. **(Fig 4.4).**

According to the presence of supporting persons of the infants in experimental group, 25% of them were supported by mothers, 70% of them were supported by both parents and 5% of them were supported by others. It interprets that the highest percentage of infants were supported by parents with the percentage of 70% in experimental group. (**Fig 4.5).**

According to the age of the infants 15% of the infants are in the age group of 7-8 months, 25% of the infants are in the age group of 8-10 months and 60% of the infants are in the age group of 11-12 months. Thus it can be interpreted that the highest percentage of infants belongs to the age group of 11 to 12 months with 60% in control group. **(Fig 4.6).**

According to the sex of the infants 40% of them belong to male sex and 60% belong to female sex. It interprets that the highest percentage of infants belongs to female sex with the percentage of 60% in experimental group. It interprets that the highest percentage of infants belongs to female sex 60% in control group. **(Fig 4.7).**

According to the weight of the infants in control group 10% of them belongs to the weight of below 8 kgs, 25% of them belong to the weight ranging from 9-10 kgs, 55% of them are in the weight ranging from 11-12kgs and 10% of them were with the weight of above 12 kgs. It interprets that the highest percentage of the infants belongs to the weight ranging from 9-10 kgs with the percentage of 25%. **(Fig 4.8).**

According to the birth order of the infants in the control group, 50% of them represent first birth order, 50% of them represent second birth order and non represent third birth order. It represent that the highest percentage of infants belongs to both first and second birth order with the percentage of 50% each. **(Fig 4.9).**

According to the presence of supporting persons of the infants in control group, 45% of them were supported by mothers, 40% of them were supported by parents and 15% of them were supported by others. It interprets that the highest percentage of infants were supported by mothers with the percentage of 45%. **(Fig 4.10).**

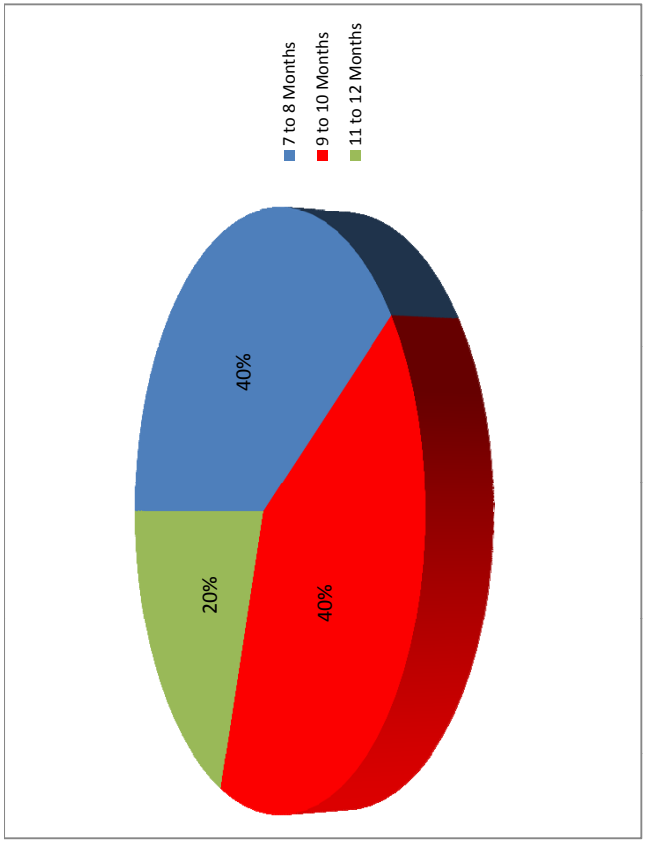


Fig 4.1 Pie diagram showing percentage distribution of infants according to their age in experimental group

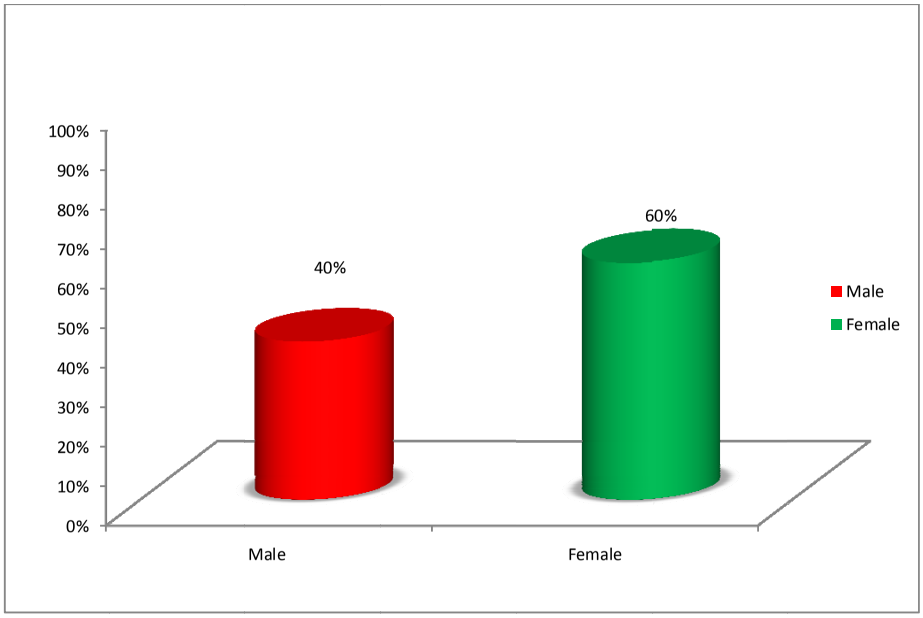


Fig. 4.2 Cylindrical bar diagram sowing percentage distribution of infants according to their sex in experimental group

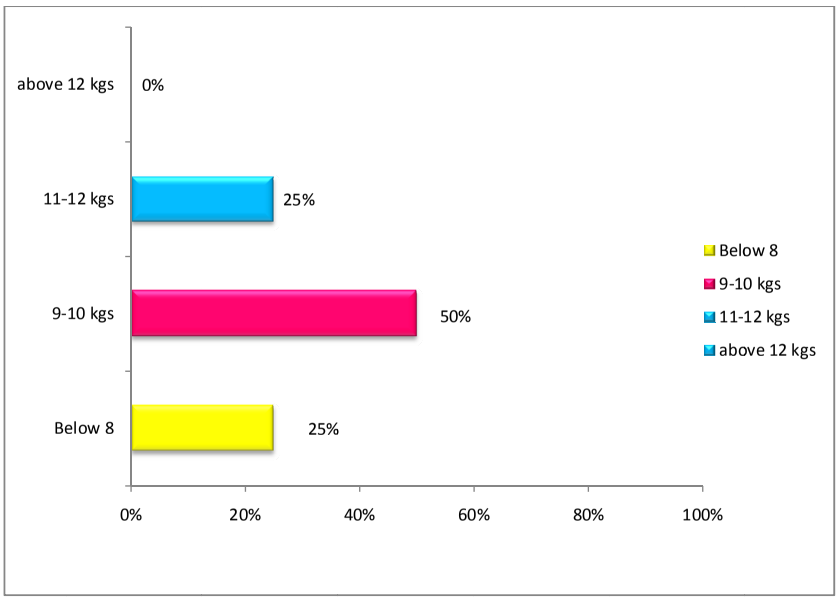


Fig 4.3 Bar diagram showing percentage distribution of infants according to their weight in experimental group

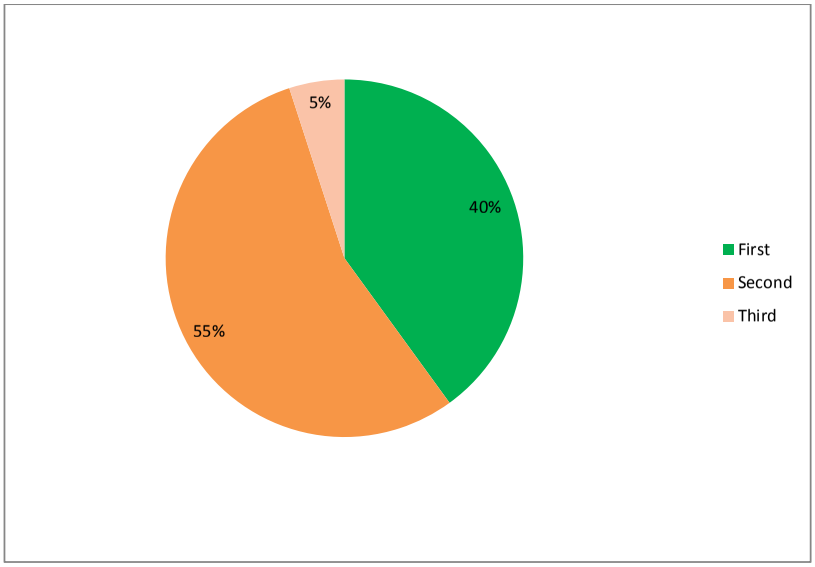


Fig 4.4 Pie diagram showing percentage distribution of infants according to their birth order in experimental group

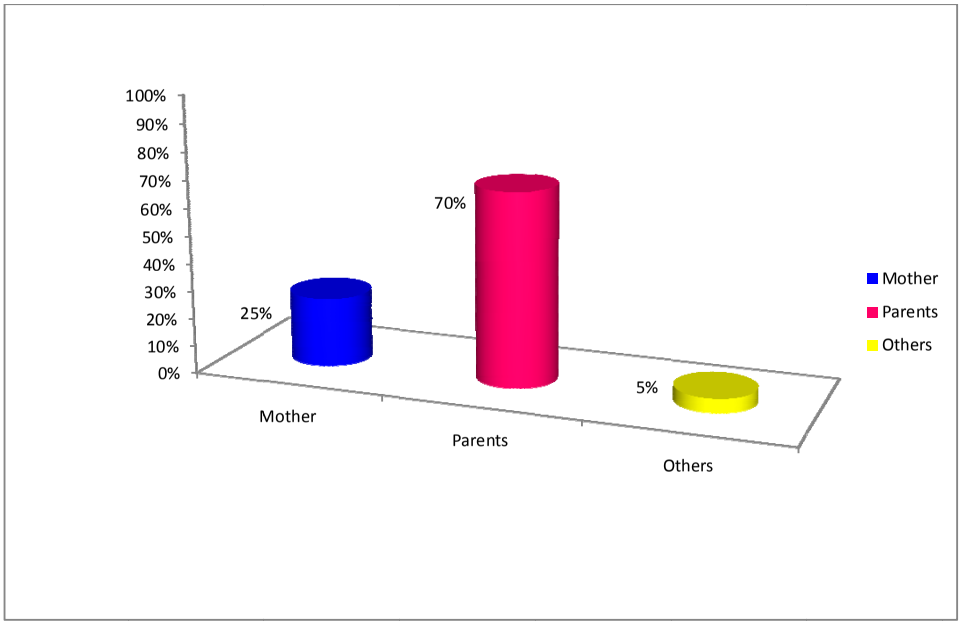


Fig 4.5 Cylindrical bar diagram showing percentage distribution of infants according to their supporting persons in experimental group

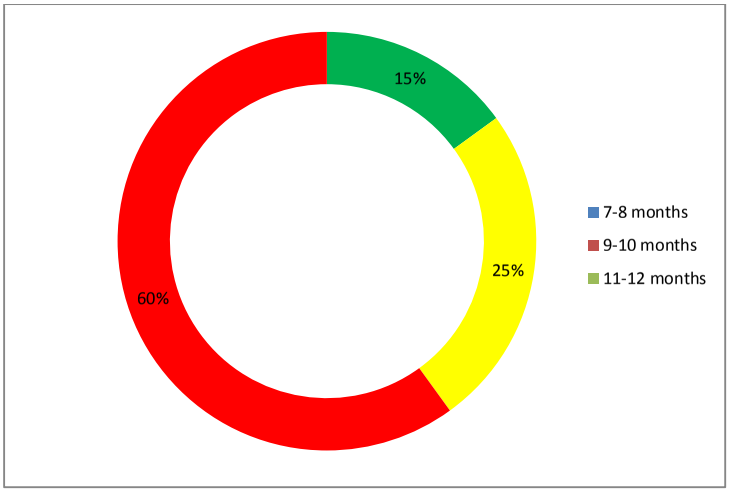


Fig 4.6 Doughnut diagram showing percentage distribution of infants according to their age in control group

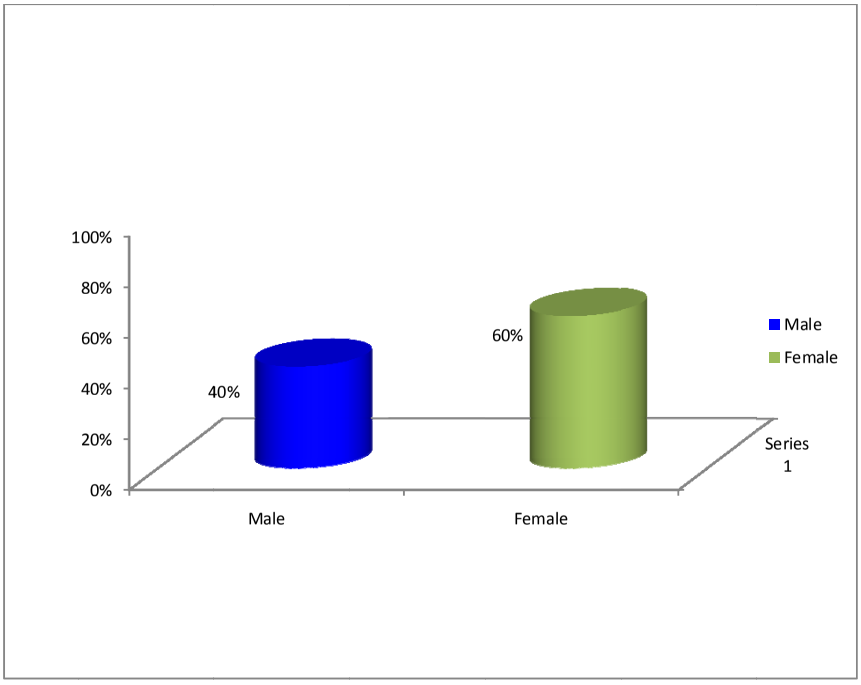


Fig 4.7 Bar diagram showing the percentage distribution of infants according to their sex in control group

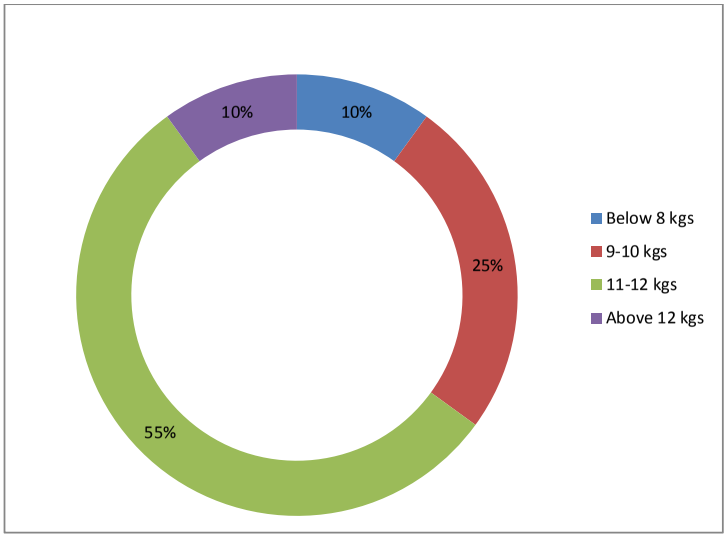


Fig 4.8 Doughnut diagram showing the percentage distribution of infants according to their weight in control group

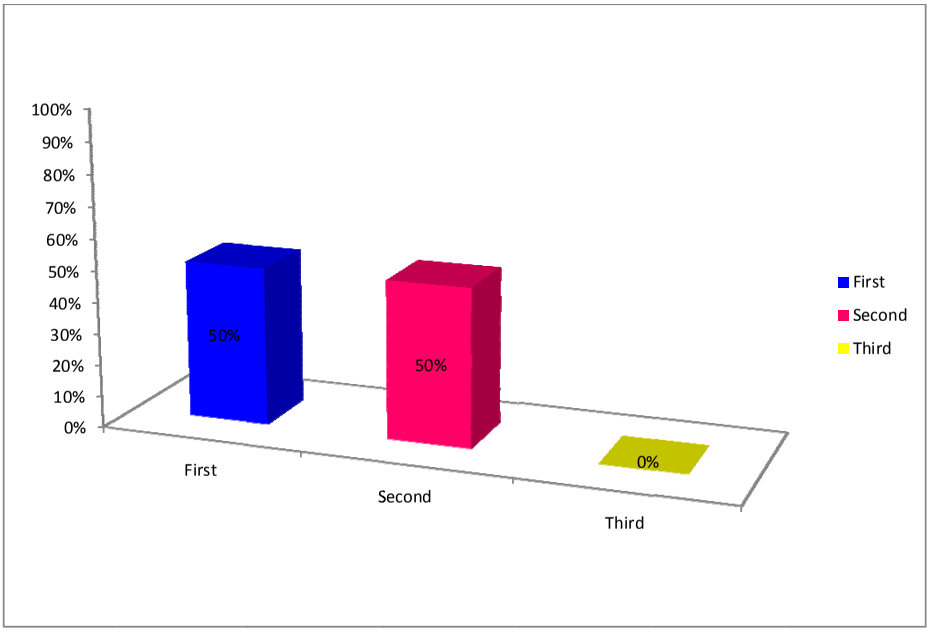


Fig 4.9Bar diagram showing the percentage distribution of infants according to their birth order in control group

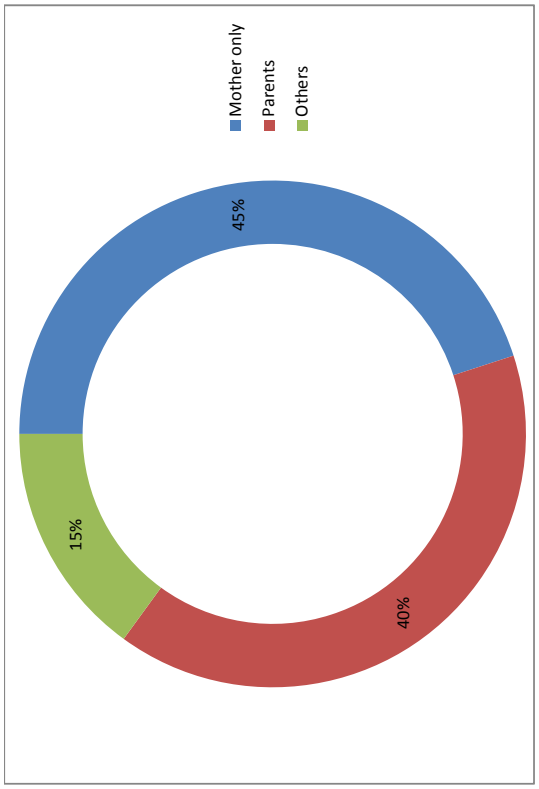


Fig 4.10 Doughnut diagram showing the percentage distribution of infants according to their supporting persons in control group

Section II

Evaluation of pain perception among infants of experimental and control group

This section deals with the evaluation of effectiveness of 24% oral sucrose solution among infants under going venepuncture. The qualitative data is converted into quantitative data, the average score was obtained with help of FLACC behavioral pain scale.

The data is presented on the table.

Table 4.2-Distribution of samples according to mean and standard deviation

Level of pain	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
No pain	0	0	0	0
Mild	0	0	0	0
Moderate	19	95%	0	0
Severe	1	5%	20	100%
Total	20	100%	20	100%

Based on the FLACC behavioral scale, 95% of infants suffered moderate level of pain and 5% suffered severe pain in the experimental group.**(Fig 4.11).**

According to the FLACC behavioral scale, 100% of infants of control group suffered severe pain. **(Fig 4.12).**

According to the behavioral cues, the unpaired‘t’ value was 16.66, the mean score of the experimental and control group was 6 and 9 respectively with mean difference is 3. It interprets that the pain perception among infants of the experimental group was less than the infants of the control group. **(Fig 4.13).**

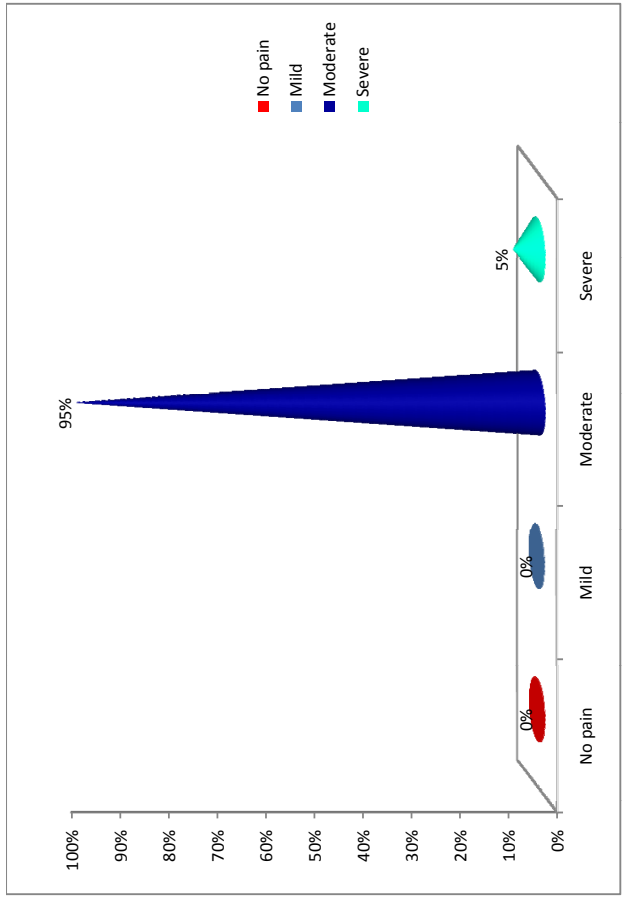


Fig 4.11 The pyramidal diagram showing the percentage distribution of level of pain among infants of experimental group

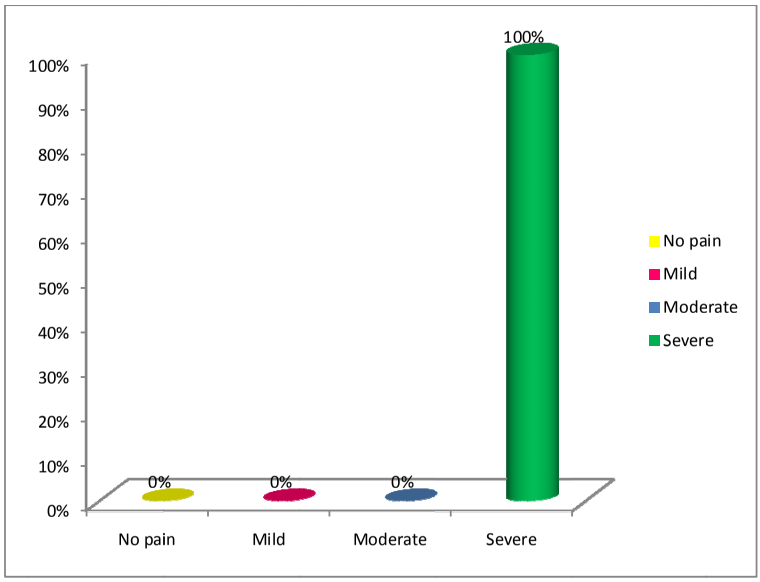


Fig 4.12 The cylindrical bar diagram showing percentage distribution of level of pain among infants of control group

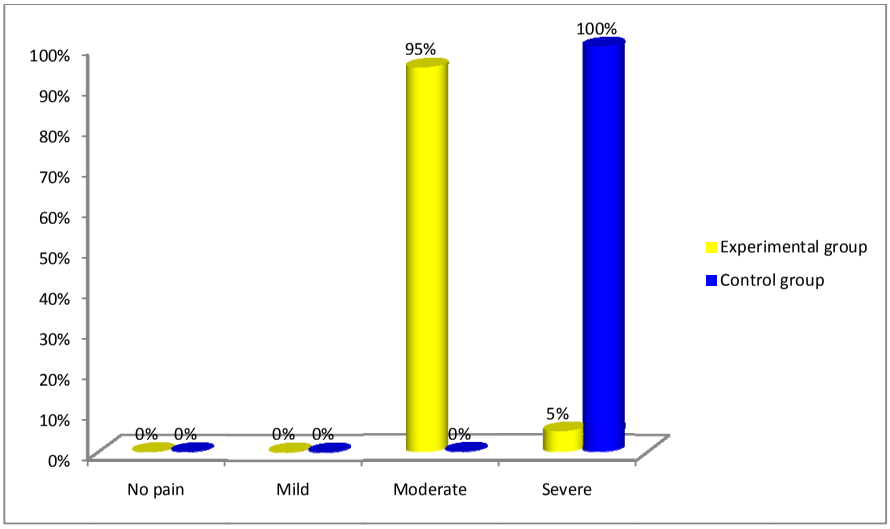


Fig 4.13 Multiple bar diagram showing comparison of the level of pain among the infants of experimental and control group

Table 4.3 showing the effectiveness of oral sucrose solution in pain reduction among infants of the experimental and control group

Purposively selected infant	**Mean**	**Standard deviation**	**Mean percentage**	**Difference in mean percentage**	**Unpaired 't' test**
Experimental group	6	±0.95	60%	30%	16.66 **(P<0.05)**
Control group	9	±0.83	90%		

In experimental group, the mean score was 6, SD was ±0.95. Whereas in control group, the mean score was 9, SD was ±0.83. The mean difference between both the groups was 3 with the mean percent of 30%. The unpaired value was 16.66, which shows a statistical significance with the p value <0.05. **(Fig 4.14).**

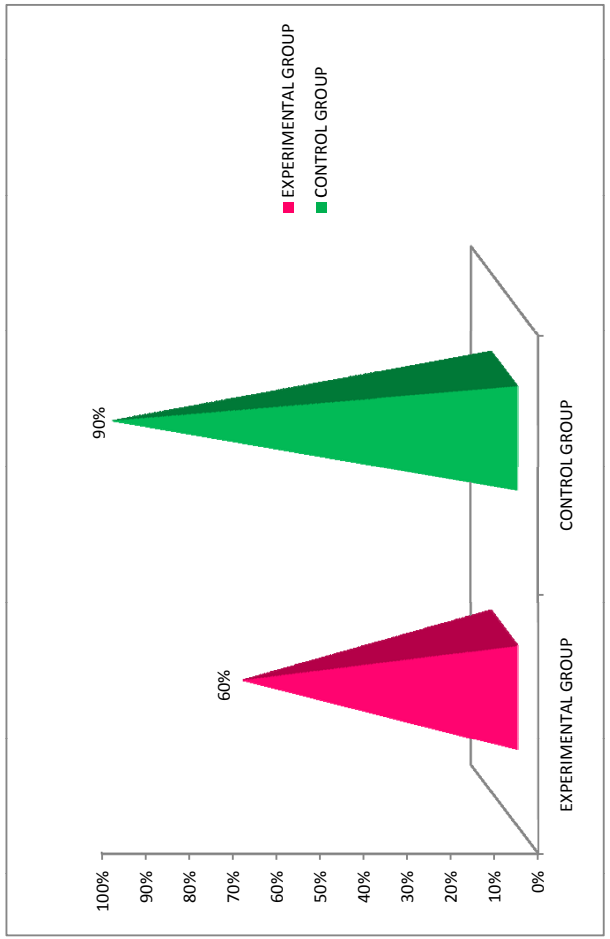


Fig 4.14 the pyramidal diagram showing the percentage distribution of pain perception among infants of experimental and control group

TABLE4.4 ASSOCIATIONS BETWEEN THE DEMOGRAPHIC VARIABLES WITH THE LEVEL OF PAIN AMONG INFANTS OF THE EXPERIMENTAL AND CONTROL GROUP UNDERGOING VENEPUNCTURE

	LEVEL OF PAIN										LEVEL OF PAIN											
	NO PAIN		MILD		MODERATE		SEVERE				NO PAIN		MILD		MODERATE		SEVERE					
	F	%	F	%	F	%	F	%			F	%	F	%	F	%	F	%				
AGE IN MONTHS																						
7-8	-	-	-	-	7	35%	1	5%	7.5		-	-	-	-	-	-	3	15%	1.04			
9-10	-	-	-	-	8	40%	-	-	P<0.05		-	-	-	-	-	-	5	25%	P>0.05			
11-12	-	-	-	-	4	20%	-	-	S		-	-	-	-	-	-	12	60%	NS			
SEX																						
Male	-	-	-	-	11	55%	-	-	0.6		-	-	-	-	-	-	8	40%	0.14			
Female	-	-	-	-	8	40%	1	5%	P>0.05		-	-	-	-	-	-	12	60%	P>0.05			
									NS										NS			
WEIGHT IN KGS																						
Below 8 kgs	-	-	-	-	4	20%	1	5%	0.27		-	-	-	-	-	-	2	10%	0.24			
9-10kgs	-	-	-	-	10	50%	-	-	P>0.05		-	-	-	-	-	-	5	25%	P>0.05			
11-12Kgs	-	-	-	-	5	25%	-	-	NS		-	-	-	-	-	-	11	55%	NS			
Above 12kgs	-	-	-	-	-	-	-	-			-	-	-	-	-	-	2	10%				
BIRHT ORDER																						
First	-	-	-	-	7	35%	1	5%	1.34		-	-	-	-	-	-	10	50%	0.17			
Second	-	-	-	-	11	55%	-	-	P>0.05		-	-	-	-	-	-	10	50%	P>0.05			
Third	-	-	-	-	1	5%	-	-	**NS**		-	-	-	-	-	-	-	-	**NS**			
SUPPORTING PERSONS																						
Mother only	-	-	-	-	7	35%	1	5%	0.48		-	-	-	-	-	-	9	45%	0.2			
Parents	-	-	-	-	14	70%	-	-			-	-	-	-	-	-	8	40%				
									P>0.05										P>0.05			
Others	-	-	-	-	1	5%	-	-	**NS**		-	-	-	-	-	-	3	15%	**NS**			

In experimental group, infants in the age group of 7 to 8 months perceived 35% moderate pain and 5% severe pain; infants in the age group of 9 to 10 months perceived 40% moderate pain and infants in the age group of 11 to 12 months perceived 20% moderate pain. The chi-square value was 7.5 which shows statistically significance with the p value <0.05. **(Fig 4.15).**

In experimental group, the male infants demonstrated 55% of moderate pain and 5% of severe pain; female infants demonstrated 40% of moderate pain. The chi-square value was 0.6 which shows statically non-significance with the p value >0.05. **(Fig 4.16).**

In experimental group, infants with the weight of below 8 kgs show 20% of moderate pain and 5% with severe pain; infants with the weight of 9 to 10 kgs shown 50% with moderate pain and infants with the weight of 11 to 12 kgs shown 25% with moderate pain. The chi-square value was 0.27 which shows statistically non-significance with the p value >0.05.**(Fig 4.17).**

In experimental group, infants those who were in first birth order show 35% with moderate pain and 5% with severe pain; infants in the second birth order shown 55% with moderate pain and infants in third birth order shown 5% with moderate pain. The chi-square value was 1.34 which shows statistically non-significance with the p value >0.05. **(Fig 4.18).**

In experimental group, the infants supported by mother only show 35% of moderate pain and 5% severe pain; the infants supported by parents perceived 55% with moderate pain and infants supported by others showed 5% with moderate pain. The chi-square value was 0.48 which was statistically non-significance with the p value >0.05.**(Fig 4.19).**

In control group, infants in the age group of 7 to 8 months perceived 35% moderate pain and 15% severe pain; infants in the age group of 9 to 10 months perceived 25% severe pain and infants in the age group of 11 to 12 months perceived 60% severe pain. The chi-square value was 1.04 which shows statistically non-significance with the p value >0.05. **(Fig 4.20).**

In control group, the male infants demonstrated 40% of severe pain; female infants demonstrated 60% of severe pain. The chi-square value was 0.14 which shows statically non-significance with the p value >0.05. **(Fig 4.21).**

In control group, infants with the weight of below 8 kgs show 10% of severe pain; infants with the weight of 9 to 10 kgs shown 25% with severe pain; infants with the weight of 11 to 12 kgs shown 55% with severe pain and infants with the weight of above 12 kgs shown 10% with severe pain. The chi-square value was 1.04 which shows statistically non-significance with the p value >0.05. **(Fig 4.22).**

In control group, infants those who were in first birth order show 50% with severe pain; infants in the second birth order shown 50% with severe pain and infants in third birth order showed no pain as there were no samples. The chi-square value was 1.34 which shows statistically non-significance with the p value >0.05.**(Fig 4.23)**

In control group, the infants supported by mother only show 45% with severe pain; the infants supported by parents perceived 40% with severe pain and infants supported by others showned 5% with severe pain. The chi-square value was 0.48 which was statistically non-significance with the p value >0.05. **(Fig4.24).**

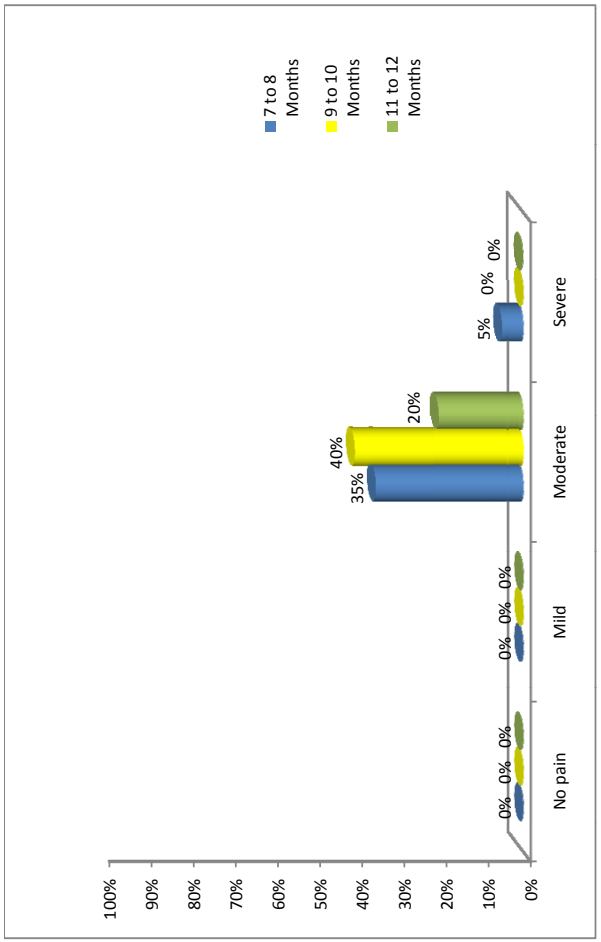


Fig 4.15 The multiple bar diagram showing the association of age of infants with the level of pain in experimental group

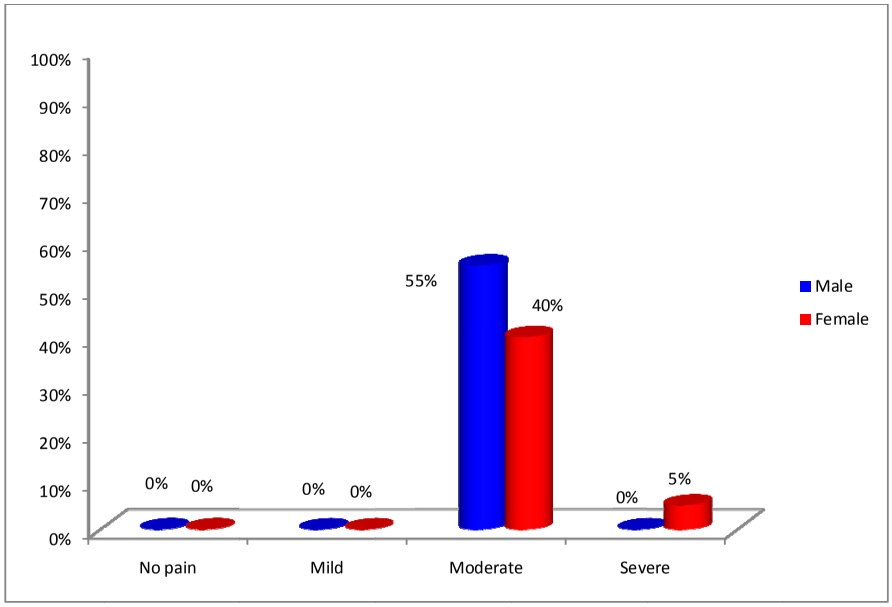


Fig 4.16 The cylindrical bar diagram showing the association between the sex and level of pain among infants in experimental group

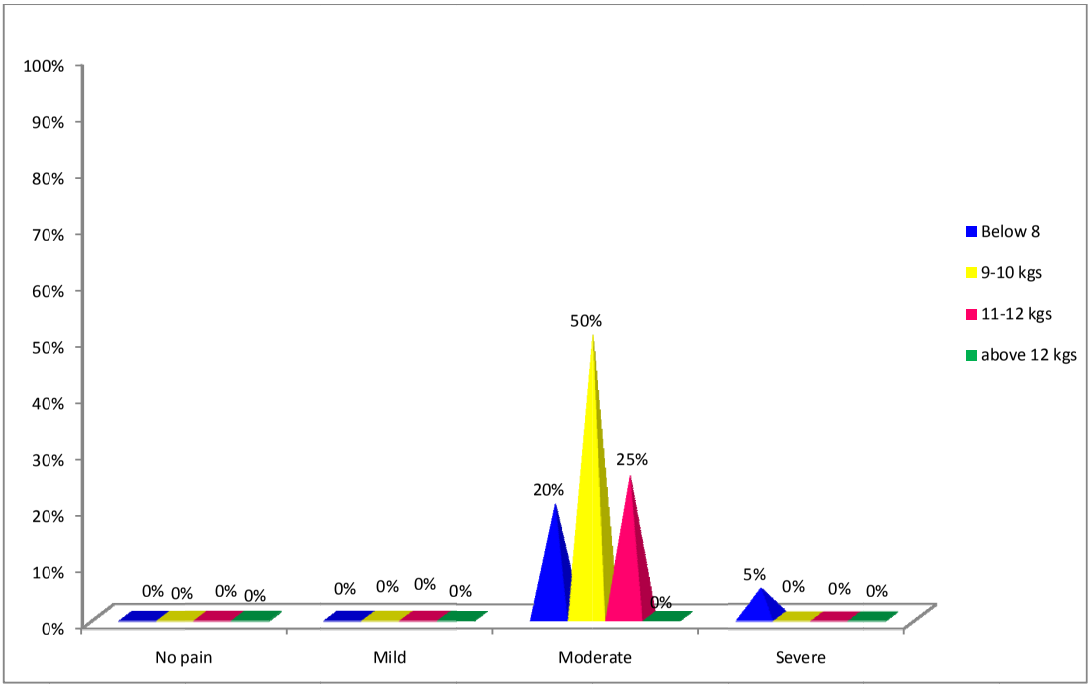


Fig 4.17 The cylindrical bar diagram showing association between the weight and level of pain of infants in experimental group

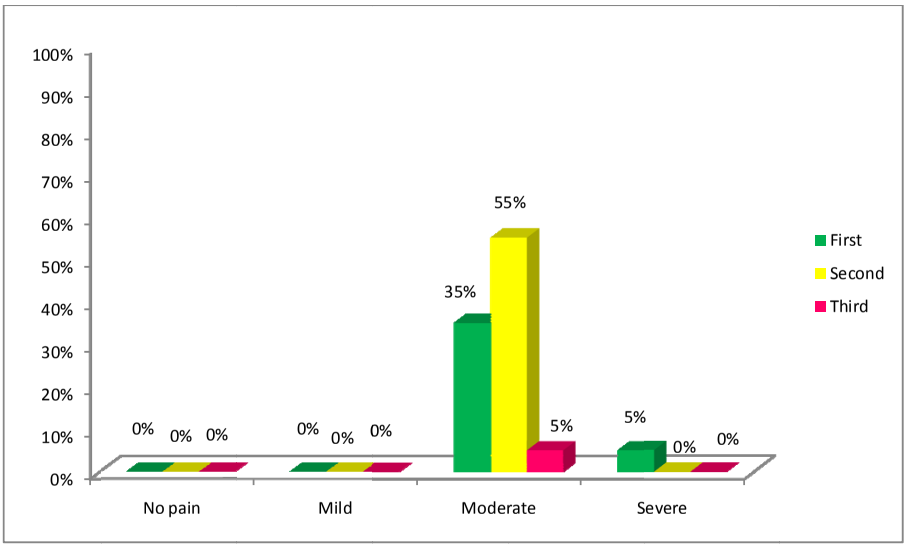


Fig 4.18 The multiple bar diagram showing association between birth order and level of pain among infants in experimental group

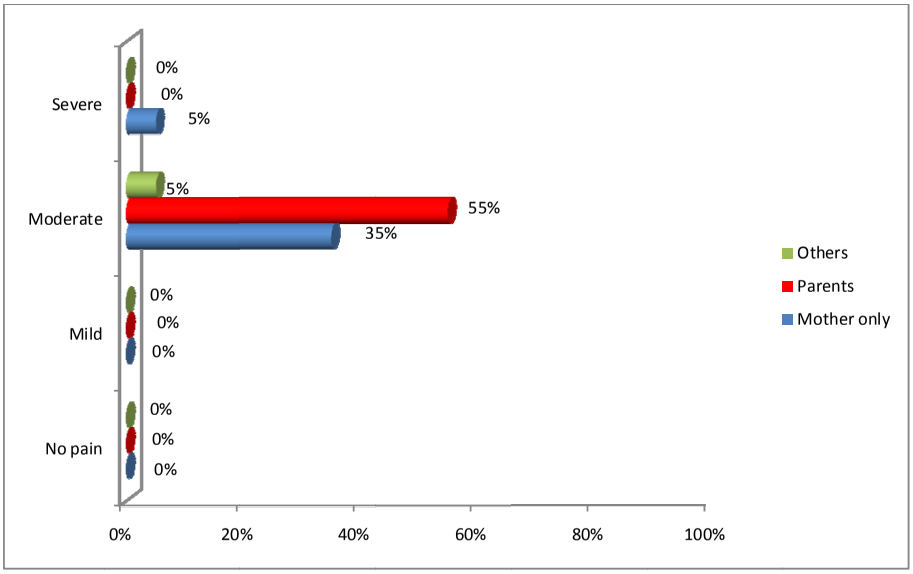


Fig 4.19 The cylindrical bar diagram showing association between the supporting persons and level of pain among infants in experimental group

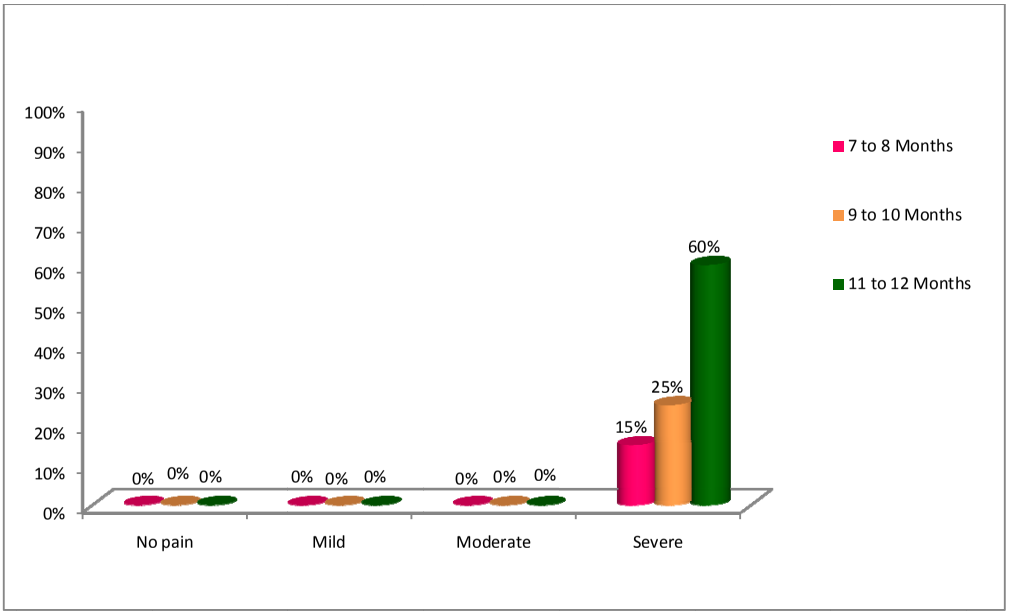


Fig 4.20 The pyramidal diagram showing association between age of infants and level of pain among infants of control group

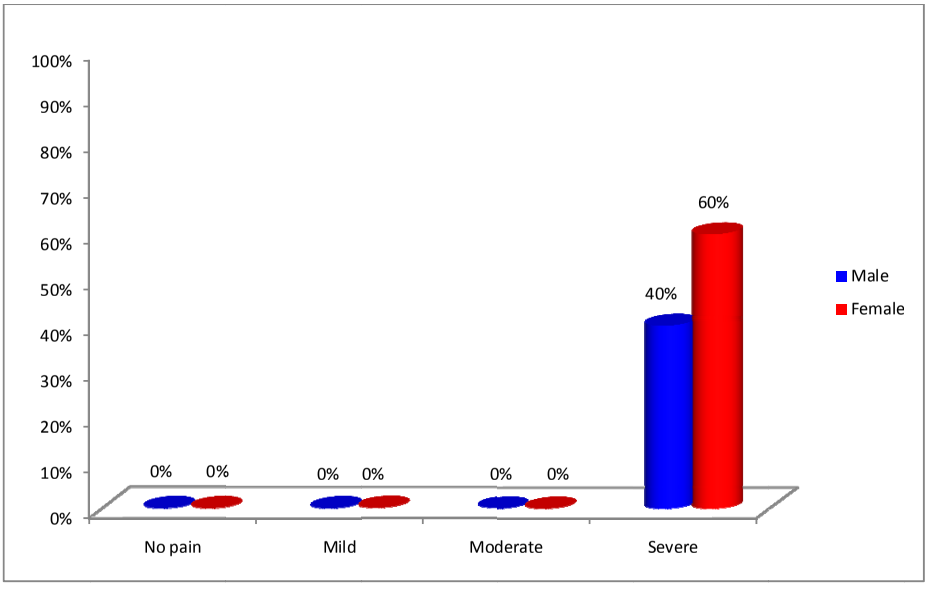


Fig 4.21 The cylindrical bar diagram showing association between sex of infants and level of pain in control group

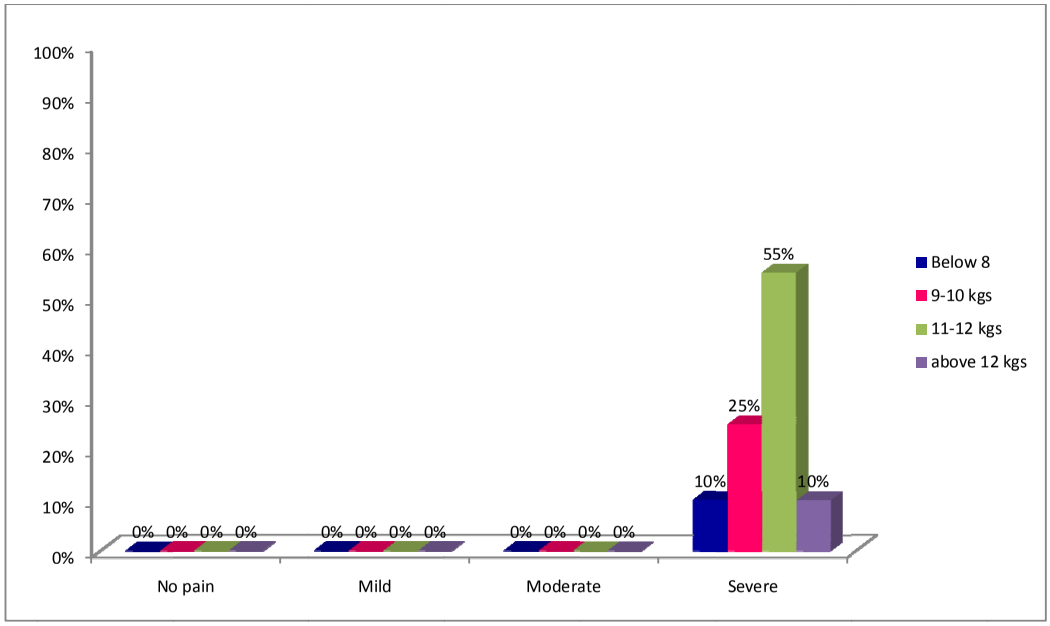


Fig 4.22 The multiple bar diagram showing association between the weight of infants and level of pain in control group

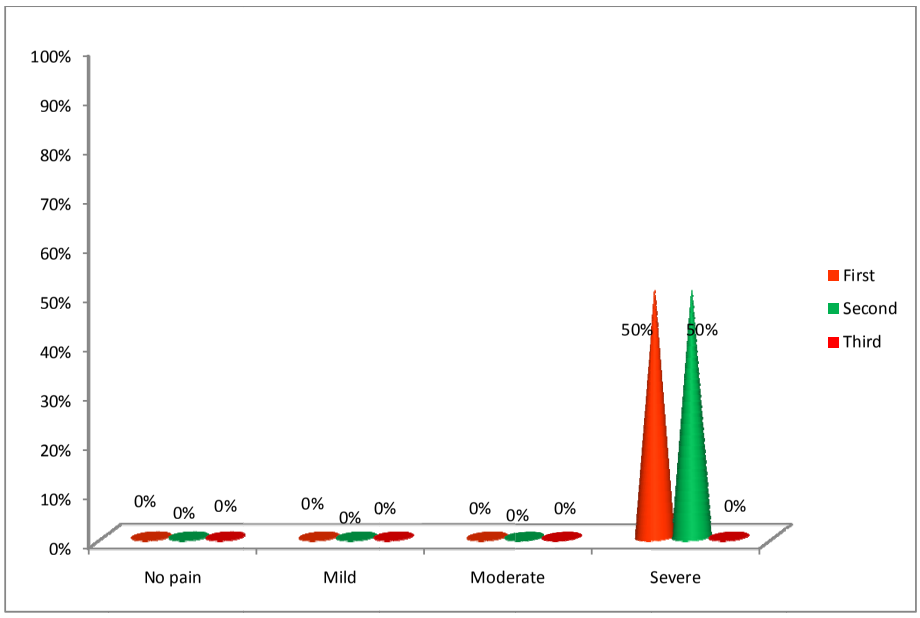


Fig 4.23 The pyramidal diagram showing association between birth order and level of pain in control group

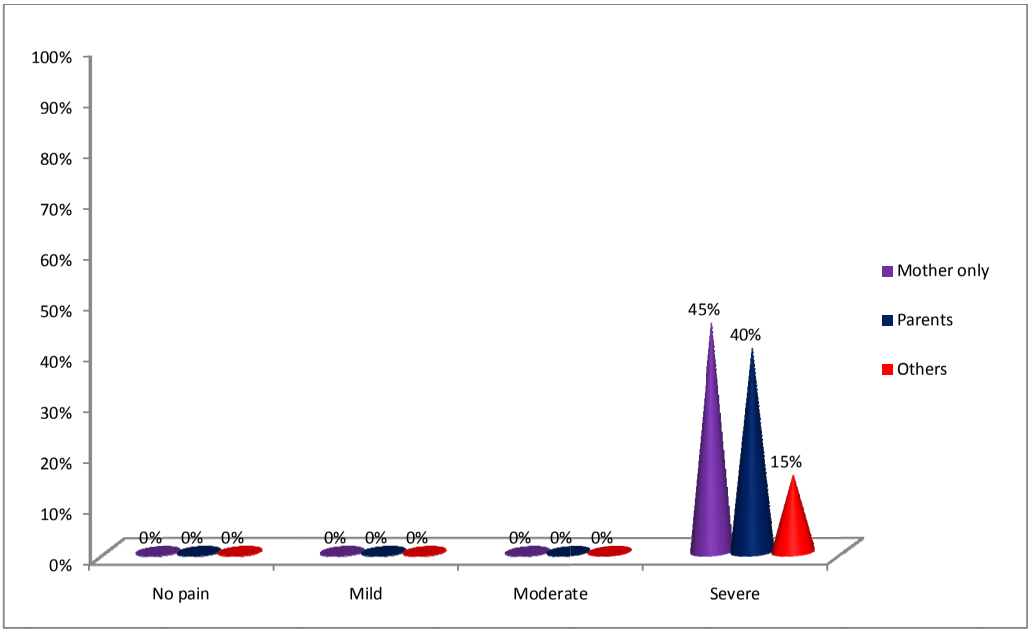


Fig 4.24 The pyramidal diagram showing association between supporting persons and level of pain in control group

This chapter dealt with the association of demographic variables with the level of pain among infants of experimental and control group.

The association shows significance only with the demographic variable, age of the infants with the chi-square value of 7.5 in experimental group. Thus the other demographic variables exhibited non-significance with the level of pain among infants of both experimental and control group which was statistically interpreted.

CHAPTER V

DISCUSSION

CHAPTER V

DISCUSSION

This chapter deals with the discussion which was based on the findings obtained from the statistical analysis and its relation to the objectives of the study, the conceptual frame work and the related literature.

This study was used to assess the effectiveness of oral sucrose solution in reduction of pain among infants under going painful procedure at Government Head Quarters Hospital, Erode.

The following were the objectives of this study.

OBJECTIVES:

1. To assess the level of pain during venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode. To assess the level of pain in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode.

2. To evaluate the effectiveness of oral sucrose solution among infants under going painful procedure like venepuncture in experimental and control group.

3. To find out the association between the selected demographic variables and the post test scores of the experimental and control group infants undergoing venepuncture

OBJECTIVES

1. **To assess the level of pain among infants during venepuncture of experimental and control group admitted at Government Head Quarters Hospital, Erode**.

   This was analyzed by using frequency and percentage and the result shows that,

- In the experimental group, 95% of infants had moderate level of pain perception and 5% of infants had severe level of pain perception based on the FLACC behavioral scale.
- In the control group 100% of infants had severe level of pain perception based on the FLACC behavioral scale.

Hypothesis

H1:- There is a significant level of pain during venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode. So this hypothesis was accepted.

2. **To evaluate the effectiveness of oral sucrose solution among infants under going venepuncture in experimental and control group.**

   This was analyzed by using mean, standard deviation, mean percentage and unpaired‘t’ test and the result shows that,

In experimental group

- Mean Post test score was 6.
- SD was ±0.95.
- Mean percent was 60%.

In control group

- Mean Post test score was 9.
- SD was ± 0.84.
- Mean percent was 90%
- The mean difference was 30%.
- **The unpaired‘t’ test value was 16.66, (P<0.05, significant).**

Hypothesis

H2:- There is a significant effectiveness of oral sucrose solution among infants under going painful procedure like venepuncture in experimental and control group. hence this hypothesis was accepted.

3. **Association between the selected demographic variables and the post test scores of experimental and control group infants undergoing venepuncture.**

   This was analyzed by using chi-square test and the result shows that,

Experimental group

- ❖ Chi square value for age of the infants was 7.5 (p<0.05)
- ❖ Chi square value for sex of the infants was 0.6 (p>0.05)
- ❖ Chi square value for weight of the infants was 0.27 (p>0.05)

- Chi square value for birth order of the infants was 1.34 (p>0.05)
- Chi square value for supporting persons with infants of was 0.48 (p>0.05).

It reveals that there was a significant association between the demographic variable, age and post test scores among infants of experimental group (p<0.05); whereas the other demographic variables like sex, weight, birth order and supporting persons shows non significance with the post test scores,(p>0.05).

Control group

- Chi square value for age of the infants was 1.04(p>0.05)
- Chi square value for sex of the infants was 0.14(p>0.05)
- Chi square value for weight of the infants was 0.24(p>0.05)
- Chi square value for birth order of the infants was 0.17(p>0.05)
- Chi square value for supporting persons with infants was 0.2(p>0.05)

It reveals that there was no significant association found between the post test scores of control group when compared to age, sex, birth order, weight and supporting persons, (p>0.05).

Hypothesis

H3:- There is no significant association between the selected demographic variables and the post test scores of the experimental and control group infants. Hence the hypothesis is rejected.

CHAPTER VI

SUMMARY,CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS.

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study, its findings, conclusion and the implications for nursing administration, nursing practice, nursing education and nursing research. This study has been started with a few limitations and ends with suggestions and recommendations for research in future.

Summary

Venepuncture is one of the commonest procedures under gone by the hospitalized children. It is usually associated with pain. 24% oral sucrose solution is effective in reducing procedural pain. Hence the investigator studied the "effectiveness of oral sucrose solution in reduction of pain among infants admitted at the Government head Quarters Hospital, Erode".

Objectives:

1. To assess the level of pain during venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode. To assess the level of pain in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode.

2. To evaluate the effectiveness of oral sucrose solution among infants under going painful procedure like venepuncture in experimental and control group.

3. To find out the association between the selected demographic variables and the post test scores of the experimental and control group infants undergoing venepuncture.

Hypotheses

Researchers formulated and tested the following research hypotheses,

H1:- There is a significant level of pain during venepuncture in experimental and control group infants admitted in the Government Head Quarters Hospital, Erode.

H2:- There is a significant effectiveness of oral sucrose solution among infants under going painful procedure like venepuncture in experimental and control group.

H3:- There is a significant association between the selected demographic variables and the post test scores of the experimental and control group infants undergoing Venepuncture

The review of literature on related studies helped the investigator to design the methodology, conceptual frame work and find out the tool. The literature reviews for the present study were presented under the following headings.

i. Studies related to pain perception among infant.

ii. Studies related to non pharmacological measures for pain

iii. Studies related to effectiveness of sucrose solution on pain among infants undergoing Venepuncture.

The conceptual framework adopted for the study was "Kathryn Barnard Parent/Caregiver-Child interaction model". The research approach used for this study

was manipulative and evaluative approach which was a quasi experimental design. Settings chosen for the study was the Government Head Quarters Hospital, Erode.

Non-probability sampling technique was used to select the samples. 40 samples were selected of which 20 infants were grouped as experimental group and 20 infants were grouped as control group. The FLACC behavioral scale was used to assess the level of pain.

The content validity was obtained from experts like Pediatrician and nursing experts. The standardized tool was used for data collection. The reliability for the tool was $\mathbf{r^1}$= 0.95.

The main study was conducted at the Government Head Quarters Hospital, Erode. The samples were selected by using purposive sampling technique among the infants who fulfill the sampling criteria. 24% oral sucrose solution was given to the infants of experimental group. Data was gathered through the FLACC behavioral scale. The data gathered were analyzed by descriptive and inferential statistical method and interpretation was made based on the objectives of the study.

Findings

The major findings of the study were presented under the following headings.

I. Findings related to description of sample characteristics of experimental group and control group according to their demographic variables.

In experimental group,

- Most (40%) of the infants were in the age group of 7 to 8 months and 9 to 10 months.
- Majority (60%) of the infants were females.
- Half (55%) of the infants were with the weight of 11 to 12 kgs.
- Most (55%) of the infants represented second birth order.
- Majority (70%) of the infants were supported by parents.

In control group,

- Most (60%) of the infants were in the age group of 11 to 12 months.
- Majority (60%) of the infants were females.
- Most (25%) of the infants were with the weight of 9 to 10 kgs.
- Most (45%) of them represented first and second birth order.
- Most (45%) represented the infants supported by mothers.

II. Findings related to the level of pain during Venepuncture among infants of experimental group and control group after administration of oral sucrose solution.

- **In experimental group,**
  - In post test score 95% of infants had moderate pain and 5% infants had severe pain.
- **In control group,**
  - In post test score 100% of infants had severe pain.

III. Findings related to determine the effectiveness of oral sucrose solution in reduction of pain among infants of experimental group and control group undergoing venepuncture.

The effectiveness of oral sucrose solution was tested by using mean, standard deviation, mean percentage and unpaired 't' test. The findings shows that,

In experimental group

- Mean Post test score was 6.
- SD was ±0.95.
- Mean percent was 60%.

In control group

- Mean Post test score was 9.
- SD was ± 0.84.
- Mean percent was 90%
- The mean difference was 30%.
- The unpaired't' test value was 16.66, (P<0.05, significant).

IV. Findings related to the association between post test scores during Venepuncture infants of experimental group and control group with their demographic variables.

Chi-square was calculated to analyze the association between posttest scores of infants among experimental group and control group with their demographic variables. The results shows that, Chi-square value for age of the infants was 7.5, for sex 0.6, for weight 0.27, for birth order 1.34 and for supporting persons 0.48 in

experimental group whereas in control group, age of the infants was 1.04, sex was 0.14, weight was 0.24, birth order was 0.17 and supporting persons was 0.2.

CONCLUSION

From the findings of the study it can be concluded that,

- Highest percentages (40%) were in the age group of 7 to 8 months and 9 to 10 months in experimental group, 60% infants were in the age group of 11 to 12 months, 60% were females in both experimental and control group, 55% infants were with the weight of 11 to 12 kgs in experimental group and 25% with 9 to 10 kgs in control group, 55% were in second birth order in experimental group and 45% were in first and second birth order in control group, 70% were supported by parents in experimental group and 45% were supported by mothers in control group.
- 24% oral sucrose solution was highly effective on infants under going venepuncture in experimental group.
- There is significant association found between the demographic variables such as age of experimental group and pain perception (p<0.05), and the other demographic variables like sex, weight, birth order and supporting persons was found to be non significance. In control group, there was no association between the demographic variables and pain perception of infants.

IMPLICATIONS FOR NURSING

The findings of the study have implication in Nursing services, Nursing Education, Nursing administration and Nursing research.

NURSING ADMINISTRATION

- A protocol for using 24%oral sucrose solution can be prepared by each organization and used by the absence of physician's order.

NURSING EDUCATION

- The non pharmacological pain management measures can be included in nursing curriculum, as they play a vital role in baby care.
- In service education and continuing nursing education can be provided to the nurses working in pediatric unit and neonatal unit.
- Conferences, workshops, symposium and seminars can be held for all health professionals regarding the non pharmacological pain management measures.

NURSING PRACTICE

- The health professionals can use the non pharmacological pain management measures to alleviate pain of neonates and infants undergoing venepuncture procedure without physicians order.

NURSING RESEARCH

Continuing research on certain non pharmacological pain management measures to alleviate pain. The findings of the research can be used as the evidence based practice by the nursing professionals.

RECOMMENDATIONS

- Instillation of 24% oral sucrose solution can be used as a routine nursing care activity prior to venepuncture procedure and it can be considered as evidence based practice.
- As a similar study on various age groups of children can be done
- A comparative study can be done between instillation of 24% oral sucrose solution and other non pharmacological pain management measures.
- Studies on the effectiveness of other non pharmacological pain management measures can be conducted.
- This similar study can be done to compare the effect of oral sucrose solution in babies of both sex.
- This study can be recommended to government to include oral sucrose solution as pain management measure in health sector.

SUMMARY

This chapter as dealt with the summary of the study, major findings, conclusions, implications of the study in nursing field and recommendations for future.

BIBLIOGRAPHY

BIBLIOGRAPHY

BOOKS

1. B.T. Basavanthappa, **"Medical Surgical Nursing"**, (2009), Jaypee publishers India, 2nd edition, Pp- 76 to 91.
2. Brunner and Suddarth's, "**Text Book Of Medical Surgical Nursing"**, (2004), Lippincot William and Wilkins, 10th edition, Pp-218 to 241.
3. Lippincot, **"Manual Of Nursing Practice"**, (2006), Jaypee Brothers Medical Publishers (P) Ltd, 8th edition, Pp-156 to 158.
4. Patricia. A. Potter et al, **"Basic Nursing Theory and Practice"**, (1995) Mosby publication, India, 8th edition, Pp-255 to 256.
5. Polit. D.F. Hungler Bp, **"Essentials Of Nursing Research"**, (1999), JB Lippincot company, Philadelphia, 16th edition, Pp- 40 to 43.
6. Potter and Perry, **"Clinical Nursing Skills And Techniques"**, (1990),The C.V. Mosby Company, 2nd edition, Pp-89 to 92.
7. Sharma R.N, **"Methodology Of Education Research"**, (1993), Surjeet Publication, 1st edition, Pp- 253 to 258.
8. Sundar Rao P.S, Richard.J, "**An Introduction To Biostatistics"**,(1999), Elsevier Publication, 3rd edition, Pp- 78 to 79.
9. Teri Kyle, **"Essentials Of Pediatric Nursing"**, (2009), Wolters Kluver Pvt Ltd, 1st edition, Pp- 379 to 400.
10. Wong's,**"Nursing Care Of Infants And Children"**,(2011), Elsevier Publication, 4th edition, Pp-194 to 198.

JOURNALS

1. Anand Kuajn Sharma, **"Effectiveness Of 24% Orla Sucrose Solution on Pain Reduction"**, Indian Journal of Pediatrics, May 2008, Volume 76, p-5.
2. Braz. J.Med, **"Pain Among Pediatrics"**, Brazilian Journal of Medical and Biological Research, Dec 2012, Volume 54.
3. Bop Philip, **"Efficacy Of Oral Sucrose Solution On Pain"**, Journal of Pediatric Nursing, 2006.
4. Denise Margaret Harrison, **"The Myths Of Sucrose"**, Journal of Neonatal Nursing, April 2008, Volume 14, p-39 to 46.
5. Gray et al., **"Effectiveness of Skin Contact on Pain Reduction"**, Post graduate Medical Journal, Volume 79.
6. Stevens et al., **"Efficacy of Non-Pharmacological Interventions On Pain"**, Journal of Pediatric Nursing, Volume 44(3), p- 216 to 220.
7. M. Yannia Pepino and Julie. A. Mennela Ph.D, **"Sucrose Induced Analgesia"**, Journal of association of Care of Children Health, Volume 9, p- 108 to 113.
8. Sinho et al., **"Analgesia Effect Of Oral Sucrose Solution For Pain Relief In Infants"**, Journal of Consulting Psychology, 2007, Volume 42, p-220 to 223.
9. Taddio oblosson and oblosson, **"Sweet Sucrose Taste Induces Analgesia"**, The Johns Hopkins Medical Journal, Volume 131.
10. Subhashini FL, Vasa M, Lodha R. **"Comparison Of Two Pain Scales In Indian Children"**, Indian journal of pediatrics. 2008Sep; 75(7): p23-6.

11. Reyes S. Nurses perception of assessment of infant's pain. BMC Pediatr. 2003Apr; 34(8): p38-42.
12. McCullough S, Halton T, Mowbray D, Macfarlane, **"Lingual Sucrose Reduces The Pain Response To Naso Gastric Tube Insertion"**: a randomised clinical trial. Arch dis Child field neonatal ed. 2008Mar; 93(2): p100-03.
13. Curtis SJ, Jou H, Ali S, Vandermeer B, Klassen T. **"A randomized controlled trial Of sucrose or pacifier as analgesia for infants receiving venepuncture"**. BMC Pediatr. 2007Jul; 18(7): p 27.
14. Sajedi F, Kashaninia Z, Rahgozar M, Radrazm L. **"The efficacy of oral glucose for relieving pain following intramuscular injection in term neonates"**. Acta medica iranica. 2006 May; 44(5): p317.
15. Kar SKNatu SA, Daga SR**. "Sucrose for the Relief of Pain Associated With Immunization Injections in Infants"**. Indian journal of pediatrics. 2008Apr; 23(7): p25-9.
16. Hatfield LA, Gusic ME, Dyer AM. **"Analgesic Properties of Oral Glucose During Routine Immunizations at 2 To 4 Months of Age".** Pediatrics. 2008 Feb; 121(2): p 327 -34.
17. Thyr M, Sundholm, Teeland L, Rahm VA. **"Oral Glucose As An AnalgesiC To Reduce Infant Distress Following Immunization At The Age Of 3,5 And 12 Months"**. Foundation acta pediatrica. 2007Mar; 96: p233 – 36.
18. Mohammadn Hasan Sahebihagh, Mina Hosseinzadeh,Asghar Mohammad pourasl, Ahmad Kosh**a,**(2011)**,"The effect of breastfeeding**, **oral**

sucrose and combination of oral sucrose and breastfeeding in infant's pain relief during vaccination" ,16(1): 1-7 .

19. Cebeci D, Bilgen H, Ozek E, Ozdogan T, Akman I,(2010), **"Comparison of two doses of breast milk and sucrose during neonatal heel prick. Pediatric Int",** Apr; 52(2):175-9.
20. Shah PS, Aliwalas L, Shah V (2007)**,"Breast feeding or breast milk to alleviate procedural pain in neonates: systematic review",** Breastfeed Med. June**,**2(2):74-82**.**
21. Ambika Gnanam Chidambaram, S. Manjula, B. Adhisivam, and B. Vishnu Bhatt (2014) **" Effect of Kangaroo mother care in reducing pain due to heel prick among preterm neonates"**, a cross over trial, march 2014, vol 27, no 5, p: 488- 490

WEBSITE

www.wikipedia.com

www.google.com

www.rediff.com

www.cochrane.com

www.pubmet.com

ANNEXURES

Letter seeking permission to conduct pilot study

From

Julyet Vidhya. M, M.Sc(N) II year,

Sresakthimayeil Institute of Nursing and Research,

Natrajapuram, NH-544 (Salem to Coimbatore),

Komarapalayam, Namakkal(Dt)

To

The Chief Medical officer

Government Head Quarters Hospital,

Erode

Through

The Principal

Sresakthimayeil Institute of Nursing and Research,

Natrajapuram, NH-544 (Salem to Coimbatore),

Komarapalayam, Namakkal (Dt)

Respected Sir/Madam,

SUB: Permission to conduct pilot study – Reg.

I am II year M.Sc (N) student of Sresakthimayeil Institute of nursing and Research. As a partial fulfillment of Master of Science in Nursing, I have under taken the following research study, which has to be submitted to The Tamilnadu Dr.M.G.R. Medical University, Chennai.

The statement of the problem is "**Effectiveness of Oral Sucrose solution in reduction of pain among infants under going painful procedure at Government Head Quarters Hospital, Erode".**

I kindly request you to permit me to conduct the proposed pilot study and provide necessary facilities for the study. Please do the needful.

Thanking You

Date: Yours sincerely

Place:

LETTER SEEKING PERMISSION TO CONDUCT STUDY

From

M. Julyet Vidhya
M.Sc Nursing II year, Sresakthimayeil institute of nursing and research,
Natrajapuram,NH-544 (Salem to Coimbatore)
Komarapalayam,Namakkal(Dist)

To

The Medical Superintendent
Government Head Quarters Hospital,
Erode.

Through

The Principal
Sresakthimayeil Institute Of Nursing And Rrsearch,
Natrajapuram,NH-544 (Salem to Coimbatore)
Komarapalayam,Namakkal(Dist)

Respected Sir,

Sub: Permission to conduct study in ERODE GOVERNMENT HOSPITAL – Reg.

*** ** ***

I Mrs.Julyet Vidhya.M,II year M.Sc (Nursing) student of Sresakthimayeil institute of nursing and research, Komarapalayam as a partial fulfillment of master of science in nursing have undertaken the following study for my dissertation which has to be submitted to THE Dr. M.G.R Medical University, Chennai.

The statement of the problem for my study is **"EFFECTIVENESS OF ORAL SUCROSE SOLUTION IN REDUCTION OF PAIN AMONG INFANTS UNDER GOING PAINFUL PROCEDURE AT GOVERNMENT HOSPITAL, ERODE.**

I am in need of your help and co-operation to conduct study among infants in your esteemed hospital. I kindly request you to permit me to collect data from your hospital and allow me to utilize the needed facilities.

I assure you that my study will not affect the routine work of the hospital in any way nor would it harm study patients .Kindly do the needful.

Thanking you,

Date : 12/02/2014
Place: KOMARAPALAYAM.

Yours faithfully,

PRINCIPAL
SRESAKTHIMAYEIL INSTITUTE OF
NURSING AND RESEARCH
KOMARAPALAYAM - 638 183.

LETTER REQUESTING OPINION AND SUGGESSTIONS OF EXPERTS FOR CONTENT VALIDITY TOOL

From

II year M.Sc (N) (Child Health Nursing),
Sre sakthimayeil institute of nursing and Research ,
(J.K.K.Nattaraja Educational Institutions),
Kumarapalayam,Namakkal (dt).

To

Through: The Principal

Respected Sir/Madam,

SUB: Content Validity – Requesting – valuable opinion & suggestions regarding

I am final year M.Sc (N) student of Sre sakthimayeil institute of nursing and Research (J.K.K.Nattaraja Educational Institutions),komarapalayam. In partial fulfillment of M.Sc (N) programme , I have selected the topic mentioned below for the research project which has to be submitted to the Tamil Nadu Dr.M.G.R Medical University .

Hereby I have enclosed the tool on PAIN ASSESSMENT. Hence I request your good self to validate the tool & give your valuable opinion &suggestions for necessary modification of the same.

"**Effectiveness of Oral Sucrose solution in reduction of pain among infants under going painful procedure at Government Head Quarters Hospital, Erode".**

Thanking you in anticipation

Encl: Tool

Yours faithfully

Content Validity Certificate

Name:

Designation:

I hereby certify that I have validated the tool of Mrs. Julyet Vidhya. M – II year M.Sc(N) student of Child Health Nursing department who is under taking dissertation on "**Effectiveness of Oral Sucrose solution in reduction of pain among infants under going painful procedure at Government Head Quarters Hospital, Erode".**

Place: Komarapalayam

Date: signature of the expert

Certificate by the editor

This is to certify that the dissertation entitled "Effectiveness of oral sucrose solution in reduction of pain among infants admitted at Government Head Quarters Hospital", Erode is a bonafied research work done by Mrs. Julyet Vidhya II year M.Sc (N) student of Sresakthimayeil Institute of Nursing and Research (JKK Nataraja Educational Institutions), Komarapalayam, Namakkal.

Mrs.S.**Sasirekha MA, MPhil, Med.** edited this manuscript on behalf of the partial fulfillment of the prerequisite for the degree of **Master of Science in Nursing (Pediatric Nursing).**

Date:

Place: Signature of the editor

LIST OF EXPERTS

1. **Dr. B.S. SENTHIL KUMAR., MD.,**
   UMA clinic,
   Komarapalayam.
2. **Dr. M.BALAKRISHNAN., DCH.,**
   Pediatrican,
   Vignesh Clinic,
   Bhavani.
3. **Ms. M.JAYALAKSHMI., M.Sc(N).,**
   Reader, Child Health Nursing,
   Vivekanandha College of Nursing,
   Thiruchengode .
4. **Mrs. G.MAGESHWARI., M.Sc(N).,**
   Reader, Child Health Nursing,
   Dhanvantri College of Nursing,
   Pallakapalayam.
5. **Mrs.P. BEULAH., M.Sc(N).,**
   Reader, Child Health Nursing,
   Sresakthimayeil Institute of Nursing and Research,
   Komarapalayam.

DATA COLLECTION TOOL

INTRODUCTION

Here, I would like to inform you that, I am researching about the effectiveness of Oral Sucrose Solution in reduction of pain among infants and I would like to have your child as my study participant with your consent and I inform you that Oral Sucrose Solution has no side effects on your child.

Your kind co-operation is highly esteemed and your honest responses are valuable. If you are willing to participate in the study, please sign the consent form given below.

Thanking you for agreeing to participate in the study, Kindly fill the Performa given below.

Place: Yours sincerely,

Date :

CONSENT FORM

I understood that whatever you have explained and I accept you to have my child as your study participant with my full co-operation.

I am declaring this with my full conscious and my clear knowledge on above.

Place: Parent's Signature

Date :

ஒப்புதல் கடிதம்

நான் ஜீலியட் வித்யா, SSINAR செவிலியர் கல்லூரியில் செவிலியர் படிப்பு (முதுநிலை இரண்டாம் ஆண்டு) படித்து வருகிறேன். என் படிப்பிற்கு உட்பட்டு இனிப்பு திரவம் கொடுத்து பச்சிளம் குழந்தைகளின் வலி நிவாரணம் ஏற்படுத்துவது குறித்த ஆராய்ச்சியின் பங்கிற்க்காக உங்கள் குழந்தைகளுக்கு இனிப்பு திரவம் கொடுக்க உங்கள் அனுமதியை வேண்டுகிறேன். நான் கொடுக்க இருக்கும் இனிப்பு திரவம் மருத்துவ சான்றிதழ் பிரகாரம் பக்கவிளைவுகள் அற்றது.

என் ஆராய்ச்சியில் பங்கு கொள்ள ஒத்துழைப்பு கொடுப்பின் இந்த பாரத்தில் கையொப்பம் இடும்படி கேட்டுக் கொள்கிறேன்.

தாங்கள் கூறியது எனக்கும் தெளிவாக புரிந்தது மற்றும் உங்கள் ஆராய்ச்சியில் பங்கு கொண்டு என் குழந்தைக்கு இனிப்பு திரவம் கொடுத்து வலி நிவாரண ஆராய்ச்சி செய்ய என் சுயநினைவுடன் ஒப்புதல் அளிக்கிறேன்.

இடம்:

தேதி: பெற்றோரின் கையொப்பம்

Description of the Tool

Section A

Demographic Variables

1.Age of the infant

7 to 8 months

9 to 10 months

11 to 12 months

2. Sex

Male

Female

3. Weight of the infant in kgs

Below 8 kgs

9 to 10 kgs

11 to 12 kgs

Above 12 kgs

4. Birth order of the infant

First

Second

Third

5. Supporting persons with the infant during venepuncture

Mother only

Parents

Others

The FLACC Behavioral Pain Scale

S.No	Parameters	0	1	2
1.	Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant frown, clenching jaw, quivering chin
2.	Legs	Normal posture or relaxed	Uneasy, restless, tense	Kicking or legs drawn up
3.	Activity	Lying quietly, normal position, moves easily	Squirming, shifting forth, tense	Arched, rigid or jerking
4.	Cry	No cry	Moans or whimpers occasional complaint	Crying steadily, screams or frequent complaint
5.	Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to distractible	Difficult to console or distract

PROCEDURE FOR INSTILLATION OF 24% ORAL SUCROSE SOLUTION

Introduction:-

Administration of 24% oral sucrose solution among infants under going painful procedure is effective, safe and promotes comfort to the infant.

Articles needed:-

A tray containing:

- 24 grams of sugar diluted in 100 ml distilled water
- 5 ml syringe
- A small bowel
- A small towel

Procedure:-

- Wash hands
- Spread the towel around the neck and chest of the child
- Take the diluted solution in a small bowel
- Fill 2 ml of sucrose in a syringe with the solution
- Administer it on the anterior part of the tongue 2 minutes prior to the painful procedure for 30 seconds

- Venepuncture procedure can be done after 2 minutes of instillation of the solution
- Pain is assessed during venepuncture fro 5 minutes
- If the venepuncture is unsuccessful, a second attempt is made only after the interval of 5 minutes

After care:-

- Remove the towel and wipe the mouth of the child
- Hand over the baby to the parents
- Replace the articles
- Record the pain assessment on the FLACC behavioral scale

PHOTOGRAPHS

PHOTOGRAPHS