

**EFFECTIVENESS OF BREAST FEEDING UPON THE PAIN PERCEPTION  
OF INFANTS DURING IMMUNIZATION**

**BY**

**K. ETUK ARET SHARLEY**

**A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R.MEDICAL  
UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF MASTER  
OF SCIENCE IN NURSING**

**APRIL 2012**

**EFFECTIVENESS OF BREAST FEEDING UPON THE PAIN PERCEPTION  
OF INFANTS DURING IMMUNIZATION**

**Approved by the Dissertation Committee on** : \_\_\_\_\_

**Research Guide** : \_\_\_\_\_

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Principal and Professor in Nursing,  
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Chennai - 600 095.

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## DECLARATION

I hereby declare that the present dissertation titled “**An Experimental Study To Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants during Immunization Andhra Mahila Sabha, Chennai.**” is the outcome of the original research work undertaken and carried out by me, under the guidance of **Dr. Latha Venkatasen, M.Sc (N)., M.Phil., Ph.D.**, Principal and professor, Maternal Health Nursing, Apollo College of Nursing and **Mrs. Nesa Sathya Satchi, M.Sc (N).**, Reader, Pediatric Nursing, Apollo College of Nursing, Chennai. I also declare that the material of this has not formed in any way, the basis for the award of any degree or diploma in this university or any other universities.

M.Sc. Nursing II year

## ACKNOWLEDGMENT

My heartfelt praise and gratitude to **Lord Almighty** for His blessings, wisdom and courage throughout my endeavour and for sustaining me in hours of need.

I proudly and honestly express my sincere gratitude to **Dr. Latha Venkatesan, M.Sc (N), M.Phil., Ph.D.**, Principal, Apollo College of Nursing for her caring spirit, excellent guidance, innovative ideas, support and valuable suggestions during the course of my work.

I take this opportunity to express my deep sense of gratitude to my guide **Ms. Nesa Sathya Satchi, M.Sc (N)**, Reader, Child Health Nursing, Apollo College of Nursing, for her constant encouragement and the inspiring guidance throughout my work.

I proudly express my sincere gratitude to **Prof. Ms. Lizy Sonia .A, M.Sc (N)**, Vice Principal, Apollo College of Nursing for her caring spirit and excellent guidance.

I owe my profound gratitude to **Dr. Shyamala .J, DNB, DCH**, Neonatologist, Apollo Children's Hospital, for her valuable suggestion and guidance.

I profoundly thank **Dr. Bela Suryakumari**, Medical Superintendent, Andhra Mahila Sabha, Chennai for granting permission to conduct the study in their esteemed institution.

I extend my earnest gratitude to **Dr. S. Sundaram** and **Dr. K. Prema Chander**, Pediatrician, Andhra Mahila Sabha for their constant encouragement and support throughout my study.

I honestly express my gratitude to **Prof. Ms. Vijayalakshmi .K, M.Sc (N)**., Research Coordinator, Apollo College of Nursing for her effort in clarifying and guidance in statistical analysis.

I extend my greatest pleasure to thank all the faculty of Child Health Nursing Department **Ms. Cecilia Mary, M.Sc (N), Ms. Jamuna Rani, M.Sc (N), Ms. Jennifer, M.Sc (N)**., for their support and splendid guidance throughout my study.

My sincere gratitude to the **Nursing staff of Immunization Clinic** of Andhra Mahila Sabha for extending their cooperation and support during the data collection.

I sincerely thank **all the participants** in this study and I am greatly indebted to them for their patience, cooperation and acceptance to participate in the study.

I am immensely grateful to my beloved Parents **Rev. M. Kumaradhas, Ms. N. Gilda Ponmalar**, loving Sister **Ms. K. Etuk Shalom** and loving Brother **Mr. K. Edet Bijoy** for their prayers, love and constant encouragement at all stages of my work.

Last but not the least, I extend my **warm thanks to all** who helped me in shaping this study a successful one, directly or indirectly.

## **SYNOPSIS**

An Experimental Study to Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants during Immunization at Andhra Mahila Sabha, Chennai.

### **Objectives of the Study**

1. To assess the level of pain perceived in the control and experimental group of infants during immunization.
2. To determine the effectiveness of breast feeding upon pain perception in the experimental group of infants during immunization.
3. To determine the level of satisfaction of mothers regarding breast feeding during immunization among the experimental group of infants.
4. To find out the association between the selected demographic variables and pain perception in the control and experimental group of infants during immunization.
5. To find out the association between the selected immunization particulars and pain perception by the control and experimental group of infants during immunization.

The conceptual framework for the study was based on Modified Melzack and Wall's Gate Control theory of pain (1965), which mainly focuses on the transmission of pain impulses and pain perception. An experimental research approach with post test only design was adopted with the sample size of 60 selected by systematic random sampling technique was conducted in Andhra Mahila Sabha, Chennai. An extensive review of literature and experts guidance laid the foundation to develop tools such as

demographic variable proforma of infants, Proforma of immunization particulars, Neonatal Infant Pain Scale and rating scale on level of satisfaction of mother regarding breast feeding during immunization. The validity and reliability of tools were obtained.

The demographic variables and immunization particulars were obtained in both groups and the mothers in experimental group were taken to breast feeding area, seated on a comfortable chair and were asked to breast feed the infant 2 minutes before the immunization injection, stop the feeding at the time of injection and then continue the feeding for 5 minutes immediately after administration of injection. Pain perceptions of the infants and the level of satisfaction of mothers were assessed and the obtained data was analyzed using inferential and differential statistics.

#### **Major findings of the study were**

- Most of the infants were males (60%, 40%) in the age group of 1-2 months (63.3%,66.7%) with birth weight between 3.1-3.5 kg (33.3%, 46.7%), present weight between 5-6 kg (36.7% , 33.3%) ,living in nuclear family (60%, 80.5) with the family monthly income between 5001-10000 rupees (53.3%, 33.3% ) and were from suburban area (53.3%36.7%) in the control and experimental group respectively.
- Majority of the infants received pentavac injection (83.3%, 73.3%), did not had any previous hospitalization nor any allergic reaction to previous immunization, breast feeding after birth was initiated within 30 min –1hour(53.3%, 50%) and did not have any history of breast feeding difficulties (90%, 86.7%) in the control and experimental group respectively.

- Findings revealed that the mean and standard deviation of the pain score in experimental group (M=3.16, SD=0.687) was lower when compared to that of control group (M =6.1, SD=0.907).The difference was significant at  $P<0.001$  level. Thus the null hypothesis  $H_{o1}$  was rejected.
- There was a significant association between the age and pain perception of infants in the control group and no significant association between other demographic variables such as a gender, birth weight, present weight, type of family, area of residence, family monthly income and pain perception of infants.
- There was no significant association between the selected demographic variables and pain perception of infants in the experimental group. Thus the null hypothesis  $H_{o2}$  is rejected with regard to age in control group and retained with regard to other variables.
- There was no significant association between the selected immunization particulars and pain perception of infants in the control group and experimental group. Thus the null hypothesis  $H_{o3}$  was retained.
- The study findings revealed that majority (90%) of the mothers were highly satisfied regarding breast feeding during immunization. The intervention also enhanced the participation and confidence among the mothers to support the infants in reducing the pain experience during immunization injection.

## **Recommendations**

- The same study can be conducted on larger sample size to generalize the results.
- The study can be replicated in different settings.
- The same study can be conducted for pain management during other invasive procedures.
- The study can be conducted by using different pain scales to assess the pain score.
- The study can be conducted among the neonates for pain during BCG vaccination and heel prick procedure.
- A comparative study can be conducted to assess the effectiveness of breast feeding with other interventions like oral sucrose administration during immunization injection.

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## APPENDIX I

### LETTER SEEKING PERMISSION TO CONDUCT THE STUDY



**Apollo College of Nursing**

(Recognised by the Indian Nursing Council and Affiliated to  
the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/1017/11

13.06.2011

To

The Medical Director,  
Andra Mahila Sabha,  
11, Dr. Durgabai Deshmukh Road,  
Chennai - 600087

Respected Sir / Madam,

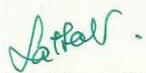
Sub. : To request permission for research – Reg.

**Greetings!** As a part of the curriculum requirement, our II year M.Sc. (N) student Ms. K.Etuk Aret Sharley has selected the following title for her research study.

**“An Experimental Study to assess the Effectiveness of Breast Feeding upon Pain Perception of Infants during Immunization at selected Hospitals, Chennai”.**

So I kindly request your good selves to permit her to conduct research in your esteemed institution and use the resource materials for the above –mentioned candidate.

Thanking You,

  
**Dr. LATHA VENKATESAN**  
**PRINCIPAL**

IS/ISO 9001:2000



Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.  
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

## APPENDIX II

### LETTER PERMITTING TO CONDUCT THE STUDY



Late Dr. Smt. Durgabai Deshmukh  
Founder President

Smt. Rajalakshmi Sunkavally  
President

Smt. Sarojini Ramaswamy  
Vice-President

## ANDHRA MAHILA SABHA DURGABAI DESHMUKH GENERAL HOSPITAL & RESEARCH CENTRE

ISO 9001 : 2000 Certified Hospital



Dr. Rathina Sabapathy  
Chairman

Smt. I. Lakshmi Murthy  
Secretary

Dr. Mrs. Bela Surykumar  
Medical Superintendent

### PERMISSION LETTER TO CONDUCT THE STUDY

To

15.06.2011

Dr. LATHA VENKATESAN,  
Principal,  
Apollo College of Nursing,  
Ayanambakkam, Chennai-95

Respected Madam,

Sub: To grant permission for research study-Reg.

With reference to your letter no. CO/1017/11 dated 13.06.2011, We are pleased to inform you the Ms.K.Etuk Aret Sharley, MSc(N) II year student is permitted to conduct her research study on, "An Experimental study to assess the effectiveness of breast feeding upon pain perception of infants during immunization at selected hospitals, Chennai.

Yours faithfully,

*Bela Surykumar*  
Medical Superintendent

No. 11, Dr. Durgabai Deshmukh Road, Raja Annamalai Puram, Chennai - 600 028.  
Phone : 2493 8311 Fax : 24617611 E-mail : ddghrc@sify.com ddghrc@hotmail.com

**APPENDIX III**  
**ETHICS COMMITTEE LETTER**

## Ethics Committee



22 June, 2011

To  
Ms. Etuk Aret Sharley  
1<sup>st</sup> Year M.Sc (Nursing)  
Dept. of Pediatrics  
Apollo College of Nursing, Chennai  
Tamil Nadu, India

**Ref:** An experimental study to assess the effectiveness of breast feeding upon the pain perception of infants during immunization at selected hospitals, Chennai

**Sub:** Your letter dated 9 June, 2011 for approval of the above referenced project and its related documents

Dear Ms. Etuk Aret Sharley,

Ethics committee – Apollo Hospitals has received the following document submitted by you related to the conduct of the above – referenced study.

- Project “An experimental study to assess the effectiveness of breast feeding upon the pain perception of infants during immunization at selected hospitals, Chennai”
- Study Performa
- Informed consent form

The above-mentioned documents have been reviewed and approved (through expedited review) by the Chairman, Vice-Chairman and Member Secretary at a specially convened meeting of the Ethics Committee. The study is hereby approved to be conducted by you in the presented form

The following Ethics Committee members were present at the meeting held on 22 June, 2011

Name	Profession	Position in the committee
Mr. S. S. Narayanan	Ethicist	Chairman
Dr. Radha Rajagopalan	Clinician	Vice - Chairman
Dr. Jayanthi Swaminathan	Sr. GM Clinical & Collaborative Research	Member Secretary

**Apollo Hospitals Enterprise Limited**  
21, Greams Lane, Off Greams Road, Chennai - 600 006  
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449  
E - Mail : [ecapollochennai@gmail.com](mailto:ecapollochennai@gmail.com)

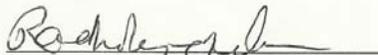
## Ethics Committee



After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

Yours sincerely,

  
Dr. Radha Rajagopalan  
Ethics Committee – Vice Chairman  
Apollo Hospitals, Chennai

Date 22/6/11

DR. RADHA RAJAGOPALAN  
Vice Chairman  
Ethics Committee  
Apollo Hospitals Enterprise Limited  
Chennai 600 076, Tamil Nadu

Apollo Hospitals Enterprise Limited  
21, Greams Lane, Off Greams Road, Chennai - 600 006  
Tel : 91 - 44 - 2829 3333 Extn : 6008, 91 - 44 - 2829 5465 Extn : 6639 Fax : 91 - 44 - 2829 4449  
E - Mail : [ecapollochennai@gmail.com](mailto:ecapollochennai@gmail.com)

## APPENDIX IV

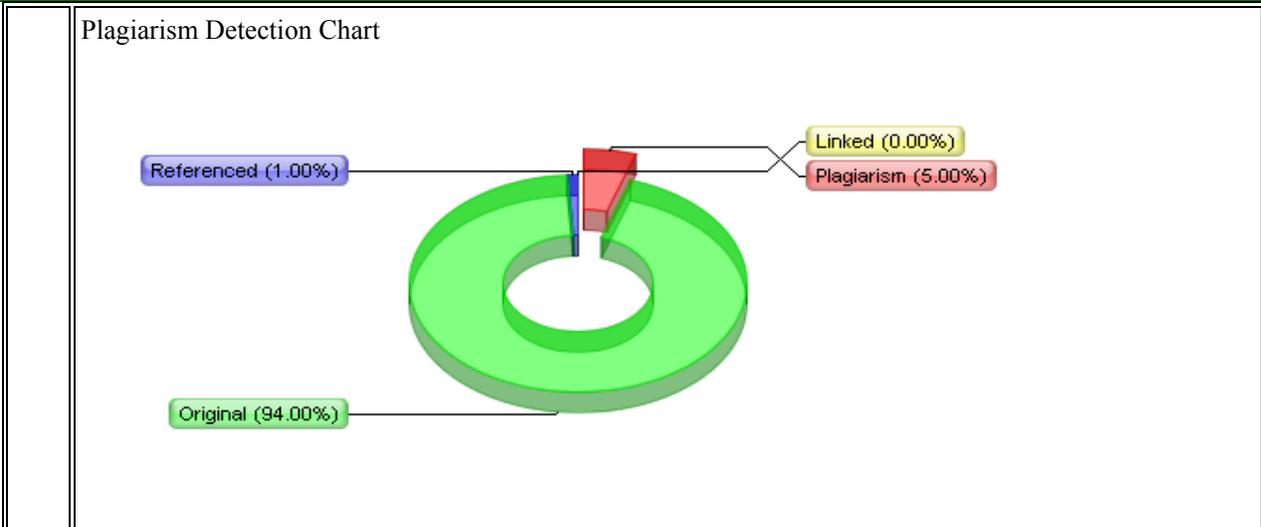
### PLAGIARISM ORIGINALITY REPORT

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## APPENDIX V

### LETTER REQUESTING OPINIONS AND SUGGESTIONS OF EXPERTS FOR ESTABLISHING CONTENT VALIDITY OF RESEARCH TOOL

**From**

\_\_\_\_\_,  
M.Sc., (Nursing) Second Year,  
Apollo College of Nursing,  
Chennai – 600095.

**To**

**Forwarded Through:**

**Dr. Latha Venkatesan,**  
Principal,  
Apollo College of Nursing,  
Chennai - 600095.

**Respected Madam/Sir,**

Sub: Requesting for opinions and suggestions of experts for establishing content validity for Research tool.

I am a postgraduate student of the Apollo College of Nursing. I have selected the below mentioned topic for research project to be submitted to The Tamil Nadu Dr. M.G.R Medical University, Chennai as a partial fulfilment of Masters of Nursing Degree.

**TITLE OF THE TOPIC:**

**“An Experimental Study to Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants During Immunization at Andhra Mahila Sabha, Chennai.”**

With regards may I kindly request you to validate my tool for its appropriateness and relevancy. I am enclosing the Background, Need for the study, Statement of the problem, Objectives of the study, Demographic Variable Proforma, Proforma of Immunization particulars in Infants, Neonatal Infant Pain Scale, and Rating Scale on Level of Satisfaction of mothers on Breast feeding during immunization for your reference. I would be highly obliged and remain thankful for your great help if you could validate and send it as soon as possible.

Thanking you,

**Yours Sincerely,**

## APPENDIX VI

### LIST OF EXPERTS FOR CONTENT VALIDITY

1. **Dr. Latha Venkatesan, M.Sc (N), M.Phil., Ph.D.,**  
Principal and Professor in Maternity Nursing,  
Apollo College of Nursing,  
Chennai.
2. **Prof. Mrs. Lizy Sonia .A, M.Sc (N),,**  
Professor in Medical Surgical Nursing,  
Apollo College of Nursing,  
Chennai.
3. **Mrs. Nesa Sathya Satchi, M.Sc (N),,**  
Reader in Child Health Nursing.,  
Apollo College of Nursing,  
Chennai.
4. **Dr. Shyamala .J., DNB, DCH,**  
Consultant Neonatologist,  
Apollo children's Hospital  
Chennai.
5. **Dr. S. Sundaram, MD., DCh.,**  
Consultant Pediatrician,  
Andhra Mahila Sabha Hospital,  
Chennai.
6. **Mrs. Shobana, M.Sc (N),,**  
Professor in Community Health Nursing,  
Apollo College of Nursing,  
Chennai .
7. **Mrs. Jennifer, M.Sc (N),,**  
Lecturer in Pediatric Nursing,  
Apollo College of Nursing,  
Chennai.

**APPENDIX VII**

**CERTIFICATE FOR CONTENT VALIDITY**

**TO WHOMSO EVER IT MAY CONCERN**

This is to certify that tools and content for the research study developed by \_\_\_\_\_, II year M.Sc(Nursing) student of Apollo College of Nursing for her dissertation “**An Experimental Study to Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants During Immunization at Andhra Mahila Sabha, Chennai.**” was validated for content validity.

**Signature of the Expert**

**APPENDIX VIII**  
**RESEARCH PARTICIPANT CONSENT FORM**

Dear Participant,

I am \_\_\_\_\_M.Sc. Nursing student of Apollo College of Nursing, Chennai.

As a part of my study, I have selected a Research Project on **“An Experimental Study to Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants During Immunization at Andhra Mahila Sabha, Chennai.”**

I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your response. The information collected will be kept confidential and anonymity will be maintained.

**Signature of the Researcher**

I, ..... hereby give my consent to participate in the study.

**Signature of the Participant**

## ஆராய்ச்சியில் பங்கு பெறுபவருக்கான ஒப்புதல் படிவம்

அன்பிற்குரிய பங்கு பெறுவோரே !

கு.இற்றுக் அரிட் ஷேர்லி என்னும் அப்போலோ செவிலியர் கல்லூரி முதுகலை மாணவியாகிய நான் படிப்பின் ஒரு பகுதியாக, குழந்தை தடுப்பூசி பெறும் போது வலியை குறைக்கும் பொருட்டு தாய்ப்பால் கொடுக்கும் முறையின் பலனை ஆராய்ச்சி செய்ய உள்ளேன். இவ்வாய்வு தடுப்பூசி கொடுக்கும் போது வலியை குறைக்க பெரிதும் பயன்படும் .

இவ்வாராய்ச்சியில் நீங்கள் பங்கு பெற்று உங்கள் பதில்களை உண்மையாகவும், வெளிப்படையாகவும் கூறுமாறு கேட்டு கொள்கிறேன். உங்கள் பதில்கள் இரகசியமாய் பாதுகாக்கப்படும் என உறுதியளிக்கிறேன்.

ஆராய்ச்சியாளரின் கையொப்பம்.

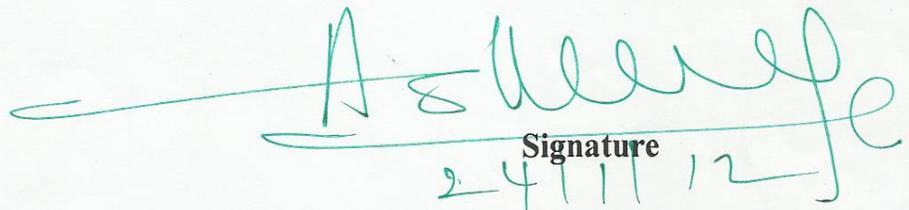
\_\_\_\_\_ எனும் நான் இவ்வாய்வில் கலந்து கொள்ள சம்மதிக்கிறேன்.

பங்கு பெறுவோரின் கையொப்பம்.

**APPENDIX IX**

**CERTIFICATE FOR ENGLISH EDITING  
TO WHOMSOEVER IT MAY CONCERN**

This is to certify that the dissertation titled “An Experimental Study to Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants During Immunization at Andhra Mahila Sabha, Chennai.” by Ms. K. Etuk Aret Sharley, II Year M.Sc., Nursing student of Apollo College of Nursing was edited for English language appropriateness by, A. SOUN DARARAJAN



**Signature**

**A. SOUN DARARAJAN, M.A.**  
P. G. Assistant in ENG.  
N. Krishnasamy Mudaliar H  
ainathapuram, VELLORE - 632 9

## APPENDIX X

### CERTIFICATE FOR TAMIL EDITING TO WHOMSOEVER IT MAY CONCERN

This is to certify that the tool for Demographic variable proforma, Proforma of Immunization Particulars in Infants and the Rating Scale on Level of Satisfaction of mother's regarding Breast feeding during Immunization translated by Ms. K. Etuk Aret Sharley, II Year M.sc(N) student, Apollo College of Nursing for her dissertation "**An Experimental Study to Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants During Immunization at Selected Hospitals, Chennai.**" was edited for Tamil language appropriateness by Jmt. U. JULIET RUTH ELIZABETH.

Signature

  
290511103  
HEADMASTER  
WILLY'S INTEGRATED PRIMARY SCHOOL  
VANDALUR. PIN : 690 049

## APPENDIX XI

### DEMOGRAPHIC VARIABLE PROFORMA OF INFANTS RECEIVING IMMUNIZATION

#### Purpose:

This proforma is used by the researcher to collect information on the demographic variables of child such as age, gender, birth weight, present weight, religion, type of family, area of residence, family monthly income.

#### Instruction:

The researcher will collect the information by interviewing the mother and also by reviewing immunization records for relevant details.

Sample number

1. Age of the child : \_\_\_\_\_

1.1 1-2 months

1.2 3-4 months

1.3 5-6 months

2. Gender of the child

2.1 Male

2.2 Female

3. Birth weight of the child

3.1 <2.5 kg

3.2 2.6-3 kg

3.3 3.1-3.5 k

3.4 > 3.6 kg

4. Present weight of the child: \_\_\_\_\_

4.1 <4 kg

4.2 4.1-5 kg

4.3 5-6 kg

4.4 > 6 kg

5. Type of family

5.1 Nuclear

5.2 Joint

6. Area of residence

6.1 Urban

6.2 Sub urban

6.3 Rural

7. Family monthly income in Rupees: \_\_\_\_\_

7.1 < 5000

7.2 5001-10000

7.3 10001- 15000

7.4 >15001

**சமூக மற்றும் குடும்ப விவரங்களின் மாறுபட்டக் குறிப்புகளை அறியும்  
மாதிரிப்படிவம்**

**நோக்கம்**

இந்த மாதிரிப்படிவம் குழந்தையின் மாறுபட்டக் குறிப்புகளான வயது, பால், பிறந்தவுடன் குழந்தையின் எடை, தற்போதைய எடை, மதம், குடும்ப வகை, வீடு உள்ள இடம், குடும்பத்தின் மாத வருமானம் போன்ற மாறுபட்டக் குறிப்புகளை அறிய ஆய்வாளர் பயன்படுத்துவது.

**அறிவுரை**

தாயிடம் நேர்க்காணல் மூலமும் மற்றும் தடுப்பூசிப் பற்றிய ஆவணங்களில் உள்ளத் தேவையான விவரங்களைப் படிப்பதன் மூலமும் ஆய்வாளர் தகவல்களைச் சேகரிப்பார்.

மாதிரி எண்:

**1. குழந்தையின் வயது**

1.1 1-2 மாதங்கள்

1.2 3-4 மாதங்கள்

1.3 5-6 மாதங்கள்

**2. குழந்தையின் பாலினம்**

2.1 ஆண்

2.2 பெண்

**3. குழந்தைப் பிறந்தவுடன் இருந்த எடை**

3.1 <2.5 கிலோ

3.2 2.6-3 கிலோ

3.3 3.1-3.5 கிலோ

3.4 > 3.6 கிலோ

4. குழந்தையின் தற்போதைய எடை

4.1 < 4 கிலோ

4.2 4.1 – 5 கிலோ

4.3 5.1 – 6 கிலோ

4.4 > 6 கிலோ

5. குடும்ப வகை

5.1 தனிக் குடும்பம்

5.2 கூட்டுக் குடும்பம்

6. வீடு உள்ள இடம்

6.1 நகரம்

6.2 நகரியம்

6.3 கிராமம்

7. குடும்பத்தின் மாத வருமானம் ரூபாயில்.....

7.1 <5000

7.2 5001-10000

7.3 10001-15000

7.4 >15001

## APPENDIX XII

### PROFORMA OF IMMUNIZATION PARTICULARS IN INFANTS

#### Purpose

This proforma is used by the researcher to collect the information on immunization particulars in infants.

#### Instruction

The researcher collects the information through reviewing the immunisation records and by interviewing the mother or care taker.

1. Type of vaccination
  - 1.1 DPT vaccine
  - 1.2 Hepatitis B vaccine
  - 1.3 Hib vaccine
  - 1.4 Pentavac
  - 1.5 Quadrovax
2. Previous hospitalisation of the child:
  - 2.1 Yes
  - 2.2 No
3. History of any allergic reaction to previous immunisation:
  - 3.1 Yes
  - 3.2 No
4. Age at which Breast feeding was initiated after birth:
  - 4.1 30 min -1 hour
  - 4.2 1-6 hours
  - 4.3 > 6 hours
5. History of breast feeding difficulties:
  - 5.1 yes
  - 5.2 No

**குழந்தைகளுக்கு அளிக்கப்படும் தடுப்பூசிப் பற்றிய விவரத்திற்கான மாதிரிப் படிவம்**

**நோக்கம்:**

இந்த மாதிரிப் படிவம் குழந்தைகளுக்கு அளிக்கப்படும் தடுப்பூசிப் பற்றிய விவரங்களைச் சேகரிக்கப் பயன்படுத்தப்படுகிறது.

**அறிவுரை:**

ஆவணங்களை படிப்பதன் மூலமும் தாய் அல்லது குழந்தைக் காப்பாளரிடம் நேர்காணல் மூலமும் ஆய்வாளர் தகவல்களைச் சேகரித்தல்.

1. தடுப்பூசியின் வகை:
  - 1.1 முத்தடுப்பூசி
  - 1.2 மஞ்சக்காமாலை தடுப்பூசி
  - 1.3 ஹிப் தடுப்பூசி
  - 1.4 பெண்டாவக்
  - 1.5 கோட்ரோவக்ஸ்
  
2. குழந்தை முன்பு மருத்தவமனையில் அனுமதிக்கப் பட்டிருந்ததா?
  - 2.1 ஆம்
  - 2.2 இல்லை
  
3. முந்தையத் தடுப்பூசியின்பொழுது ஏதேனும் ஒவ்வாமை ஏற்பட்டதுண்டா?
  - 3.1 ஆம்
  - 3.2 இல்லை
  
4. குழந்தைப் பிறந்தவுடன் தாய்ப் பால் ஆரம்பிக்கப்பட்ட வயது
  - 4.1 30 நிமிடத்திலிருந்து 1 மணி நேரம்
  - 4.2 1 – 6 மணி நேரம்
  - 4.3 > 6 மணி நேரம்
  
5. தாய்ப் பால் கொடுப்பதில் சிரமம் இருந்ததா?
  - 5.1 ஆம்
  - 5.2 இல்லை

## APPENDIX XIII

### PAIN ASSESSMENT SCALE

#### THE NEONATAL INFANT PAIN SCALE (NIPS)

##### Purpose

This scale is used by the researcher to measure the pain perception of infants during immunization as scored by the researcher.

##### Instruction

The researcher scores the pain by observing the infant during immunization and places a tick (✓) mark in appropriate column.

Criteria	Pain assessment	Score
Facial expression 0- relaxed muscle 1- grimace	Restful face, neutral expression Tight facial muscle, furrowed brow chin jaw	
Cry 0- no cry 1- whimper 2- vigorous cry	Quiet , not crying Mild moaning, intermittent Loud scream. rising shrill continuous	
Breathing pattern 0- relaxed 1-change in breathing	Usual pattern for the baby Indrawing irregular faster than usual gagging breath holding	
Arms 0-relaxed/ restrained 1-flexed/extended	No muscular rigidity occasional random movements of limb Tense straight rigid and/or rapid extension	

	flexion	
Legs		
0-relaxed/ restrained	No muscular rigidity occasional random movements of limb	
1-flexed/extended	Tense straight rigid and/or rapid extension flexion	
Stage of arousal		
0-sleeping/ awake	Quiet peaceful sleeping or alert and settled	
1- fussy	Alert restless and thrashing	

### Score Interpretation

- 0 - No pain
- 1-3 - Mild pain
- 4-7 - Severe pain

**APPENDIX XIV**

**BLUE PRINT OF RATING SCALE ON LEVEL OF SATISFACTION OF  
MOTHER REGARDING BREAST FEEDING DURING IMMUNIZATION**

<b>SL.NO</b>	<b>CONTENT</b>	<b>ITEMS</b>	<b>TOTAL ITEMS</b>	<b>PERCENTAGE</b>
1.	Character of the researcher	1,2,3	3	30%
2.	Effects of intervention in the mother	4,5,6	3	30%
3.	Effects of intervention in the child	7, 8,9,10	4	40%
		TOTAL	10	100%

**RATING SCALE ON LEVEL OF SATISFACTION OF MOTHER REGARDING  
BREAST FEEDING DURING IMMUNIZATION**

**Purpose**

The rating scale is used by the researcher after immunization to assess the level of satisfaction of mothers on breast feeding during immunization and its effectiveness.

**Instruction**

The rating scale consists of 10 items. Kindly read and give your responses freely and frankly and the responses will be confidential. The responses range from highly satisfied to highly dissatisfied with score 3, 2, 1, 0 respectively.

Sl. No.	Questions	Highly satisfied	Satisfied	Dissatisfied	Highly dissatisfied
1.	The prior information about the breastfeeding given by the researcher.				
2.	The courtesy of the researcher.				
3.	Presence of the investigator in times of need.				
4.	Effect of breast feeding during immunization.				
5.	Anxiety level of the mother.				

6.	Mother's comfort to give breast feed during immunization.				
7.	Comfort of the child.				
8.	Child's response to pain perception during immunization.				
9.	Feeling of security to mother and child.				
10.	Time taken to calm the child.				

### Score Interpretation

SCORE	PERCENTAGE	INTERPRETATION
<12	<40%	Low satisfaction
12 – 20	40 – 69%	Moderate satisfaction
21 - 30	70 – 100%	High satisfaction

**திருப்தி நிலைப் பற்றிய நிழற்பட திட்ட வரைவு**

வ.எண்	பொருளடக்கம்	வகைகள்	மொத்தம் வகைகள்	சதவிகிதம்
1.	ஆராய்ச்சியாளருக்கான கேள்விகள்	1,2,3	3	30%
2.	தாய்க்கு இருந்த பலன்	4,5,6	3	30%
3.	குழந்தைக்கு இருந்த பலன்	7,8,9,10	4	40%
			மொத்தம்	100%

**தடுப்பூசி காலத்தில் தாய்ப் பால் கொடுப்பதில் தாய்க்கு இருந்த திருப்திப் பற்றிய தர அளவுகோல்.**

**நோக்கம்**

இந்த அளவுகோலானது தடுப்பூசிக்கு பிறகு தாய்ப் பால் கொடுப்பதில் தாய்மார்களுக்கு ஏற்பட்டத் திருப்தியின் அளவையும் அதன் பயன்பாட்டையும் மதிப்பீடு செய்ய ஆய்வாளர் பயன்படுத்தியது.

**அறிவுரை**

இந்த அளவுகோலில் பத்து வகைகள் உள்ளன. தயவுசூர்ந்து இவற்றைப் படித்து உங்கள் பதில்களை சுதந்திரமாகவும் வெளிப்படையாகவும் அளிக்கவும். பதில்கள் பாதுகாக்கப்படும். பதில்களின் எல்லை மிகவும் திருப்தியிலிருந்து திருப்தியில்லைவரை இருக்கும்.

வ. எண்.	கேள்விகள்	மிகவும் திருப்தி	திருப்தி	திருப்தி யில்லை	மிகவும் திருப்தி யில்லை
1.	தாய்ப்பால் கொடுப்பதுப் பற்றி ஆய்வாளர் முன்னர் கொடுத்தத் தகவல்.				
2.	ஆய்வாளர் அணுகு முறை				
3.	தேவையான நேரங்களில் ஆய்வாளர் உடன் இருந்தது.				
4.	தடுப்பூசி காலத்தில் தாய்ப்பால் கொடுப்பதில் தாய்க்கு இருந்த பலன்.				
5.	தாய்க்கு இருந்த ஆவலின் அளவு.				

6.	தடுப்பூசி காலத்தில்தாய்ப் கொடுப்பதில் தாய்க்கு இருந்த சொளகரியம்				
7.	குழந்தையின் சொளகரியம்				
8.	தடுப்பூசியின்பொழுது குழந்தையின் வலி உணர்வு அறியும்ஆற்றலின் வெளிப்பாடு				
9.	தாய் மற்றும் சேயின் பாதுகாப்பு உணர்வு				
10.	குழந்தையை அமைதிப்படுத்த எடுத்துக் கொண்ட நேரம்				

#### மதிப்பெண் விளக்கம்

மதிப்பெண்	சதவிகிதம்	பொருள் விளக்கம்
<12	<40%	குறைவான திருப்தி
12-20	40-69%	மிதமான திருப்தி
21-30	70-100%	மிகவும் திருப்தி

## APPENDIX XV

### Item Wise Frequency and Percentage Distribution of Level of Satisfaction of Mothers regarding Breast Feeding during Immunization in the Experimental Group of Infants (N=30)

Items	High satisfaction		Moderate Satisfaction		Low satisfaction	
	n	p	n	p	n	p
The prior information about breast feeding given by the researcher	30	100	-	-	-	-
The courtesy of the researcher	30	100	-	-	-	-
Presence of investigator in times of need	28	93.3	2	6.67	-	-
Effect of breast feeding during immunization	19	63.3	11	36.7	-	-
Anxiety level of the mother	8	26.67	19	63.3	3	10
Mother's comfort to give breast feed during immunization	15	50	12	40	3	10
Comfort of the child	26	86.7	1	3.3	3	10
Child's response to pain perception during immunization	9	30	19	63.3	2	6.67
Feeling of security to mother and child	26	86.7	4	13.3	-	-
Time taken to calm the child	22	73.3	8	26.7	-	-

It can be inferred from the above table that majority of the mothers were highly satisfied with all the items related to level of satisfaction.

**APPENDIX XVI**  
**DATA CODE SHEET**

**DV- Demographic variable**

**AGE- age of the child**

- 1.1 1-2 months
- 1.2 3-4 months
- 1.3 5-6 months

**GOC- Gender of the child**

- 2.1 Male
- 2.2 Female

**B WT-Birth weight of the child**

- 3.1 < 2.5 kg
- 3.2 2.6 – 3 kg
- 3.3 3.1- 3.5 kg
- 3.4 > 3.6 kg

**P WT- Present weight of the child**

- 4.1 < 4 kg
- 4.2 4.1 – 5 kg
- 4.3 5.1- 6 kg
- 4.4 > 6 kg

**TOF- Type of family**

- 5.1 Nuclear
- 5.2 Joint

**AOR - Area of residence**

- 6.1 Urban
- 6.2 Suburban
- 6.3 Rural

**MI – Monthly Income in Rupees**

- 7.1 < 5000
- 7.2 5001 - 1000
- 7.3 10001 - 15000
- 7.4 > 15000

**IP- Immunization particulars**

**VAC- Vaccination**

- 1.1 DPT
- 1.2 Hepatitis B vaccine
- 1.3 HIB vaccine
- 1.4 Pentavac
- 1.5 Quadrovax

**PHC: Previous Hospitalization of child**

- 2.1 Yes
- 2.2 No

**HAR: History of Allergic reaction**

- 3.1 Yes
- 3.2 No

**ABFI: Age at which Breast feeding is initiated**

- 4.1 30 min- 1 hour
- 4.2 1 hour- 6 hour
- 4.3 > 6 hour

**HBFD: History of breast feeding difficulty**

- 5.1 Yes
- 5.2 No

APPENDIX-XVII- MASTER CODE SHEET

APPENDIX-XVII- MASTER CODE SHEET																													
CONTROL GROUP														EXPERIMENTAL GROUP															
DV PROFORMA							IP PROFORMA					NIPS	DV PROFORMA							IP PROFORMA					NIPS	SATIS.			
S.NO	AGE	GOC	B	WTP	WT	TOF	AOR	MI	VAC	PHC	HAR	ABFI	HBFD	SCORE	AGE	GOC	B	WTP	WT	TOF	AOR	MI	VAC	PHC	HAR	ABFI	HBFD	SCORE	SCORE
1	1.1	2.1	3.4	4.4	5.1	6.2	7.4	1.4	2.2	3.2	4.3	5.1	5	1.3	2.2	3.1	4.3	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	3	27		
2	1.1	2.2	3.3	4.2	5.1	6.2	7.2	1.5	2.2	3.2	4.1	5.2	7	1.2	2.1	3.2	4.3	5.1	6.2	7.2	1.5	2.2	3.2	4.2	5.2	3	30		
3	1.1	2.1	3.3	4.2	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	6	1.1	2.1	3.2	4.2	5.1	6.3	7.1	1.5	2.2	3.2	4.1	5.2	3	28		
4	1.1	2.2	3.3	4.3	5.2	6.2	7.3	1.4	2.2	3.2	4.2	5.2	4	1.1	2.1	3.2	4.2	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	4	27		
5	1.2	2.2	3.2	4.1	5.1	6.2	7.1	1.4	2.2	3.2	4.3	5.2	5	1.1	2.1	3.3	4.3	5.1	6.2	7.3	1.4	2.2	3.2	4.2	5.2	4	29		
6	1.1	2.1	3.3	4.3	5.2	6.3	7.1	1.4	2.2	3.2	4.1	5.2	5	1.2	2.2	3.3	4.3	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	5	28		
7	1.1	2.1	3.2	4.3	5.1	6.2	7.2	1.4	2.2	3.2	4.2	5.2	7	1.1	2.2	3.2	4.2	5.2	6.2	7.2	1.4	2.2	3.2	4.2	5.2	4	27		
8	1.2	2.2	3.2	4.3	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	7	1.1	2.2	3.3	4.2	5.1	6.1	7.4	1.4	2.2	3.2	4.1	5.2	3	25		
9	1.1	2.1	3.3	4.3	5.1	6.2	7.2	1.4	2.2	3.2	4.1	5.2	7	1.1	2.2	3.2	4.2	5.1	6.3	7.2	1.4	2.2	3.2	4.1	5.2	3	29		
10	1.1	2.2	3.2	4.1	5.1	6.1	7.2	1.4	2.2	3.2	4.3	5.1	6	1.2	2.2	3.3	4.3	5.1	6.1	7.4	1.4	2.2	3.2	4.3	5.2	4	29		
11	1.1	2.1	3.4	4.2	5.1	6.2	7.2	1.4	2.2	3.2	4.2	5.2	6	1.1	2.1	3.3	4.2	5.2	6.2	7.2	1.4	2.2	3.2	4.1	5.2	2	28		
12	1.1	2.1	3.2	4.2	5.2	6.2	7.2	1.5	2.2	3.2	4.1	5.2	6	1.1	2.1	3.3	4.3	5.1	6.1	7.2	1.4	2.1	3.2	4.2	5.2	3	26		
13	1.1	2.1	3.4	4.4	5.2	6.1	7.4	1.4	2.2	3.2	4.3	5.2	6	1.1	2.1	3.2	4.2	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	3	29		
14	1.2	2.2	3.1	4.3	5.2	6.2	7.2	1.5	2.1	3.2	4.2	5.2	7	1.1	2.2	3.3	4.1	5.1	6.3	7.1	1.4	2.2	3.2	4.3	5.1	4	29		
15	1.2	2.2	3.2	4.3	5.1	6.2	7.3	1.4	2.2	3.2	4.1	5.2	7	1.1	2.1	3.1	4.2	5.1	6.2	7.2	1.4	2.2	3.2	4.1	5.2	3	20		
16	1.2	2.2	3.1	4.1	5.1	6.3	7.1	1.4	2.1	3.2	4.2	5.1	7	1.1	2.1	3.2	4.4	5.1	6.2	7.1	1.4	2.2	3.2	4.1	5.2	2	28		
17	1.1	2.2	3.2	4.1	5.1	6.2	7.2	1.4	2.2	3.2	4.1	5.2	6	1.1	2.1	3.2	4.4	5.1	6.2	7.2	1.5	2.2	3.2	4.1	5.2	3	29		
18	1.1	2.1	3.1	4.1	5.1	6.1	7.2	1.4	2.2	3.2	4.3	5.2	6	1.1	2.2	3.3	4.3	5.1	6.3	7.1	1.4	2.2	3.2	4.3	5.1	3	28		
19	1.1	2.1	3.1	4.1	5.2	6.2	7.2	1.4	2.2	3.2	4.1	5.2	5	1.2	2.1	3.4	4.4	5.1	6.2	7.3	1.5	2.1	3.2	4.2	5.2	4	26		
20	1.1	2.1	3.1	4.1	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	5	1.2	2.1	3.3	4.3	5.2	6.2	7.2	1.4	2.2	3.2	4.1	5.2	3	24		
21	1.2	2.1	3.4	4.4	5.2	6.3	7.1	1.4	2.1	3.2	4.1	5.2	7	1.2	2.2	3.3	4.4	5.2	6.1	7.3	1.5	2.2	3.2	4.2	5.2	3	27		
22	1.2	2.1	3.4	4.4	5.2	6.2	7.2	1.4	2.2	3.2	4.1	5.2	7	1.1	2.1	3.2	4.1	5.1	6.1	7.2	1.4	2.2	3.2	4.2	5.2	3	20		
23	1.2	2.2	3.3	4.3	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	7	1.2	2.2	3.3	4.4	5.1	6.2	7.3	1.5	2.2	3.2	4.1	5.2	3	27		
24	1.1	2.2	3.3	4.3	5.2	6.2	7.2	1.4	2.2	3.2	4.2	5.2	5	1.1	2.1	3.4	4.2	5.1	6.3	7.1	1.4	2.1	3.2	4.3	5.1	2	29		
25	1.3	2.2	3.2	4.4	5.1	6.2	7.2	1.5	2.1	3.2	4.2	5.2	5	1.2	2.2	3.4	4.4	5.2	6.1	7.4	1.5	2.2	3.2	4.2	5.2	4	19		
26	1.1	2.1	3.3	4.3	5.2	6.3	7.2	1.4	2.2	3.2	4.2	5.2	7	1.1	2.1	3.3	4.3	5.2	6.2	7.3	1.4	2.2	3.2	4.1	5.2	3	25		
27	1.1	2.1	3.3	4.4	5.1	6.3	7.1	1.4	2.2	3.2	4.1	5.2	5	1.1	2.2	3.2	4.2	5.1	6.3	7.2	1.4	2.2	3.2	4.1	5.2	2	29		
28	1.2	2.1	3.2	4.3	5.1	6.2	7.2	1.4	2.2	3.2	4.1	5.2	6	1.2	2.1	3.3	4.3	5.1	6.3	7.1	1.5	2.1	3.2	4.1	5.2	3	28		
29	1.2	2.1	3.3	4.4	5.2	6.3	7.1	1.5	2.2	3.2	4.2	5.2	7	1.1	2.2	3.3	4.2	5.1	6.1	7.4	1.4	2.2	3.2	4.2	5.2	3	28		
30	1.1	2.1	3.1	4.1	5.2	6.3	7.2	1.4	2.2	3.2	4.1	5.2	7	1.1	2.2	3.1	4.2	5.1	6.3	7.1	1.4	2.2	3.2	4.2	5.2	3	24		



## CHAPTER I

### INTRODUCTION

#### Background of the Study

*“Who fed me from her gentle breast and hushed me in her arms to rest,  
and on my cheek sweet kisses prest - My Mother. ”*

*~Anne Taylor*

The joy and ecstasy of motherhood cannot be expressed in words. In every culture, being pregnant and to give birth to a child is considered as a major and vital event in the life of a women. The mother learns to interpret the cues and meets the demand of her infant and infant recognises the emotional attachment of the mother. Nurturing and caring the child throughout the developmental stage is a challenging task of a mother.

The word infant comes from the old French word “enfant” meaning incapable of speech. Infancy is an earliest stage of child’s development which starts from birth and extends up to one year of age. The current global population is 7 billion with 19.9 per 1000 birth every year. According to the Indian statistics (2012), the population is 1.22 billion with 22.2 per 1000 birth and Tamilnadu constitute about 6.07%. Infancy signifies the beginning of life as an independent individual who is the future citizen of the nation. The physical changes and development achievements of infants are so dramatic than other stages of development in life.

With the birth of every child, women is cherished with breast milk to feed her baby. Breast feeding is universally endorsed as the best way of feeding infants. The

process of attachment is perfectly fulfilled in the act of breast feeding. Breast milk contains all the nutrients that a baby needs in the first few months for optimum growth and development, easily digestible, protection from infections and allergies and physiological adaptation. Breastfeeding sow the seeds for a lifelong bond between the mother and the child and all round health for the infant in the years to come.

Breastfeeding is beneficial not only to the infant but also to the mother. The advantages of breast feeding to the mother are it helps in rapid involution of uterus, suppresses ovulation and helps in natural birth spacing, lowers the risk of ovarian and breast cancer. Though breast milk is the natural feed, hygienic and safe, some of the disadvantages of breast feeding include transmission of drugs, infections through breast milk and development of breast milk jaundice.

Infants are becoming increasingly subjected to a longer battery of invasive procedures and investigation which are painful. Children undergo routine immunizations as part of their medical care which is the most common painful procedure. Immunization against vaccine preventable diseases is essential to reduce under five mortality. For most of the infants immunization may be the first injection. It may be given through oral, intra dermal, intramuscular or subcutaneous route which depends on the type of vaccination. Among them intramuscular injections are more painful than other route of administration.

The vaccines that are given for infants under 6 months of age to prevent the six killer diseases includes Bacille Calmatte Guerin (BCG), Polio, Diphtheria Pertussis and Tetanus (DPT) vaccination. Previously Hepatitis B vaccine and Haemophilus Influenza

B (Hib) vaccine was given as optional vaccines at 6, 10 and 14 weeks. The World Health Organisation (WHO) has included Hepatitis B vaccine and Hib vaccine to the immunization schedule in 2010 in order to reduce the mortality due to hepatitis, influenza and meningitis. Global health observatory report of 2011 stated that an estimated 109 million children under the age of one were vaccinated with three doses of DPT vaccine. In India statistics reports about 72% of DPT vaccination coverage, in Tamilnadu, the overall coverage of vaccination is 91%, among them Chennai constitute about 95%. Immunization is also a key strategy to ensure global health and to respond to the threat of emerging infections.

Pain from vaccine injections is a source of distress for children, their parents and vaccinators, and if not addressed, can lead to pre-procedural anxiety at future procedures, medical fears, and healthcare avoidance behaviours including non-adherence with immunization schedules. Pain is the unpleasant sensory and emotional experience associated with actual or potential tissue damage. It is estimated that up to 25% of adults have needle fears, the majority of people with needle fears develop them from childhood period. Unfortunately, infants have limited means to cope with pain because they cannot rub a painful area and stimulate non nociceptive touch fibers that would block the pain sensation, nor can they distract themselves through visualization.

There are no systemic pharmacological treatments that are appropriate to provide pain relief during minor procedures, such as immunizations, in this age group. An intervention that is natural, cost effective, and has no ill effects would be ideal for use in primary care settings for infants receiving immunizations. Research has shown that breastfeeding is a more than nourishing infants with mother's milk, it provides

natural and effective intervention to decrease pain perception in infants during vaccinations, as well as during venipuncture and heel sticks. It encompasses 3 components that are comforting and analgesic to infants: taste, suckling, and skin to skin contact.

Phillips et al. (2005) conducted a prospective control trial to compare analgesic effect of breastfeeding vs pacifier use in 96 healthy breast fed infants undergoing blood collection via heel stick in a hospital in California. The analgesic effect of pacifier use with maternal holding vs non maternal holding were also assessed. The study concluded that breastfeeding is more analgesic than non maternal holding with pacifier use which is significant at  $P < 0.01$  level. Thus, Breastfeeding and maternal holding should be considered as pain control measures for the neonate during heel stick procedures. This findings helps to identify the analgesic effect of breast milk during other painful procedures.

Although little is known about the pain relieving mechanism, the function of mother infant interaction serves as a means of preventing or reducing pain and stress. Holding infants during immunization can reduce crying when compared with infants who receive their immunization while being restrained on the examination table. Also studies represented that holding, rocking and skin to skin contacts have been shown to effectively modulate the pain responses of newborn during any painful procedure.

In India, few studies related to the pharmacological and non pharmacological intervention to reduce pain during immunization was conducted. Unfortunately there is no practice of pain reduction measures during immunization in many institutions.

Immunization in infants cause physical stress to infants and creates anxiety to the care giver. The researcher observed that there is less focus on assessment and management of pain in infants. It is necessary to promote pain management measures as routine practice in the immunization clinics. Breast feeding is an effective analgesic which can be easily implemented. It is a natural, safe, cost effective and easy available method that can be given for infants to reduce the pain experience during immunization. Thus, researcher decided to conduct the study to assess the effectiveness of breast feeding upon the pain perception of infants during immunization injection.

### **Need For the Study**

Pregnancy can be an intense time in the life of an expecting mother filled with physical and emotional changes. During the antenatal period, foetus receives all nutrients and oxygen from the mother's blood. After birth, the baby receives all the essential nutrients through the mother's milk. The milestone of life is the infancy period where the rapid growth and development takes place .The infant should be nourished and cared physically and emotionally in order to meet the developmental needs. Breast feeding is the cultural norm of feeding infants since antiquity and it is the ideal nutrition for the baby. Breast feeding not only nurtures the child, but also perfectly fulfils the process of maternal infant bonding.

The Global Statistics of 2010 reported that the incidence of breastfeeding rate increased from 76% in 2005 to 81% in 2010 in the UK. In India, the prevalence of exclusive breastfeeding reported at 3 months was 97% which declined to 62% by 6 months of age of infants. In Tamil Nadu, 79 % of children under four months of age are

exclusively breastfed, among them Chennai reports only 6.4%. Many working women ignore to breast feed the child exclusively for six months. The importance of breast feeding must be taught to mothers when they visit the clinic.

Immunization might be the first intramuscular injection for most of the infants. Immunizations not only protects children from vaccine preventable diseases, but also serve as an opportunity to deliver other life saving measures providing protection against life threatening diseases such as influenza, meningitis and cancers that occur in adulthood. Based on the latest World Health Organization global estimates for 2010, trends related to global vaccination coverage continue to be positive. The global coverage of DPT vaccination was 85%, hepatitis B vaccine was 75% and Hib vaccine was 42%. In India it includes 72% for DPT vaccination and 37% for Hepatitis B vaccination. In Tamilnadu, the overall coverage of vaccination is 91%, among them Chennai constitute about 95%.

The recent trend in immunization is that the individual vaccines are replaced by combined vaccines. It includes pentavalent vaccine which is the combination of DPT, Hepatitis B and Hib vaccine and quadrovax which includes DPT, and Hib vaccine. The combined vaccines have reduced the administration of multiple vaccines in infants which in turn reduces the stress of infants. Pain is a perception that is often overlooked in the infant population, especially with regards to immunization. Painful medical procedures for children begin with heel sticks and injections at birth and continue throughout childhood. Most often, infants undergo routine immunizations without adequate intervention to decrease the pain caused by the injections.

In addition to routine well child visit pain, injuries and illnesses frequently require anxiety provoking painful procedures. Infants do perceive and remember pain, demonstrating heightened pain responses to other painful procedures later in life. Assessing and treating pain in infants can be difficult. Infants and children are often unable or unwillingly to communicate the presence, location and intensity of pain. A number of non pharmacological techniques such as distraction, relaxation, skin cooling techniques, cutaneous stimulation, sweet tasting solutions provide coping strategies that may help reduce pain perception make pain more tolerable, reduces anxiety and prevents usage of analgesics.

However, there has been very little research to determine a natural, cost effective intervention to pain perception later in life. Breast feeding is a preferred method of infant feeding in the first year of life is considered to be an effective pain reducing intervention during immunization. Breastfeeding has been shown to have analgesic effects in infants undergoing medical procedures. It is considered as combined analgesic intervention because it includes different components such as sweet-tasting solution, sucking, holding and skin to skin contact that may individually attenuate pain responses.

Breast milk contains a higher concentration of tryptophan, a precursor of melatonin. Melatonin is shown to increase the concentration of beta endorphins and could possibly be one of the mechanisms for the nociceptive effects of breast milk. Among the analgesics studied for neonatal or infant's pain, breast feeding / breast milk is a natural, easily available, easy to use and potentially risk free intervention. Only limited studies were conducted to see effectiveness of breast feeding for procedural pain.

Breast feeding in infants under age 6 months of age and use of sucrose or lidocaine in children aged 6 to 48 months has significantly reduced crying time and pain scores. A prospective controlled study was conducted among 243 children between age 0 and 48 months receiving their routine vaccinations at Well Child Unit in Turkey were randomly assigned to the study groups to investigate the interventions that affect pain reduction during vaccination. (Dilli et al, 2009)

As nurses play a major role in giving immunization to the children, it is their responsibility to help to alleviate pain and discomfort of the infants during immunization injections and reduce the anxiety of care giver's. Researcher found that no pain interventions were given to infants during immunization injection in the clinics. This stimulated the researcher to identify the simple, safe and easy method of pain intervention during immunization thus motivated to conduct an experimental study to assess the effectiveness of breast feeding upon pain perception of infants during immunization and to obtain the satisfaction level of the parents towards the intervention.

### **Statement of the Problem**

An Experimental Study to Assess the Effectiveness of Breast Feeding upon the Pain Perception of Infants during Immunization at Andhra Mahila Sabha, Chennai.

### **Objectives of the Study**

1. To assess the level of pain perceived in the control and experimental group of infants during immunization.
2. To determine the effectiveness of breast feeding upon pain perception in the experimental group of infants during immunization.

3. To determine the level of satisfaction of mothers regarding breast feeding during immunization among the experimental group of infants.
4. To find out the association between the selected demographic variables and pain perception in the control and experimental group of infants during immunization.
5. To find out the association between the selected immunization particulars and pain perception in the control and experimental group of infants during immunization.

### **Operational Definitions**

#### **Effectiveness**

In this study, it refers to the expected and desired changes in the level of pain perception of infants who were breast fed during immunization as measured by Neonatal Infant Pain Scale (NIPS).

#### **Breast feeding**

In this study, it refers to initiating breast feeds 2 minutes prior to the immunization injection, stop the feed at the time of administration of injection and continuing it immediately after the immunization injection for 5 minutes.

#### **Pain perception**

In this study, it refers to the pain experienced by the infants during immunization injection as measured by Neonatal Infant Pain Scale.

## **Infant**

In this study, it refers to the children of age between 1 month to 6 months attending the immunization clinic at Andhra Mahila Sabha.

## **Immunization**

In this study, it refers to the administration of any one of the following vaccine such as DPT vaccine, hepatitis B vaccine, Hib vaccine, pentavac or quadrovax by deep intramuscular route in vastus lateralis muscle of anterior thigh of infants.

## **Assumptions**

- Breast feeding is the ideal method of feeding for infants.
- Sucking is a pleasurable act for infants.
- Immunization tends to be the most common health care related painful experience to infants.
- Immunization is given against vaccine preventable diseases.
- Painful procedures cause physical stress and discomfort to infants and increase the anxiety of the mother.

## **Null Hypotheses**

**Ho<sub>1</sub>** There will be no significant difference in pain perception of control and experimental group of infants during immunization.

**Ho<sub>2</sub>** There will be no significant association between the selected demographic variables and pain perception in the control and experimental group of infants during immunization.

**Ho<sub>3</sub>** There will be no significant association between the selected immunization particulars and pain perception by the control and experimental group of infants during immunization.

### **Delimitations**

The study was delimited to infants who are:

- between the age group of 1 to 6 months.
- visiting immunization clinic at Andhra Mahila Sabha.
- receiving either DPT vaccine, Hep B vaccine, Hib vaccine, pentavac or quadrovax injection.
- mother's willing to participate in the study and know either Tamil or English.

### **Conceptual Framework**

The conceptual framework deals with the interrelated concepts that are assessable together in some rational schemes virtue of their relevance to a common theme (Polit and Beck, 2008).

The conceptual framework is a process of ideas which are formed and utilized for the development of research design. It helps the researcher to know what data needs to be collected and gives direction to the entire research process. Kerlinger views theory as a set of interrelated concepts that gives a systematic view of phenomenon that is explanatory and predictive in nature. The present study is aimed at reducing the pain perception of infants during immunization injection. As the Gate control theory focuses

on the transmission of pain impulses and pain perception, this study is based on Modified Melzack and Wall's Gate Control theory (1965).

### **Gate control theory of pain**

Melzack and Wall's Gate control theory (1965) explains that "the substantia gelatinosa, a functional unit of densely packed cells which extends the length of the spinal cord, is the site of a transmission blocking action which 'closes the gate' to impulses entering the spinal cord on their way to the transmission cells" when non-nociceptive touch fibres are stimulated. Conversely "when open, the gate permits sensory input to reach the transmission cells in the dorsal horn of the spinal cord", allowing the perception of pain to get through. This potential blocking mechanism can result in little or no pain perception regardless of the intensity of the painful stimuli. Based on the principle of gate control theory, the following conceptual framework was developed.

### **Intervention**

In this study, the intervention refers to initiation of breast feeding 2 minutes prior to the immunization injection, stop the feeds at the time of injection and continue it for 5 minutes immediately after the injection in the experimental group. It stimulates the pain receptors which send back impulses into spinal cord via the posterior root and effectively block the pain pathway. The control group receive the conventional method of nursing care without intervention.

### **Pain perception during immunization injection**

Infants who undergo immunization injection experience pain. In the control group there is more stimulation to pain receptors during immunization injection whereas, in experimental group, there is less stimulation of pain receptors during immunization due to initiation of breast feeding 2 minutes before and immediately after immunization injection for 5 minutes.

### **Pain control mechanism**

The gate control theory also discusses the idea of central control through modulation of nerve impulses in descending fibres from the brain. The gate tends to close when the cognitive activities such as distraction (breast feeding) are processed along these fibres, therefore preventing the transmission of pain through a “descending blocking action”. This mechanism also affects the various pain entitles such as anxiety, anticipation, and memory of prior experience.

### **Pain perception after immunization injection**

Both in control and experimental group pain perception is assessed by Neonatal Infant Pain Scale (NIPS). The experimental group experiences less pain compared to control group infant.

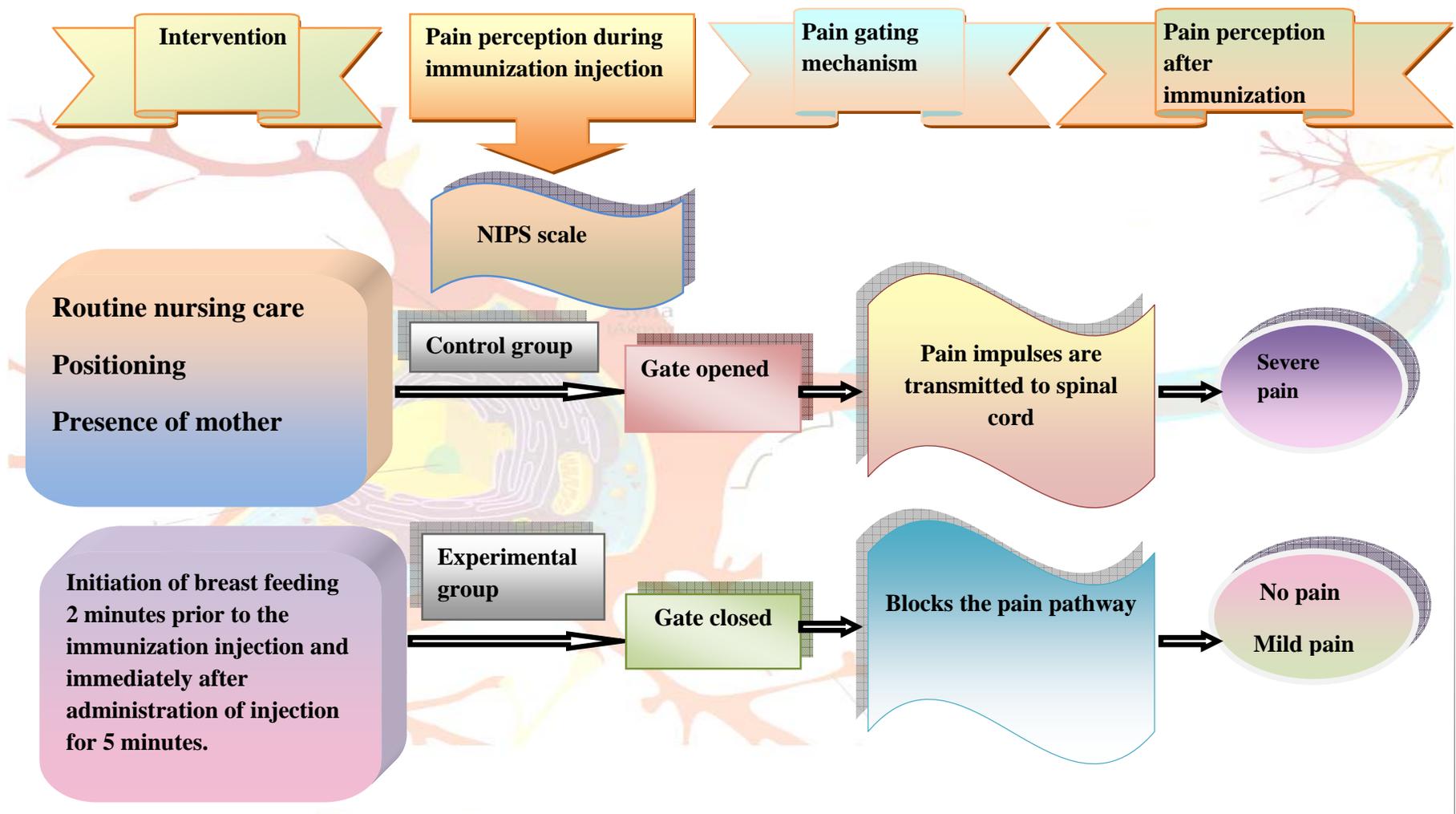


Fig. 1 Conceptual Framework based on Melzack and Wall's Gate Control Theory (1965)

## **Projected Outcome**

Breast feeding during immunization will help the infants to have decreased pain perception and increases mother's satisfaction. The intervention will be affordable, safe, require no prior practice and easy to administer.

## **Summary**

This chapter has dealt with the background, need for the study, statement of the problem, objectives, operational definitions, assumptions, Null hypotheses, delimitations and conceptual framework.

## **Organisation of the Report**

Further aspects of the study are presented in the following chapters.

- In chapter II:** Review of literature
- In chapter III:** Research methodology which includes research approach, research design, setting, population, sample and sampling technique, tool description, validation and reliability of tools, pilot study, data collection procedure and plan for data analysis.
- In chapter IV:** Analysis and interpretation of the data
- In chapter V:** Discussion.
- In chapter VI:** Summary, conclusion, implication and recommendation.

The report ends with selected references and annexure.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

Review of literature helps the research to build on existing work he or she should understand what is already known as topic (Polit and Beck, 2008).

Review of literature helps to plan and conduct the study in a systematic manner. Review of literature is the task of reviewing literature which involves the identification, selection, critical analysis and reporting of existing information on the topic of interest. It provides the basis to locate the data, new ideas that need to be included in the present study. It helps the researcher to find the accurate data that could be used for supporting the present finding and drawing conclusions.

This chapter deals with a review of published and unpublished research studies and related material for the present study. The review helps the researcher to develop an insight into the problem area and helps to build the foundation of the study.

For the present study, the researcher reviewed the related literature and organized under the broad headings.

- **Literatures related to Breast feeding**
- **Literatures related to Pain Perception of Infants**
- **Literatures related to Breast Feeding as Pain Intervention during Painful Procedure**

## **Literatures related to Breast Feeding**

Brown et al. (2011) conducted a retrospective study to examine the factors associated with breast feeding initiation and duration among 138 young mothers between 17-24 years at health centre in Malaysia. Participants completed a retrospective questionnaire about their experience of breast feeding or artificial milk feeding during the first 6 months of post partum period. A further 10 mothers who breast fed for atleast 6 months completed a semi structured interview. Findings revealed that breast feeding for atleast 6 months was positively associated with attending a breast feeding support group, believing breast feeding to be easy, being part of environment where breast feeding is normative and being encouraged to breast feed by others.

A Qualitative study was conducted by Grassley et al.(2008) on infant feeding experience and knowledge influence mother's decisions to initiate and continue breast feeding among the 30 mothers participated in one of the four groups held in a North Texas metropolitan area. The researcher analyzed the text of each group interview using the content analysis method and identified five themes. It was concluded that breast feeding occurs within the context of an extended family in which grandmothers bring their own infant feeding practices and beliefs to their support of new mothers. Mothers need and want grandmother's support, but their advice and concerns may reflect cultural beliefs that do not protect breast feeding.

In the year 2007, Chung et al. at United States conducted a systematic review of various evidence on the short and long term effects of breastfeeding on infant and maternal health outcomes in developed countries. Review included meta analyses,

randomized and non randomized comparative trials, prospective cohort, and case control studies on the effects of breastfeeding and relevant outcomes. Approximately 400 individual studies were included in this review. Findings reveal that the history of breastfeeding was associated with a reduction in the risk of acute otitis media, non-specific gastroenteritis, severe lower respiratory tract infections, atopic dermatitis, asthma, obesity, type 1 and 2 diabetes, childhood leukemia, sudden infant death syndrome (SIDS), and necrotizing enterocolitis.

In Scotland, a comparative study was conducted among 203 mothers on initiation and continuation of breast feeding who breast feed or provide bottle feeds to infants. Semi structured questionnaire were administered to the mothers followed by postal questionnaires at 6 weeks. Infant feeding intentions, feeding behaviour at birth and follow up, behavioural beliefs and subjective norms for both breast feeding and bottle feeding were assessed. The results were the breast feeders rated close social referents as more in favour of bottle feeding and more against breast feeding at follow up, whereas bottle feeders rating did not change. Breast feeding continuers perceived more overall social pressure to bottle feeds, (Swanson and Power, 2005).

### **Literatures Related To Pain Perception of Infants**

Anand and Matthew (2011) viewed that early experience of pain has lasting effects which results in lessened pain sensitivity, lack of coping strategies and poor cognitive development. Babies often receive less pain relieving medicine before invasive procedures or after surgery than adults do. An inflammatory response lasting from hours to days will follow, leading to increased pain sensitivity around the damaged

tissue. Human infants perceive pain, as determined by physiological and behavioral responses, at their earliest developmental stages, even before birth.

Neonatal pain can have profound and perhaps permanent effects on development. Premature babies receiving painful clinical procedures during intensive care later exhibited a lower reaction to pain. Experience of pain during an early stage of development known as the sensitive or critical period permanently alters pain perception in the adult. Painful experiences in early life may leave a legacy of altered sensitivity to subsequent pain in later life. Early painful experiences will be remembered by the developing brain, perhaps for the entire life of the individual.

Ninchal (2009) conducted a quasi experimental study to compare the effectiveness of oral glucose solution as against local anaesthetic jelly upon pain perception during DPT immunization among 120 infants at Andhra Mahila Sabha Chennai. The infants in control group received the routine nursing care whereas the infants in group I, II and III received oral glucose solution, local anaesthetic jelly and oral glucose with local anaesthetic respectively. The pain score was assessed using Riley Infant pain scale and Neonatal Infant Pain scale. Findings reveal that oral glucose solution with local anaesthetic jelly was more effective than oral glucose solution or local anaesthetic jelly in reducing the pain during DPT immunization at  $P < 0.05$  level.

The effectiveness of administration of oral glucose solution and application of local anaesthetic cream prior to intramuscular injection in reducing pain in infants was conducted among 90 infants undergoing immunization injection in child health centre, Madurai. Randomised double blind control group design was use in this study. One

group of 30 infants received 1 ml of 25% glucose solution orally and local placebo Vaseline on the skin, whereas another group of 30 infants received lidocaine cream on the skin and orally administered placebo sterile water and one group did not receive any treatment. Pain score in all the groups were measured using Face, Leg , Activity, cry and Consolability (FLACC) behavioural pain scale. The results showed that pain scores were significantly lower in the group who received glucose at  $M=5.8$  than that of control group at  $M= 11$  significant at  $p<0.001$ (Baby, 2007).

In a community pediatric centre at Ontario, an effect of age, gender and holding on pain response during infants during immunization was studied as randomized control trial among 106 infants aged 2-6 months of age. Infants were positioned either supine on the examination table or held by a parent during routine immunization in experimental and control group respectively. Facial grimacing scoring system was used. Findings revealed that there was no difference between the supine position and holding infants in the duration of crying. Similarly gender did not affect the pain response. In contrast it was found that 2 month old infants displayed more pain during immunization than 4 to 6 months old infants. (Ipp et al. 2004).

In the year 2004, Franck, Cox, Allen and winter, conducted a descriptive cross sectional survey in 10 neonatal units at UK and US to describe the parental concern and distress about the infant pain. 196 parents of pre term and full term infants admitted in hospital were selected and completed a three part questionnaire after the second day of admission. Parents reported that their infants had experienced moderate to severe pain that was greater than they had expected. Few parents had received written information, about the infant's pain or pain management. Most of the parents had numerous worries

about pain and pain treatments and the unmet information needs about infant pain and they wish to have greater involvement in their infant's pain care. These parental concerns about infant pain contributes to parental stress.

A randomised control study to assess the effectiveness, feasibility and parental acceptance of a simple combination of pain reduction intervention for infants receiving multiple immunization injections was conducted in Academic hospital based primary care centre, pittsburg. 116 infants were randomly assigned to the intervention or control group for administration of four injections. The intervention group received sucrose and oral tactile stimulation and were held by their parents during immunization. The control group did not receive these interventions. The median first cry duration was 19.0 seconds for the intervention group compared with 57.5 seconds for the control group. They concluded that combining surge, oral tactile stimulation, and parental holding was associated with significantly reduced crying in infants receiving multiple immunization injections. (Cohen et al.2003)

Taddio et al. (2001) conducted a prospective cohort study to examine the effect of neonatal circumcision on subsequent pain responses of infants during immunization among the 3 groups of infants at the clinic of the infant's primary care physician centre. Group 1 was circumcised using the anaesthetic cream EMLA (n=29), group 2 underwent circumcision with a placebo (n=26) and, the control group, was uncircumcised (n=32). Results showed that males who were circumcised with placebo, had a significantly greater pain responses to their routine immunization than those who were circumcised with the use of the EMLA cream or who were not circumcised ( $p<0.05$ ), suggesting that infants do perceive and remember pain.

In Canada, the expression of pain in infants and toddlers, developmental changes in facial action was conducted among 75 infants to assess the age related variations in facial action during immunization in infants using the Neonatal Facial Coding System (NFCS) and the Baby Facial Action Coding System (FACS). A significant main effect for age was found for NFCS recovery scores with 4 month old infants having significantly lower pain summary scores than the other age groups ( $p < 0.05$ ). For Baby FACS scores, a main effect for age was significant at ( $p < 0.005$ ), with summary scores significantly higher for 2 month old compared to the other age groups ( $p < 0.001$ ). Thus, age-related differences in pain behaviour were observed using two separate facial action coding systems during immunization. (Lilly, Craig and Grunau, 2001).

### **Literature Related to Breast Feeding as Pain Intervention during Painful Procedure**

In the year 2011, Thomas, Shetty and Bagali conducted a quasi experimental study to assess the role of breast feeding in pain response during injectable immunization among 40 infants (5-15 weeks) receiving either first, second or third dose of DPT vaccine at Immunization centre in Karnataka. The pain perception was assessed using Neonatal infant pain scale in both experimental and control group. Study reveals that the mean pain score was 4.7 in the experimental group and 6.6 in the control group at 1<sup>st</sup> minute. The mean pain score at 5<sup>th</sup> minute was 0.55 and 1.95 in the experimental and control group respectively. There was a statistical difference in the pain response of infants who were given breast feeding than those who were not breast feed during injectable immunization.

The effectiveness of breast feeding on pain experience of infants during the intravenous therapy was conducted among 30 hospitalized infants (1 to 6 months) from a Children Hospital at Coimbatore. The pain was assessed using FLACC scale. The intensity of pain for the experimental group was observed while mother was feeding the baby. The mean pain score was 1.13 for the experimental group whereas in the control group was 8.92. The mean duration of crying during overall intravenous therapy was 3.29 min for the experimental group and 47.27 min for the control group. The study concluded that breastfeeding was effective in reducing pain perception and crying time of infants while carryout the intravenous therapy (Jasmine, 2010).

Breast feeding in infants under age 6 months of age and use of sucrose or lidocaine in children aged 6 to 48 months has significantly reduced crying time and pain scores during vaccination injections. A prospective controlled study was conducted among 243 children between age 0 and 48 months receiving their routine vaccination injections at Well Child Unit in Turkey. The study samples were randomly assigned to the study groups to investigate the interventions that affect pain reduction during vaccination. (Dilli et al. 2009)

In the year 2008, Razek and El-Dein, conducted a quasi experimental study in two maternal and child health centres at Jordan, to assess the effects of breast feeding on pain relief during neonatal immunization injections among the infants of 1 year of age. Infants were divided into two groups, the breast fed group and the control group and were observed during routine immunization. Pain responses were assessed by using Facial Pain Rating Scale and NIPS before, during and after the procedure. Findings revealed that the crying time was shorter in intervention (breast-fed) group than in the

control group M= 125.33, SD= 12.18 and M= 148.66, SD=13.96 respectively with a statistically significant difference in the duration of crying during and after immunization.

Breast feeding has analgesic effect in reducing the pain perception during heel puncture. A quasi experimental study was conducted among 200 healthy full term newborns to evaluate the analgesic effect of breast feeding during heel lace procedure at Andrea Hospital, Italy. In experimental group, mothers were made to breast feed the baby during heel lace procedure. Whereas in control group no intervention was given. Pain assessment was evaluated by Douleur Aigue Nouveau ne scale. Results proved that the difference in pain score was significant in two groups with M= 2.65 in experimental group and M= 5.15 for control group of newborn.( Uga et al. 2008).

Efe and Ozer (2007) conducted a prospective randomized controlled trial to examine the pain relieving effect of breastfeeding during immunization among 66 healthy, full term infants receiving routine vaccination at immunization clinic in Turkey. Infants were assigned to experimental group in which the infants were encouraged to breastfeed before, during, and after the procedure or the control group who were swaddled in a blanket and were soothed vocally by their mothers. Researchers found total duration of crying was significantly shorter in the breastfeeding group (M=35.85 seconds) compared to the control group (M = 76.24 seconds). They also found that 9 of the 33 breastfed infants did not cry while undergoing the immunization process.

In California, a prospective randomized controlled trial was conducted to assess the crying duration among the breastfed newborn infants during and after undergoing heel-sticks procedure. The infants were randomly assigned into 3 groups Group 1 were breastfed, Group 2 were given pacifiers while being held by their mothers, and Group 3 was given pacifiers while being held by research assistants. The percentage of infants that cried during the procedure and for 3 minutes post procedure showed that breastfeeding provided more analgesia when compared to pacifier use with non maternal holding. Breastfeeding and pacifier use with maternal holding were both useful at providing analgesia when compared to pacifier use with non maternal holding. (Phillips et al. 2005)

Grandin, Finnstrom and Schollin (2004) conducted a randomised control trial in University Hospital Sweden to compare the pain reducing effect of oral glucose with that of being breastfed shortly before venipuncture in newborns who were randomly assigned to any of the four groups, breastfed and 1 ml placebo, breastfed and 1 ml 30% glucose, fasting and 1 ml placebo, fasting and 1 ml 30% glucose. Pain during venipuncture was measured with the premature infant pain profile (PIPP). The median crying time during the first 3 minutes in groups I, II, III and IV were 63, 18, 142 and 93, respectively which concluded that breastfeeding shortly before venipuncture has major impact on the pain score and crying time. The combination of oral glucose and breastfeeding showed lowest pain score and significantly shorter duration of crying.

In the year 2002, Gray et al. conducted a prospective controlled trial at two hospitals in Massachusetts to determine whether breastfeeding provides analgesia among 30 infants undergoing a heel-lance procedure. The breastfeeding group was

allowed to nurse during blood collection, while the infants in the control group were swaddled and kept in their bassinets during the procedure. Mean cry levels were reduced by 91% and facial grimacing by 84% in the breastfed group. Mean increase in heart rate was also significantly lower in the breastfed group when compared to the control group at  $P < 0.001$  level. This study also demonstrates that breastfeeding is useful in reducing pain perception in infants. The fact that 11 of the 15 breastfeeding infants did not cry at all suggests that breastfeeding may block pain transmission.

### **Summary**

This chapter has dealt with review of literature related to the problem stated. The literatures presented here were extracted from 15 primary and 6 secondary sources. It has helped the researcher to understand the impact of the problem under study. It has also enabled the investigator to design the study, develop the tool, plan the data collection procedure and to analyze the data.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

The methodology of the research study is defined as the way the data is gathered in order to answer the question to analyze the research problem. It enables the researcher to project the blue print of the research undertaken. The research methodology involves a systematic procedure by which the researcher starts from the initial identification of the problem to its final conclusion. The present study was conducted to assess the effectiveness of breast feeding upon the pain perception of infants during immunization.

This chapter deals with a brief discussion of different steps undertaken by the researcher for the study. It involves research approach, research design, setting, population, sample and sampling technique, selection of tool, content validity, reliability, pilot study, data collection procedure and plan for data analysis.

#### **Research Approach**

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of research study which is undertaken. Experimental research is an extremely applied form of research and involves finding out how well a program, practice or policy are working (Polit and Beck, 2008). In this study, the researcher wanted to assess the effectiveness of breast feeding upon the pain perception of infants during immunization. After extensive review of literature the researcher found that the experimental approach was the best suited approach.

## Research Design

Research design as the overall plan for addressing a research question, including specifications for enhancing the study's integrity (Polit and Beck, 2008) A true experimental research design was used for this study which is the most powerful method available for testing hypothesis of cause and effect relationship between variables. It has the characteristic features such as manipulation, control and randomization. Randomization was carried out to select 60 samples and to assign them in the control and experimental group. Breast feeding was given as intervention in the experimental group.

In this study, post test only design was adopted. The researcher manipulated the independent variable i.e., breast feeding during immunization to the experimental group of infants. The effectiveness of breast feeding upon the independent variable i.e., the pain perception in infants was computed.

The research design is represented diagrammatically as follows:

Post test only design

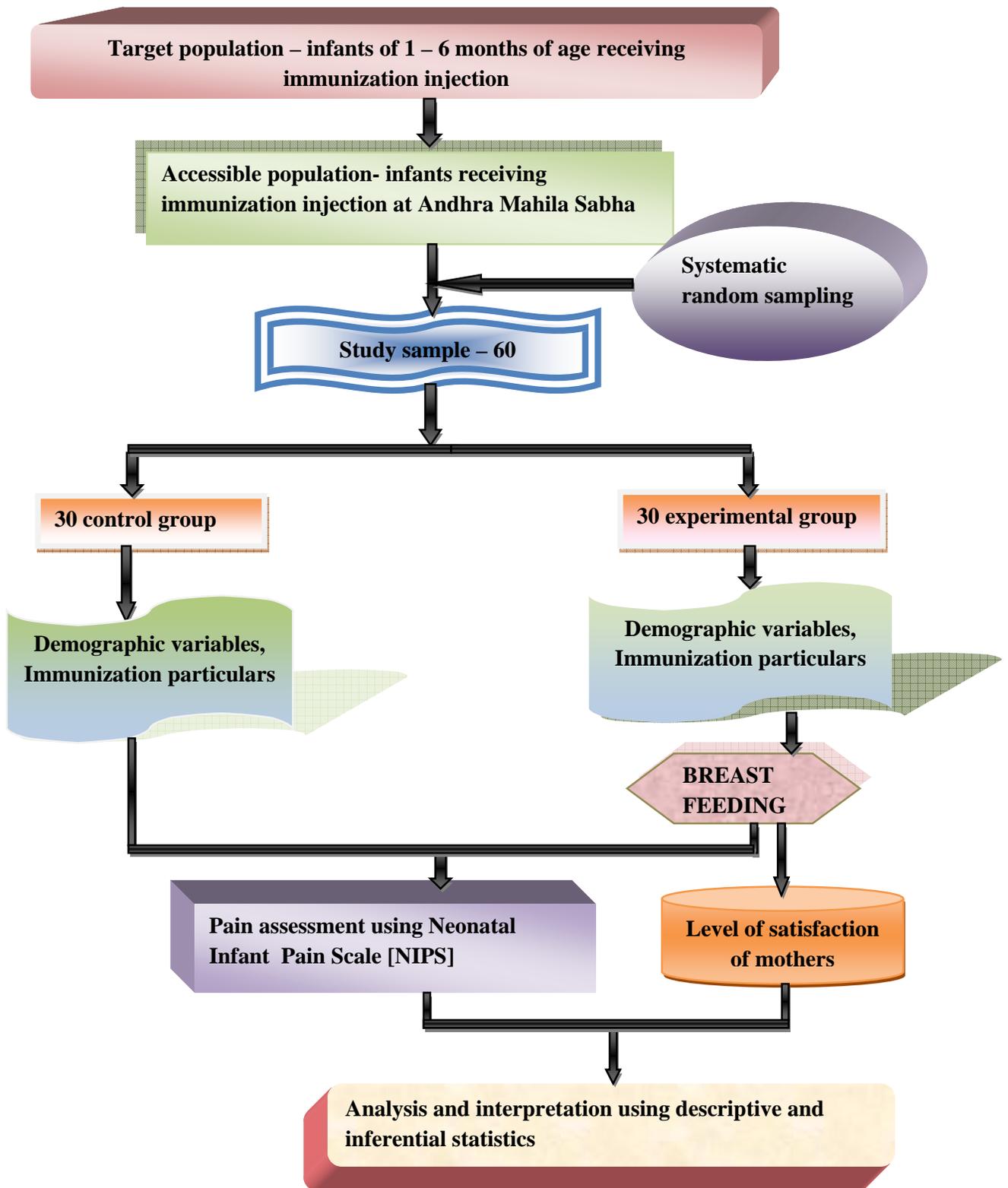
R - - O1

R - X O1

R - Randomization

X - Breast feeding during immunization

O1 - Post test observation



**Fig.2. Schematic Representation of Research Design**

## **Variables**

### **Independent variable**

The variable that is believed to cause or influence the dependent variable is the independent variable (Polit and Beck, 2008). The independent variable of this study is breast feeding during immunization.

### **Dependent variable**

The variable hypothesized to depend on or be caused by another variable is the dependent variable (Polit and Beck, 2008). The dependent variable in this study is the level of pain perception during immunization.

### **Attribute Variable**

Variables that describe the study sample characteristics are termed as attribute variables. (Polit and Beck,2008). In this study the attribute variables are the demographic variable proforma of the infants and the immunization particulars of the infants.

## **Research Setting**

Research setting is the physical location and conditions in which data collection takes place in a study (Polit and Beck, 2008). The study was conducted in the immunization clinic at Andhra Mahila Sabha, Chennai. It is a 100 bedded general hospital with specialization in gynaecology, pediatric and geriatric care. In this hospital, immunization clinic is conducted every week from Monday to Saturday between 9:00

am to 1:00 pm. Around 400 children receive immunization in the hospital every month. Among them about 100 infants between 1 to 6 months of age receive either DPT vaccine, hepatitis B vaccine, Hib vaccine, pentavac or quadrovax injection.

### **Population**

Population is the entire set of individuals or objects having some common characteristics (Polit and Beck, 2008).

#### **Target population**

The entire population is the aggregate of cases in which a researcher is interested and would like to generalize the study results (Polit and Beck, 2008). The target Population of this study includes the Infants 1 to 6 months of age who receive either DPT vaccine, hepatitis B vaccine, Hib vaccine, pentavac or quadrovax injection.

#### **Accessible population**

The accessible population is the aggregate of cases that conforms to designated criteria and that are accessible as subjects for a study (Polit and Beck, 2008). The accessible population was the Infants 1 to 6 months of age who receive either DPT vaccine, hepatitis B vaccine, Hib vaccine, pentavac or quadrovax injection at Andhra Mahila Sabha, Chennai.

### **Sample**

Sample is a subset of a population selected to participate in a study (Polit and Beck, 2008). Sample size for the present study was 60 infants of 1 to 6 months of age

receiving the immunization injection at Andhra Mahila Sabha. Among them 30 infants were assigned control group and 30 in experimental group who satisfy the inclusion criteria.

### **Sampling Technique**

Sampling is the process of selecting a portion of the population to represent the entire population (Polit and Beck, 2008). The subjects of the present study were selected by systematic random sampling technique in which the infants who satisfied the inclusion criteria were selected and were numbered one and two. The infants with one number were assigned to control group and two numbers to the experimental group.

### **Sampling Criteria**

#### **Inclusion criteria**

- Infants between 1 to 6 months of age.
- Infants receiving either DPT vaccine, Hepatitis B vaccine, Hib vaccine, pentavac or quadrovax.
- Both male and female infants.
- Infants who are on breast feeding.
- Infants attending the immunization clinic.
- Care giver who knows Tamil or English.

#### **Exclusion criteria**

- Infants with any physical illness
- Infants with cleft lip/ palate
- Infants with breast feeding problems
- Mothers who are not willing to participate.

## **Selection and Development of Tools**

The study aimed at evaluating the effectiveness of breastfeeding upon the pain perception of infants during immunization. Data collection instrument was developed through an extensive review of literature and consultation with experts.

The instruments used were demographic variable proforma of infants receiving immunization , Proforma of immunization particulars in infants, Neonatal Infant Pain Scale to assess the pain perception of infants and rating scale on level of satisfaction of mother regarding breast feeding during immunization.

### **Demographic variable proforma of infants receiving immunization**

Demographic variable proforma of infant includes the information regarding age, gender, birth weight, present weight, type of family, area of residence, family monthly income. This was used to collect the base line information.

### **Proforma of immunization particulars in infants**

Immunization particulars in infants includes type of vaccination, previous hospitalisation of the child, history of any allergic reaction to previous immunization, age at which breast feeding was initiated after birth and history of breast feeding difficulties.

### **Neonatal Infant Pain Scale**

Neonatal Infant Pain Scale is a standardised scale which was developed by Lawrence et al. in 1993. It consists of six criteria: facial expression, cry, breathing patterns, arms, legs, state of arousal. Each criterion has score 0 and 1 and only the second criteria has score 0, 1 and 2.

<b>Score</b>	<b>Interpretation</b>
0	no pain
1-3	mild pain
4-7	severe pain

### **Rating scale on level of satisfaction of mother's regarding breast feeding during immunization**

The level of satisfaction of mother regarding breast feeding during immunization was measured by rating scale, which comprises of 3 categories: character of the investigator, effect of the intervention on the mother, effect of the intervention on the child. Rating scale includes 10 items. The responses includes highly satisfied, satisfied, dissatisfied, highly dissatisfied with score 3,2,1,0 respectively. The maximum score is 30.

<b>Score</b>	<b>Percentage</b>	<b>Interpretation</b>
<12	<40%	low satisfaction
12-20	40-69%	moderate satisfaction
21-30	70-100%	high satisfaction

## **Psychometric Properties of the Instruments**

### **Validity**

Content validity is the degree to which an item in an instrument adequately represents the universe of the content (Polit and Beck, 2008). The tools were given for validation to the seven experts in the field of research and nursing. The validators had suggested some modification in demographic variable proforma and clinical variable proforma. The modification and suggestion of experts were incorporated in the final preparation of the tool.

### **Reliability**

The reliability is the degree of consistency with which an instrument measures the attribute which is designed to measure (Polit and Beck, 2008).

#### **1. Neonatal Infant Pain Scale (NIPS)**

The reliability of the tool was determined by the authors using interrater reliability 0.92 and 0.97, internal consistency use in cronbach alpha 0.88 after procedures for Neonatal Infant Pain Scale. It was found to be highly reliable.

#### **2. Rating scale on level of satisfaction of mother's regarding breast feeding during immunization**

The reliability of the tool was tested using split half method and the reliability was found to be 0.8 which indicates that the tool is highly reliable.

### **Pilot Study**

Pilot study is a miniature version of actual study, in which the instrument is administered to the subjects drawn from the same population. It is a small scale version or trial run done in preparation for a major study (Polit and Beck, 2008). The purpose was to find out the feasibility and practicability of the study and to finalize the tools. The pilot study was conducted with 12 infants receiving immunization injection, among them 6 were in control group and 6 in experimental group. On the whole, the intervention was found to be feasible, effective and easy to administer.

### **Intervention Protocol**

In the experimental group, the mothers were taken to the breast feeding area, seated comfortably in a chair and were asked to breast feed the infant 2 minutes before the immunization injection, stop the feeding at the time of injection to prevent aspiration and then continue the feeding for 5 minutes immediately after administration of injection. Pain perceptions of the infants were assessed using Neonatal infant pain scale. The level of satisfaction of mothers regarding breast feeding during immunization was assessed using satisfaction rating scale.

### **Protection of Human Rights**

The researcher presented the proposal to the ethical committee of Apollo hospitals and got ethical clearance to further proceed with the study. The researcher obtained permission to conduct the study from Principal and HOD, Pediatric nursing department of Apollo College of nursing and the Medical Superintendent of Andhra

Mahila Sabha. Informed Consent was obtained from the mothers before collecting the data and Confidentiality was maintained throughout the study.

### **Data Collection Procedure**

Data collection is the gathering of information needed to address a research problem (Polit and Beck, 2008). The data was collected from 17-6-2011 to 16-7-2011 at Andhra Mahila Sabha, Chennai. After obtaining formal permission from the medical superintendent of Andhra Mahila Sabha, the researcher met the paediatric department and got the approval and valuable suggestions to conduct the study. The investigator introduced herself to the mothers of infant between 1 to 6 months of age, explained about the research study and obtained informed consent from the mothers who were willing to participate in the study. By using systematic random sampling technique, the samples who satisfied the inclusion criteria were selected and were numbered one and two and were assigned to control and experimental group respectively.

The researcher collected the demographic variables and immunization particulars by interviewing the mother and reviewing the immunization records. The pain perception of the infants during immunization in control group was assessed using NIPS scale without any intervention. In the experimental group, the mothers were taken to the breast feeding area, seated comfortably in the chair and were asked to breast feed the infant 2 minutes before the injection, stop the feeding at the time of injection to prevent aspiration and then continue the feeding for 5 minutes immediately after administration of injection. Pain perceptions of the infants were assessed using NIPS

scale. The level of satisfaction of mothers regarding breast feeding were assessed using satisfaction rating scale.

### **Problem Faced During Data Analysis**

Few of the working mothers were not willing to breast feed the infants immediately after the injection because of the time consumption.

### **Plan for Data Analysis**

Data analysis is the systematic organization and synthesis of research data and testing of research data and testing of research hypothesis by using the obtained data (Polit and Beck , 2008). Descriptive statistics like frequency distribution, percentage, mean, standard deviation and inferential statistics like ‘t’ test and chi- square is used to analyze the data.

### **Summary**

This chapter has dealt with the research methodology. It includes research approach, research design, research setting, population, sample, and sampling technique, selection and development of tools, validity and reliability of the study instrument, pilot study, intervention protocol, data collection procedure, problem faced during data collection, plan for data analysis. In the following chapter, analysis is interpreted by using descriptive and inferential statistics.

## **CHAPTER IV**

### **ANALYSIS AND INTERPRETATION**

This chapter includes both descriptive and inferential statistics. Statistics is a field of study concerned with techniques or methods of collection of data, classification, summarizing, interpretation, drawing inferences, testing of hypothesis, making recommendation (Mahajan, 2004).

The data was collected from 60 infants receiving immunization injection at Andhra Mahila Sabha, Chennai, among them 30 were in control group and 30 in experimental group to determine the effectiveness of breast feeding during immunization injection. The data was analysed according to the objectives and hypothesis of the study. Data analysis was computed after transferring the collected data into a coding sheet. The researcher used descriptive and inferential statistics for the analysis. The data was analyzed, tabulated and interpreted using descriptive and inferential statistics.

#### **Organisation of the Findings**

The findings of the study were organised and presented under the following headings:

- Frequency and percentage distribution of demographic variables in control and experimental group of infants
- Frequency and percentage distribution of immunization particulars in control and experimental group of infants
- Frequency and percentage distribution of pain perceived by infants during immunization as measured by NIPS scale

- Frequency and percentage distribution of level of satisfaction of mothers regarding breast feeding during immunization in the experimental group of infants.
- Dimension wise frequency and percentage distribution of level of satisfaction of mothers regarding breast feeding during immunization in the experimental group of infants.
- Comparison of mean and standard deviation of pain perceived by control and experimental group of infants during immunization as measured by NIPS scale.
- Association between the selected demographic variables and pain perception of infants in the control group using NIPS scale.
- Association between the selected demographic variables and pain perception of infants in the experimental group using NIPS scale.
- Association between the selected immunization particulars and pain perception of infants in the control group using NIPS scale.
- Association between the selected immunization particulars and pain perception of infants in the experimental group using NIPS scale.

**Table .1**

**Frequency and Percentage Distribution of Demographic Variables in the Control and Experimental Group of Infants.**

Demographic variables	Control group(n=30)		Experimental group(n=30)	
	n	p	n	p
<b>Age of the child</b>				
1-2 months	19	63.3	20	66.7
3-4 months	10	33.3	9	30
5-6 months	1	3.3	1	3.3
<b>Gender of the child</b>				
male	18	60	16	53.3
Female	12	40	14	46.7
<b>Birth weight</b>				
< 2.5 kg	6	20	3	10
2.6- 3 kg	9	30	10	33.3
3.1- 3.5 kg	10	33.3	14	46.7
> 3.6 kg	5	16.7	3	10
<b>Present weight</b>				
< 4 kg	8	26.7	2	6.7
4.1-5 kg	4	13.3	12	40
5-6 kg	11	36.7	10	33.3
> 6 kg	7	23.3	6	20

The data in table1 revealed that most of the infants in the control group and experimental group were males (60%, 40%) in the age group of 1-2 months (63.3%, 66.7%) ,birth weight between 3.1-3.5 kg (33.3%, 46.7%), present weight between 5-6 kg (36.7% , 33.3%) respectively.

Fig.3 describes the percentage distribution of type of family. Majority of the infants in the control and experimental group were living in nuclear family (60%, 80%).

Fig.4 shows the percentage distribution of area of residence. Most of the infants in the control and experimental group were from suburban (53.3%, 36.7 %).

Fig.5 reveals the percentage distribution of family monthly income. Most of the infants in the control group and experimental belongs to the family monthly income between 5001 – 10000 (53.3%, 33.3%).

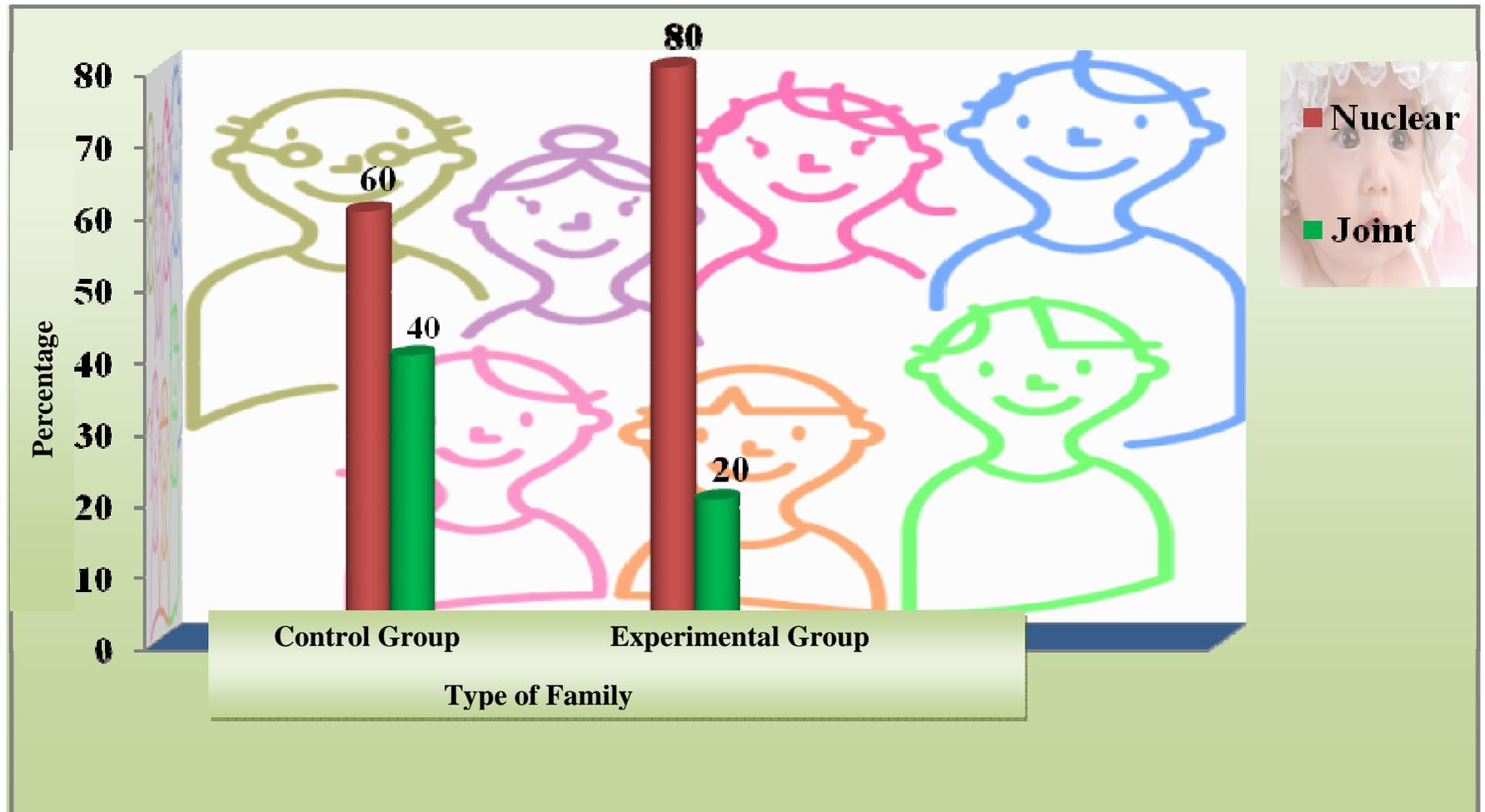


Fig.3 Percentage Distribution of Type of Family in the Control and Experimental Group of Infants

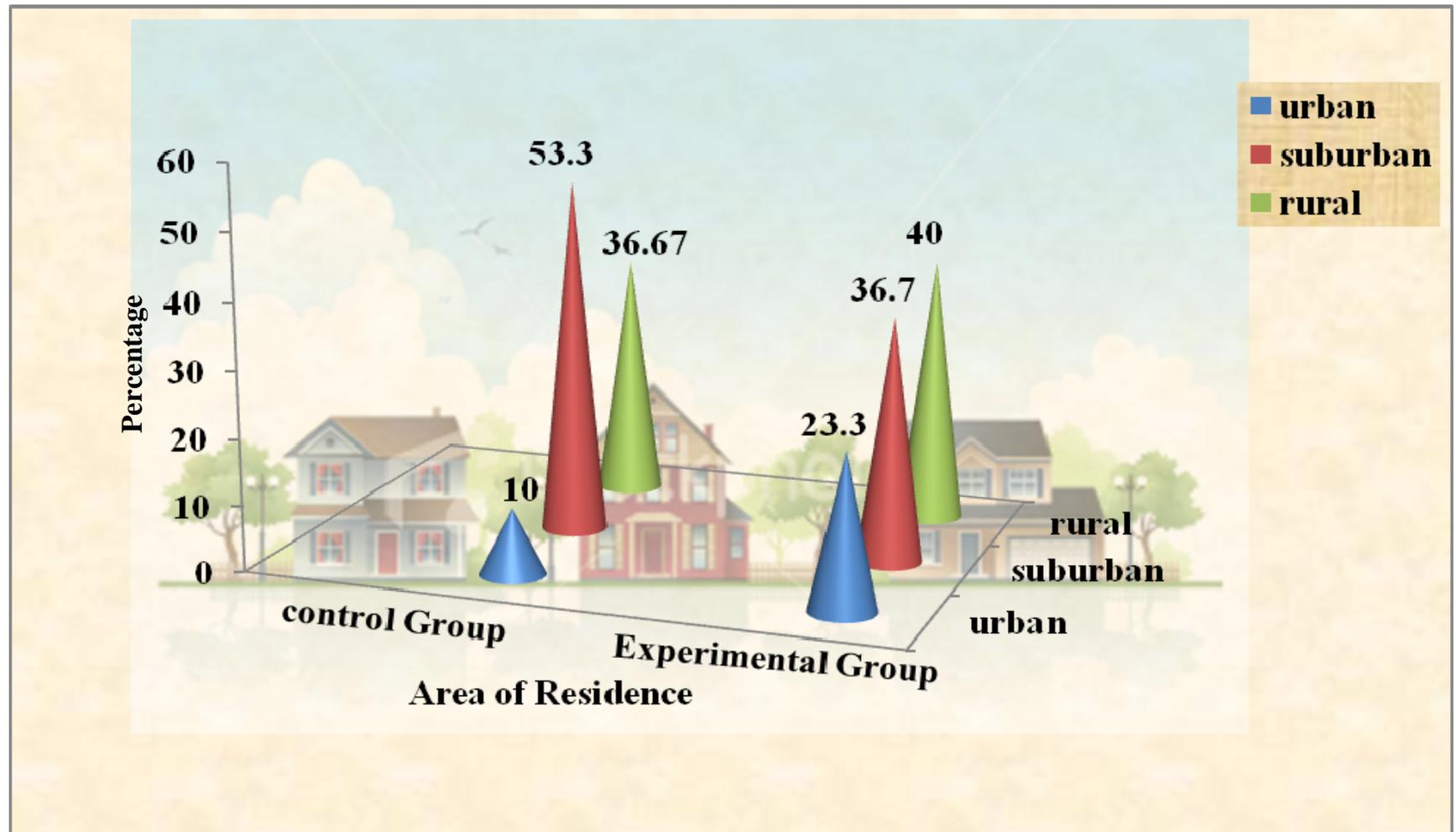


Fig.4 Percentage Distribution of Area of Residence in the Control and Experimental Group of Infants

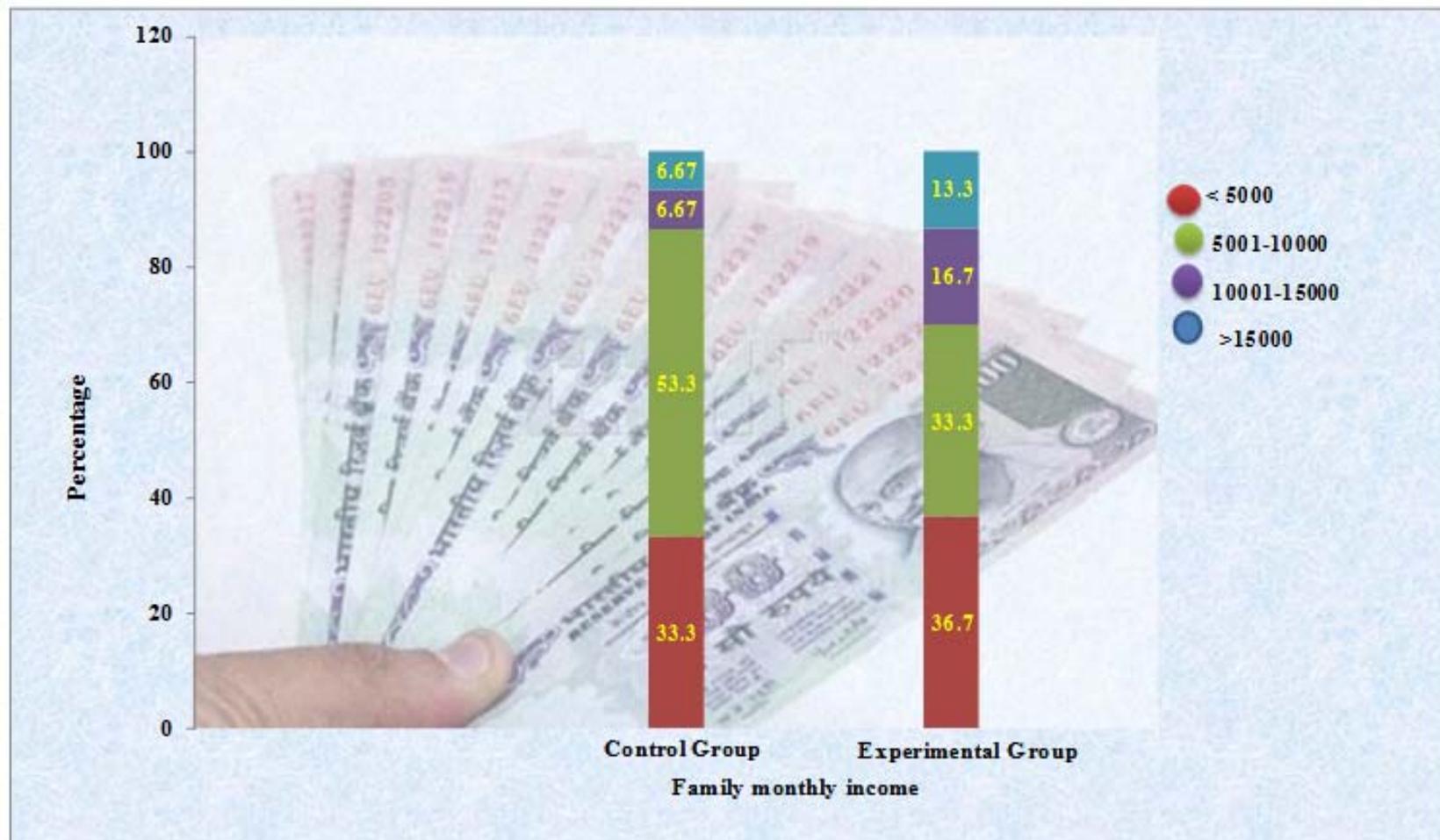


Fig.5 Percentage Distribution of Family Monthly Income in the Control and Experimental Group of Infants

**Table .2**

**Frequency and Percentage Distribution of Immunization Particulars in Control and Experimental Group of Infants**

Immunization particulars	Control group(n=30)		Experimental group(n=30)	
	n	p	n	p
<b>Type of vaccination</b>				
DPT	-	-	-	-
Hepatitis B vaccine	-	-	-	-
Hib vaccine	-	-	-	-
Pentavac	25	83.3	22	73.3
Quadrovax	5	16.67	8	26.7
<b>Previous hospitalization of the child</b>				
Yes	4	13.3	4	13.3
No	26	86.7	26	86.7
<b>History of any allergic reaction to previous immunization</b>				
Yes	-	-	-	-
No	30	100	30	100
<b>Age at which breast feeding was initiated after birth</b>				
30 min- 1 hour	16	53.3	15	50
1-6 hours	9	30	10	33.3
> 6 hours	5	16.7	5	16.7
<b>History of breast feeding difficulties</b>				
Yes	3	10	4	13.3
No	27	90	26	86.7

The data presented in table 2 revealed that majority of the infants in the control group and experimental group received pentavac injection (83.3%, 73.3%), did not had any previous hospitalization (86.7%, 86.7%) or any allergic reaction to previous immunization (100%, 100%), the breast feeding after birth was initiated within 30 min to 1hour (53.3%, 50%) and did not had any history of breast feeding difficulties (90%, 86.7%) respectively.

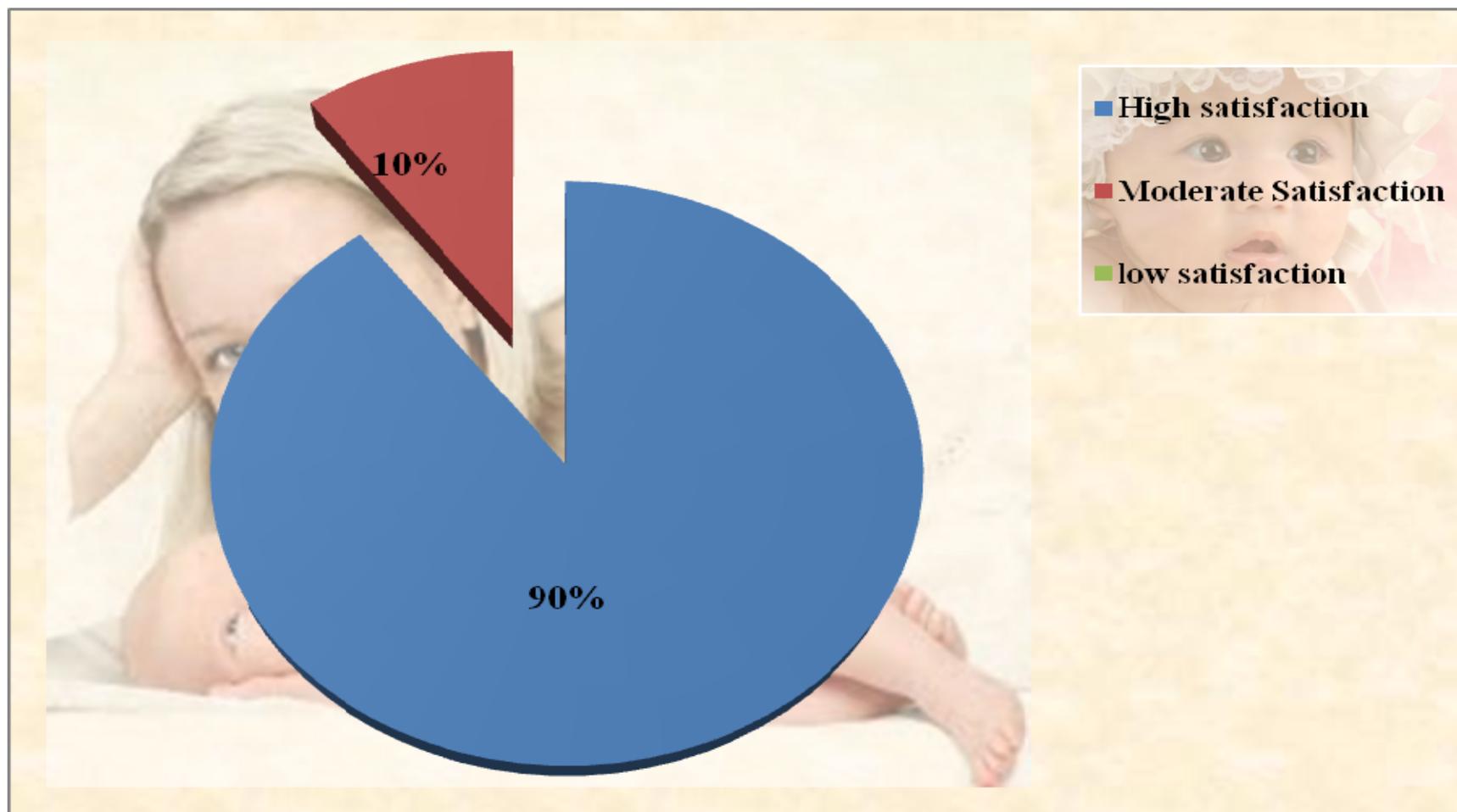
**Table .3**

**Frequency and Percentage Distribution of Pain Perceived by Infants During Immunization as Measured by NIPS Scale.**

Pain measured by NIPS	No pain		Mild pain		Severe pain	
	n	p	n	p	n	p
Control group	-	-	-	-	30	100
Experimental group			22	73.3	8	26.7

The data presented in the table 3 reveals that all the infants in the control group had severe pain during immunization, where as in the experimental group majority of the infants had mild pain (73.3%).

Fig.6 shows the percentage distribution of level of satisfaction of mothers in experimental group regarding breast feeding during immunization. Findings reveal that Majority of the mothers were highly satisfied regarding breast feeding during immunization.



**Fig.6 Percentage Distribution of Level of Satisfaction of Mothers in experimental group on Breast Feeding During Immunization**

**Table. 4**

**Dimension Wise Frequency and Percentage Distribution of Level of Satisfaction of Mothers in the Experimental Group Regarding Breast Feeding during Immunization**

(N=30)

Dimensions	High Satisfaction		Moderate satisfaction		Low satisfaction	
	n	P	n	p	n	p
Character of researcher	30	100	-	-	-	-
Effect of intervention in mother	22	73.3	8	26.7	-	-
Effect of intervention in child	27	90	3	10	-	-

It can be inferred from the table 4 that majority all the mothers were highly satisfied with all the character of the researcher (100%), effect of intervention in mother (73.3%) and effect of intervention in child (90%).

**Table. 5**

**Comparison of Mean and Standard Deviation of Pain Perceived by Control and Experimental Group of Infants During Immunization as Measured by NIPS Scale**

Group	n	mean	SD	t value
Control group	30	6.1	0.907	13.9 ***
Experimental group	30	3.16	0.687	

\*\*\* P<0.001

The data in table 5 depicts that the mean and standard deviation of the control group is M=6.1, SD=0.907 and that of experimental group is M=3.16, SD=0.687, the obtained 't' value 13.9 is greater than the table value 3.46 at P<0.001.

**Table. 6**

**Association Between the Selected Demographic Variables and Pain Perception of Infants in the Control Group Using NIPS Scale.**

(N=30)

Demographic variables	NIPS Score		$\chi^2$
	Upto mean n	Above mean n	
<b>Age of the child</b>			
Upto 2 months	3	8	4.35*
Above 2 months	14	5	df=1
<b>Gender of the child</b>			
Male	11	7	0.36
Female	6	6	df=1
<b>Birth Weight of the child</b>			
< 3 kg	9	6	0.13
> 3 kg	8	7	df=1
<b>Present weight of the child</b>			
< 5 kg	9	3	2.04
> 5 kg	8	10	df=1
<b>Type of family</b>			
Nuclear	11	7	0.88
Joint	6	6	df=1
<b>Area of residence</b>			
Urban and Suburban	13	6	1.69
Rural	4	7	df=1
<b>Family monthly income</b>			
< 10000	14	12	0.05
>10001	3	1	df=1

\* P&lt;0.05

From the table 6, it could be inferred that there was a significant association between the age of the child and pain perception and no significant association between other demographic variables and pain perception in control group of infants.

**Table. 7**

**Association Between the Selected Demographic Variables and Pain Perception of Infants in the Experimental Group Using NIPS Scale.**

**(N=30)**

Demographic variables	NIPS Score		$\chi^2$
	Upto mean	Above mean	
	n	n	
<b>Age of the child</b>			
Upto 2 months	16	4	0.53
Above 2 months	6	4	df=1
<b>Gender of the child</b>			
Male	13	3	0.4
Female	9	5	df=1
<b>Birth Weight of the child</b>			
< 3 kg	11	2	0.65
> 3 kg	11	6	df=1
<b>Present weight of the child</b>			
< 5 kg	11	3	0.04
> 5 kg	11	5	df=1
<b>Type of family</b>			
Nuclear	4	2	0.01
Joint	18	6	df=1
<b>Area of residence</b>			
Urban and Suburban	12	5	0.06
Rural	9	3	df=1
<b>Family monthly income</b>			
< 10000	17	4	0.98
>10001	5	4	df=1

From the table 7, it could be inferred that there was no significant association between the selected demographic variables and pain perception in the experimental group of infants.

**Table .8**

**Association Between the Selected Immunization Particulars and Pain Perception of Infants in the Control Group Using NIPS Scale.**

(N=30)

	Immunization particulars	NIPS Score		$\chi^2$
		Upto mean n	Above mean n	
<b>Type of vaccination</b>				
	Pentavac	15	10	0.11 df=1
	Quadrovax	2	3	
<b>Previous Hospitalization</b>				
	yes	1	3	0.69 df=1
	No	16	10	
<b>History of allergic reaction</b>				
	Yes	-	-	-
	No	17	13	
<b>Age at which breast feeding is initiated</b>				
	within 1 hour	8	8	0.17 df=1
	> 1 hour	9	5	
<b>History of breast feeding difficulty</b>				
	yes	2	1	0.06 df=1
	no	15	12	

From the table 8, it could be inferred that there was no significant association between the selected immunization particulars and pain perception in the control group of Infants.

**Table .9**

**Association Between the Selected Immunization Particulars and Pain Perception of Infants in Experimental Group Using NIPS Scale.**

**(N=30)**

Immunization particulars	NIPS score		$\chi^2$
	Upto mean	Above mean	
	n	n	
<b>Type of vaccination</b>			
Pentavac	16	6	0.12 df=1
Quadrovax	6	2	
<b>Previous Hospitalization</b>			
yes	3	1	0.28 df=1
No	19	7	
<b>History of allergic reaction</b>			
Yes	0	0	-
No	22	8	
<b>Age at which breast feeding is initiated</b>			
within 1 hour	14	2	2.14 df=1
> 1 hour	8	6	
<b>History of breast feeding difficulty</b>			
yes	2	1	0.17 df=1
no	20	7	

From the table 9, it could be inferred that there was no significant association between the selected immunization particulars and pain perception in the experimental group of infants.

## **Summary**

This chapter dealt with the analysis and interpretation of the study findings. The analysis of the data using descriptive and inferential statistics clearly revealed the effectiveness of breast feeding during immunization and the satisfaction of mothers regarding the intervention. In the following chapter interpretations of the study findings are discussed in detail.

## **CHAPTER V**

### **DISCUSSION**

An Experimental Study to Assess the Effectiveness of Breast Feeding Upon the Pain Perception of Infants during Immunization at Andhra Mahila Sabha, Chennai.

**The Objectives of the Study were,**

1. To assess the level of pain perceived in the control and experimental group of infants during immunization.
2. To determine the effectiveness of breast feeding upon pain perception in the experimental group of infants during immunization
3. To determine the level of satisfaction of mothers regarding breast feeding during immunization among the experimental group of infants.
4. To find out the association between the selected demographic variables and pain perception in the control and experimental group of infants during immunization.
5. To find out the association between the selected immunization particulars and pain perception in the control and experimental group of infants during immunization.

The study was conducted among 60 infants between 1-6 months of age receiving immunization injection at Andhra Mahila Sabha, Chennai. The effectiveness of breast feeding was assessed upon the pain perception of infants during immunization injection.

**The first objective of the study was to assess the level of pain perceived in the control and experimental group of infants during immunization.**

Most of the infants were in the age group of 1-2 months (63.3%,66.7%), males (60%, 40%) with birth weight between 3.1-3.5 kg (33.3%, 46.7%), present weight between 5-6 kg (36.7% , 33.3%) ,living in nuclear family (60%, 80.5%) with the family monthly income between 5001-10000 rupees (53.3%, 33.3% ) and were from suburban area (53.3%, 36.7%) in the control and experimental group respectively.

A healthy infant receive the first dose of DPT vaccine as the first intramuscular injection at 6 weeks of age, it was noted that mother's were aware about the importance of immunization to be given to the infants against the killer diseases and they followed the schedule appropriately. Sex ratio over the decades in India has been deteriorating. The 2011 census reported the sex ratio in India as 940 females per 1000 males which are in consistent with the obtained data. The birth weight of 3.3 kg for males and 3.2 kg for females in India is considered as normal. Most of the infants had the expected weight which indicates that the mothers had adequate nutrition during the antenatal period.

Society is formed by combination of both nuclear and joint family. Few decades back, most of the families lived as joint family where agriculture was the main occupation. Nowadays, due to the technological development and increased literacy level most of them were employed in technical jobs. So they migrate to various areas and live as a nuclear family. Irrespective of the type of family, the care givers are aware of the health needs of their infants. Since Andhra Mahila Sabha is a charitable trust

hospital located in suburban area, and provide service at acceptable level of cost, most of the people from rural and suburban who are economically less affordable receive treatment in this hospital.

Majority of the infants received pentavac injection (83.3%, 73.3%), did not had any previous hospitalization nor any allergic reaction to previous immunization, breast feeding after birth was initiated within 30 min –1hour (53.3%, 50%) and did not have any history of breast feeding difficulties (90%, 86.7%) in the control and experimental group respectively.

The newer trend in immunization is the use of combined vaccination which prevents multiple injections in infants. The pentavalent vaccine was introduced by the government in the immunization centres in December 2010. In Andhra Mahila Sabha, infants were immunized with pentavac and quadrovax vaccines. Rarely a very few number of infants who belong to below poverty line receive individual vaccines because of non affordability. Most of the infants who came to the clinic were between 1-2 months of age. It shows that infants were receiving adequate nutrition and care that prevents from illness or infections so that hospitalization was prevented. As the vaccines are stored at appropriate temperature and administered at correct site allergic reactions were prevented in the infants.

The data describes that the mothers and nurses were aware of the importance of initiating the breast feeding within half an hour after birth. Nurses should educate all the mothers from the prenatal period about the beneficial effects of initiating breast feeding immediately after birth and should take positive measures to do so.

The pain perception of infants during immunization was assessed using Neonatal Infant Pain Scale (NIPS) in both the control and experimental group of infants. The mean and standard deviation of pain score in control group is  $M= 6.1$ ,  $SD = 0.907$  and that of experimental group is  $M =3.16$ ,  $SD= 0.687$  which indicates that the experimental group infants had lower level of pain perception in comparison with control group.

Pain stimuli that occurs due to immunization injections is unavoidable. But the transmission of the stimuli can be blocked by various distraction techniques in infants. As one of the measure, the infants in the experimental group were breast fed before and immediately after administration of injection and findings revealed that the pain perception is reduced in infants when compared to the control group of infants.

**The second objective of the study was to determine the effectiveness of breast feeding upon pain perception in the experimental group of infants during immunization.**

The effectiveness of breast feeding upon pain perception among the experimental group of infants during immunization was assessed statistically using the independent 't' test. The mean and standard deviation of pain score was lower in experimental group ( $M=3.16$ ,  $SD=0.687$ ) of infants who received breast feeding during immunization when compared to the control group of infants ( $M=6.1$ ,  $SD = 0.907$ ). The difference was statistically significant at  $P<0.001$  level. The results could be attributed to the effectiveness of breast feeding upon the pain perception of infants during immunization.

Sucking is the pleasurable act in infants. During breast feeding the infants sucking act, sweetening taste and holding distract the attention towards pain and hence the infants perception of pain has reduced. Hence the null hypothesis  $H_{01}$ , there will be no significant difference in pain perception in the control and experimental group of infants during immunization was rejected.

The findings were consistent with the prospective randomized controlled trial conducted by Efe and Ozer, (2007) among healthy, full-term infants (N = 66) for routine immunization. Infants were assigned to experimental group where the infants were encouraged to breastfeed before, during, and after the procedure or the control group who were swaddled in a blanket and were soothed vocally by their mothers. It was found that total duration of crying was significantly shorter in the breastfeeding group compared to the control group. They also found that 9 of the 33 breastfed infants did not cry while undergoing the immunization process.

The researcher concluded that the findings must be disseminated so that evidence based knowledge can be utilized in the clinical setting to reduce the pain perception of infants during immunization injections.

**The third objective of the study was to determine the level of satisfaction of mothers regarding breast feeding during immunization among the experimental group of infants.**

When assessing the level of satisfaction of mothers regarding breast feeding during immunization, it is noted that majority of the mothers (90%) were highly satisfied. Dimension wise analysis also reveals that majority of the mothers were highly

satisfied with all the character of the researcher (100%), effect of intervention in mother (73.3%) and effect of intervention in child (90%). It indicates that the mothers were also under stress and anxious regarding the painful experience of the infants during the routine immunization injections. Thus the effective pain management measure which is safe, simple, cost effective and easier to administer help the mothers to have the higher satisfaction level. These findings can be disseminated to the medical superintendent of the hospitals to implement the cost effective pain reduction interventions in the immunization clinic.

**The fourth objective of the study was to find the association between the selected demographic variables and pain perception in the control and experimental group of infants during immunization.**

Chi square test and Yates correction is used to find out the association between the selected demographic variables and the pain perception of infants. It is inferred that there was a significant association between the age of the child and pain perception of infants in the control group and no significant association between other demographic variables like gender, birth weight, present weight, type of family, area of residence, family monthly income and pain perception in control group.

As the visual and auditory sensation were not well developed for infants at 1-2 months of age, it is difficult to distract them using toys, so they perceive more pain than other infants. It is necessary to provide intervention for all the infants to reduce the pain perception. This finding were consistent with the study on the expression of pain in infants and toddlers developmental changes in facial action conducted by Lilley, Craig

and Grunau.(1997) to assess the age related variations in facial action during immunization in infants using the NFCS and the Baby FACS. A significant main effect for age was found for NFCS recovery scores with 4-month-old infants having significantly lower pain summary scores than the other age groups ( $p<0.05$ ). For Baby FACS scores, a main effect for age was significant at  $p<0.005$ , with summary scores significantly higher for 2-month-olds compared to the other age groups ( $p<0.001$ ).

It is also found that irrespective of the demographic variables, all the infants in the experimental group had the same pain perception. This shows that pain experience is not influenced by any of the factors like gender, birth weight, present weight, type of family or family income, so all the infants require pain reduction interventions during immunization. Thus the null hypothesis  $H_0$  was rejected with regard to age in control group and retained with regard to other variables in control and experimental group of infants.

**The fifth objective of the study was to find out the association between the selected immunization particulars and pain perception by the control and experimental group of infants during immunization.**

Chi square test and Yates correction is used to find out the association between the selected immunization particulars and the pain perception of infants. It was found that there was no significant association between the selected immunization particulars like type of vaccination, previous hospitalization, allergic reaction to previous immunization, age of initiating breast feeding, history of breast feeding difficulties and pain perception in the control group as well as in experimental group.

All the infants received the combined vaccine and hence the association between the type of vaccine and pain perception was not identified. Damage to the tissues will definitely cause painful stimuli. So previous hospitalization or age of initiating breast feeding or breast feeding difficulties does not influence the pain perception. Thus irrespective of the clinical variables all the infants had the same pain perception. Hence, it is necessary to provide pain reducing intervention to all the infants receiving immunization. Hence the null hypothesis  $H_0$  have no significant association between the selected immunization particulars and pain perception by the control and experimental group of infants during immunization is retained.

Researcher concludes that breast feeding can be followed as a non pharmacological pain intervention during immunization injection for infants in the immunization clinics as it is simple, safe, cost effective and east to administer. The findings can be disseminated as evidence based practice and the effectiveness can also be implicated in nursing education.

### **Summary**

This chapter dealt with the objectives of the study, major findings such as the demographic variables and immunization particulars of infants, mean and standard deviation of pain scores in control and experimental group, association between the selected demographic variables and immunization particulars and the pain perception in infants and the level of satisfaction of mothers on breast feeding during immunization.

## **CHAPTER VI**

### **SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS**

The heart of the research project lies in reporting the findings. This is the most creative and demanding part of the study. This chapter gives a brief account of the present study including the conclusion drawn from the findings, nursing implications of the study and recommendations.

#### **Summary**

The present study was intended to analyze the effectiveness of breast feeding upon the pain perception of infants during immunization at Andhra Mahila Sabha, Chennai.

#### **Objectives of the Study**

1. To assess the level of pain perceived in the control and experimental group of infants during immunization.
2. To determine the effectiveness of breast feeding upon pain perception in the experimental group of infants during immunization.
3. To determine the level of satisfaction of mothers regarding breast feeding during immunization among the experimental group of infants.
4. To find out the association between the selected demographic variables and pain perception in the control and experimental group of infants during immunization.

5. To find out the association between the selected immunization particulars and pain perception in the control and experimental group of infants during immunization.

### **Null Hypotheses**

- Ho<sub>1</sub>** There will be no significant difference in pain perception of control and experimental group of infants during immunization.
- Ho<sub>2</sub>** There will be no significant association between the selected demographic variables and pain perception in the control and experimental group of infants during immunization.
- Ho<sub>3</sub>** There will be no significant association between the selected immunization particulars and pain perception in the control and experimental group of infants during immunization.

The conceptual framework for the study was developed on the basis of Melzack and Wall's Gate control theory of pain, which was modified for the present study. An intensive review of literature and experts guidance laid the foundation to the development of tools such as demographic variable proforma, immunization particulars, Neonatal Infant Pain Scale and rating scale to assess the level of satisfaction of mothers.

An experimental research approach with post test only design was adopted for the study. The present study was conducted at Andhra Mahila Sabha, Chennai, among the infants receiving immunization injection .The study sample size was 60 infants selected by systematic random sampling technique of which 30 were assigned to the control group and 30 to the experimental group.

The investigator used the demographic variable proforma of infants receiving immunization and immunization particulars of infants to obtain base line data. Neonatal Infant Pain Scale (NIPS) was used to assess the pain perception of infants and rating scale to assess the level of satisfaction of mothers regarding breast feeding during immunization. The data collection tools were validated and reliability was established. After the pilot study, the data collection of the main study was conducted for 4 weeks. The collected data was tabulated and analyzed by using appropriate descriptive and inferential statistics.

### **The Major Findings of the Study**

#### **Demographic variables**

Most of the infants were males (60%, 40%) in the age group of 1-2 months (63.3%,66.7%) with birth weight between 3.1-3.5 kg (33.3%, 46.7%), present weight between 5-6 kg (36.7% , 33.3%) ,living in nuclear family (60%, 80.5) with the family monthly income between 5001-10000 rupees (53.3%, 33.3% ) and were from suburban area (53.3%36.7%) in the control and experimental group respectively.

#### **Immunization particulars**

Majority of the infants received pentavac injection (83.3%, 73.3%), did not had any previous hospitalization nor any allergic reaction to previous immunization, breast feeding after birth was initiated within 30 min –1hour(53.3%, 50%) and did not have any history of breast feeding difficulties (90%, 86.7%) in the control and experimental group respectively.

### **Comparison of Mean and Standard Deviation of Pain Scores in the Control and Experimental Group**

The findings revealed that the mean and standard deviation of the pain score in experimental group (M=3.16, SD=0.687) who received breast feeding was lower than the control group (M=6.1, SD=0.907). The difference was significant at  $P < 0.001$  level. Thus the null hypothesis  $H_{01}$  was rejected.

### **Level of Satisfaction of Mothers Regarding Breast Feeding during Immunization in the Experimental Group**

The study findings revealed that majority of the mothers (90%) were highly satisfied regarding breast feeding during immunization. Dimension wise analysis reveals that majority of the mothers were highly satisfied with all the dimensions such as the character of the researcher (100%), effect of intervention in mother (73.3%) and effect of intervention in child (90%). The intervention also enhanced the participation and confidence among the mothers to support the infants in reducing the pain experience during immunization injection.

### **Association between the Selected Demographic Variables and Pain Perception of Infants in Control and Experimental Group Using NIPS Scale.**

It was inferred that there was a significant association between the age of the child and pain perception of infants in the control group and no significant association between other demographic variables such as a gender, birth weight, present weight, type of family, area of residence and family monthly income and pain perception of

infants. It was also inferred that there was no significant association between the selected demographic variables and pain perception of infants in the experimental group. Thus the null hypothesis  $H_{02}$  was rejected with regard to age in control group and retained with regard to other variables in both control and experimental group.

### **Association between the Selected Immunization Particulars and Pain Perception of Infants in the Control and Experimental Group of Infants using NIPS Scale.**

There was no significant association between the selected immunization particulars such as type of vaccination, previous hospitalization of the child, age at which breast feeding is initiated and history of breast feeding difficulties and pain perception of infants in the control group and experimental group. Thus the null hypothesis  $H_{03}$  was retained.

### **Conclusion**

As routine immunization injection is a stressful event for infants, it is necessary to provide pharmacological or non pharmacological interventions to reduce the pain and discomfort in infants. The findings of the study indicated that the breast feeding is simple, safe, cost effective and easy to administer than any other pharmacological or non pharmacological pain interventions. So breast feeding must be incorporated in all immunization centres as a pain intervention measure.

### **Implications**

The findings of the study has implications in the different branches of nursing profession i.e. nursing practice, nursing education, nursing administration and nursing

research. By assessing the effectiveness of breast feeding during immunization, we get a clear picture regarding different steps to be taken in all fields, to improve the standards of nursing profession.

### **Nursing practice**

As immunization is a routine painful procedure from birth, pain management enhancement is essential. As it was identified from the study findings that breast feeding was effective in pain management during immunization injections, mothers should be promoted to breast feed their infants during immunization. As nurses play a major role in identifying the health needs of infants, they should have awareness about the simple pain management interventions, to relieve the pain and discomfort of infants during immunization. All institutions and clinics should support and encourage breast feeding during immunization.

### **Nursing theory**

There are very less nursing theories related to child health care .The conceptual and theoretical models exclusively for pain perception in children is yet to be developed by nursing theorist. The present study is based on the Modified Melzack and Wall's gate control theory of pain which can be used to educate and guide the nurses in implementing breast feeding as a pain relief measure during immunization injection.

### **Nursing education**

Integration of theory and practice is a vital need and it is important in nursing education. Care of infants has been included since the beginning years of nursing

education. But the focuses on measures against pain during immunization injections are not much highlighted. With emerging health care trends, nursing education must focus on pharmacological and non pharmacological innovations to enhance nursing care.

Nurse educators need to lay emphasis on breast feeding during immunization in the curriculum and orient students in imparting knowledge to mothers regarding the safe and simple method of pain management in infants. The nursing students should be taught the importance of various pain management strategies that could be implemented in infants during immunization. Health awareness among the nursing personnel should be created regarding the importance of pain management in children during immunization.

### **Nursing administration**

With technological advances and ever growing challenges of health care needs, the administrators have a responsibility to provide nurses with substantive confined education opportunities. This will enable the nurses to update their knowledge on latest pain management strategies available to demonstrate high quality client care.

The nurse administrator should take initiative in organising the continuing nursing education programme on pharmacological and non pharmacological pain management measures for nursing personnel in hospital which aids to gain adequate steps in formulating policies, protocols in pain management of infants. The nurse administer should ensure that children are getting adequate pain management for all procedures they undergo, so that quality of nursing care could be improved.

## **Nursing research**

As there are fewer studies related to pain intervention during immunization, there is need for extensive and intensive studies in this area. It opens a big avenue for research on the innovative methods of creating awareness, development of teaching material and setting up of teaching centres and for creating awareness among the public regarding breast feeding during immunization and its benefits. As evidence based practice is the recent trend in pediatric nursing care, this will further encourage studies on the effectiveness of breast feeding upon the pain perception of infants during painful procedures. Dissemination of the findings of evidence based practice through conferences, seminars, publications in national and international nursing journals and World Wide Web will benefit a wider community.

### **Recommendations**

- The same study can be conducted on larger sample size to generalize the results.
- The study can be replicated in different settings.
- The same study can be conducted for pain management during other invasive procedures.
- The study can be conducted by using different pain scales to assess the pain score.
- The study can be conducted among the neonates for pain during BCG vaccination and heel prick procedure.
- A comparative study can be conducted to assess the effectiveness of breast feeding with other interventions like oral sucrose administration during immunization injection.

## REFERENCES

- Anand, S., & Mathew, E. (2011). Early experience of pain has lasting effects. **The commercial appeal**. Memphis, retrieved Sep 3, 2011, from <http://www.commercialappeal.com/news/2011/mar/12/>
- Baby, J. (2007). Effectiveness of administration of oral glucose solution and application of local anaesthetic cream prior to IM injection. (Unpublished Master's Thesis), The Tamilnadu Dr. MGR medical University, Tamilnadu.
- Bowden, D. & Dickey, K.(1998). **Children and their Families: the continuum of care**. Pennsylvania. W.B. Saunders Company Publishers.
- Brown, L. et al. (2011). Young mothers who choose to breast feed: the importance of being part of a supportive breast-feeding community. **Midwifery**. 27 (1),53-59.
- Carbajol, R.(2003). Analgesic effect of breast feeding in term neonates. **British Medical Journal**. (326),116-120.
- Chung, M. et al. (2007). Breast feeding and maternal and infant health outcomes in developed countries. **Agency for healthcare research and quality**. (153),1-186. retrieved Jan 1, 2011 from <http://www.ahrq.gov/clinic/tp/brfouttp.htm>
- Cohen, R.E. et al. (2003). Effective pain reduction for multiple immunization injection in young infants. **Arch Pediatr Adolesc Med**, 157,22-25 .
- Craig, D. et al.(2009). Breast feeding promotion for infants in neonatal units: a systematic review and economic analysis. **Health Technol Assess**, 13(40),1-146. retrieved,13j an, 2012,from <http://www.ncbi.nlm.nih.gov/pubmed/19728934>.
- Current World Population, (2011).retrieved on Jan 23, 2012, <http://geography.about.com/od/obtainpopulationdata/a/worldpopulation.htm>

Dilli, D. et al. (2008). Interventions to Reduce Pain during Vaccination in Infancy. **The Journal of Pediatrics**, 154(3), 385-390.

Efe,E., & Ozer.Z. (2007). The Use of Breast feeding for pain relief during neonatal immunization injection. **Applied Nursing Research**, 20(1), 6-10.

Frank, L.S., Cox.S., Allen.A., & Winter.I. (2004). Parental concern and distress about infant pain. **Arch Dis Child Fetal Neonatal**, 89, retrieved on Jan 25, 2012 from <http://www.ncbi.nlm.nih.gov/pmc/articlesPMC/1721639>.

Global Statistics, (2010). Breast feeding report card. Retrieved on Jan 23, 2012. from <http://www.cdc.gov/breastfeeding/data/reportcard.htm>

Gray, L. et al. (2002). Breast feeding is analgesic in healthy newborn. **Pediatrics**, 109, 590-593. retrieved June6, 2011 from <http://www.ncbi.nlm.nih.gov/pubmed/11927701>.

Grandin,M., Finnstrom,O., & Schhollin, A. (2004). Feeding and oral glucose addictive effects on pain reduction in newborn. **Earl Hum Dev**, 77, Retrieved Jan23, 2012 from <http://www.melanomacutaneo.it/RCT%20glucosio%20allattamento.pdf>

Grassley, J. et al. (2008).Infant feeding experience and knowledge influence mothers decision to initiate breast feeding. **Pubmed**. retrieved Jan 12, 2012, from <http://www.ncbi.nlm.nih.gov/pubmed/19036046>

Hockenberry, M., & Wilson, W. (2008). **Essentials of Pediatric Nursing**, (7<sup>th</sup> ed). Missouri. Mosby Publications.

Indian Statistics, (2012).retrieved on Jan 23, 2012, <http://censusindia.gov.in/>

Ipps, M. et al.(2004). Effect of age, gender and holding on pain response during infant immunization. **Can J Clin Pharmacol**,11,retrieved Oct 17,2011from <http://www.ncbi.nlm.nih.gov/pubmed/15226521>.

Jasmine, S. (2010). **Effectiveness of breast feeding on pain experience on infants during Intravenous therapy.** (Unpublished Master's Thesis), The Tamilnadu Dr. MGR medical University, Tamilnadu.

James, S.R., & Ashwill, J.A. (2007). **Nursing Care of Children, Principles and Practice**, Pennsylvania. Saunders Elsevier Publicatons.

Kozier,B., Erb,G., Berman, A., & Burke.(2007), **Fundamentals of Nursing.** (5<sup>th</sup> ed). Delhi. Dorling Kindersley Publishers.

Lilley, C.M., Craig, K.D., & Grunau, R.E. (2001).The expression of pain in infants and toddlers, developmental changes in facial action. **Pain**, 72, retrieved Dec 12, 2011, from <http://www.ncbi.nlm.nih.gov/pubmed/9272800>.

Mahajan, B.K. (2004). **Methods in Biostatistics.** (4<sup>th</sup> ed). NewDelhi. Jaypee Brothers Medical Publishers.

Mathew, J.(2003). Assessment and Management of pain in infants. **Post graduate Medical Journal**, 79, retrieved Nov 19, 2011 from British Medical Journals.

Ninchal, A. (2010). Effectiveness of oral glucose solution as against local anaesthetic jelly upon pain perception during DPT immunization. (Unpublished Masters dissertation), The Tamilnadu Dr. MGR medical University, Tamilnadu.

Phillips, R. et al. (2005). Analgesic effect of breast feeding or pacifier use with maternal holding in term infant. **Ambulance pediatric**, 5, 359-364. Nov10, 2011 from <http://www.ncbi.nlm.nih.gov/pubmed/16302838>

Polit, D. & Beck , H.(2008). **Nursing Research.** Philadelphia. Lippincott William and Wilkins Company.

Razek, A. & ElDein, N. (2008). Effect of breast feeding on pain relief during infant immunization injections. **International Journal of Nursing Practice**, 15(2), 99-104.

Swanson, V., & Power, A.G. (2005). Initiation and continuation of Breast feeding. **J Adv Nurs**, 50, Retrieved Jan 10, 2005 from <http://www.ncbi.nlm.nih.gov/pubmed/15811106>.

Taddio, A. et al. (2001). Effect of neonatal circumcision on pain responses during subsequent routine vaccination. **The Lancet**, 349, 599-603. retrieved June 30, 2001 from [http://www.lancet.com/journals/lancet/article/PIIS0140-6736\(96\)10316-0/abstract](http://www.lancet.com/journals/lancet/article/PIIS0140-6736(96)10316-0/abstract)

Thomas, T., Shetty, A., & Bagali, P. (2011). Role of Breast feeding in pain response in injectable immunization among infants. **The Nursing Journal of India**. CII. Retrieved Nov 25, 2011. From first search.

Tansky, C., Claire, E., and Lindberg (2010). Breast feeding as a pain intervention when immunizing infants. **Journal for Nurse Practitioners**. 6, retrieved June 30, 2011, from Elsevier Science, Inc.

Uga, E. et al. (2008). Heel lace in newborn during breast feeding: an evaluation of analgesic effect of this procedure. **Indian Journal of Pediatrics**, 34(3),1186-88.

World Health Organisation, (2011). Global Health Observatory. Retrieved on Jan 21, 2012. From <http://www.who.int/gho/immunization/en/>.