EFFECTIVENESS OF ORAL STIMULATION AND ORAL SUPPORT ON FEEDING PERFORMANCES AMONG PRETERM AND LOW BIRTH WEIGHT BABIES (LBW) AT R.L JALAPPA HOSPITAL & RESEARCH CENTER, KOLAR, KARNATAKA.

By

Mrs. SARITHA .V

Dissertation submitted to the
Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka

In partial fulfillment of the requirements for the degree of

Masters of Science in Nursing

In

Pediatric Nursing

Under the guidance of

Prof. Radha M.S

Vice-Principal and HOD

Department of Pediatric Nursing

Sri Devaraj Urs College of Nursing

Tamaka, Kolar-563103

2019

Declaration By The Candidate

I hereby declare that this dissertation entitled is a bonafide and genuine research work carried out by me under the guidance of Prof. Radha M.S, Vice-Principal and HOD, Department of Pediatric Nursing, Sri Devaraj Urs College of Nursing, Tamaka, Kolar.

Signature of the Candidate

(Mrs.Saritha. V)

Date:

Place: Tamaka, Kolar

CERTIFICATE BY THE GUIDE

This is to certify that the dissertation entitled "A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital & Research Center, Kolar, Karnataka", is a bonafide and genuine research work done by Mrs.Saritha.V, in partial fulfillment of the requirement for the Degree of Master of Science in Pediatric Nursing.

Prof .Radha M.S

Vice-Principal and HOD

Department of Pediatric Nursing

Sri Devaraj Urs College of Nursing

Tamaka, Kolar.

Date:

Place: Tamaka,Kolar

ENDORSEMENT BY THE HEAD OF THE DEPARTMENT/ PRINCIPAL/HEAD OF THE INSTITUTION

This is to certify that the dissertation entitled "A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital &Research Center, Kolar, Karnataka", is a bonafide and genuine research work done by Mrs.Saritha.V, under the guidance of Prof.Radha M.S Vice-Principal and HOD Department of Pediatric Nursing, in partial fulfillment of the requirement for the Degree of Master of Science in Pediatric Nursing.

Signature of the H.O.D

Prof .Radha M.S

Vice-Principal and HOD

Department of Pediatric Nursing

Sri Devaraj Urs College of Nursing

Tamaka, Kolar.

Signature of the Principal

Dr.G.Vijayalakshmi

Principal

Sri Devaraj Urs College of Nursing

Tamaka, Kolar.

Date:

Place: Tamaka, Kolar

Date:

Place: Tamaka, Kolar

COPYRIGHT

DECLARATION BY THE CANDIDATE

I hereby declare that the **Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka** shall have the right to preserve, use and disseminate this dissertation in print or electronic format for academic/research purpose.

Signature of the Candidate

(Mrs. Saritha.V)

Date:

Place: Tamaka, Kolar

ACKNOWLEDGEMENT

"Attitude is more important than the past, than education, than money, than circumstances, than what people do or say. It is more important than appearance, giftedness, or skill"

Charles R. Swindoll

First and foremost I would like to thank God almighty in the process of putting this book together I realized how true this gift of writing is for me. You given me the power to believe in my passion and pursue my dreams. I could never have done this without the faith I have in you.

I owe a special thanks to **Management** of Sri Devaraj Urs College of Nursing for giving me a platform to complete my study successfully.

I express my sincere gratitude and whole hearted thanks to main architect of the study **Prof.Radha M.S,** Vice-Principal & HOD, Dept.of Pediatric nursing, for her untiring efforts, enlighting ideas, valuable suggestions, guidance & co-operation for fruitful completion of this study.

I express my profound respect and deep gratitude to **Dr.G.Vijayalakshmi**, Principal, Sri Devaraj Urs college of Nursing, for her support, valuable suggestions and guidance to carry out the study.

I express my sincere thanks to **Mrs.Lavanya Subhashini,** Associate Professor, Dept. of Pediatric Nursing, Sri Devaraj Urs college of Nursing for her consistent, corrective efforts and encouragement, personal interest and patience in helping me to complete the study successfully.

I express my sincere gratitude to **Prof.Zeanath C.J,** HOD, Dept. of Medical Surgical Nursirg, and Chief Nursing Officer and NICU staff of R.L Jalappa Hospital and Research center, Kolar for their timely co-operation and support.

It gives me a great pleasure to express my heartful gratitude to **all the HOD's, and Teaching faculty of various departments,** Sri Devaraj Urs College of Nursing, Tamaka,Kolar for their valuable advice and suggestions.

I wish to acknowledge the encouragement, co-operation, patience and guidance offered by **Mr.Rajesh R,** IIyear M.Sc(N) class co-ordinator, Sri Devaraj Urs college of Nursing.

I am greatful to **Mr.Ravi Shankar**, Asst. Professor, Department of Statistics, Sri Devaraj Medical College, Kolar for his expert guidance, valuable suggestions and assistance in the statistical analysis and interpretation of data.

I express my humble thanks to **Dr. Lakshmaiah** V. Medical Superintendent, Sri R.L Jalappa Hospital and Research Center for granting me permission to conduct the study.

I express my sincere thanks to **Mrs. Lakshmi Bhatt,** Principal, R.L Jalappa central school, for her editorial support of the thesis.

A profound and deep sense of gratitude to the **Librarians** of Sri Devaraj Urs College of Nursing, for their co-operation.

My sincere thanks and gratitude to all my **Classmates, Friends** who have helped me in the successful completion of this study.

I owe my personal debt of gratitude to all Preterm and low Birth Weight babies and their mothers for enthusiastic participation in the study, without their co-operation the study would not have been possible.

Finally, I must express my very profound gratitude to my beloved parents **Mrs.Rani**, **Mr.Sudhakar Naidu,** my partner, **Mr.Pavan Kumar K.B**, my loving Son **Master. Jashwanth K.P Chowdhary** and my sisters and brothers-in –law for providing me with unfailing support and continuous encouragement throughout my study and through the process of research and writing this thesis. This accomplishment would not have been possible without them. Thank you.

No words can express my appreciation and indebtedness to many of them whose names have not been mentioned who helped unselfishly and most willingly in the successful completion of the thesis.

Thank you all

Signature of Candidate

(Mrs. Saritha.V)

Date : 26.07.2019

Place: Tamaka, Kolar.

ABBREVATIONS

CSB: Coordinate Swallowing and Breathing

EFS: Effective Feeding Skill

LBW: Low Birth Weight

MPS: Maintain Physiologic Stability

NICU: Neonatal Intensive Care Unit

OFR: Oral Feeding Readiness

OFS: Oral Feeding Skill

OMF: Organize Oral-Motor Functioning

OFRR: Oral Feeding Recovery (During the first Five Minutes Post feeding)

ABSTRACT

Background of the Study

Delivering adequate amounts of nutrients to premature infants at all times is challenging because the infant's immature gastrointestinal tract is initially unable to accept feedings. Inadequate nutrient intakes have resulted in widespread postnatal growth restriction. Now that it is known that postnatal growth restriction is associated with poor neurocognitive development, hence efforts are required to increase nutrient intake, by improving the feeding performance during this period.

Once physiological stability has been attained, a major challenge for preterm infants is achievement of oral feeding competence. The American Academy of Pediatrics has included competency at nipple-feeding, either breast or bottle, as a criterion for preterm infant readiness for hospital discharge. Achieving competence at this important task takes time, with the transition from gavage to full bottle-feedings reported to last 10 to 14 days. Longer transition to full bottle-feedings has been associated with increased length of hospital stay.

Statement of the Problem

"A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital & Research Center, Kolar, Karnataka".

Objectives of the study

1. To evaluate the effectiveness of Oral stimulation and Oral support on Feeding Performances by comparing the findings between Experimental and Control group.

2. To determine the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

Methods

Quantitative approach with True Experimental Time series (Posttest only with Control group) design was used for this study.

The study was conducted at NICU of R.L.Jalappa Hospital and Research Centre, Kolar. The sample consisted of 40 Preterm and LBW babies , The sample were

selected and allotted to experimental group and control group by using simple random(computer generated random number assignment) sampling technique and following inclusion criteria.

Data was collected by giving Oral support and Oral stimulation to preterm and LBW babies of experimental group twice a day before the beginning of the scheduled feeding, which include 12 mts of Oral stimulation (non-nutritive sucking and stroking of oral structures) and 3mts of Oral support.

Feeding performances were assessed on 3rdday,5th day,&7th day of initiating the intervention by requesting the mother to put the baby to breast, by using EFS scale (early feeding skill assessment check list)

For the babies of control group ,routine hospital care was continued , feeding performances were assessed on 3rd day ,5th day,& 7th day as of the experimental group.

The collected data was analyzed by using descriptive and inferential statistics.

Results 70% (14) mothers were in the age group of 24-27 years in Experimental group where as in Control group 55% (11) mothers were in the age group of 24-27.With regard to Gestational Age i.e. 35% (07) of babies were born between 35-36 weeks in Experimental group where as in control group. 40% (08) of babies were born between 32-33weeks. With regard to Birth Weight of child i.e 40% (08) of babies were born between 1.5-1.8kgs in Experimental group where as in control group 40% (08) of babies were born between 1.2-1.5kgs. With regard to Order of Birth i.e. 60 %(12) babies were first born in Experimental group where as in Control group 45%(09) babies were first born.

Mean scores of feeding performances in Experimental group on Day-3&5&7 was 19.85 &26.80 & 28.35with S.D of 5.00&3.41&1.72, where as in control group 13.70&19.30&23.85 with S.D of 6.08&6.68&6.02 at 38 df and calculated t-value was 3.48 &4.46&3.21 which are more than table value with P <0.05 level of significance, indicating Statistically Significant improvement in feeding performances of babies in the Experimental group. Hence the stated Ho_1 was rejected

Chi- square calculated value is less than table value at 0.05 level of significance for association between Gestational age, Birth weight of child and Order of birth and Feeding performances of Preterm and LBW babies Hence the stated H_{02} was accepted.

Conclusion:

Findings revealed that the Oral Stimulation and Oral support helps in improving the feeding performances among Preterm and LBW babies

Key terms: Pre terms, Low Birth Weight Babies, Oral stimulation and Oral support, Feeding Performances, NICU.

LIST OF CONTENTS

SL No	CONTENTS	PAGE NO
1.	INTRODUCTION	01-06
2.	OBJECTIVES	07-12

3.	REVIEW OF LITERATURE	13-28
4.	METHODOLOGY	29-38
5.	SAMPLE SIZE ESTIMATION	39
6.	RESULTS	40-51
7.	DISCUSSION	52-58
8.	CONCLUSION	59-61
9.	SUMMARY	62-64
10.	REFERENCES	65-70
11	ANNEXURES	71-87

LIST OF TABLES

Sl. No	Tables	Page. No
1	Frequency and Percentage distribution of Socio Demographic Variables	42
2	Comparison of Mean scores of Feeding Performances between Experimental and Control group	45

3	Mean Scores of Feeding Performances of LBW and Pre term babies at different point of time in Experimental group	47
4	Mean Scores of Feeding Performances of LBW and Pre term babies at different point of time in Control group	48
5	Association between Feeding performances and Socio Demographic Variables of Preterm and LBW babies in Experimental group	49
6	Association between Feeding performances and Socio Demographic Variables of Preterm and LBW babies in Control group	50

LIST OF FIGURES

Sl.No	Figures	Page. No

1	Conceptual Frame work to evaluate the effectiveness of Oral stimulation and Oral Support on Feeding Performances of Preterm and LBW	12
2	Schematic Representation of the Study Research Design	30
3	Mean Scores of Feeding Performances among Preterm and LBW babies in Experimental and Control groups.	46

LIST OF ANNEXURES

Annexure No	Annexures	Page. No
1	Ethical Committee Clearance Certificate	71
2	Permission Letter To Conduct Research Study	72
3	Patient Information Sheet	73
4	Certificate From Statistician	77
5	English Editing Certificate	78
6	RGUHS –Synopsis Registration Certificate	79
7	Master Sheet	80

INTRODUCTION

Babies are bits of stardust, blown from the hand of God.

Barretto

Babies are the buds of imagination that are ready to bloom with lights of love and affection.

Debasish Mridha

The first 28 days are most crucial time for a new born's survival. Globally Neonatal deaths occur at a rate of 19 deaths per 1,000 live births. Before reaching the age of 1 year the probability of dying is 12/1000 births and after 1 year , but before turning 5 years it is 11/1000 births. Globally, in 2016 around 2.6 million neonates died in first month of life.

According to WHO, every year about 15 million babies are born prematurely around the world and that is more than one in 10 of all babies born globally. Almost 1 million children die each year due to complications of preterm birth (2013). Across 184 countries, the rate of preterm birth ranges from 5% to 18% of babies born. In India, out of 27 million babies born every year (2010 data), 3.5 million babies born are premature[1].

Preterm is defined as babies born alive before 37 weeks of pregnancy are completed. There are sub-categories of preterm birth, based on gestational age[2]:

- Extremely preterm (less than 28 weeks)
- Very preterm (28 to 32 weeks)
- Moderate to late preterm (32 to 37 weeks).

W.H.O

Good nutrition is essential for survival, physical growth, mental development, performance, productivity, health and well-being across the entire life-span: from the

earliest stages of fetal development, at birth, and through infancy, childhood, adolescence and LBW babies on into adulthood[3].

Delivering adequate amounts of nutrients to premature infants at all times is challenging because the infant's immature gastrointestinal tract is initially unable to accept feedings. Inadequate nutrient intakes have resulted in widespread postnatal growth restriction. Now that it is known that postnatal growth restriction is associated with poor neurocognitive development, efforts are made to increase nutrient intakes[4].

Why Feeding Premature Babies Is so Difficult? The reason is:

Preterm babies are immature at birth, and may not have enough strength or coordination to breastfeed or bottle feed well enough to grow. A preemie may look strong and healthy enough to go home, but may still not be feeding well[5].

Babies need to develop three major skills in order to be able to eat effectively[5]:

- A mature suck: Premature babies aren't born with mature sucking skills. In order to drink milk from the breast or a bottle, babies need to have a suck that is both coordinated and strong.
- A mature swallow: Swallowing large volumes of milk takes a lot of strength, and babies need to develop the muscles in their tongue and jaw to swallow well.
- Coordination of sucking, swallowing, and breathing: The most challenging of the feeding skills, it can take babies a while to learn how to coordinate breathing with drinking milk.

Feeding premature babies who haven't developed these three skills can be frustrating for parents, nurses, and the babies themselves. A preterm without a mature

suck and swallow will quickly become exhausted during a feeding—each feeding session is quite a workout[5].

Babies who don't coordinate sucking, swallowing, and breathing well are scary to feed. They start off well, sucking and swallowing with gusto. Suddenly, though, they may realize that it's time to breathe, and they aren't quite sure how. They may choke and gag on their milk, or stop breathing entirely until the feeding is paused[5].

Once physiological stability has been attained, a major challenge for preterm infants is achievement of oral feeding competence. The American Academy of Pediatrics has included competency at nipple-feeding, either breast or bottle, as a criterion for preterm infant readiness for hospital discharge. Achieving competence at this important task takes time, with the transition from gavage to full bottle-feedings reported to last 10 to 14 days. Longer transition to full bottle-feedings has been associated with increased length of hospital stay[6].

A national survey of neonatal intensive care unit feeding practices revealed no consistent criteria for the initiation of oral feeding and no organized protocol for oral feeding progression. Once oral feedings are initiated, a common but untested practice is to start with one oral feeding attempt per day and gradually, but arbitrarily, increase oral offerings over time. In fact, although research is limited, there is some evidence that preterm infants who have more bottle opportunities attain full oral feeding earlier than infants who receive fewer opportunities[6].

NEED FOR STUDY

Due to the underdeveloped central nervous system and oral musculature, preterm infants frequently experience oral feeding difficulties, with coordination

lacking for the suck-swallow-breath mechanism. Preterm infants rely on administered feedings and parenteral nutrition to ensure proper nutritional requirements are met[7]. All stable LBW infants and Preterm babies, irrespective of their initial feeding method should be put on their mothers' breast. The immature sucking observed in preterm infants born before 34 weeks might not meet their daily fluid and nutritional requirements but helps in rapid maturation of their feeding skills and also improves the milk secretion in their mothers ('Non-nutritive sucking')[8].

Adverse effects, however, are increased due to the lack of stimuli from the gastrointestinal tract. Safe and successful suckle feeding, via breast or by bottle, is one requirement for hospital discharge and an ultimate goal for preterm infant feeding. Thus, facilitating oral feeding skills and helping preterm infants transit to full oral feeding are a key focus for the medical staff of neonatal intensive care units (NICUs) [7].

Evidence suggests that initiation of breastfeeding in the first day of life is associated with a significant reduction in the risk of neonatal mortality when compared with delaying breastfeeding for more than 24 hours after birth[9].

Literature also revealed that:

- In preterm gestation compared to full term sucking pattern is-high in frequency, low in amplitude, weak in power.
- Feeding via tube or oral feeds leads to unstable vital signs like Bradycardia during sucking-apnea, low oxygen saturation may happens.
- Probably due to poor co-ordination of movements under developed Cardio-Respiratory system, Central Nervous System, Oral musculature leads to mortality and morbidity.

Early Oral Motor Interventions (OMIs) are beneficial for oral feeding in preterm infants. OMI is defined as sensory stimulation of the lips, jaw, tongue, soft palate, pharynx, larynx and respiratory muscles, which are thought to influence the physiological underpinnings of the oropharyngeal mechanism in order to improve its functions[7].

This supports the notion that the development of sucking is not only an inborn conditioned reflex dependent upon neuro physiological maturation, but that it can also be enhanced with practice and stimulation. Sucking is regarded as the best way to feed newborns; however, the sucking skills of preterm infants become mature between weeks 32 and 34[10].

Oral support minimizes fluid loss, stabilizes the jaw, and organizes deglutition. Oral support is the result of both the action of chin and cheek support, and the aid to deglutition[11]

An Experimental study was conducted at level three NICU in children hospital of Fudan University during 2011-2012 ,to evaluate the effect of an Oral Stimulation programme on 72 preterm infants who were randomly assigned into the experimental group and the control group using Computer-generated random number assignment. A t-test and non-parametric test were used to compare the differences between two groups, Mean and standard deviation were used and analyzed by using SPSS 16.0 version. Results were there was no difference in the PMA between the two groups at the time when the infants initiated oral feeding, while the PMA in the experimental group was significantly lower than that in the control group at independent oral feeding ($p < 0.05$). The transition time in the experimental group was significantly shorter than that in the control group ($p < 0.05$). There was no difference

in the parenteral nutrition duration between the two groups ($p > 0.05$) The average length of hospital stay in the experimental group was 39.97 ± 14.81 d, while the control group was 41.25 ± 16.15 d. There was no difference in the length of hospital stay between the two groups ($p = 0.724$)[12].

Previous research has shown that OMI can shorten the transition time from gavage feeding to full oral feeding and improve oral feeding efficiency. There is no research domestically, however, to evaluate the effects of early OMI. Hence the researcher has intended to take up this study to examine the feeding performances by giving oral stimulation. The purpose of this study was to evaluate the effect of an early oral stimulation program on oral feeding in preterm infants and LBW babies to better inform clinical treatment of preterm and LBW infants[7]

CHAPTER--2

OBJECTIVES

This chapter deals with the statement of the problem, objectives of the study, operational definitions, hypothesis, conceptual framework which provides a frame of reference of reference of study.

STATEMENT OF THE PROBLEM

"A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital &Research Center, kolar, Karnataka".

OBJECTIVES OF THE STUDY :

1. To evaluate the effectiveness of Oral stimulation and Oral support on Feeding Performances by comparing the findings between Experimental and Control group.

2. To determine the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

OPERATIONAL DEFINITIONS :

1. Effectiveness: In this study it refers to the improvement in the feeding performances of preterm and LBW babies of experimental group.

2. **Oral stimulation**: In this study it refers it refers to the nonnutritive sucking by using researcher little finger used by the researcher for oral stimulation.

3. Oral Support: In this study it refers to the support given by the researcher with the help of researcher hands, i.e. thumb and index finger are used to provide inward and forward support on infant's cheek and the middle finger under their mental protuberance of mandible to give slight uplift to the chin.

4. Feeding performances: In this study it refers to number of cumulative nipple feedings which will be assessed by using EFS (Effective Feeding Skills assessment) check list, comprising of babies skills on oral feeding readiness, oral feeding skill and oral feeding recovery.

5. Preterm: In this study Preterm is defined as babies born alive before 32- 36weeks of pregnancy .

6. Low birth weight: in this study it refers to babies born with birth weight of 1.2kgs-2.499kgs.

7.Socio demographic variables: In this study it refers to Gestational age, Birth weight, Gender, Age of mother, Medical condition, Apgar score, Date of admission and Date of discharge.

HYPOTHESES:

Ho_1: There will be no significant difference in feeding performances of preterm and low birth weight babies between experimental and Control groups.

Ho_2: There will be no significant association between feeding performances of preterm and LBW babies with their selected socio demographic variables.

CONCEPTUAL FRAMEWORK :

Conceptual framework refers to the interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme. The present study is aimed at assessing the effectiveness of oral stimulation and oral support on feeding performances of preterm and low birth weight babies.

The conceptual framework of this study is based on Context, Input, Process and Product (CIPP)model on evaluation developed by Daniel Stufflebeam (2003). It aims to provide an analytic and rational basis for programme decision making based on the cycle of planning, structuring, implementing and reviewing and revising decisions. Each examined through a different aspect of evaluation-Context, Input, and Process and Product evaluation. CIPP model provides a comprehensive systematic continuous ongoing framework for programme evaluation.

Concepts of Stufflebeam Evaluation

- Context evaluation
- Input evaluation
- Process evaluation
- Product evaluation

Context evaluation

It highlights the environment in which the proposed programme exists. It assesses the needs, problems, opportunities, basis for defining goals, priorities and objectives. It helps in making programme planning decisions.

Based on findings of other studies and related literature, it is assumed that Preterm and Low Birth weight babies are having less feeding performances.

Input Evaluation

Input evaluation involves steps and resources needed to meet the goals and objectives. It serves as a basis for structuring decisions. In the present study input refers to the

- Framing a Research Design
- Establishment of reliability of tool
- Selection of sample
- Performing of Oral Stimulation and Oral Support on Preterm and Low Birth weight Babies

Process Evaluation

It involves the implementation of plans to guide activities and later to explain outcome. In the present study it refers to

- Assessing the feeding performances of Preterm and Low Birth weight Babies
- Performing Oral stimulation and Oral support
- Assessing the Feeding performances after Oral Stimulation and Oral Support

Product Evaluation

It helps to identify both intended and unintended outcome to keep the process on track and comparing them anticipated outcome. It can be decided if the programme

should be continued, modified or dropped altogether. In this study product evaluation refers to

- Comparing the feeding performances in Experimental and Control groups
- Finding the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

This step of the model further leads to recycling decisions and need for modification to terminate which is not in the preview of this study.

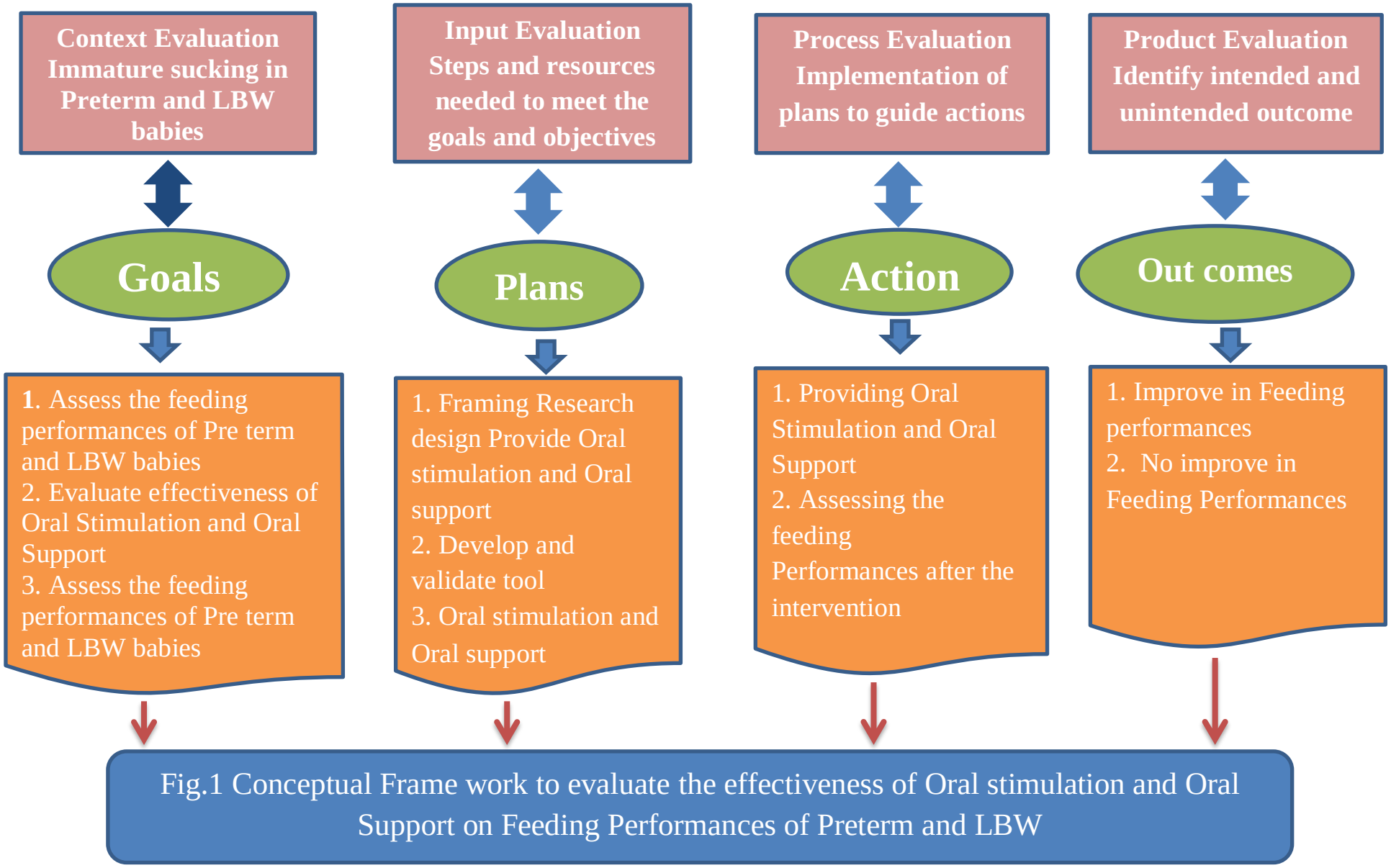


Fig.1 Conceptual Frame work to evaluate the effectiveness of Oral stimulation and Oral Support on Feeding Performances of Preterm and LBW

CHAPTER-3

REVIEW OF LITERATURE

This chapter deals with selected studies which are related to the objectives of the proposed study. A review of research and non- research literature relevant to the study was undertaken which held the investigator to develop deeper insight into the problem and gain information on what have been done in the past.

Review of literature is a key step in the research process. Review of literature is defined as a broad comprehensive, in depth, systematic and critical review of scholarly publications, unpublished scholarly publications audio-visual materials and personal communications. It refers to extensive, exhaustive and systematic examinations of publications relevant to the research project [13]

Review of literature on the research topic makes the researcher familiar with the existing studies and provides information which helps to focus on a particular problem and lays a foundation upon which to base a new knowledge [13]. The related literature review was done from journals, research articles, books, unpublished dissertations, PubMed and Medline.

Review of relevant and related literature will be done and organized under the following headings

- Literature related to Effectiveness of Oral Stimulation and Oral Support on Feeding performances and Weight gain in preterm and low birth weight babies.
- Literature related to establishment of feeding among preterm and low birth weight babies.

Literature related to Effectiveness of Oral Stimulation and Oral Support on Feeding performances and Weight gain in preterm and low birth weight babies.

A quasi- experimental research design was Conducted at two different NICUs of Pediatric Hospitals at Cairo University in Aug 2012, to assess the Effect of Pre feeding Oral Stimulation Program on Preterm Infants' Feeding Performance. Purposive sampling technique was used to select the samples. The sample size was Fifty five preterm infants less than 37 weeks of gestation and inefficient feeders (i.e., consuming less than 4 ml of milk per minute in the first 5 min in a feeding) Twenty eight preterm infants were selected firstly from both NICUs, assigned as control group and they received routine feeding care administered by the NICUs. The oral stimulation program was administered for 27 preterm infant twice a day 5– min. before the beginning of a scheduled feeding. Each preterm infant in the intervention group received two stimulation sessions per day for two consecutive days. The feeding procedures were identical for both groups. SPSS, version 20 was usedto analyze the data. Chi-square was used to detect the difference between the two groups. Comparison of means was performed using paired-sample t-test. A repeated measure F. test statistic was used to study the changes by time within each group. The p value <0.05 was considered statistically significant. No significant differences between the two groups were found in the total oral intake rate at the 1st session. At the 2nd, 3rd and 4th sessions, the total oral intake rate was significantly higher in the intervention group than in the control (group) (p= <0.001, <0.001 and <0.001, respectively) . After receiving 5-min. pre feeding oral stimulation, no significant differences between the two groups were found in the mean net leakage at the end of the 1st session (P=0.064). While it was reduced significantly in the intervention group at the end of the 2nd, 3rd and 4th sessions, (p= <0.001, <0.001 and <0.001, respectively). The mean net leakage was

reduced within both groups but there was significantly higher reduction within intervention group only (P= <0.001 & 0.071 respectively) The results indicated that the pre feeding oral stimulation had significantly increased the mean total oral intake of required rate, decreased net leakage and shortened oral feeding duration for the intervention group(2)[14] .

An Experimental study was conducted at level three NICU in children hospital of Fudan University during 2011-2012 ,to evaluate the effect of an Oral Stimulation programme on 72 preterm infants who were randomly assigned into the experimental group and the control group using Computer-generated random number assignment. Oral feeding performance/efficiency was defined as volume of milk consumed relative to the duration of oral feeding session(ml/mt),recorded the duration and volume in every observed oral feeding session by an Nurse on duty who was blind to the assignments, Weight gain recording every day. by calculation weight gain rate by formula: Weight gain rate(g/(kgxday))=1000xIn (weight when discharged/birth weight) or (days of life when discharged- days needed to recover to birth weight). A t-test and non-parametric test were used to compare the differences between two groups, Mean and standard deviation were used and analyzed by using SPSS 16.0 version. Results were there was no difference in the PMA between the two groups at the time when the infants initiated oral feeding, while the PMA in the experimental group was significantly lower than that in the control group at independent oral feeding ($p < 0.05$). The transition time in the experimental group was significantly shorter than that in the control group ($p < 0.05$). There was no difference in the parenteral nutrition duration between the two groups ($p > 0.05$) The average length of hospital stay in the experimental group was 39.97 ± 14.81 d, while the control group was 41.25 ± 16.15 d.

There was no difference in the length of hospital stay between the two groups ($p = 0.724$)[12].

A case control study was conducted at Taiwan on Early Oral-motor management on feeding performance in premature neonates, with an objective of evaluating effectiveness of Impact on early intervention of Oral-motor management on feeding pattern and the neonatal outcomes in premature neonates. The sample size was 68 preterm infants with birth weight less than 1500gms or gestational age less than 32weeks enrolled into the experimental group (34 preterm infants).They selected babies retrospectively who matched gestational age and birth weight and enrolled them into control group (34 preterm infants).Intervention was given to the experimental group 30mts prior to the actual feeding, control group was continued with routine care. The duration of each intervention was 30mts ,intervention was continued for the experimental group till the baby could take required amount of milk with in 20mts.Feeding progress was evaluated, by considering transition periods from tube to oral feeding, Gestational age at the start of oral feedings, Birth weight, amount of milk intake at discharge and the days of Hospital stay. Mean, standard deviation , Independent t-test and regression analysis tests were used to analyse the data. There were significant differences in the body weight (p=0.002) and hospital stay(0.003) between the study and control group. Study has concluded that intervention improved feeding performance and Neonatal outcome in terms of shorter hospital days[10].

A randomized trial was conducted at NICU at Texas Children's Hospital, Houston, Texas in April 2004, with an objective to assess the effect of an oral stimulation program on the maturation of sucking skills of preterm infants. The sample size was Thirty two preterm infants (13 males, 19 females), appropriate size for gestational age (gestational age at birth 28 wks, SD 1.2wks; birth weight 1002g, SD

251g), were randomly placed into experimental and control groups. Infants in the experimental group received a non-nutritive oral stimulation program and those in the control group received a sham stimulation program. Both interventions were started before the start of oral feedings, 48 hours following discontinuation of nasal continuous positive airway pressure, and were administered once per day for 10 consecutive days, 15 to 30 minutes before a tube feeding.. Infants' sucking skills were monitored twice when they were taking 1 to 2 and 6 to 8 oral feedings per day. The oral stimulation program consisted of stroking the peri oral and intraoral structures for 15 minutes.. The maturational level assessment of sucking pattern and sucking frequency, paired and independent *t*-tests were used to compare within- and between-group differences respectively, at 1 to 2 and 6 to 8 oral feedings/day. The non-parametric Wilcoxon Median test was used to compare the amplitudes of the expression and suction components. For the assessment of endurance, a paired *t*-test was used to compare the stages of sucking, sucking burst duration, and amplitudes of suction and expression during the first and last 5 minutes of the oral feeding session. Infants in the experimental group achieved full oral feedings 7 days sooner than the control group (p=0.005). The experimental group demonstrated significantly greater overall intake and rate of milk transfer at 1 to 2 oral feedings/day (p=0.01 and p=0.02 respectively). Mean stage of sucking for the experimental group was 3.3 (SD 0.6) at 1 to 2 oral feedings/day and 3.5 (SD 0.6) at 6 to 8 oral feedings/day. For the control group, mean stage of sucking was 3.1 (SD 0.8) and 3.4 (SD 0.6) at these two time points. Study was concluded that oral stimulation programs can advance the maturation of specific sucking skills. This supports the notion that the development of sucking is not only an inborn conditioned reflex dependent upon neuro physiological maturation, but that it can also be enhanced with practice[15].

A double-blind, randomized, clinical trial was performed at NICU at the Fernandes Figueira Institute, FIOCRUZ, Rio de Janeiro, Brazil, in August 2006.with an objective to determine whether sensory-motor-oral stimulation and non-nutritive sucking in preterm newborns influence weight gain, length of stay ,number of days until initiating oral feeding and number of days until reaching complete oral feeding. Sample size of total of 98 very low birth infants, 49 in the experimental group and 49 in the control group . Mean gestational age at birth was 30.5±1.7 weeks in the experimental group and 30.2±1. 8 weeks in the control group. Preterm infants in the experimental group received sensory-motor-oral stimulation and non-nutritive sucking and infants in the control group received a sham stimulation program. Both were administered from when they reached enteral diet (100 kcal/kg/day) until the beginning of oral diet. Primary outcome was length of hospital stay. In both groups, the change from gavage tube to oral feeding began when the newborn reached a gestational age of at least 34 weeks was clinically stable and based on the speech therapists evaluation regardless of weight. Clinical evaluation of the newborn's capacity to begin oral diet was performed by an external experienced speech therapist three times a day. Weight was measured daily using a Filizola™ scale sensitive to 5 g. Statistical analysis of the data used the EPI info package (6.04) from the centers of Disease Control ,Atlanta, USA. The data were analyzed for treatment group differences with Chi-square or Fishers exact tests for the Categorial. Independent oral feeding was attained significantly earlier in the experimental group than the control group, 38±16 days of life (mean±S.D.) versus 47±17 days of life, respectively (Pb0.001) There was significant difference in length of hospital stay between the two groups (41.9±17 (mean±S.D.) versus 52.3±19 days (Pb0.01)). The results were sensory-motor-oral stimulation, together with early non-nutritive sucking (as soon as the newborn reaches full diet) in low birth weight infants

as long as they are clinically stable, should be implemented to promote earlier initiation of oral feeding and earlier hospital discharge[16].

A randomized, blinded clinical trial was conducted to examine outcomes related to the newly developed Premature Infant Oral Motor Intervention (PIOMI) on feeding progression and length of stay (LOS) in preterm infants. Total of 19 infants from 1 level III NICU born between 26 and 29 weeks 10 in the experimental group and 9 in the control group. The experimental group received the PIOMI for 5 minutes per day for 7 consecutive days. The control group received a sham intervention to keep staff and parents blinded to the infants' group assignment. Physiological and behavioral stabilities were continually assessed throughout the intervention. A chart review was then conducted to compare the transition from gavage feeding to total oral feedings between the experimental and control group, as well as LOS. Infants who received the once-daily PIOMI transitioned from their first oral feeding to total oral feedings 5 days sooner than controls (P = .043) and were discharged 2.6 days sooner than controls. Study concluded that further study on the use of PIOMI with preterm infants to enhance oral feeding skills and decrease LOS[17].

A double-blind randomized clinical trial was conducted in the neonatal intensive care units(NICUs) of two hospitals in Tehran, to examine the effectiveness of the Premature Infant Oral Motor Intervention (PIOMI) in the feeding progression and early intervention on 30 preterm infants who were randomly assigned into intervention and control group, each containing 15 infants. The PIOMI was administered to the intervention group in the course of 10 days. The infants in the control group received routine nursing services. Repeated measures ANOVA (RMA) were analyzed. The postmenstrual age and weight of the participants were examined at the time points of accomplishing one, four, and eight oral feedings a day and at the time

of hospital discharge. Results were the intervention group reached the first oral feeding (with a mean of 7.2 days) and eight oral feeding (with a mean of 13.47 days) earlier than the control group. The length of hospital stay in intervention group was significantly shorter (P=0.03). RMA wasn't statistically significant between groups for weight (F: 0.76, P: 0.39, ŋ: 0.03); but within-subjects test showed that change of the weight over time and for interaction of time and group was significant (F:74.437, P <0.001, ŋ: 0.727). Study suggest that PIOMI can be integrated in feeding rehabilitation programs of the premature infants born with gestational age of as young as 26-29 weeks, and applied at 29 weeks postmenstrual age (PMA)[18].

A Randomized control trail was conducted to evaluate sucking organization in premature infants following a preterm infant multi-sensory intervention, the Auditory, Tactile, Visual, and Vestibular (ATVV) at two inner-city Midwestern community hospitals' NICUs (level II [with extended capabilities] and level III NICU) A convenience sample of 183 healthy premature infants born 29 - 34 weeks post-menstrual age (PMA) were randomly assigned to the ATVV intervention or a control group..Sucking microstructure data were collected at baseline when the infant was to begin oral feeding prior to intervention and every seven days until hospital discharge. The baseline feeding assessment was conducted at the first oral feeding when possible, or within five days of initiation of oral feeding, then weekly until hospital discharge. The ten-minute feeding assessments were conducted during an early morning regularly scheduled feeding, using the MCNSA. A quadratic trend was observed for number of sucks, sucks per burst, and maturity index, with the intervention group increasing significantly faster by day 7 (Model estimates for group day: $\beta = 13.69$, $p < 0.01$; $\beta = 1.16$, $p < 0.01$; and $\beta = 0.12$, $p < 0.05$, respectively). Sucking pressure increased linearly over time, with significant between-group differences at day 14 ($\beta = 45.66$, $p < 0.01$).

Study concluded that ATVV infants exhibited improved sucking organization during hospitalization, suggestive that ATVV intervention improves oral feeding[19].

Angela G, Giada S, Olena C, Marchi, Gagliardi, etal conducted a systemic reviews Nineteen studies were included in this review: 15 randomized, 1 quasi-randomized, and 3 crossover randomized controlled trials. The main aim of this systematic review was to determine the effects of early intervention on quantitative parameters of sucking in preterm infants Studies were selected if they fulfilled the following criteria: (i) involved infants born preterm (gestational age at birth below 37 weeks), (ii) tested experimental interventions to improve sucking or oral feeding skills, and (iii) included quantitative outcome measure based on objective parameters of sucking performance. Specific Medical Subject Headings (MeSH) terms were utilized. Several studies have demonstrated that early intervention strategies have beneficial effects on the oral feeding performance of preterm infants, and the majority of them used qualitative assessments as the primary outcome measures. In conclusion, the evidence indicates that a variety of interventions, based on different principles and methodologies, are effective in enhancing quantitative aspects of sucking. Efficiency parameters are the most frequently explored, as they are directly related to the infant nutrition capacity and therefore present the highest clinical relevance. They are positively influenced by most types of intervention, though are less affected by NNS training only. Frequency, morphology, and efficiency parameters outline some of the mechanisms of functional sucking but are infrequently investigated[20].

Literature related to establishment of feeding among preterm and low birth weight babies:

Optimal feeding of low birth weight infants Low birth weight (LBW) infants need optimal nutrition during the neonatal period for proper growth and development. Appropriate feeding of low birth weight and very low birth weight infants improves their chances of survival and is important for their optimum growth and development. Breast milk is the ideal food for all infants including those who are LBW. WHO recommends that all LBW infants, irrespective of their gestation be fed breast milk. The goal is to enable every LBW infant to receive feeding directly and exclusively from her/his mother's breast at the earliest. However, many preterm infants have feeding difficulties initially because of

- Inability to coordinate suck,
- swallow and breathing Immature and
- sluggish gut and
- Systemic illness.

• Full term small-for-gestational-age infants because of being weak or sick may also experience.

- Poor attachment and sucking effort on the breast
- Poor swallowing •
- Easy tiredness (and hence poor intake) •
- Vomiting, regurgitation or abdominal distension

Lower the birth weight, greater is the likelihood of feeding difficulties. These infants may not be stable enough to tolerate enteral feeds and are therefore provided intravenous fluids till such time that enteral feeding can be established optimally. Direct

feeding from the mother's breast may not be possible or may not be enough to fulfill the need in many others and in this situation, feeding may need to be provided by alternative feeding methods such as feeding tube, spoon, paladai or cup.

LBW infants who are able to breastfeed should be put to the breast as soon as possible after birth when they are clinically stable, and should be exclusively breastfed until six months of age. Low-birth-weight infants, who are unable to take directly from the breast, should be fed by oro-gastric tube, feeding cup, paladai or spoon.

Pickler RH, Reyna BA conducted a Randomized, crossover study to examine the effect of prefeeding non-nutritive sucking (NNS) on breathing, nutritive sucking (NS), and behavioral characteristics of bottle feeding. The convenience sample was composed of 10 preterm infants who were 33 to 40 weeks post conceptual age (PCA) at the time of the observation. Ten preterm infants received NNS before 1 bottle feeding and served as their own control at a second bottle feeding. Sucking was measured using a chin strain gauge and breathing was measured with a nasal thermistor. Behavioral characteristics included behavior state, measured using the Neonatal Individualized Developmental Care and Assessment Program (NIDCAP) behavior state scale, and feeding efficiency. NS waves were smoother and more regular than NNS waves. Time to onset and duration of the first non-nutritive suck burst were positively correlated with time to onset for the first nutritive suck burst. Prefeeding NNS had no statistically significant effect on characteristics of breathing or on any other characteristics of NS. Behavioral state during feedings and feeding efficiency were not affected by prefeeding NNS. Study concluded that In this sample, the use of prefeeding NNS did not affect NS, breathing during feeding, or select behavioral characteristics of feeding[21].

Hill AS, Kurkowski TB, Garcia J conducted A crossover repeated measures design was used with 20 preterm infants for a total of 40 bottle-feeding sessions to determine whether a therapeutic technique, oral support (cheek and jaw support), would influence the cardiopulmonary functions or nutritive sucking patterns of preterm infants during feeding. The Whitney Mercury Strain Gage and a Nonin Cardiopulmonary monitor were used to observe sucking characteristics and cardiopulmonary functions during feeding. Results were Infants not receiving support paused longer ($F= 6.37$, $df= 5$, $p < .001$) and more frequently ($F= 5.01$, $df= 5$, $p < .001$) than supported infants. There were no differences between the groups in the number of sucks and bursts, the burst duration, the stability of the total sucking activity, or the rate of sucking. Oxygen saturation (SaO2) values, heart rate, and respiratory rate did not differ between the groups during feeding. Post feeding SaO2 levels were lower than pre feeding levels for infants not receiving oral support ($t= 0.96$, $df= 19$, $p= .03$). Study concluded that Oral support provided stability for the jaw and fostered the return of the infant's pre feeding SaO2 values, but it did not interfere with cardiopulmonary function during feeding[22].

Younesian S1, Yadegari F1, Soleimani F2. Conducted a true experimental study on 20 preterm infants to examine the effect of oral sensory motor stimulation on feeding performance, length of hospital stay, and weight gain in preterm infants at 30 - 32 weeks of gestational age. Premature infants ($n = 20$) were randomly assigned to experimental and control groups. The experimental group received oral sensory motor stimulation of the oral structures (15 minutes / day) for 10 successive days, while these stimulations were not offered to the control group. Days elapsed to achieve oral feeding, length of hospital stay, and weight gain in the two groups were assessed. Transition to oral feeding was acquired significantly earlier in the infants in the experimental group

than in the controls: 13 and 26 days, respectively ($P < 0.001$). Likewise, the length of hospitalization was significantly shorter in the experimental group than in the control group: 32 days and 38 days, correspondingly ($P < 0.05$). The two groups showed no significant difference in terms of weight gain in the first, second, third, and fourth weeks of birth: first week: 100 vs. 110; second week: 99 vs. 111; third week: 120 vs. 135; and fourth week: 129 vs. 140.gth of hospital stay, and weight gain in preterm infants at 30 - 32 weeks of gestational age. Study concluded that the number of days to reach oral feeding in preterm babies was decreased by oral motor stimulation, which in turn conferred earlier hospital discharge[23].

An experimental study was conducted from NICU at Kamali Hospital (Karaj, IR Iran) , to compare the effects of NNS and pre-feeding oral stimulation program on feeding performance, length of hospital stays, weight gaining. Thirty-two preterm infants (16 males and 16 females) with convenience sampling, were randomly assigned following inclusion criteria. into NNS (n = 11), pre-feeding oral stimulation (n = 10) and control (n = 11) group. The oral stimulation program consisted of once daily stroking of cheeks, gums and tongue and followed by 3 minutes of non-nutritive sucking for 15 minutes. The control group received sham intervention. Statistical analyses were performed using SPSS16.0 statistical software. Kolmogorov-Smirnov test revealed continuous variables to be normal, so parametric tests were used. An ANOVA was performed followed by Scheffé's method to compare 3 groups (NNS, pre-feeding oral stimulation and control group) for the gestational age at different stage of oral feeding. Repeated measures ANOVA were performed to analyze intra-group changes. A MANOVA was performed to compare the weight gains from birth through weeks between three groups. Statistical significance was considered at $\alpha = 0.05$.Results were there was no significant difference in regard to gestational age, birth weight,

gender distribution and Apgar score between 3 groups in pre-test stage. While the gestational age of independent oral feeding in both intervention groups was lower than control group thecanalyzes revealed no significant difference in the gestational age between three groups (P > 0.05). Also weight of the groups obtained through time.The average days of life for independent oral feeding in NNS and pre-feeding oral stimulation were 16.72 ± 8.94 and 18.20 ± 9.18 day respectively, while the control group was 24.27 ± 9.42 day. Although the NNS and pre-feeding stimulation groups reached 7.55 and 6.07 days sooner to independent oral feeding than in the control group, but the difference did not reach statistical significance. Preterm infants in the intervention (NNS and pre-feeding oral stimulation) and control groups did not differ statistically in regard to attainment of 1, 4, and 8 oral feeding per day (P > 0.05)[24].

A Randomized controlled trial was conducted to assess the effect of additional oromotor stimulation along with routine care on transition from gavage to full oral feeding in preterm neonates. 51 neonates (28-34 weeks) randomized to receive either oromotor stimulation along with routine care (n=25, intervention), or routine care alone (n=26, control) (which included Kangaroo mother care and non-nutritive sucking).Results were Median (IQR) days to reach partial and full spoon feed were significantly lesser [5(3-9.5) vs 10(5-15) P=0.006; and 7(5-14.5) vs 12.5(7-21); P=0.03] in intervention than in control group, respectively. A significantly higher number (56%) in intervention group as compared to control group (31%) achieved partial direct breast feeding at discharge (P=0.01).the study concluded that Oromotor stimulation along with routine care reduces the duration of gavage feeding in preterm neonates[25].

An experimental study was conducted to examine the effects of stroking and a perioral and intraoral prefeeding stimulation program on healthy, growing, preterm infants in a Level II special care nursery. Two groups of nine randomly assigned,

medically stable preterm infants, born between 30 weeks and 34 weeks gestation, were selected for the study. All infants were introduced to nipple feeding at approximately 34 weeks post conceptual age. The infants in the control group received a 5-min stroking protocol before feeding; the infants in the experimental group received a 5-min stroking protocol in addition to a perioral and intraoral stimulation program. Results were compared with the control group, the experimental group had a decreased number of gavage feedings, greater weight gain, and fewer days of hospitalization. The experimental group also had higher scores on the Revised-Neonatal Oral Motor Assessment nutritive suck scale than the control group. Study concluded that On a preliminary basis, the findings from this study establish the efficacy of occupational therapy in a Level II special care nursery for healthy, growing, preterm infants. Further, the specific treatment strategies conducted with the infants receiving the experimental procedures have also been preliminary established as effective in enhancing the infants' feeding skills, resulting in weight gain and decreased hospital stays as compared with their counterparts in the control group[26].

Quasi experimental study was conducted to assess the effect of feeding performance on cheek stimulation versus lip stimulation among the preterm babies at selected hospitals in PCMC, Pune. Non Probability Convenience Sampling Technique was used for 60sample the tool developed which includes section 1= the demographic variables section 2= Deals with modified Brazeltone scale in that total 12 observations included in tool. Results found that the effect of feeding performance of preterm babies before lip stimulations pretest mean score

is 9.7 and after given lip stimulations mean score is 11.6. This indicates that after stimulations average score rises to 11.6 respectively. It has been observed that effect of feeding performance of preterm babies before cheek stimulations pretest mean score is 10.8 and after given cheek stimulations means score was 9.7. This indicates that after cheek stimulations mean score was decreased. After comparison cheek & lip stimulation p-value not significant (less than 0.05) hypothesis is rejected. The study concluded that the pretest knowledge average mean score is 11.6 and practice score is 7.8 after stimulation average score rises to 11.6 respectively. This indicates that the knowledge and practice grades improved after stimulation. After comparison cheek & lip stimulation p-value not significant (less than 0.05) hypothesis is rejected[27].

CHAPTER -4

METHODOLOGY

This chapter deals with the methodology selected for the study. It includes research approach, research design, variables, setting of the study, population, sample and sampling technique, sampling criteria, selection of the tool, performing oral stimulation and oral support, procedure of data collection and plan for data analysis.

Research Approach:

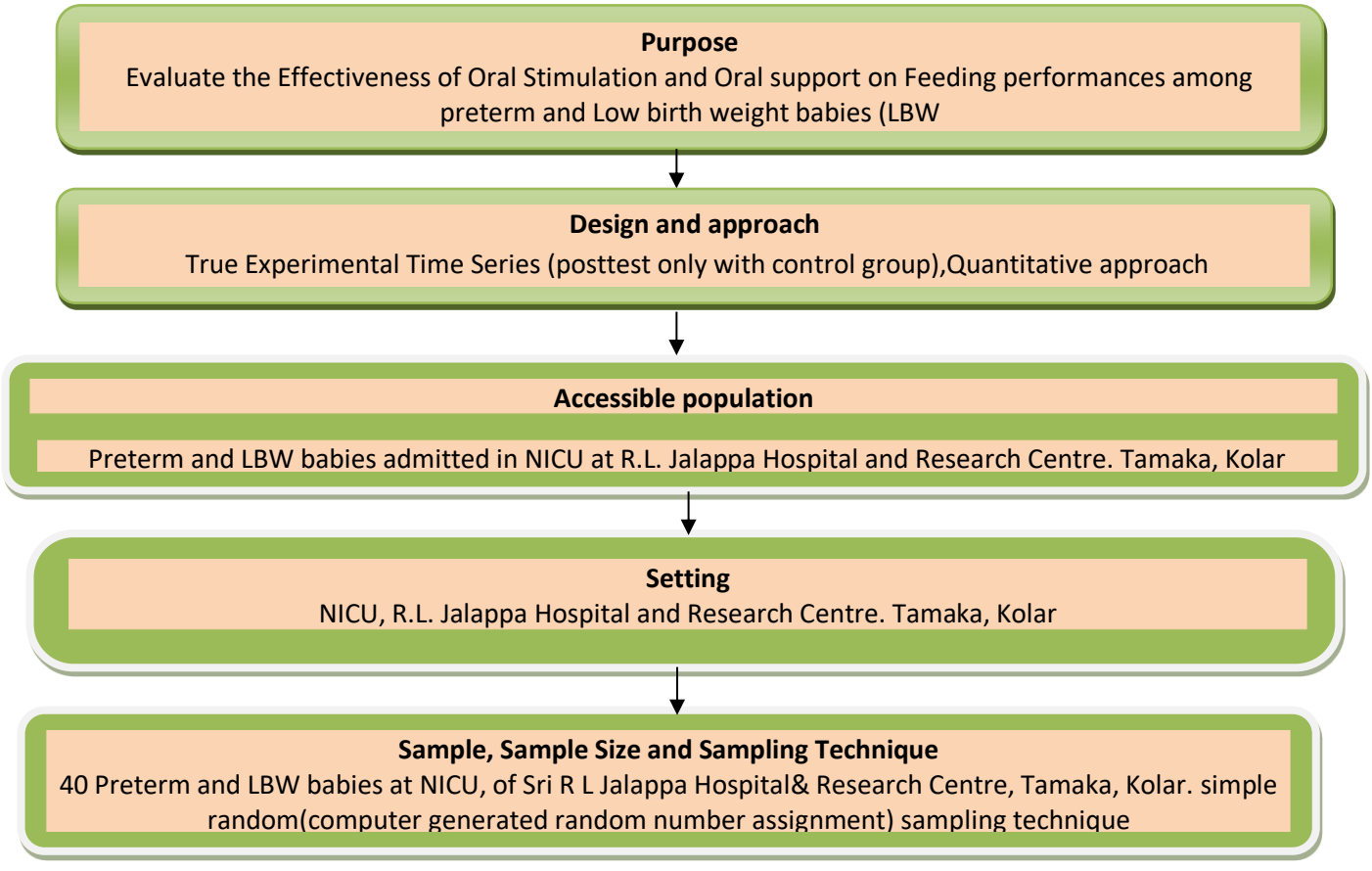
Research approach is the basic procedure for the research inquiry. The research approach helps the researcher to determine what data to collect and how to analyze it[28].

The present study aimed at determining the Effectiveness of Oral Stimulation and Oral support on Feeding performances among Preterm and Low birth weight babies (LBW) at R.L Jalappa Hospital & Research Center, Kolar, Karnataka.

Research Design:

Research design is the arrangement of conditions for collection and analysis of data in a manner that aims at the research purpose with economy in procedure[29].

In this study quantitative approach with True Experimental Time Series (posttest only with control group) design was adopted.



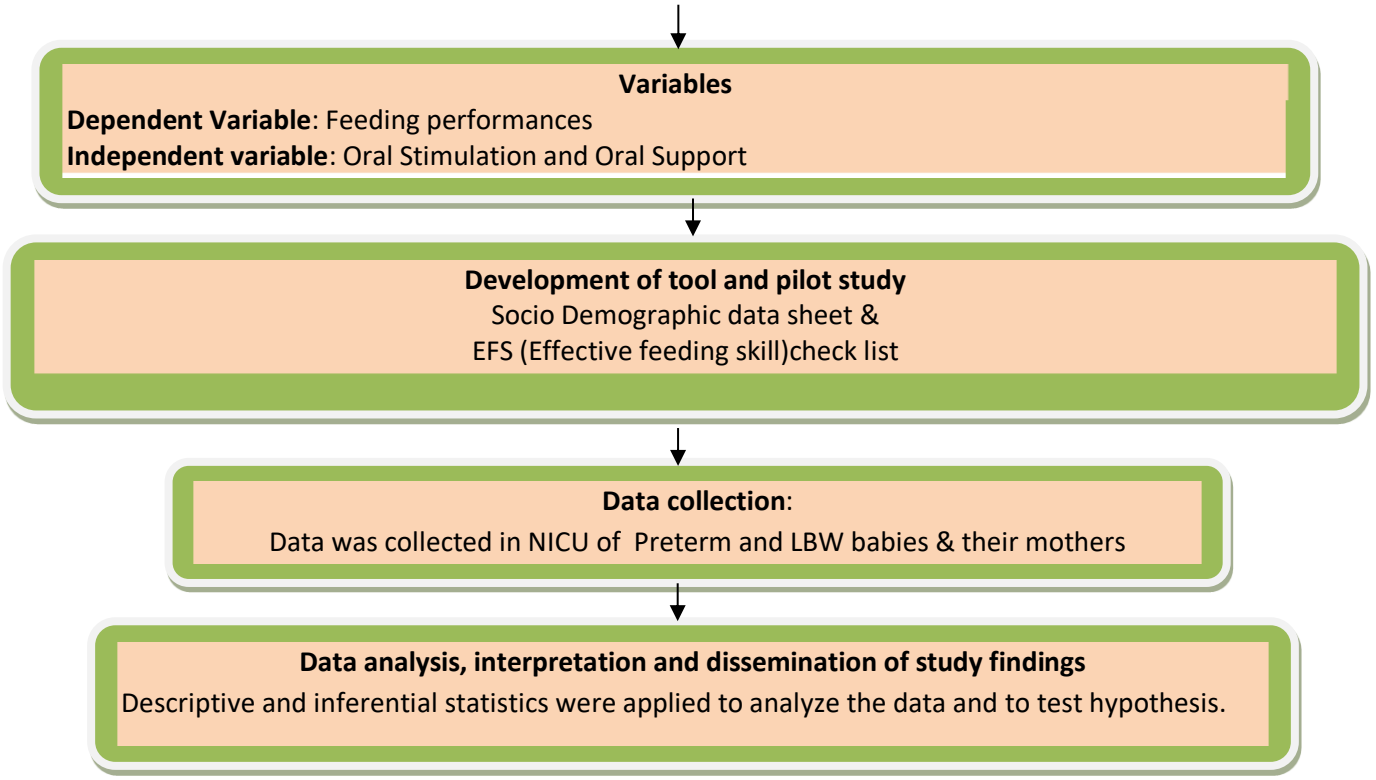


Fig.2: Schematic Representation of the Study Research Design

Variables

Variables are qualities, properties, characteristics of persons, things, situation that change or vary[13].

Independent Variable:

Independent variable is the variable that stands alone and does not depend on any other. In this study, Oral stimulation and Oral support was the independent variable[13].

Dependent Variable:

The dependent variable is the variable the researcher is interested in understanding, explaining or predicting[13].

In this study, it refers to the Feeding performances of Preterm and LBW babies.

Extraneous Variable:

All those variables which are present in the research environment that may interfere with research findings[13].

In this study it refers to the selected variables like Age of mother Gestational age of child, Birth weight of child, Order of birth of child.

Setting of the study:

Setting is the physical location and condition in which data collection takes place[30].

The study was conducted in NICU of R.L Jalappa Hospital and Research centre, Tamaka, Kolar. RLJH&RC is an multi-Specialty Hospital with 1200 bed strength It has well equipped NICU with 16 beds with all lifesaving equipment ,and availability of Health care persons round the clock.

Population

The term population refers to the aggregation of all the units in which a researcher is interested[31].

In this study the population refers to Preterm and low birth weight babies admitted in NICU of R.L Jalappa Hospital and Research Centre.

The sample of the study comprises of Preterm and LBW babies

Sample:

The sample may be defined as representative unit of a target population, which is to be worked upon by researcher during their study[31].

Sampling Technique:

Sampling technique is the process of selecting a portion of the population to represent the entire population[31].

Simple random (computer generated random number assignment) sampling technique and following inclusion criteria

Criteria for Selection of Samples:

Inclusion criteria:

Babies admitted in NICU

- With gestational age of 32-36weeks.
- Birth weight of 1.2-2kgs.
- Physiologically stable.
- Who are on NG tube feeding.
- Mothers willing to participate in the study.

Exclusion criteria:

- Babies admitted in NICU
- With respiratory distress and severe illness.
- On sedation and critically ill.

Selection and development of the tool:

Data collection tool is the procedure or instrument used by the researcher to observe or measure the key variables in the research problem[32].

Data collection tool used in this study consists of two sections.

Section. A: Socio demographic data.

Section.B: EFS (Effective feeding skill)check list**:** Comprises of Oral feeding readiness, Oral feeding skill, Oral feeding recovery[33].

The Early Feeding Skills (EFS)[29] tool is a clinician-reported instrument developed to assess the emergence of early feeding skills and identify domains in need of intervention.

Validity and Reliability of the Tool:

Construct validity was examined through the association of the EFS with

(1) Concurrently scored Infant-Driven Feeding Scale-Quality (IDFS-Q)

(2) Infant birth risk (gestational age)

(3) Maturity (postmenstrual age).

Results: Principal components analysis with varimax rotation supported a 5-factor structure.

- The total EFS demonstrated good internal consistency reliability (Cronbach α= 0.81).

- The total EFS score had construct validity with the IDFS-Q (r =-0.73; P < .01), and with gestational age of a subsample of premature infants (r = 0.22; P <.05).

Implications for practice:

As a valid and reliable tool, the EFS can assist the inter professional feeding team to organize feeding assessment and plan care.

Dr. Thoyre and colleagues conclude. They suggest that further studies using the EFS could add to understanding of neonatal feeding skill development.

Description of the tool:

1.Oral Feeding Readiness (OFR)				
Able to hold body in a flexed position with arms hands toward midline		Yes(1)	No(0)	
Demonstrates energy for feeding-maintains muscle tone and body flexion through assessment period		Yes	No	
2.Oral Feeding Skill (OFS)				
Ability to Remain engage in feeding				
Predominant muscle tone (energy infant demonstrates for feeding)	Maintains flexed body position with arms towards midline	Inconsistent tone ,variable muscle tone	Some tone consistently felt but somewhat hypotonic	Little or no tone,felt,flaccid limp most of the time

	(3)	(2)	(1)	(0)
3.Ability to Organize Oral-Motor Functioning (OMF)				
Opens mouth promptly when lips are stroked at feeding onsets	All (3)	Most (2)	Some (1)	None (0)
Once feeding is under way, maintains a smooth rhythmic pattern of sucking				
4.Ability to coordinate Swallowing and Breathing (CSB)				
Able to engage in long sucking bursts (7-10sucks) without behavioral stress signs or an adverse or negative cardiorespiratory response				
5.Ability to Maintain Physiologic Stability (MPS)				
In first 30sec after each feeding onset, oxygen saturation is stable and behavioral stress cues absent				
Stops to breathe before behavioral stress cues appear				
Clear breath sounds –no grunting breath sounds (prolonging the exhale, partially closing glottis on exhale)				
6.**Oral Feeding Recovery (During the first Five Minutes Post feeding) (OFRR)**				
Predominant stage	Quiet alert	Drowsy	Sleep	Fuss cry
Range of Oxygen Saturation (%)				

Scoring

The EFS check list was divided into 06 parameters and scoring was given for the same as follows:

1. Oral Feeding Readiness (OFR)-04
2. Oral feeding skill (OFS)-12
3. Ability to Organize Oral-Motor Functioning (OMF)-12
4. Ability to Coordinate Swallowing and Breathing (CSB)-06
5. Ability to maintain Physiologic stability (MPS)-18

6. Oral Feeding Recovery (During the first Five Minutes Post feeding) (OFRR)-12

Pilot Study:

Pilot study is the small scale version/trial run, done in preparation of the main study

The main objective of the pilot study is to help the researcher to become familiar with the use of tool and find out the difficulty to conduct the main study. The pilot study was conducted at Sri R.L. Jalappa Hospital and Research Centre, Kolar from **03-04-19 to 16-04-19.**

The researcher did not encounter any problems during the time of data collection and the study was found feasible and practicable.

Method of data collection

Data collection is the process of selecting subjects and gathering data from these subjects.

The data was collected from **15-04-2019 to 25-06-2019** over a period of 55 days. The time schedule for data collection was every day from 10 am to 5 pm. The data was collected under the following phases:

1. **Preparatory Phase**
    - Ethical clearance was obtained from the institutional ethics committee of Sri Devaraj Urs College of Nursing
    - A formal written permission was obtained from Medical Superintendent of Sri R.L. Jalappa Hospital and Research Centre.

- The sample was selected and allotted to experimental group and control group by using simple random(computer generated random number assignment) sampling technique and following inclusion criteria

Data Collection Phase.

Weight of the babies of both experimental and control group was measured.

Oral support and Oral stimulation was given to preterm and LBW babies of experimental group twice a day before the beginning of the scheduled feeding, which include 12 mts of Oral stimulation (non-nutritive sucking and stroking of oral structures) and 3mts of Oral support.

Feeding performances were assessed on 3rdday,5th day,&7th day of initiating the intervention by requesting the mother to put the baby to breast, by using EFS scale (early feeding skill assessment check list)

For the babies of control group ,routine hospital care was continued , feeding performances were assessed on 3rd day ,5th day,& 7th day as of the experimental group.

Plan for data analysis:

The analysis of data requires a number of closely operations such as establishment of categories, the application of these categories to raw data through coding, tabulation and then drawing statistical inference.

The data obtained was analyzed by descriptive and inferential statistics in achieving the objectives of the study.

- Organization of data in master sheet.

- To analyze demographic characteristics. Frequencies, percentages, Mean, were used
- Repeated measures of ANOVA and independent‘t’ test were used through SPSS 20version to analyze effectiveness of oral support and oral stimulation on feeding performances .
- Chi-square analysis was done to determine association between socio demographic variables and feeding performances of preterm and low birth weight babies.

Summary:

This chapter deals with the methodology, research approach, research design, setting, population, sample, sampling technique, description of the tool, reliability of the tool, pilot study, method of collection, data collection procedure and plan for data analysis. The analysis and interruption of the results have been presented in the following chapter.

CHAPTER-V

THE SAMPLE SIZE ESTIMATION PROCESS

STATEMENT OF THE PROBLEM

"A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital &Research Centre, kolar, Karnataka".

Research approach: Quantitative research approach

Research design: True Experimental Time Series (posttest only with control group)

Sampling technique: Simple random (computer generated random number assignment)

Sampling Size: 40 samples from NICU of R.L.Jalappa Hospital and Research Centre Tamaka Kolar., 20 for Experimental group and 20 for Control group

Sample size estimation: Sample size was estimated based on Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) based on the Lyu.T.C etal study.

For the present study 40 preterm babies were selected in NICU of R.L.Jalappa Hospital and Research Centre Tamaka Kolar.

27/5/19

Signature of the Statistician

S. RAVISHANKAR
Lect./Assit. Professor,
Dept. of Community Medicine,
Sri Devaraj Urs Medical College,
Tamaka, Kolar-563101

CHAPTER-6

RESULTS

This chapter deals with analysis and interpretation of data gathered to determine the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among Preterm and low birth weight babies (LBW)

Analysis of data can be defined as the systematic organization and synthesis of research data and the testing of research hypothesis using the data. Analysis is described as categorization, ordering, manipulating, and summarizing the data to obtain the answer to the research question. The purpose of analysis is to reduce the data to an intelligible and interpretable form so that the relation of research problem can be studied[32].

The data has been analyzed and interpreted in the light of the objectives and Hypothesis of the study.

Objectives of the Study:

1. To evaluate the effectiveness of Oral stimulation and Oral support on Feeding Performances by comparing the findings between Experimental and Control group.

2. To determine the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

Null Hypotheses:

Ho_1: There will be no significant difference in feeding performances of preterm and low birth weight babies between experimental and Control groups.

Ho_2: There will be no significant association between feeding performances of preterm and LBW babies with their selected socio demographic variables.

Organization of findings:

The data was analyzed and presented under the following headings.

Section I: Socio demographic characteristics of Mother and Preterm and LBW babies.

Section II: Feeding Performances of Preterm and LBW babies before and after intervention.

Section III: Association between Feeding performances and socio demographic variables of Preterm and LBW babies.

Section I: Socio Demographic Characteristics of Mother and Preterm and LBW Babies.

Table-1: Frequency and percentage distribution of socio demographic variables

N=40

Sl.No	**Socio demographic variables**	**Experimental group($n_{1=20}$)**		**Control group($n_{2=20}$)**	
		Frequency	**Percentage (%)**	**Frequency**	**Percentage (%)**
1	Age of mother				
	a.20-23	04	20	05	25
	b.24-27	14	70	11	55
	c.28-31	02	10	04	20
	d.32 and above	-	-	-	-
2	Gestational age of child (in weeks)				
	a.32-33	05	25	08	40
	b.33-34	04	20	04	20
	c.34-35	04	20	04	20
	d.35-36	07	35	04	20
3	Birth weight of child (in kgs)				
	a.1.2-1.5	06	30	08	40
	b.1.5-1.8	08	40	07	35
	c.1.8-2.0	06	30	05	2

4	Order of birth of child				
	a.Primi	12	60	09	45
	b.Gravida-2	04	20	09	45
	c. Gravida-3	03	15	02	10
	d. Gravida-4 & above	01	05	-	-

Table 1: shows that majority i.e. 70% (14) mothers were in the age group of 24-27 years and 20% (4) were in the age group of 20-23 years and 10% (2) were in the age group of 28-31 years in Experimental group where as in Control group majority i.e. 55% (11) mothers were in the age group of 24-27 years and 25% (5) were in the age group of 20-23 years and 20% (4) were in the age group of 28-31 years respectively.

With regard to Gestational Age i.e. 35% (07) of babies were born between 35-36 weeks 25 %(5) were born between 32-33 weeks 20%(4) of babies were born between 33-34 and 20%(4) of babies were born between 34-35 weeks in Experimental group where as in control group. 40% (08) of babies were born between 32-33weeks 20%(4) were born between 33-34 weeks 20%(4) of babies were born between 34-35 and 20%(4) of babies were born between 35-36 weeks respectively.

With regard to Birth Weight of child i.e 40% (08) of babies were born between 1.5-1.8kgs 30%(04) were born between 1.2-1.5kgs 30%(04) were born between 1.8-2.0kgs in Experimental group where as in control group 40% (08) of babies were born between 1.2-1.5kgs 35%(07) were born between 1.5-1.8kgs 25%(05) were born between 1.8-2.0kgs respectively

With regard to Order of Birth i.e. 60%(12) babies were first born children 40%(08) were second born and above in Experimental group where as in Control group 45%(09) babies were first born children 55%(09) were second born and above respectively.

Section II: Feeding Performances of Preterm and LBW babies before and after intervention.

Table 2: Comparison of Mean scores of Feeding performances between Experimental and Control group

N=40

Time	Group	Mean	S.D	t-value	df	p-value	Inference
DAY-3	Exp.Group N_1=20	19.85	5.00	3.48	38	.001	SS
	Con.Group N_2=20	13.70	6.08				
DAY-5	Exp. Group N_1=20	26.80	3.41	4.46	38	.001	SS
	Con.Group N_2=20	19.30	6.68				
DAY-7	Exp.Group N_1=20	28.35	1.72	3.21	38	.003	SS
	Con.Group N_2=20	23.85	6.02				

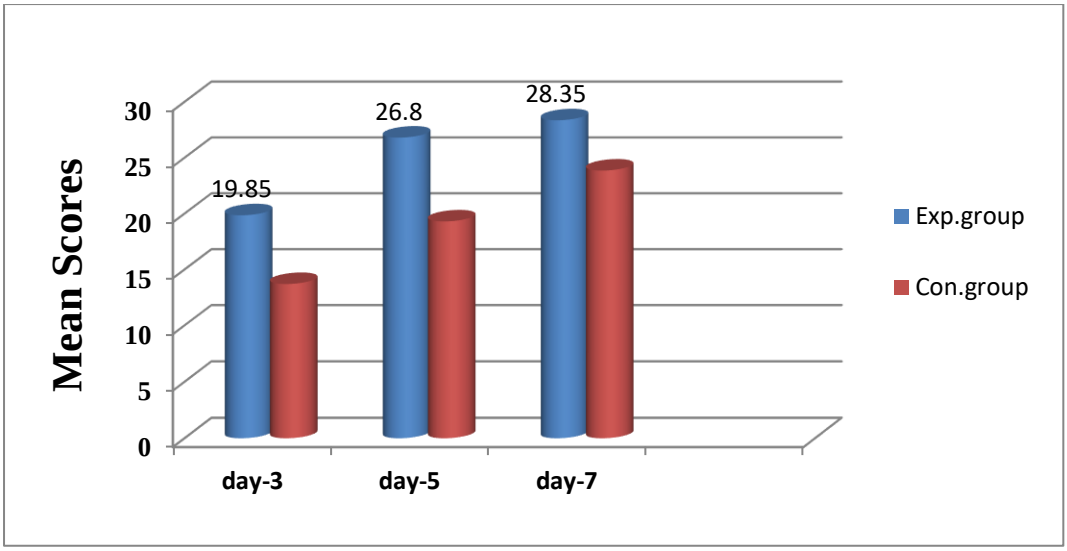


Figure: 3 Column Diagram showing mean scores of feeding performances among Preterm and LBW babies in Experimental and Control groups.

The findings revealed that, the Mean scores of Experimental group on Day-3, 5&7 was 19.85 &26.80 & 28.35with S.D of 5.00&3.41&1.72, respectively where as in control group 13.70&19.30&23.85 with S.D of 6.08&6.68&6.02 respectively at 38 df and calculated independent ' t'-value was 3.48 & 4.46 & 3.21 which is less than table value at 0.05 level of significance indicating Statistically Significant difference in establishment of feeding performances between experimental and control group. Hence the stated null hypothesis H_{01} is rejected.

Table 3: Mean scores of feeding performances of LBW and Pre term babies at different point of time in Experimental group

N=40

Variable	**Mean ± SD Day 3**	**Mean ± SD Day 5**	**Mean ± SD Day 7**	**p-value**	**Inference**
Feeding performances	19.85 ± 5.00	26.80 ± 3.41	28.35 ± 1.72	.001 Wilks lambda .199 F=36.22	SS

Table -3 presents the Mean scores of feeding performances of Pre term and LBW babies at different point of time in Experimental group with means of 19.85 &26.80 & 28.35and S.D of 5.00&3.41&1.72 respectively, with p-value of.001which indicates statistically significant differences in the feeding performances from day 3 to day 5 and day 7.

Table: 4 Mean scores of Feeding Performances of LBW and Pre term babies at different point of time in control group

N=40

Variable	**Mean ± SD Day 3**	**Mean ± SD Day 5**	**Mean ± SD Day 7**	**p-value**	**Inference**
Feeding performances	13.70 ± 6.08	19.30 ± 6.68	23.85 ± 6.02	.001 F=46.240	SS

Table -4 presents the Mean scores of feeding performances of Pre term and LBW babies at different point of time in Control group with means of 13.70&19.30&23.85 with S.D of 6.08&6.68&6.02 respectively, with p-value of.001which indicates statistically significant difference in the feeding performances from day 3 to day 5 and day7.

Section III: Association between Feeding performances and socio demographic variables of Preterm and LBW babies

Table 5: Association between Feeding performances and socio demographic variables of Preterm and LBW babies in Experimental group

N=40

Sl.no	Socio demographic variables	Feeding performances		χ^2 Calculated value(at 0.05 levels)	p-value	df	Inference
		Below & equal to median **25**	Above median				
1	Gestational age 32-33weeks	03	02	0.00	3.84	01	NS
	33 and above	07	08				
2	Birth weight of child 1.2-1.5kgs	05	1	0.85			NS
	1.5-1.8 kgs	5	9				
3	Order of birth First born	7	5	0.20			NS
	Second born & above	3	5				

Table 5 indicates that, chi- square calculated value is less than table value at 0.05 level of significance for Gestational age, Birth weight of child and Order of birth and Feeding performances of Preterm and LBW babies Hence the stated H_{02} is accepted.

Table 6: Association between Feeding performances and socio demographic variables of Preterm and LBW babies in Control group

N=40

Sl. No.	Socio demographic variables	Feeding performances		χ^2 Calculated d value(at 0.05 levels)	p-value	Df	Inference
		Below & equal to median **20.1**	Above median				
1	Gestational age 32-33 weeks	06	02	1.87			NS
	33 and above	04	08				
2	Birth weight of child 1.2-1.5kgs	04	01	1.06	3.84	01	NS
	1.5-and above	06	09				
3	Order of birth First born	05	04	0.00			NS
	Second born and above	05	06				

Table 6 indicates that, chi- square calculated value is less than table value at 0.05 level of significance for Gestational age, Birth weight of child and Order of birth and Feeding performances of Preterm and LBW babies Hence the stated H_{02} is accepted.

Summary:

This chapter dealt with the analysis and interpretation of findings of the study. The data was analyzed by using inferential and descriptive statistics. The analysis has been organized and presented under various sections like description of demographic variables, description of feeding performances before and after intervention, comparison of feeding performances of preterm and LBW babies with their selected socio demographic variables

CHAPTER-7

DISCUSSION

This chapter presents the major findings of the study and discusses them in relation to similar studies conducted by other researchers.

The aim of this study was to evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies. Data collection and analysis were carried out based on the objectives of the study.

Objectives of the study:

1. To evaluate the effectiveness of Oral stimulation and Oral support on Feeding Performances by comparing the findings between Experimental and Control group.

2. To determine the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

Major findings of the study:

1. Socio demographic characteristics:

1. Majority i.e. 70% (14) mothers were in the age group of 24-27 years in Experimental group where as in control group 55 %(11) mothers were in 24-27 years.
2. Majority i.e. 35% (07) of babies were born between 35-36 in Experimental group where as in control group. 40% (08) of babies were born between 32-33weeks

3. Majority i.e. 40% (08) of babies were born between 1.5-1.8kgs in Experimental group where as in control group 40% (08) of babies were born between 1.2-1.5kgs
4. Majority i.e. 60 %(12) babies were first born in Experimental group where as in Control group 45 %(09) babies were first born.

The first objective of the study was**, to evaluate the effectiveness of Oral stimulation and Oral support on Feeding Performances by comparing the findings between Experimental and Control group.**

The findings (Table 2, figure: 2) revealed that, the Mean scores of Experimental group on Day-3, 5&7 was 19.85 &26.80 & 28.35with S.D of 5.00&3.41&1.72, respectively where as in control group 13.70&19.30&23.85 with S.D of 6.08&6.68&6.02 respectively at 38 df and calculated independent ' t'-value was 3.48 & 4.46 & 3.21 which is less than table value at 0.05 level of significance indicating Statistically Significant difference in establishment of feeding performances between experimental and control group. Hence the stated null hypothesis H_{01} is rejected.

Study findings are supported by a Randomized study conducted by Rocha AD, Moreira ME, Pimenta HP, Ramos JR, Lucena SL to assess the efficacy of sensory-motor-oral stimulation and non-nutritive sucking in very low birth weight infant born between 26 and 32 weeks of gestational age. Preterm infants in the experimental group received sensory-motor-oral stimulation and non-nutritive sucking and infants in the control group received a sham stimulation program. Both were administered from when they reached enteral diet (100 kcal/kg/day) until the beginning of oral diet. Study results were Independent oral feeding was attained significantly earlier in the experimental

group than the control group, 38+/-16 days of life (mean+/-S.D.) versus 47+/-17 days of life, respectively (P<0.001) There was significant difference in length of hospital stay between the two groups (41.9+/-17 (mean+/-S.D.) versus 52.3+/-19 days (P<0.01))[34].

Study findings are also supported by, a randomized, blinded clinical trial was conducted to examine outcomes related to the newly developed Premature Infant Oral Motor Intervention (PIOMI) on feeding progression and length of stay (LOS) in preterm infants. Total of 19 infants from 1 level III NICU born between 26 and 29 weeks 10 in the experimental group and 9 in the control group. The experimental group received the PIOMI for 5 minutes per day for 7 consecutive days. The control group received a sham intervention to keep staff and parents blinded to the infants' group assignment. Infants who received the once-daily PIOMI transitioned from their first oral feeding to total oral feedings 5 days sooner than controls (P = .043) and were discharged 2.6 days sooner than controls. Study concluded that further study on the use of PIOMI with preterm infants to enhance oral feeding skills and decrease LOS[17].

Study findings are also supported by, Younesian S1, Yadegari F1, Soleimani F2. Conducted a true experimental study on 20 preterm infants to examine the effect of oral sensory motor stimulation on feeding performance, length of hospital stay, and weight gain in preterm infants at 30 - 32 weeks of gestational age. Premature infants (n = 20) were randomly assigned to experimental and control groups. Days elapsed to achieve oral feeding, length of hospital stay, and weight gain in the two groups were assessed. Transition to oral feeding was acquired significantly earlier in the infants in the experimental group than in the controls: 13 and 26 days, respectively (P < 0.001). Likewise, the length of hospitalization was significantly shorter in the experimental group than in the control group: 32 days and 38 days, correspondingly (P < 0.05). The

two groups showed no significant difference in terms of weight gain in the first, second, third, and fourth weeks of birth: first week: 100 vs. 110; second week: 99 vs. 111; third week: 120 vs. 135; and fourth week: 129 vs. 140.gth of hospital stay, and weight gain in preterm infants at 30 - 32 weeks of gestational age. Study concluded that the number of days to reach oral feeding in preterm babies was decreased by oral motor stimulation, which in turn conferred earlier hospital discharge[23].

Study findings are also supported by, double-blind randomized clinical trial was conducted in the neonatal intensive care units(NICUs) of two hospitals in Tehran, to examine the effectiveness of the Premature Infant Oral Motor Intervention (PIOMI) in the feeding progression and early intervention on 30 preterm infants who were randomly assigned into intervention and control group, each containing 15 infants. Repeated measures ANOVA (RMA) were analyzed. The postmenstrual age and weight of the participants were examined at the time points of accomplishing one, four, and eight oral feedings a day and at the time of hospital discharge. Results were the intervention group reached the first oral feeding (with a mean of 7.2 days) and eight oral feeding (with a mean of 13.47 days) earlier than the control group. The length of hospital stay in intervention group was significantly shorter (P=0.03). RMA wasn't statistically significant between groups for weight (F: 0.76, P: 0.39, ŋ: 0.03); but within-subjects test showed that change of the weight over time and for interaction of time and group was significant (F:74.437, P <0.001, ŋ: 0.727). Study suggest that PIOMI can be integrated in feeding rehabilitation programs of the premature infants born with gestational age of as young as 26-29 weeks, and applied at 29 weeks postmenstrual age (PMA)[18].

The second objective of the study was to determine the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

The findings (Table 5&6) revealed that, chi- square calculated value is less than table value at 0.05 level of significance for association between Gestational age, Birth weight of child and Order of birth and Feeding performances of Preterm and LBW babies indicating statistically not significant. Hence the stated null hypothesis H_{02} is accepted.

Study findings are supported by, Bingham PM, Ashikaga T, Abbasi S. Conducted a prospective, observational study to assess the value of non-nutritive sucking (NNS) measures as predictors of oral feeding performance in comparison to other putative predictors of feeding skills at neonatal intensive care units (NICU) in rural/academic, urban/tertiary centers in the USA. In all, 51 premature infants born between 25 and 34 weeks' PMA, birth weight 1512.3+/-499.4 g, were included in this study. Interventions were measurement of NNS, standardized feeding advance schedule, performance of NOMAS, and standardized, permissive, oral feeding advance schedule. Cox proportional hazards and non-parametric rank sum tests were used to assess the relationship between NNS and feeding outcome measures. Results were Higher NNS organisation scores predicted shorter transition to FOF ($p<0.05$): infants with a more organised suck pattern reached independent oral feeding 3 days earlier (16 vs 13 day transition) than infants with more chaotic patterns of suck bursts. Consistency of the suck waves also corresponded with feeding milestones: infants with more regular suck wave pressure deflections became competent oral feeders approximately 3 days earlier than those

with irregular suck pressure waves. PMA at birth was inversely associated with PMA at FOF. NOMAS measures were not associated with outcome measures. Study concluded that Measures of NNS organisation and suck consistency constitute useful candidate predictors of feeding performance by premature infant[35].

Study findings are also supported by, Randomized control trail was conducted to evaluate sucking organization in premature infants following a preterm infant multi-sensory intervention, the Auditory, Tactile, Visual, and Vestibular (ATVV) at two inner-city Midwestern community hospitals' NICUs (level II [with extended capabilities] and level III NICU) A convenience sample of 183 healthy premature infants born 29 - 34 weeks post-menstrual age (PMA) were randomly assigned to the ATVV intervention or a control group. A quadratic trend was observed for number of sucks, sucks per burst, and maturity index, with the intervention group increasing significantly faster by day 7 (Model estimates for group day: $\beta = 13.69$, $p < 0.01$; $\beta = 1.16$, $p < 0.01$; and $\beta = 0.12$, $p < 0.05$, respectively). Sucking pressure increased linearly over time, with significant between-group differences at day 14 ($\beta = 45.66$, $p < 0.01$). Study concluded that ATVV infants exhibited improved sucking organization during hospitalization, suggestive that ATVV intervention improves oral feeding[19].

Study findings are supported by, Angela G, Giada S, Olena C, Marchi, Gagliardi, etal conducted a systemic reviews Nineteen studies were included in this review: 15 randomized, 1 quasi-randomized, and 3 crossover randomized controlled trials. The main aim of this systematic review was to determine the effects of early intervention on quantitative parameters of sucking in preterm infants Studies were selected if they fulfilled the following criteria: (i) involved infants born preterm (gestational age at birth below 37 weeks), (ii) tested experimental interventions to

improve sucking or oral feeding skills, and (iii) included quantitative outcome measure based on objective parameters of sucking performance. Specific Medical Subject Headings (MeSH) terms were utilized. In conclusion, the evidence indicates that a variety of interventions, based on different principles and methodologies, are effective in enhancing quantitative aspects of sucking. Efficiency parameters are the most frequently explored, as they are directly related to the infant nutrition capacity and therefore present the highest clinical relevance. They are positively influenced by most types of intervention, though are less affected by NNS training only. Frequency, morphology, and efficiency parameters outline some of the mechanisms of functional sucking but are infrequently investigated[20].

Summary:

This chapter has dealt with the discussion of major findings of the study along with the supporting studies for assessment of Effectiveness of feeding performances among Preterm and LBW babies with its selected socio demographic variables.

CHAPTER-8

CONCLUSION

This chapter presents the major findings of the study, the conclusions drawn, implications, limitations, suggestions and recommendations.

This study was aimed at assessing the Effectiveness of feeding performances among Preterm and LBW babies at R.L Jalappa Hospital & Research Center, Kolar, Karnataka. Quantitative approach with true experimental time series (posttest only with control group) design was adopted for this study. The data was collected from 40 Preterm and LBW babies.

The study based on Daniel Stuffle beam(2003) Context, Input, Process and Product (CIPP) model the conclusions drawn from the study were as follows

The Mean scores of Experimental group on Day-3, 5&7 was 19.85 &26.80 & 28.35with S.D of 5.00&3.41&1.72, respectively where as in control group 13.70&19.30&23.85 with S.D of 6.08&6.68&6.02 respectively at 38 df and calculated independent ' t'-value was 3.48 & 4.46 & 3.21 which is less than table value at 0.05 level of significance indicating Statistically Significant difference in establishment of feeding performances between experimental and control group. Hence the stated null hypothesis H_{01} is rejected.

The findings (Table 5&6) revealed that, chi- square calculated value is less than table value at 0.05 level of significance for association between Gestational age, Birth weight of child and Order of birth and Feeding performances of Preterm and LBW babies indicating statistically not significant. Hence the stated null hypothesis $\mathbf{H_{02}}$ is accepted.

Nursing Implications

The present study was conducted to determine the effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital &Research Center, kolar, Karnataka". The findings of the study have following implications for Nursing Practice, Nursing Education, Nursing Administration, and Nursing Research. Results of the study would help

a) Nursing Practice

Oral support and Oral stimulation serves as a guideline for improving the feeding performances, as a part of developmental supportive care of Preterm and LBW babies.

b) Nursing Education

Findings of the study would highlight the importance of Oral stimulation and Oral support to improve the feeding performances among Preterm and LBW babies.

c) Nursing Administration

- In service education can be planned for staff of NICU to improve the feeding performances of Preterm and LBW babies by an intervention of Oral Stimulation and Oral Support.

d) Nursing research

- Contributes relevant additional information to the body of knowledge
- The suggestions and recommendations can be utilized by other researchers for further studies in the same filed.

- The outcome may serve as a guideline in preparing the protocols on Oral stimulation and Oral support.

Limitations of the Study

1. The effectiveness of feeding performances were assessed only by giving Oral stimulation and Oral support by using EFS(Effective feeding skill)check list
2. Small number of subjects limited the generalization of the study.
3. The study was limited only to Preterm (32-36weeks) and LBW babies (1.2-2kgs) admitted to NICU of R.L Jalappa Hospital &Research Center, kolar.

Recommendations

Based on the findings of the present study recommendations offered for the further study are:

1. Similar study can be replicated on a larger population.
2. Similar study can be conducted in very low birth weight babies.
3. Similar study can be conducted along with other developmental supportive interventions
4. Follow up studies can be conducted to assess the feeding performances

SUMMARY

This chapter has brought out various implications of the study and provided recommendations. Studies of this kind should be conducted to yield more reliable results.

CHAPTER-9

SUMMARY

Oral stimulation and Oral support helps in improving the feeding performances of Preterm and LBW babies, as early establishment of breast feeding is the most common problem among the babies born premature and LBW. To promote development of effective feeding performances in order to support nutritional requirement of these babies the nursing staff working in NICU's can initiate Oral stimulation and Oral support in scheduled manner as they are closely associated in caring babies at NICU.

With this view, a Quantitative approach was adopted to determine the effectiveness of Oral stimulation and Oral support on Feeding performances among Preterm and LBW babies.

Objectives of the study:

1. To evaluate the effectiveness of Oral stimulation and Oral support on Feeding Performances by comparing the findings between Experimental and Control group.

2. To determine the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

NULL HYPOTHESES

The study attempted to examine following hypotheses which were tested at 0.05 level of significance

Ho_1: There will be no significant difference in feeding performances of preterm and low birth weight babies between experimental and Control groups.

Ho_2: There will be no significant association between feeding performances of preterm and LBW babies with their selected socio demographic variables.

Major findings of the study:

1. Majority i.e. 70% (14) mothers were in the age group of 24-27 years in Experimental group were as in control group 55 %(11) mothers were in 24-27 years.
2. Majority i.e. 35% (07) of babies were born between 35-36 in Experimental group where as in control group. 40% (08) of babies were born between 32-33weeks
3. Majority i.e. 40% (08) of babies were born between 1.5-1.8kgs in Experimental group where as in control group 40% (08) of babies were born between 1.2-1.5kgs
4. Majority i.e. 60 %(12) babies were first born in Experimental group where as in Control group 45 %(09) babies were first born.

The findings of the study revealed that Mean scores of Experimental group on Day-3, 5&7 was 19.85 &26.80 & 28.35with S.D of 5.00&3.41&1.72, respectively where as in control group 13.70&19.30&23.85 with S.D of 6.08&6.68&6.02 respectively at 38 df and calculated t-value was 3.48 &4.46 & 3.21 which is less than table calculated value which indicates Statistically Significant hence the first null hypothesis H_{01} is rejected.

The findings of the study revealed that chi- square calculated value is less than table value at 0.05 level of significance for association between Gestational age, Birth weight of child and Order of birth and Feeding performances of Preterm and LBW babies Hence H_{02} is accepted.

Summary:

On the whole, carrying out the present study was an enriching experience to the investigator. It also helped a great deal to explore the effect of Oral stimulation and Oral support in improving the feeding performances of Preterm and LBW babies. The study also helps in practicing Oral stimulation and Oral support at NICU'S in the hospitals. The experience gained through this study would motivate the investigator to conduct more studies of this nature and to provide good cultural attitude. The constant encouragement and guidance by the guide, co-operation and interest of mothers in the study contributed to the fruitful completion of the study.

REFERENCES

1. National portal of India. Preterm birth: Available from: https://www.nhp.gov.in/disease/reproductive-system/female-gynaecological-diseases-/preterm-birth. Accessed on Feb.20, 2019.
2. Preterm birth-World Health Organization: Available from: https://www.who.int/news-room/fact-sheets/detail/preterm-birth. Accessed on Feb.2,2019
3. WHO: maternal, newborn, child and adolescent health: available from:https://www.who.int/maternal_child_adolescent/topics/newborn/nutrition/en/. Accessed on Feb.20, 2019.
4. Karger. Meeting the nutritional needs of Low Birth Weight infant: Available from: https://www.karger.com/Article/FullText/323381. Accessed on Feb.23, 2019.
5. Cheryl Bird. Feeding premature babies in the NICU. Available from: https://www.verywellfamily.com/feeding-premature-babies-in-the-nicu-2748597. Accessed on Feb.25, 2019.
6. National Institute of Health's prediction of feeding performance in preterm infants. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1350962/. Accessed on Feb.26, 2019.
7. National Institute of Health's prediction of feeding performance in preterm infants. Available from https://www.sciencedirect.com/science/article/pii/S235201321400012X. Assessed on Feb.28, 2019.

8. Sankar M.J, Agarwal R, Mishra S, Deorari A, Paul V,Feeding of Low Birth weight Infants AIIMS- NICU protocols 2008.Available from http://newbornwhocc.org/pdf/feeding_of_low_birth_weight_infants_050508.pdf. Accessed on Feb.28, 2019.
9. WHO. Breastfeeding of low-birth-weight infants. Available from https://www.who.int/elena/titles/supplementary_feeding/en/
10. YounesianS, Yadegari F,Soleimani F. Impact of Oral Sensory Motor Stimulation on Feeding Performance, Length of Hospital Stay, and Weight Gain of Preterm Infants. Available from. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4583832. Accessed on Mar.06, 2019.
11. Boiron M, Nobrega L, Roux S,Henrot A, Saliba E, Effects of Oral stimulation and Oral support on non-nutritive sucking & feeding Performances performance in preterm infants: Available from: https://www.ncbi.nim.nih.gov/pubmed/17518930. Accessed on Mar.06, 2019.
12. Tian-chanLyu,Yu-xiaZhang,Xiao-jingHu,YunCao,PingRen,Yue-jueWang,The effect of an early oral stimulation program on oral feeding of preterm infants. Available from: https://www.sciencedirect.com/science/article/pii/S235201321400012X#! Accessed on Mar.12, 2019.
13. Basvantappa B.T. Nursing Research. Isted. New Delhi: Jaypee Brothers Medical Publishers; 2000. P. 158-160.

14. Amer H.W,Rashad H.M, ElhamidDabashS,Ezz El Din Z, Effect of Pre feeding Oral Stimulation Program on Preterm Infants' Feeding Performance. Available from:https://pdfs.semanticscholar.org/a613/226ba0559b43ffcf7e8f44de3a3758ffb527.pdf. Accessed on Mar.12, 2019.
15. S Fucile; EG Gisel, Effect of an oral stimulation program on sucking skill maturation of Preterm infants, available from: https://www.ncbi.nlm.nih.gov/pubmed/15739719.
16. Pimenta H.P, Moreira M.E.L, Rocha A.D, Junior S, LPinto L.W, Lucena S.L, Effects of non-nutritive sucking and oral stimulation on breastfeeding rates for preterm, low birth weight infants: Available from http://www.scielo.br/scielo.php?pid=S002175572008000600008&script=sci_arttext&tlng=en. Accessed on Mar.28, 2019
17. Lessen, B. Effect of the premature infant oral motor intervention on feeding progression and length of stay in preterm infants. Advances in Neonatal Care. Available from http://europepmc.org/abstract /med/21730962. Accessed on April.12, 2019
18. Ghomi H, Yadegari F, Soleimani F, Knoll BL, Noroozi M, Mazouri A.The effects of premature infant oral motor intervention (PIOMI) on oral feeding of preterm. Available from https://www.ncbi.nlm.nih.gov/pubmed/30851536. Accessed on April.18, 2019.
19. Medoff-Cooper B, Rankin K, Li Z, Liu L, White-Traut R. Multisensory intervention for preterm infants improves sucking organization. Available from: https://www.ncbi.nlm.nih.gov/pubmed/25822519. Accessed on April.18, 2019.

20. Angela G,giada S, OlenaC,VivinaM,Francesca C etalEarly Intervention to Improve Sucking in Preterm Newborns: A Systematic Review of Quantitative Studies. Available from: https://www.nursingcenter.com/cearticle?an=00149525201904000000007&Journal_ID=675992&Issue_ID=4954727. Accessed on May.6,2019.
21. Pickler RH, RenyaBA, effects of non-nutritive sucking on nutritive sucking, breathing, and behavior during bottle feedings of preterms. Available from: https://www.ncbi.nlm.gov/pubmed/15368215. Accessed on April.18, 2019
22. Hill AS, KurkowskiTB,Garcia J, Oral support measures used in feeding preterm infant. Available from: https://www.ncbi.nlm.gov/pubmed/10667623. Accessed on June.6, 2019.
23. Younesian S, Yadegari F, Soleimani F.Impact of Oral Sensory Motor Stimulation on Feeding Performance, Length of Hospital Stay, and Weight Gain of Preterm Infants in NICU. Available from: https://www.ncbi.nlm.nih.gov/pubmed/26421163. Accessed on June.13,2019.
24. Asadollahpour.F, Yadegari.F, Soleimani.F, Khalesi.N, Effects of Non-Nutritive Sucking and Pre-Feeding Oral Stimulation on Time to Achieve Independent Oral Feeding for Preterm Infants.Available from: https://www.ncbi.nlm.nih.gov/pubmed/26199713
25.Bala P, Kaur R, Mukhopadhyay K, Kaur S. Oromotor Stimulation for Transition from Gavage to Full Oral Feeding in Preterm Neonates.Available from https://www.ncbi.nlm.nih.gov/pubmed/26840669.

26. Gaebler CP, Hanzlik JR. The Effects of a Pre feeding stimulation program on Preterm Infants.Availablefrom: https://www.ncbi.nlm.nih.gov/pubmed/8822241

27. Chhaya Godase, D Priya, Rupali Salvi. A comparative study to assess the effect of feeding performance on cheek stimulation versus lip stimulation among the pretermbabies inselected hospitals. Availablefrom: https://pdfs.semanticscholar.org/f506/8f8f38136895665a721c390a2b142068ebcf.pdf

28. Polit D F, Beck CT. Nursing Research Principles and Methods.7th ed. Philadelphia: Lippincott Company.2004.

29. Sidhu K S. Methodology of research education. New Delhi: Sterling Publishers.1999

30. Burns N, Groove S K. The practice of nursing research conduct, critique and utilization. Philadelphia: W.B. Saunders Company.1996.

31. Suresh.K.sharma; Nursing research and statistics; Elsevier publications.2014. p.145-146.

32. Polit D F, Beck C T, Hungler D P. Essential of nursing research, methods, appraisal and utilization. 5th ed. Philadelphia: Lippincott Company.2001

33. Thyro,S.M, Shankar,C.S,Pridham,K.F. The early feeding skills assessment for preterm infants/Neonatal/Network,Vol.25,no.3,p.9,May/June reprinted.

34. Rocha AD, Moreira ME, PimentaHp, Ramos JR, Lucena SL, a randomized study of the efficiency of sensory motor oral stimulation and non-nutritive sucking in very Low birth infant. Available from: https://www.ncbi.nlm.nih.gov/pubmed/16979854. Accessed on July.5, 2019.

35. Bingham PM, Ashikaga T, Abbasi S, prospective study of non-nutritive sucking and feeding skills in premature infants. Available from: https://www.ncbi.nlm.nih.gov/pubmed/19948525. Accessed on July.10, 2019.

ANNEXURE-I

	SRI DEVARAJ URS COLLEGE OF NURSING TAMAKA, KOLAR – 563 103. INSTITUTIONAL ETHICS COMMITTEE	Format No.	IEC 00
		Issue No.	01
		Rev No.	01
		Date	01-04-2008

Ref.:No.SDUCON/IEC/ 26 /2018-19 Date: 04-04-2018

From
The Institutional Ethics Committee,
Sri Devaraj Urs College of Nursing,
Tamaka, Kolar-563 101.

To
Mrs.Saritha
I M.Sc(N)
Peadiatric Nsg.
SDUCON, Tamaka.

This is to certify that the institutional ethics committee of Sri Devaraj Urs College of Nursing, Tamaka, Kolar has examined and unanimously approved the M.Sc(N) ***Topic "A Study To Evaluate The Effectiveness Of Oral Stimulation And Oral Support On Feeding Performances In Preterm And Low Birth Weight Babies In A Selected Hospital, Kolar, Karnataka".*** of **Mrs.Saritha,** Under guidance of **Prof. Radha M.S,** Sri Devaraj Urs College of Nursing Tamaka, Kolar.

Member Secretary
MEMBER SECRETARY
ETHICS COMMITTEE
SRI DEVARAJ URS COLLEGE OF NURSING
TAMAKA KOLAR - 563103.

Chairperson
CHAIR PERSON
ETHICS COMMITTEE
SRI DEVARAJ URS COLLEGE OF NURSING
TAMAKA KOLAR - 563103.

ANNEXURE-II

From,
Saritha.V
II year MSc Nursing
S.D.U.C.O.N

Date- 07.03.2019
Place-Tamaka, Kolar.

To,
The Medical Superintendent,
R.L.J.H&RC
Tamaka. Kolar

(Through the proper channel)

Respected sir,

(Sub:- Requesting permission to conduct Research Study)

As the above mentioned subject I the undersigned student of II year M.ScNursing Under the department of Pediatric Nursing specialty would like to conduct a research **"A Study To Evaluate The Effectiveness of Oral Stimulation and Oral Support On Feeding Performances In Preterm and Low Birth Weight Babies at R.L Jalappa Hospital &Research Center, Kolar, Karnataka"**. as a part of partial fulfillment for Masters Degree , hence I kindly request you to grant permission to collect data in NICU without disturbing Hospital routines and comfort of the patient .

Kindly consider the letter and do the needful,

Thanking you

Name of the guide
Prof.Radha.M.S 7/3/19
Head of the Department
HOD , Pediatric Dpt.
S.D.U.C.O.N

Yours Faithfully
7/3/19
(Saritha.V)

Forwarded for the needful
Forwarded to M.S. of RLJH2RC with a request to permit candidate to collect data
7/3/19
Principal
Sri Devaraj Urs College of Nursing
Tamaka, Kolar-563 101.

Permitted
08/3/19

ANNEXURE-III

Patient Information Sheet

Study Title: "A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital &Research Center, kolar, Karnataka"

Principal Investigator : V.Saritha

Study site : NICU, Sri R.L.Jalappa Hospital & Research Center, Kolar Karnataka

Purpose of The study: The aim of the study to evaluate the effectiveness of Oral stimulation and Oral support on Feeding Performances by comparing the findings between Experimental and Control group.

2. To determine the association between Feeding Performances with selected socio demographic variables of Preterm and Low birth weight babies.

Voluntary Participation: Your participation in this study is entirely voluntary. There is no compulsion to participate in this study. You will be no way affected if you do not wish to participate in the study. You are required to sign only if you voluntarily agree to participate in this study .Further you are at a liberty to withdraw from the study at any time.
Procedure:

Confidentiality: All information collected from you will be strictly confidential and will not be disclosed to anyone except if it is required by the law. This information collected will be used only for research, presentation and publication. This information will not reveal your identity.

We would not compel you any time during this process; also we would greatly appreciate your cooperation to the study. We would like to get your consent to participate in the study

For any information you are free to contact investigator. This study has been approved by the institutional ethical committee.

INFORMED CONSENT FORM

Name of the investigator: V.Saritha

Name of the Organization: Sri Devaraj Urs College of Nursing

Title of the study: "A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital &Research Center, kolar, Karnataka."

If your agree to participate in the study I will collect information (as per proforma) from you or a person responsible for you or both. We will collect relevant details.

You are invited to part in this research study. You are being asked to participate in this study because you satisfy our eligibility our criteria. The information in the given document is meant to help you decide whether or not to take part. Please feel free to ask any queries. I give my consent to collect the information & also can be used for medical research, test validation, or education as long as my privacy is maintained.

I have read or it has been read and explained to me in my own language. I have understood the purpose of this study, the nature of information that will be collected and disclosed during the study. I had the opportunity to ask questions and the same has been answered to my satisfaction. I understand that I remain free to withdraw from this study at any time and this will not change my future care. I the undersigned agree to participate in this study and authorize the collection and is closure of m6y personal information for presentation and publication.

Patient's signature/ Thumb impression

Person obtaining consent and his/her signature:

Principal investigator signature:

Principal Investigator.

M¦àUÉ ¥ÀvÀæ

C£ÀÄPÀæªÀÄ ¸ÀASÉå:

CzsÀåAiÀÄ£ÀzÀ ²Ã¶ðPÉ: **"**PÀ£ÁðlPÀzÀ PÉÆÃ¯Áj£À°è DAiÉÄÌ ªÀiÁrzÀ D¸ÀàvÉæAiÀÄ°è ¥ÀÆªÀð¨sÁ«AiÀiÁV ªÀÄvÀÄÛ PÀrªÉÄ d£À£À vÀÆPÀªÀ£ÀÄß ºÉÆA¢gÀÄªÀ ªÀÄPÀÌ¼À°è , ¨Á¬ÄAiÀÄ GvÉÛÃd£À ªÀÄvÀÄÛ ¨ÉA§®¢AzÀ , DºÁgÀ ¸ÉÃ«¸ÀÄªÀ PÁAiÀÄðPÀëªÀÄvÉ ªÀÄvÀÄÛ UÀT¸ÀÄªÀ vÀÆPÀzÀ ªÉÄÃ¯É DUÀÄªÀ ¥ÀjuÁªÀÄUÀ¼À£ÀÄß ªÀiï°åÃPÀj¸À®Ä MAzÀÄ CzsÀåAiÀÄ£À"

ªÀÄÄRå¸ÀA±ÉÆÃzsÀPÀgÀ ºÉ¸ÀgÀÄ: ¸ÀjvÀ . «

¨sÁUÀªÀ»¸ÀÄªÀgÀ ºÉ¸ÀgÀÄ:

F CzsÀåAiÀÄ£ÀzÀ ¥Àæw «ªÀgÀUÀ¼À£ÀÄß ºÁUÀÆ CzÀgÀ GzÉÞÃ±ÀªÀ£ÀÄß £À£ÀUÉ DxÀðªÁUÀÄªÀAvÉ w½¹PÉÆnÖgÀÄvÁÛgÉ. F CzsÀåAiÀÄ£ÀzÀ §UÉÎ ºÀ®ªÁgÀÄ ¥Àæ±Éß PÉÃ¼À®Ä CªÀPÁ±À zÉÆgÉwzÉ ºÁUÀÆ £À£Àß ¥Àæ±ÉßUÀ½UÉ vÀÈ¦ÛPÀgÀªÁzÀ GvÀÛgÀUÀ¼ÀÄ zÉÆgÉwzÉ.

£À¤ßAzÀ NzÀ®àlÖ CxÀªÁ £À£ÀUÉ N¢ w½¹zÀ CzsÀåAiÀÄ£ÀzÀ GzÉÝÃ±À £À£ÀUÉ CxÀðªÁVzÀÄÝ, £À¤ßAzÀ ¸ÀAUÀæ»¸À®àlÖ ªÀiÁ»wAiÀÄ£ÀÄß PÉÃªÀ® CzsÀåAiÀÄ£ÀPÁÌV §¼À¸À¯ÁUÀÄªÀÅzÀÄ. ºÁUÀÄ F ªÀiÁ»wAiÀÄ£ÀÄß UË¥ÀåªÁVqÀ¯ÁUÀÄªÀÅzÀÄ. £À£Àß UÀÄgÀÄvÀ£ÀÄß §»gÀAUÀ ¥Àr¸ÀÄªÀÅ¢®è JAzÀÄ w½¸À¯ÁVzÉ. F CzsÀåAiÀÄ£ÀzÀ°è ¨sÁUÀªÀ»¸À®Ä C¢üPÀÈvÀªÁV ªÀiÁ»w ¸ÀAUÀæ»¸À®Ä, ¥ÀjÃQë¸À®Ä ªÀÄvÀÄÛ ªÉÊAiÀÄÄQÛPÀ ªÀiÁ»wAiÀÄ£ÀÄß UË¥ÀåªÁVj¸À®Ä £À£Àß ¸ÀéEZÉÑ¬ÄAzÀ M¦à ¸À» ºÁQgÀÄvÉÛÃ£É.

¨sÁUÀªÀ»¸ÀÄªÀªÀgÀ ¸À»

¢£ÁAPÀ

¸ÀAzÀ±ÀðPÀgÀ ºÉ¸ÀgÀÄ ªÀÄvÀÄÛ ¸À»:

¢£ÁAPÀ:

ªÀÄÄRå ¸ÀA±ÉÆÃzÀPÀgÀ ¸À»: ----------

gÉÆÃVAiÀÄ ªÀiÁ»w ¥ÀvÀæææ

CzsÀåAiÀÄ£ÀzÀ ²Ã¶ðPÉ: : "PÀ£ÁðlPÀzÀ PÉÆÃ¯Áj£À°è DAiÉÄÌ ªÀiÁrzÀ D¸ÀàvÉæAiÀÄ°è ¥ÀÆªÀð¨sÁ«AiÀiÁV ªÀÄvÀÄÛ PÀrªÉÄ d£À£À vÀÆPÀªÀ£ÀÄß ºÉÆA¢gÀÄªÀ ªÀÄPÀÌ¼À°è , ¨Á¬ÄAiÀÄ GvÉÛÃd£À ªÀÄvÀÄÛ ¨ÉA§®¢AzÀ , DºÁgÀ ¸ÉÃ«¸ÀÄªÀ PÁAiÀÄðPÀëªÀÄvÉ ªÀÄvÀÄÛ UÀT¸ÀÄªÀ vÀÆPÀzÀ ªÉÄÃ¯É DUÀÄªÀ ¥ÀjuÁªÀÄUÀ¼À£ÀÄß ªÀiï°åÃPÀj¸À®Ä MAzÀÄ CzsÀåAiÀÄ£À"

¥ÀæªÀÄÄR ¸ÀA±ÉÆÃzsÀPÀgÀÄ: ¸ÀjvÀ .«

CzsÀåAiÀÄ£À ªÀiÁqÀÄªÀ ¸ÀÜ¼À:. £ÀªÀeÁvÀ wÃªÀæ ¤UÁ WÀlPÀ, Dgï J¯ï eÁ®¥Àà D¸ÀàvÉæ ªÀÄvÀÄÛ ¸ÀA±ÉÆÃzsÀ£Á PÉÃAzÀæ.

CzsÀåAiÀÄ£ÀzÀ GzÉÝÃ±À:

1 . ¥ÁæAiÉÆÃVPÀ ªÀivÀÄÛ ¤AiÀÄAvÀæt UÀÄA¦£À £ÀqÀÄ«£À D«µÁÌgÀUÀ¼À£ÀÄß ºÉÆÃ°¸ÀÄªÀ ªÀÄÆ®PÀ DºÁgÀ ¥ÀæzÀ±Àð£À ªÀÄvÀÄÛ vÀÆPÀ ºÉZÀÑ¼ÀzÀ §UÉÎ ªÀiïTPÀ ¨ÉA§®zÀ ¥ÀjuÁªÀÄªÀ£ÀÄß ªÀiï®åªÀiÁ¥À£À ªÀiÁqÀ®Ä

2 . DºÁgÀzÀ ¥ÀæzÀ±Àð£À ªÀÄvÀÄÛ ¥ÀÆªÀð¨sÁ«AiÀiÁV DAiÉÄÌAiÀiÁzÀ ¸ÁªÀiÁfPÀ d£À¸ÀASÁå C¹ÜgÀ ªÀÄvÀÄÛ PÀrªÉÄ d£À£À vÀÆPÀ ²±ÀÄUÀ¼ÉÆA¢UÉ vÀÆPÀ ºÉaÑ¸ÀÄªÀ £ÀqÀÄ«£À ¸ÀA§AzsÀªÀ£ÀÄß ¤zsÀðj¸À®Ä.

¸Àé EZÉÑ¬ÄAzÀ ¥Á¯ÉÆÎÃ¼ÀÄî«PÉ: ¸ÀA±ÉÆÃzsÀ£ÉAiÀÄ°è ¥Á¯ÉÆÎ¼ÀÄªÀÅzÀÄ ¸Àé EZÉÑ¬ÄAzÀ PÀÆrgÀÄªÀzÁVgÀÄvÀÛzÉ. ¤ÃªÀÅ F ¸ÀA±ÉÆÃzsÀ£É¬ÄAzÀ ªÀÄzsÀåzÀ°èAiÉÄÃ ºÉÆgÀ§AzÀgÀÆ DxÀªÁ ¨sÁUÀªÀ»¸À¢zÀÝgÀÆ PÀÆqÀ ¤ªÀÄUÉ ®¨sÀåªÁUÀÄwÛÃgÀÄªÀ aQvÉì ªÀÄvÀÄÛ ¸ÉÃªÉUÀ¼ÀÄ §zÀ¯ÁUÀÄªÀÅ¢®è. F ªÉÆÃzÀ®Ä ¸ÀA±ÉÆÃzsÀ£ÉAiÀÄ°è ¨sÁUÀªÀ»¸À®Ä M¦àPÉÆAqÀÄ ªÀÄzsÀåzÀ°è ¤zsÁðgÀªÀ£ÀÄß §zÀ°¸À®Ä CºÀðjgÀÄwÛÃj.

¸ÀA±ÉÆÃzsÀ£Á ¥ÀæQæAiÉÄ: ¥ÁæAiÉÆÃVPÀ CzsÀåAiÀÄ£**À**

UË¥ÀåvÉ: ¸ÀA±ÉÆÃzsÀ£É ¸ÀAzsÀ¨sÀðzÀ°è zÉÆgÉvÀ ªÀiÁ»wAiÀÄ£ÀÄß UË¥ÀåªÁVqÀÄvÉÛÃªÉ. ¤ªÀÄä ºÉ¸Àj£À §zÀ¯ÁV PÀæªÀÄ ¸ÀASÉåUÀ¼À£ÀÄß §¼À¸ÀÄvÉÛÃªÉ. ªÀÄÆ® ¸ÀA±ÉÆÃzzsÀPÀgÀ°è ªÀiÁvÀæ ¤ªÀÄä ªÀiÁ»w EgÀÄvÀÛzÉ. CzÀgÀ UË¥ÀåvÉAiÀÄ£ÀÄß PÁ¥ÁqsÀÄvÁÛgÉAzÀÄ zÀÈqsÀ¥Àr¸ÀÄvÉÛÃ£É. CªÀ±Åå«zÀÝ°è ¸ÀA±ÉÆÃzsÀ£ÉAiÀÄ°è zÉÆgÉvÀ ªÀiÁ»wAiÀÄ£ÀÄß ªÉÆzÀ®Ä ªÉÊzÀåQÃAiÀÄ ¸ÀªÀÄÄzÁAiÀÄ ¸À¨sÉAiÀÄ°è ZÀað¸À¯ÁUÀÄªÀÅzÀÄ

ªÀÄvÀÄÛ ªÉÊzÀåQÃAiÀÄ ¥ÀwæPÉUÀ¼À°è ¥ÀæPÀn¸À¯ÁUÀÄªÀÅzÀÄ. AiÀiÁªÀÅzÉÃ ªÀiÁ»wUÁV ¤ÃªÀÅ ¸ÀA±ÉÆÃzsÀPÀgÀ£ÀÄß ¸ÀA¥ÀQð¸À§ºÀÄzÁVzÉ. F ªÀiÁ»wAiÀÄ£ÀÄßö ¤ªÀÄUÉ CzsÀåAiÀÄ£ÀzÀ »£Éß¯É ¤ÃqÀ®Ä GzÉÝÃ²¸À¯ÁVzÉ. ¸ÀAUÀæ»¹zÀ ªÀiÁ»wAiÀÄ£ÀÄß UË¥ÀåªÁVqÀ¯ÁUÀÄvÀÛzÉ. F ªÀiÁ»wAiÀÄ£ÀÄß CzsÀåAiÀÄ£À, ¥Àæ¸ÀÄÛw ªÀÄvÀÄÛ ¥ÀæPÀluÉ GzÉÝÃ±ÀPÁÌV ªÀiÁvÀæÀ §¼À¸À¯ÁUÀÄvÀÛzÉ. F «µÀAiÀÄzÀ°è÷ AiÀiÁªÀÅzÉÃ ¸Àà¶ÛÃPÀgÀt ¨ÉÃPÁVzÀÝ°è PÉÃAzÀæ £ÉÊwPÀ ¸À«ÄwAiÀÄªÀgÀ£ÀÄß ¸ÀA¥ÀQð¸À§ºÀÄzÀÄ. ¤ÃªÀÅ ¸ÀéAiÀÄA¥ÉæÃgÀuÉ¬ÄAzÀ F CzsÀåAiÀÄ£ÀzÀ°è ¨sÁUÀªÀ»¸À®Ä M¦àzÀ°è ªÀiÁvÀæ ¸À» ºÁPÀ§ºÀÄzÀÄ.

zsÀ£ÀåªÁzÀUÀ¼ÀÄ,

ANNEXURES-IV

CERTIFICATE FROM STATISTICIAN

I here by certify that I have provided statistical guidance in analysis to Mrs. Saritha.V, M.Sc(N) student of Sri Devaraj Urs College of Nursing,Tamaka,Kolar for the study titled as "A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among preterm and low birth weight babies (LBW) at R.L Jalappa Hospital & Research Center, Kolar, Karnataka".

Signature of Experts

Mr.. Ravishankar S.,
Assistant professor in Biostatistics
Department of Community medicine
Sri Devaraj Urs Medical College
Tamaka, Kolar.

S. RAVISHANKAR
Lect./Assit. Professor,
Dept. of Community Medicine,
Sri Devaraj Urs Medical College,
Tamaka, Kolar-563101

Place : Tamaka, Kolar

Date: 19.07.2019

ANNEXURE V

ENGLISH EDITING CERTIFICATE

I here by certify that I have edited the consent of Dissertation titled a "A study to Evaluate the Effectiveness of Oral Stimulation and Oral Support on Feeding performances among Preterm and Low Birth Weight babies (LBW) at R.L Jalappa Hospital & Research Center, Kolar, Karnataka", of Mrs. Saritha.V, 2nd year M.Sc.(N) student, Sri Devaraj Urs College of Nursing, Tamaka, Kolar.

Signature of experts

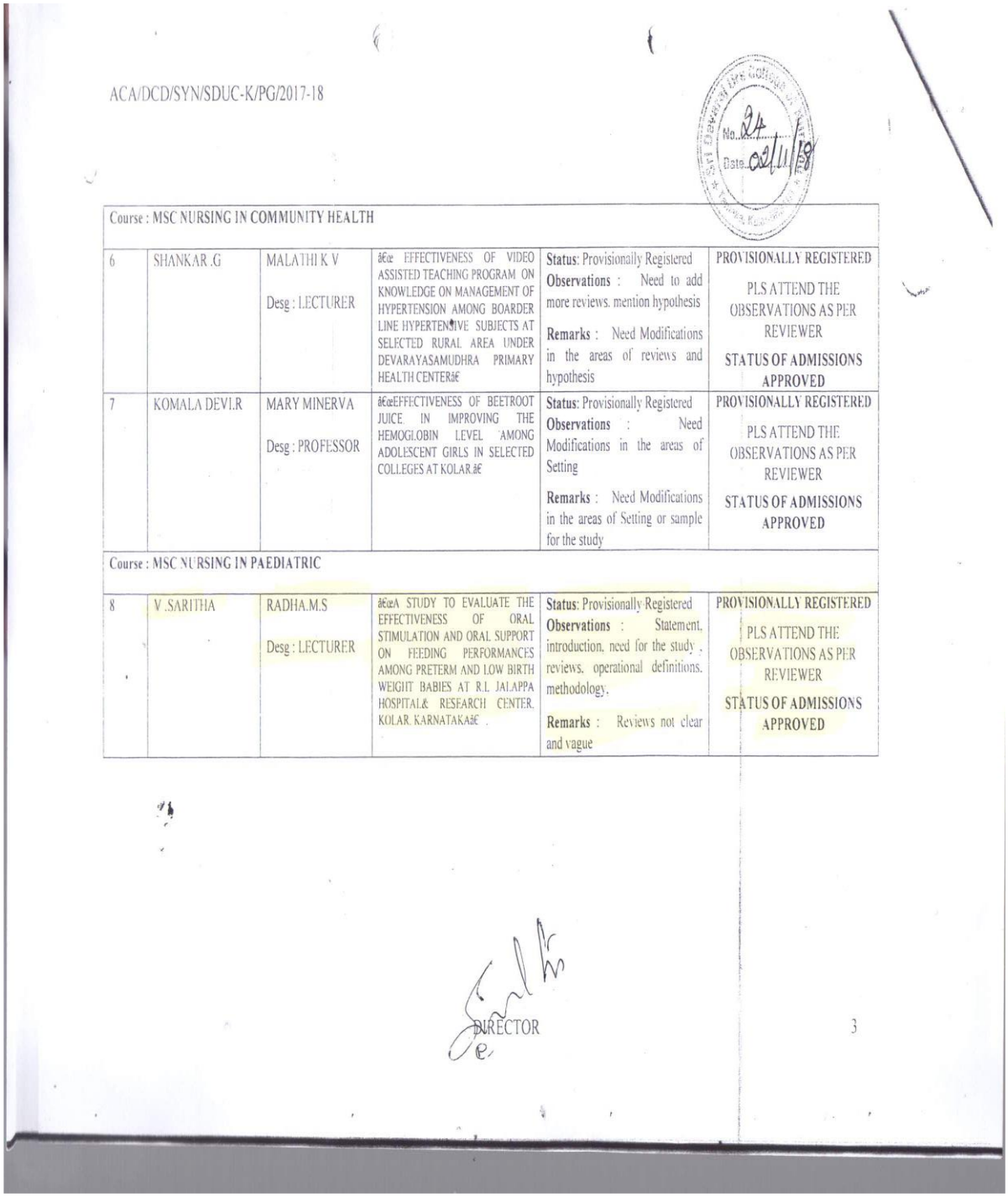
PRINCIPAL
R.L. Jalappa Central School
Mitakalla Halli
Tamaka Kolar 563102

Place: Tamaka, kolar

Date: 23-07-2019

ANNEXURE-VI

Synopsis Approval Letter by University



ACA/DCD/SYN/SDUC-K/PG/2017-18

No. 24
Date 02/11/18

Course : MSC NURSING IN COMMUNITY HEALTH					
6	SHANKAR .G	MALATHI K V Desg : LECTURER	â€œ EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAM ON KNOWLEDGE ON MANAGEMENT OF HYPERTENSION AMONG BOARDER LINE HYPERTENSIVE SUBJECTS AT SELECTED RURAL AREA UNDER DEVARAYASAMUDHRA PRIMARY HEALTH CENTERâ€	**Status**: Provisionally Registered **Observations** : Need to add more reviews. mention hypothesis **Remarks** : Need Modifications in the areas of reviews and hypothesis	PROVISIONALLY REGISTERED PLS ATTEND THE OBSERVATIONS AS PER REVIEWER STATUS OF ADMISSIONS APPROVED
7	KOMALA DEVI.R	MARY MINERVA Desg : PROFESSOR	â€œEFFECTIVENESS OF BEETROOT JUICE IN IMPROVING THE HEMOGLOBIN LEVEL AMONG ADOLESCENT GIRLS IN SELECTED COLLEGES AT KOLAR.â€	**Status**: Provisionally Registered **Observations** : Need Modifications in the areas of Setting **Remarks** : Need Modifications in the areas of Setting or sample for the study	PROVISIONALLY REGISTERED PLS ATTEND THE OBSERVATIONS AS PER REVIEWER STATUS OF ADMISSIONS APPROVED
Course : MSC NURSING IN PAEDIATRIC					
8	V .SARITHA	RADHA.M.S Desg : LECTURER	â€œA STUDY TO EVALUATE THE EFFECTIVENESS OF ORAL STIMULATION AND ORAL SUPPORT ON FEEDING PERFORMANCES AMONG PRETERM AND LOW BIRTH WEIGHT BABIES AT R.L JALAPPA HOSPITAL& RESEARCH CENTER, KOLAR. KARNATAKAâ€ .	**Status**: Provisionally Registered **Observations** : Statement, introduction, need for the study , reviews, operational definitions, methodology. **Remarks** : Reviews not clear and vague	PROVISIONALLY REGISTERED PLS ATTEND THE OBSERVATIONS AS PER REVIEWER STATUS OF ADMISSIONS APPROVED

DIRECTOR

3

ANEXXURE-VII

Section-A: Socio Demographic Data of Experimental and Control Group

SAMPLES ⬇	EXPERIMENTAL GROUP			CONTROL GROUP		
	GAIW	BWC	OOB	GAIW	BWC	OOB
1	2	2	1	2	2	1
2	2	2	1	1	2	1
3	2	1	1	1	2	1
4	2	2	1	2	2	1
5	1	1	1	2	1	2
6	2	2	2	2	2	2
7	1	1	1	2	2	2
8	2	1	2	1	2	1
9	1	2	2	2	2	2
10	1	2	1	1	1	2
11	2	2	1	1	2	1
12	2	1	2	1	2	2
13	2	2	2	1	2	2
14	2	2	2	2	1	1
15	2	2	1	2	2	2
16	2	2	1	2	2	2
17	2	1	2	1	1	1
18	1	2	1	2	2	2
19	2	2	1	2	2	2
20	2	2	2	2	2	2

Section- A: Socio Demographic Data.

1. Gestational Age of Child (in. weeks)(GAIW)

    1. 32-33

    2. 33and above

2. Birth Weight of Child(in kgs). (BWC)

    1.1.2-1.5

    2. 1.5and above

3. Order of Birth Of Child. (OOB)

    1.Primi

    2. Gravida2 and above

Section-B: Effective Feeding Skills Check List

1.Oral Feeding Readiness (OFR)				
Able to hold body in a flexed position with arms hands toward midline	Yes(1)		No(0)	
Demonstrates energy for feeding-maintains muscle tone and body flexion through assessment period	Yes		No	
2.Oral Feeding Skill (OFS)				
Ability to Remain engage in feeding				
Predominant muscle tone (energy infant demonstrates for feeding)	Maintains flexed body position with arms towards midline (3)	Inconsistent tone ,variable muscle tone (2)	Some tone consistently felt but somewhat hypotonic (1)	Little or no tone,felt,flaccid limp most of the time (0)
3.Ability to Organize Oral-Motor Functioning (OMF)				
Opens mouth promptly when lips are stroked at feeding onsets	All (3)	Most (2)	Some (1)	None (0)
Once feeding is under way, maintains a smooth rhythmic pattern of sucking				
4.Ability to coordinate Swallowing and Breathing (CSB)				
Able to engage in long sucking bursts (7-10sucks) without behavioral stress signs or an adverse or negative cardiorespiratory response				
5.Ability to Maintain Physiologic Stability (MPS)				
In first 30sec after each feeding onset, oxygen saturation is stable and behavioral stress cues absent				
Stops to breathe before behavioral stress cues appear				
Clear breath sounds –no grunting breath sounds (prolonging the exhale, partially closing glottis on exhale)				
6.**Oral Feeding Recovery (During the first Five Minutes Post feeding) (OFRR)**				
Predominant stage	Quiet alert	Drowsy	Sleep	Fuss cry
Range of Oxygen Saturation (%)				

Effective Feeding Skills Check List (Scoring)

OFR-04

OFS-12

OMF-12

CSB-06

MPS-18

OFRR-12

Master Sheet of Effective Feeding Check List In Experimental Group

Samples / Scores	DAY-3						DAY-5						DAY-7					
	OFR	OFS	OMF	CSB	MPS	OFRR	OFR	OFS	OMF	CSB	MPS	OFRR	OFR	OFS	OMF	CSB	MPS	OFRR
1	0	4	2	1	2	5	1	6	4	1	4	6	2	6	6	2	4	6
2	0	2	2	1	2	6	2	6	4	2	4	6	2	6	4	3	6	6
3	0	3	2	2	4	5	1	5	4	3	6	6	2	6	6	3	6	6
4	0	4	5	2	5	6	2	6	6	3	6	6	2	6	6	3	6	6
5	0	4	4	2	4	5	1	6	6	3	4	6	2	6	6	3	6	6
6	2	6	6	3	6	6	2	6	6	3	6	6	2	6	6	3	6	6
7	0	4	4	2	4	6	0	6	5	3	6	6	2	6	6	3	6	6
8	0	4	4	2	4	6	1	6	6	3	6	6	2	6	6	3	6	6
9	0	4	4	2	4	5	2	6	5	2	6	6	2	6	6	3	6	6

10	0	4	4	2	4	5	2	6	6	3	5	6	2	6	6	3	6	6
11	0	4	4	2	4	5	2	6	6	3	6	6	2	6	6	3	6	6
12	0	4	4	2	4	5	2	6	6	3	6	6	2	6	6	3	6	6
13	2	6	6	3	6	6	2	6	6	3	6	6	2	6	6	3	6	6
14	2	6	6	3	6	6	2	6	6	3	6	6	2	6	6	3	6	6
15	1	4	4	2	4	5	2	6	6	3	6	6	2	6	6	3	6	6
16	0	2	2	1	2	2	1	4	4	1	4	4	2	4	6	2	4	6
17	2	2	4	3	4	5	2	4	4	2	4	4	2	4	6	2	4	6
18	0	4	4	2	4	5	2	6	6	4	6	6	2	6	6	4	6	6
19	2	4	4	2	4	5	2	6	6	3	6	6	2	6	6	3	6	6
20	1	4	4	2	4	6	2	6	6	4	6	6	2	6	6	4	6	6

Master Sheet of Effective Feeding Check List In Control Group

Samples / Scores	DAY-3						DAY-5						DAY-7					
	OFR	OFS	OMF	CSB	MPS	OFRR	OFR	OFS	OMF	CSB	MPS	OFRR	OFR	OFS	OMF	CSB	MPS	OFRR
1	0	4	4	2	4	5	2	6	4	3	5	6	2	6	6	3	6	6
2	0	4	4	2	4	5	0	4	4	2	4	5	2	5	4	2	6	6
3	0	4	4	2	4	5	0	4	4	2	4	5	2	4	6	3	5	6
4	0	1	0	1	2	5	1	2	2	1	3	6	2	2	4	2	4	6
5	0	2	0	0	0	4	0	2	2	1	2	5	2	4	4	2	4	6
6	0	4	3	1	2	4	2	5	4	2	3	5	2	6	6	3	4	6
7	0	4	4	2	4	5	1	5	5	2	5	6	2	6	6	3	6	6
8	0	3	2	1	2	5	0	4	4	1	4	6	1	5	6	3	6	6
9	0	4	4	1	2	4	0	6	6	2	4	5	1	6	6	3	6	6

10	**0**	**2**	**2**	**1**	**2**	**4**	**0**	**2**	**2**	**1**	**2**	**5**	**2**	**4**	**4**	**2**	**4**	**5**
11	**0**	**2**	**2**	**1**	**2**	**4**	**0**	**4**	**4**	**2**	**4**	**5**	**2**	**4**	**6**	**2**	**6**	**6**
12	**0**	**2**	**2**	**1**	**2**	**4**	**0**	**3**	**4**	**2**	**4**	**5**	**2**	**4**	**4**	**2**	**4**	**5**
13	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**2**	**2**	**1**	**2**	**5**	**1**	**3**	**3**	**1**	**2**	**6**
14	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**4**	**0**	**0**	**0**	**0**	**0**	**4**
15	**0**	**2**	**2**	**1**	**2**	**5**	**2**	**4**	**4**	**2**	**4**	**6**	**2**	**6**	**6**	**3**	**6**	**6**
16	**0**	**2**	**2**	**1**	**2**	**4**	**1**	**2**	**4**	**2**	**3**	**4**	**2**	**4**	**4**	**3**	**4**	**5**
17	**0**	**2**	**2**	**1**	**2**	**4**	**1**	**2**	**4**	**2**	**3**	**4**	**2**	**4**	**4**	**3**	**4**	**5**
18	**0**	**4**	**4**	**2**	**4**	**4**	**2**	**6**	**6**	**4**	**6**	**6**	**2**	**6**	**6**	**4**	**6**	**6**
19	**0**	**4**	**4**	**2**	**4**	**5**	**2**	**6**	**6**	**4**	**6**	**6**	**2**	**6**	**6**	**4**	**0**	**6**
20	**2**	**6**	**6**	**3**	**6**	**6**	**2**	**6**	**6**	**3**	**6**	**6**	**2**	**6**	**6**	**3**	**6**	**6**