



EFFECT OF ORAL MOTOR MUSCLE STIMULATION ON OUTCOMES OF PRETERM INFANT -RESEARCH PROTOCOL.

Neonatology

Mr. Raj K. Motghare*

M.Sc Nursing, MBA (Hosp.Admin), Ph.D. Scholar, DMIMS(DU), Clinical Nurse, Govt. Medical College Hospital, Nagpur, Maharashtra, India *Corresponding Author

Mrs. Archana Mourya

M.Sc.Nursing, M.Phil, Ph. D. Supervisor, Professor & Head Of Dept, Child Health Nursing, SRMM College of Nursing, Sawangi(M), Wardha.

ABSTRACT

Prematurity is incredibly common in children within the Indian scenario. Techniques for oral motor stimulation have been explored, therefore the preterm newborn develops the transition to full oral feeding safer and active suck in an exceedingly shorter time. This study aims to hold out a systematic scientific review of national and international literature reporting different techniques and elucidate their effectiveness, regarding the oral sensorimotor stimulation of preterm neonates that remained hospitalized. According to literature, the foremost current technique utilized in India is that non-nutritive sucking with a gloved finger or orthodontic pacifier. Other countries also recorded the technique of non-nutritive sucking in pacifiers followed by oral motor muscle stimulation as a current new approach. These techniques have been positively affecting neonates' oral function development. Regarding the need for promotion of exclusive breastfeeding, recent publications highlighted a concerning percentage of synthetic nipples usage for stimulation in neonatal intensive care medical units.

KEYWORDS

Infant, Newborn; Infant, Premature; Feeding; Intensive Care, Neonatal; Breast Feeding, oral motor muscle stimulation

INTRODUCTION

Prematurity is one of the main factors that provoke neonatal complications, because it retains newborn's (NB) natural development. Besides, the preterm infant is inclined to other future complications, as cognitive function development compromising⁴.

Oral-motor problems in children are easy to recognize when the child coughs and chokes while eating. However, the majority of feeding problems present initially in more subtle ways, such as difficulty introducing spoon feedings or advancing texture, or limited variety of foods accepted (Kerwin, 1999). For some children, these more common feeding problems may reflect a specific oral-motor problem, such as uncoordinated tongue movement during lateralization or dysfunctional oral transport of the food bolus to the back of the mouth to initiate the swallowing reflex. Children with neurological disorders, or those born prematurely often exhibit oral-motor problems (Gisel, Alphonse, & Ramsay, 2000; Lau & Hurst, 1999; Sullivan, Lambert, Ford-Adams, Griffiths, & Johnson, 2000).

Other authors complement that deficiency of organic maturity causes in coordination in sucking, swallowing and breathing (SSB) and submit the Preterm Newborn less than 34 gestational weeks to the use of a gastric tube as a feeding alternative. This invasive procedure is necessary, but retains the infant to receive sensorial stimuli important for OSM development¹.

Knowing the techniques used in children's hospitals and also of the impact in a child's life is essential to promote exclusive breastfeeding, contributing not only to early discharge of the preterm neonate but also to a proper alimentation, safe and effective.

Regarding oral motor muscle stimulation therapy, this article aims to develop the systematic review of national and international literature to establish different techniques of OSM maturation and discuss their effectiveness in preterm neonates that remain in the hospital environment.

AIM OF THE STUDY:

The aim of this study is to assess the effect of oral motor muscle stimulation on outcomes of preterm infants.

OBJECTIVES:

1. To assess the preterm infant outcome such as length of hospitalization, growth parameters, average weight gain per day, time to transition from RT feeding to oral katori-chamcha feed to active breastfeed, frequency of breastfeed, excretory pattern, physiological signals and reflexes.
2. To evaluate the effect of oral motor muscle stimulation on outcomes of intervention group preterm infants.
3. To compare the infant outcomes in both groups.

Hypothesis:

H1: There will be a significant improvement in infant outcomes by oral motor muscle stimulation.

H0: There will be no significant improvement in infant outcomes by oral motor muscle stimulation.

Research Methodology

Research Approach

This study will be based on evaluative approach.

Research Design

Randomized controlled trial.

Variables Of Study

Independent Variable

In this study, the independent variable is oral motor muscle stimulation.

Dependent Variable

In this study dependent variable is infant outcomes.

Setting Of Study

Population

In this study the population referred to preterm infants admitted in NICU of tertiary care hospital of Vidarbha Region.

Sampling Technique

The randomized sampling technique will be used in this study.

Sample

In this study, the sample will consist of preterm infants admitted in NICU.

Sample Size:

Study group design refers to two independent study groups will receive different treatment and primary endpoint is dichotomous with interventional group anticipated incidence is 60% and in control group is 30% with enrollment ratio of 1 with alpha of 0.05, beta 0.1 and power 90%

Sample size will be:

Group 1 - interventional group = 60

Group 2 - control Group = 60

Total = 120

Sampling Criteria

Inclusion Criteria

- Preterm infants who completed 32 weeks of gestation and upto 37 weeks of gestation.
- Preterm infants admitted in NICU

- Parents willing to participate in study.

Exclusion Criteria

- Preterm infants with ventilator support.
- Preterm infants with congenital anomalies.

Tool Preparation

A tool is an instrument or equipment used for collecting the data.

Development Of The Tool

The following tool will be developed for the study. The data collection instruments and Infant Outcome monitoring sheet will be developed:

- Section 1 : Demographic Proforma for preterm infant.
Section 2: Preterm Infant Outcome monitoring sheet.
Section 3 : Intervention Record Sheet.

Description Of Data Collection Tool

Demographic Proforma:

The structured Proforma will be consisting of all demographic data of preterm infant.

Outcome Monitoring Sheet:

- Outcome monitoring sheet will be prepared including length of hospitalization, average weight gain per day, time to transition from RT Feeding to oral katori-chamcha feed to active breastfeed, frequency of feeding, Volume of feed, respiratory rate & excretory pattern, physiological signals and Reflex activity. Scoring system will be developed after data collection. The evaluation will be done by Investigator.

Intervention Record Sheet

To note the intervention performed in a day, intervention record sheet is developed and on duty nurse will chart the intervention record.

Validity

To ensure the content validity of the prepared tool, it will be submitted to eight experts. Two pediatrician, four experts from pediatric nursing specialty, one statistician, one English teacher.

Reliability

Reliability of tool will be determined by Spearman Brown formula.

The tool will be administered on 10% samples. Reliability coefficient of the tool will be calculated and accordingly valid tool will be administered.

Pilot Study

The pilot study will be conducted in a non-study area on 10% preterm infant, the purpose of which was to assess feasibility of tool.

These preterm infants will not be included in the main study. On the basis of the results of the pilot study, checklist will be modified and refined, validity and reliability of the checklist will also be established.

Data Collection

Method Of Data Collection

Assessment & Planning Phase-

The investigator will visit the concerned hospitals in advance and will obtain the necessary permissions from the concerned authorities. The investigator will introduce himself and will inform the mothers/relatives about the nature of the study so as to ensure better cooperation during the data collection.

The investigator will explain the need, scope, purpose and objectives of the study to the concerned authority. After securing the permission from the concerned authority of hospital and photocopy of written permission letter will be given to the NICU incharges with necessary verbal information about the plan of action to get their cooperation.

Implementation Phase

The training of Oral motor muscle stimulation techniques will be teach to the nurses and mother and attending relatives by the principal investigator.

Intervention group preterm infant will receive oral motor muscle stimulation. In control group, no intervention will be given.

Evaluation Phase

The outcome measures and neonatal breastfeeding behaviors will be record and assess by a blinded observer i.e. Nurses posted at NICU.

Plan For Statistical Analysis

The collected data will be coded, tabulated and analyzed by using descriptive statistics (mean percentage, standard deviation) and inferential statistics. To associate the demographic characteristics, one way ANOVA test will be used. The data will be presented in the form of tables and graphs.

Scope Of The Study:

This study impart effective oral motor muscle stimulation which improves the outcomes of preterm infants.

This study introduce new techniques before breastfeeding practices. This all ultimately benefit the preterm infants for active breastfeed and ultimately resolve the breast engagement issues in mother aswell.

Limitations Of The Study:

1. Study is interventional study.
2. Study is limited to hospital setup & no community setup is involved.

Implications:

Nursing Service

- The findings of the study will help nursing professionals working in obstetrics and pediatrics department in impart the knowledge about oral motor muscle stimulation before breastfeeding and to get early changeover from katorichamcha feeding to breastfeeding for preterm infant.

Nursing Administration

- This will ensure better professional standards of Nursing. Findings of the study can be used by nursing administrator in creating policies and protocols and plans that will include all nursing mothers to be effectively involved in education programme. It will help nursing administrator to be planned and organized and in giving continuing education to groups.

Nursing Research

Nursing research is an essential aspect of nursing as it uplifts the profession, develop new nursing norms and enhance the body of nursing knowledge. Nursing research improves the image and perception of nursing in society which is urgently required for the future of nursing. It also motivates for evidence based nursing practice. The study would contribute to innovate practice, problems solving in different difficulties faced. Research study may be conducted to bring awareness and formulation of strategies and novelty in standard of care.

REFERENCES

1. Prade SR. Recém-nascidos pré-termo: critérios para a introdução da alimentação por via oral [Dissertação]. Santa Maria (RS): Universidade Federal de Santa Maria; 2006.
2. Brasil. Ministério da Saúde. Define as diretrizes e objetivos para a organização da atenção integral e humanizada ao recém-nascido grave ou potencialmente grave e os critérios de classificação e habilitação de leitos de Unidade Neonatal no âmbito do Sistema Único de Saúde (SUS). Portaria n.930, 10 maio 2012. Diário Oficial da União; 2012.
3. Almeida EC, Modes LC. Leitura do prontuário: avaliação e conduta fonoaudiológica com recém-nato de risco. Rio de Janeiro: Revinter; 2005.
4. Zuanetti PA, Fukuda MTH. Aspectos perinatais, cognitivos e sociais e suas relações com as dificuldades de Aprendizagem. Rev CEFAC. 2012;14(6):1047-56.
5. Macedo FH. Recém-nascido pré-termo: limites da intervenção fonoaudiológica. [Monografia na Internet]. São Paulo (São Paulo):Centro de Especialização em Fonoaudiologia Clínica; 1998 [acesso em 2013 jul 17]. Disponível em: <http://www.cefac.br/library/teses/5f20e3736d19de32fb8473629bf5c5b8.pdf>.
6. Piazza FB. O trabalho da fonoaudiologia hospitalar em UTI neonatal [Monografia na Internet]. Curitiba (PR): Centro de Especialização em Fonoaudiologia Clínica; 1999 [acesso em 2013 out 19]. Disponível em: <http://www.cefac.br/library/teses/d555217e5bc712c7723b0fa257d9e975.pdf>.
7. Caetano LC, Fujinaga CI, Scocchi CGS. Sucção não nutritiva em bebês prematuros: estudo bibliográfico. Rev Latino-Am Enfermagem. 2003;11(2):232-6.
8. Moura LTL, Tolentino GM, Costa TLS, Aline A. Atuação fonoaudiológica na estimulação precoce da sucção não-nutritiva em recém-nascidos pré-termo. Rev CEFAC. 2009;11(Suppl 3):448-56.
9. Bauer MA, Yamamoto RCC, Weinmann ARM, Keske-Soares M. Avaliação da estimulação sensorio-motora-oral na transição da alimentação enteral para a via oral plena em recém-nascidos pré-termo. Rev Bras Saude Mater Infant. 2009;9(4):429-34.
10. Yamamoto RCC, Bauer MA, Häeffner LSB, Weinmann ARM, Keske-Soares M. Os efeitos da estimulação sensorio-motora-oral na sucção nutritiva na mamadeira de recém-nascidos pré-termo. Rev CEFAC. 2010;12(2):272-9.
11. Calado DFB, Souza R. Intervenção fonoaudiológica em recém-nascido pré-termo: estimulação oromotora e sucção não-nutritiva. Rev CEFAC. 2012;14(1):176-81.
12. Pimenta HP, Moreira MEL, Rocha AD, Gomes Junior SC, Pinto LW, Lucena SL. Efeitos da sucção não-nutritiva e da estimulação oral nas taxas de amamentação em recém-nascidos pré-termo de muito baixo peso ao nascer: um ensaio clínico randomizado. J Pediatr. 2008;84(5):423-7.

13. Rocha MS, Delgado SE. Intervenção fonoaudiológica em recém-nascido pré-termo com gastroquise. *Rev Soc Bras Fonoaudiol.* 2007;12(1):55-62.
14. Delgado SE. Atuação fonoaudiológica na unidade de terapia intensiva em bebê com síndrome de pterígeo poplíteo. *Rev Soc Bras Fonoaudiol* 2009;14(1):123-8.
15. Costa PP, Ruedell AM, Weinmann ARM, Keske-Soares M. Influência da estimulação sensório-motora-oral em recém-nascidos pré-termo. *Rev CEFAC.* 2011;13(4):599-606.
16. Bonifácio T. Atuação Fonoaudiológica com bebê prematuro: estimulação sensório-motora-oral [Monografia na Internet]. São Paulo (SP): Centro de Especialização em Fonoaudiologia Clínica; 1999 [acesso em 2013 set 11]. Disponível em: <http://www.cefac.br/library/teses/a9e11e10ba75e134d3e55d717c1e1fe5.pdf>.
17. Neiva FCB, Leone CR. Sucção em recém-nascidos pré-termo e estimulação da sucção. *Pró-Fono R Atual Cient.* 2006;18(2):141-50.
18. Neiva FCB, Leone CR. Evolução do ritmo de sucção e influência da estimulação em prematuros. *Pró-Fono R Atual Cient.* 2007;19(3):241-8.
19. Volkmer ASF. O efeito do uso da sucção não nutritiva com chupeta na apneia da prematuridade [Tese]. Porto Alegre (RS): Faculdade de Medicina da Pontifícia Universidade Católica de Porto Alegre; 2011.
20. Lamounier JA. O efeito de bicos e chupetas no aleitamento materno. *J Pediatr.* 2003;79(4):284-6.
21. Pedras CTPA, Pinto EALC, Mezzacappa MA. Uso do copo e da mamadeira e o aleitamento materno em recém-nascidos prematuros e a termo: uma revisão sistemática. *Rev Bras Saude Mater Infant.* 2008;8(2):163-9.
22. Venson C, Fujinaga CI, Czuniak GR. Estimulação da sucção não nutritiva na "mama vazia" em bebês prematuros: relato de casos. *Rev Soc Bras Fonoaudiol.* 2010;15(3):452-7.
23. Medeiros AMC, Bernardi AT. Alimentação do recém-nascido pré-termo: aleitamento materno, copo e mamadeira. *Rev Soc Bras Fonoaudiol.* 2011;16(1):73-9.
24. Castilho SD, Rocha MAM. Uso de chupeta: história e visão multidisciplinar. *J Pediatr.* 2009;85(6):480-9.
25. Costa CN, Lima GRS, Jorge RM, Malta RACG, Nembr K. Efetividade da intervenção fonoaudiológica no tempo de alta hospitalar do recém-nascido pré-termo. *Rev CEFAC.* 2007;9(1):72-8.
26. Pedras CTPA, Pinto EALC, Mezzacappa MA. Uso do copo e da mamadeira e o aleitamento materno em recém-nascidos prematuros e a termo: uma revisão sistemática. *Rev Bras Saude Mater Infant.* 2008;8(2):163-9.
27. Yamamoto RCC, Keske-Soares M, Weinmann ARM. Características da sucção nutritiva na liberação da via oral em recém-nascidos pré-termo de diferentes idades gestacionais. *Rev Soc Bras Fonoaudiol.* 2009;14(1):98-105.
28. Neiva FCB. Crescimento e desenvolvimento estomatognático. In: Issler H. O aleitamento materno no contexto atual: políticas, prática e bases científicas. São Paulo: Sarvier; 2008. P.238-40.
29. Fujinaga CI, Duca AP, Petroni RACL, Rosa CH. Indicações e uso da técnica "sondado". *Rev CEFAC.* 2012;14(4):721-4.
30. Fucile S, Gisel EG, Mcfarland DH, Lau C. Oral and non-oral sensorimotor interventions enhance oral feeding performance in preterm infants. *Dev Med Child Neurol.* 2011;53(9):829-35.
31. Fucile S, Gisel EG, Mcfarland DH, Lau C. Oral and nonoral sensorimotor interventions facilitate suck-swallow-respiration functions and their coordination in preterm infants. *Early Hum Dev.* 2012;88:345-50.
32. Boiron M, Nobrega LD Nobrega, Roux S, Henrot A, Saliba E. Effects of oral stimulation and oral support on non-nutritive sucking and feeding performance in preterm infants. *Dev Med Child Neurol.* 2007;49:439-44.
33. Hwang Y, Vergara E, Lin C, Coster WJ, Bigsby R, Tsai W. Effects of prefeeding oral stimulation on feeding performance of preterm infants. *Indian J Pediatr.* 2010;77(8):869-73.
34. Poore M, Zimmerman E, Barlow SM, Wang J, Gu F. Patterned orocutaneous therapy improves sucking an oral feeding in preterm infants. *Acta Pediatr.* 2008;97(7):920-7.
35. Barlow SN, Finan DS, Lee J, Chu S. Synthetic orocutaneous stimulation entrains preterm infants with feeding difficulties to suck. *J Perinatol.* 2008;28:541-8.