



Pediatrics

A study to evaluate the effectiveness of non-nutritive sucking to facilitate oral feeding in newborns in terms of level of comfort and selected physiological parameters and to develop and validate the procedural guidelines for nursing personnel in selected hospitals of Delhi/NCR.

Pooja Singh

M.Sc.Nursing, Rajkumari Amrit Kaur College of Nursing, Lajpat Nagar, New Delhi -24

Dr. (Mrs.) Molly Babu

Senior lecturer, Rajkumari Amrit Kaur College of Nursing, Lajpat Nagar, New Delhi-24

ABSTRACT

The objectives of experimental study were to assess and evaluate the effectiveness of non-nutritive sucking to facilitate oral feeding in newborns and develop procedural guidelines on non-nutritive sucking.

The Intervention was given for 7 days for total 10 minutes before gavage feeding based on Pretest Post-test control group design. The samples consisted of 60 newborns selected by purposive sampling with random assignment and 20 nursing personnel available during the period of data collection.

Major findings were that there was a significant improvement in the level of comfort and selected physiological parameters in terms of heart rate, oxygen saturation and body weight after 7 days of non-nutritive sucking. Association values were found significant between: heart rate and newborn age, oxygen saturation and gestational age and body weight and birth weight. The structured opinionnaire revealed that the procedural guideline was found to be acceptable and useful.

KEYWORDS : Tube feeding, non-nutritive sucking, physiological parameters

NNS (Non nutritive sucking) is a best socio-economic method for promoting oral feeding by making the newborn to suck mother's breast after complete milk expression to enhance immunity and promote bonding of the mother with the baby.

Objectives of the experimental study were to evaluate the level of comfort and physiological parameters after NNS, determine association of physiological parameters with the selected factors and to develop & validate the acceptability and utility of procedural guidelines by nursing personnel working in selected hospitals of Delhi/NCR.

Samples selected by purposive sampling with random assignment were 60 newborns (32-36 weeks) admitted in NICU within 28 days of life on gavage feeding who never been associated with oral feeding. The intervention of NNS for 10 minutes duration was given for 7 days based on pretest post-test control group design whenever the baby was awake and settled.

Ethical clearance for the study was taken from Asian institute of medical sciences, QRG Central hospital and Fortis hospital of Delhi/NCR. Data collection was done by structured interview schedule, standardized comfort behavior scale, structured observation schedule and structured opinionnaire for acceptability and utility of procedural guidelines by nursing personnel from 19th December 2015 to 9th January 2016 from NICU.

RESULT

NNS was found effective in improving level of comfort as the *t* value (20.12) found significant for the mean difference (8.65) between post-test discomfort scores of experimental and control group as shown in table 1.

Table-1: Mean difference, standard deviation, standard error of mean difference and *t* value of post-test discomfort scores of newborns in experimental and control groups

GROUP	MEAN	MD	S.D	SEMD	t VALUE
POST-TEST Experimental group(n=30)	10.52	8.65	1.57	0.43	20.12*
Control group(n=30)	19.17		1.769		

t (58) = 2.00, *p*<0.05, significant at 0.05 level of significance
*:significant.

Cumulative percentage distribution (OGIVE) of post-test heart rate scores of newborns in experimental and control group as shown in figure 1. The post-test scores of experimental group lies right to the post-test scores of experimental group. The experimental and control *P*₅₀ are 147.25 and 155.7 respectively indicating NNS is improving heart rate in newborns.

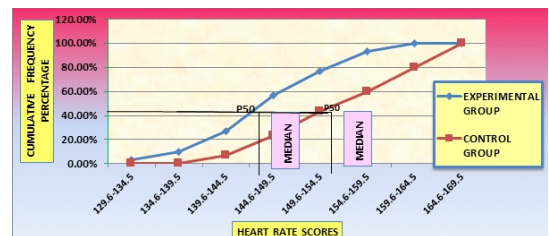


Figure 1: Cumulative percentage distribution (OGIVE) of post-test heart rate scores of newborns in experimental and control group

t value of 6.86 for the post-test scores of oxygen saturation of experimental and control group as shown in table 2.

Table 2: Mean, mean difference, standard deviation, standard error of mean difference and *t* value of post-test oxygen saturation scores of newborns in experimental and control groups

Group	Mean	MD	S.D.	SEMD	t value
POST-TEST Experimental group(n=30)	96.6	3.5	2.01	0.51	6.86*
Control group(n=30)	93.1		1.96		

t(58) = 2.00, *p*>0.05, significant at 0.05 level of significance
*:significant.

Post-test scores of body weight in experimental and control group found 2.17 and 1.87 respectively was found statistically significant at 0.05 level of significance as *t* value was 2.14.

No significant relationship between level of comfort and physiological parameters found.

Association values were found significant between heart rate &

newborn age, oxygen saturation & gestational age and body weight & birth weight.

The procedural guideline was found to be acceptable and useful

CONCLUSION

It can be concluded that the non nutritive sucking is effective in improving the level of comfort and selected physiological parameters in terms of heart rate, oxygen saturation and body weight in newborns. The procedural guideline 'Non-Nutritive Sucking' for staff nurses working in NICU was found to have high acceptability and utility scores. It can be used as a non-pharmacological therapeutic intervention and recommended as a technique for sooner transition from gavage feeding to breast feeding in newborns and is a simple and inexpensive therapy. Nurses make important decisions regarding application of non-pharmacologic therapeutic interventions for improvement in level of comfort and selected physiological parameters.

REFERENCES

Books

- Alligood, M. R., & Tomey, A. M. (2002). *Nursing Theory: Utilization and Practice* (2nd ed.). Elsevier Science Limited.
- Faridi, M. M. A., & Gupta, P. (2013). *Neonatology Practice Made Easy* (1st ed.). Jaypee Brothers.
- Garrett, H. E. (2011). *Statistics in Psychology and Education* (2nd ed.). Paragon International.
- Ghai, O. P., Gupta, P., Paul, V. K. (2008). *Essential Pediatrics* (6th ed.). O.P. Ghai.
- Morse, J. M., Field, P. A. (2005). *Nursing Research: The Application of Qualitative Approaches* (2nd ed.). Chapman & Hall.
- Pillitteri, A. (1999). *Child Health Nursing: Care of the Child & Family* (1st ed.). J. B. Lippincott Company.
- Singh, A. K. (2010). *Tests, Measurements and Research Methods in Behavioural Sciences* (5th ed.). Bharti Bhawan.
- Tomey, A. M., & Alligood, M. R. (2002). *Nursing Theorists and Their Work* (5th ed.). Elsevier Science Limited.

Journals

- Altmier, L., Kenner, C., & Damas, K. (2015). The Wee Care Neuroprotective NICU Program (Wee Care): The Effect of a Comprehensive Developmental Care Training Program on Seven Neuroprotective Care Measures for Family-Centered Developmental Care of Premature Neonates. *Newborn & Infant Nursing Review*, 15, 6-16.
- Asahdoillapour, F., Yadegari, F., Soleimani, F., & Khalesi, N. (2015). The Effects of Non-nutritive Sucking & Pre-Feeding Oral Stimulation on Time to Achieve Independent Oral Feeding for Preterm Infants. *Iranian Journal of Pediatrics*, 25(3), e809, 1-22.
- Bache, M., Pizon, E., Jacobs, J., Vaillant, M., & Lecomte, A., (2014). Effects of pre-feeding oral stimulation on oral feeding in preterm infants: A randomized clinical trial. *Early Human Development*, 90, 125-129.
- Bahgat, R. S., Elsayed, E. M. (1999). Effect of non-nutritive sucking on the behavioural state and physiological change in premature infants before feeding. *Journal of Egypt Public Health Association*, 74(1-2), 81-96.
- Bala, P. et al. (2016). Oromotor stimulation for transition from control trial. *Indian Pediatrics*, 53, 36-38.
- Barlow, S. M., Finan, D. S., Lee, J., & Chu, S. (2008). Synthetic orocutaneous stimulation entrains preterm infants with feeding difficulties to suck. *Journal of Perinatology*, 28, 541-548.
- Bernbaum, J. C., Pereira, G. R., Watkins, J.B., & Peckhar G.J. et al. (2015). Non-nutritive sucking during gavage feeding enhances growth and maturation in premature infants. *Pediatrics*, 71(1), 41-45.
- Bingham P. M., Ashikaga, T., & Abbasi, S. et al. (2010). Prospective study of non-nutritive sucking and feeding skills in premature infants. *Archives Diseases Child Fetal and Neonatal Education*, 95, F194-F200.
- Boiron, M., Nobrega, L.D., Roux, S., Henrot, k., & Saliba, E. (2007). Effects of oral stimulation & oral support on non-nutritive sucking and feeding performance in preterm infants. *Developmental Medicine & Child Neurology*, 49, 439-444.
- Briere, C. E., McGrath, J., Cong, X., & Cusson, R. (2014). A Contemporary Review of Feeding Readiness in the Preterm Infant. *The Journal of Perinatal & Neonatal Nursing*, 28(1), 51-58.
- Chorna, O. D., Slaughter, J. C., Wang, L., Stark, A. R., & Maitre, N. L. (2014). A pacifier-activated music player with mother's voice improves oral feeding in preterm infants. *Pediatrics*, 133(3), 462-467.
- Fucile S., Gisel, E. G., McFarland, D. H., & Lau, C. (2011). Oral and non-oral sensorimotor interventions enhance oral feeding performance in preterm infants. *Developmental Medicine & Child Neurology*, 53, 829-835.
- Fucile, S., Giesel, E. G. (2010). Sensorimotor Interventions Improve Growth & Motor function in Preterm Infants. *Neonatal Network*, 29(6), 359-366.
- Fucile, S., Giesel, E., & Lau, C. (2002). Oral stimulation accelerates the transition from tube to oral feeding in preterm infants. *The Journal of Pediatrics*, 141(2), 230-236.
- Geddes, D., Hartmann, P., & Jones, E. (2013). Preterm birth: Strategies for establishing adequate milk production & successful lactation. *Seminars in Fetal & Neonatal Medicine*, 18, 155-159.
- Gennattasio, A., Perri, E.A., Baranek, D., & Rohan, A. (2015). Oral Feeding Readiness Assessment in Premature Infants. *Continuing Education*, 40(2), 96-104.
- Gianni, M. L., Sannino, P., Bezze, E., Plevani, L., Cugno, N., Roggero, P. et al. (2015). Effect of co-morbidities on the development of oral feeding ability in preterm infants: a retrospective study. *Sci. Rep.* 5, 16-63.
- Harding, C., Frank, L., & Dungu, C. (2012). The use of non-nutritive sucking to facilitate oral feeding in a term Infant: A Single Care Study. *Journal of Pediatric Nursing*, 27, 700-706.

- Kamhawy, H., Davis, D. H., Alasharkawy, S., Alrafay, S., Corazzini, K. (2014). Non-nutritive sucking for Preterm Infants in Egypt. *Journal of Obstetrics, Gynaecology & Neonatology Nursing*, 43(3), 330-340.
- Khalessi, N., Nazzi, S., Shariat, M., Saboteh, M., & Farahani, Z. (2015). The Effects of Pre-Feeding Oral Stimulations & Non-Nutritive Sucking on Physical Growth and Independent oral feeding of Infants. *Iranian Journal of Neonatology*, 6(4), 25-29.
- Keshavarz, M., Rajaei, Z., Sadheghi, H., Razavi, M., & Montazeri, A. (2013). The effect of non-nutritive sucking on weight gaining of preterm infants hospitalized in neonatal intensive care unit. *Journal of Iranian Institute for Health Sources Research*, 12(2), 151-157.
- Lau, C. (2016). Development of infant oral feeding skills: What do we know? *The American Journal of Nutrition*, 103(1), 599S-605S.
- Ly, T., Zhang, Y., Hu, X., Shi, P.E.N.G., Cao, Y.U.N., & Latour, J.O.S.M. (2014). Effects of Non-Nutritive Sucking & Oral Stimulation on Feeding Performance in Preterm Infants in China: A Randomized Trial. *Pediatric Critical Care Medicine*, 15(4), 22.
- Salehi, Z., Nouri, J. M., Khademolhoseyni, S. M., & Ebadi, A. (2015). The effects of Education and Implementation of Evidence-Based Nursing Guidelines on Infants' Weight Gaining in NICU. *Journal of Health Science*, 7(2), 148-153.

REPORTS & PUBLICATIONS

- Every Newborn: An action plan to end preventable deaths; World Health Organization, 2014. Available at <http://www.everynewborn.org/Documents/Full-action-plan-EN.pdf>
- Lee A. C., Katz J, Blencowe H, et al. RG SGA-Preterm Birth Working Group. National and regional estimates of term and preterm babies born small for gestational age in 138 low-income and middle-income countries in 2010. *Lancet Global Health* 2013; 1: 26-36.
- National Neonatal Perinatal Database. Report for the year 2002-03. Available at http://www.newbornwhocc.org/pdf/nnpd_report_2002-03.PDF 80 INAP: India Newborn Action Plan.
- Operational Guidelines Rashtriya Bal Swasthya Karyakram (RBSK) Child Health Screening and Early Intervention Services under NRHM. National Rural Health Mission, Ministry of Health and Family Welfare, Government of India, February 2013.
- Population Enumeration Data (Final Population), Census of India 2011, Office of Registrar General of India. Available at http://www.censusindia.gov.in/2011census/population_enumeration.aspx
- Resource material for Rashtriya Bal Swasthya Karyakram (RBSK). National Rural Health Mission, Ministry of Health and Family Welfare, Government of India, October 2013.