ORIGINAL RESEARCH PAPER

Paediatrics

PREFEEDING OROMOTOR STIMULATION FOR IMPROVING OROMOTOR FUNCTION IN PRETERM NEONATES

KEY WORDS: KMC,NNS, Neonates

Dr. Anushree M Benny PG Resident (MD), Department of Pediatrics, Jhalawar Medical College, Jhalawar.

Dr. Sandesh M* PG Resident (MD), Department of Pediatrics, Jhalawar Medical College, Jhalawar. *Correspondence Author

ABSTRACT

Background- Preterms (< 32weeks) are incapable of independent oral feeding due to underdeveloped oral motor skills and lack of coordination of sucking, swallowing and respiration. Aim of study was to determine effect of Premature Infant Oral Motor Intervention program on oromotor function and time to full independent spoon feeds in preterm infants.

Methods- 50 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- Spoon-feeding was achieved earlier in the intervention group as well as significantly higher number of babies were on partial breast feed at discharge.

Conclusions- This study concluded that it can be practiced in all stable preterm neonates even in moderate preterm with positive effects

INTRODUCTION

Preterms (< 32weeks) are incapable of independent oral feeding due to underdeveloped oral motor skills and lack of coordination of sucking, swallowing and respiration. In preterm neonates, optimal breast feeding is limited due to several reasons e.g, illnesses, gut immaturityand inadequate suck, swallow and breathing coordination due to poor oromotor skills. Many research studies shows that sensorimotor interventions can be used to improve oral feeding in preterm babies which provide direct, targeted input to the oral structures involved in feeding.[1] These studies suggest that oromotor stimulation (OMS) programme (peri and intra-oral stimulation, with or without nonnutritive sucking) applied to preterm infants during gavage feeding can improve sucking abilities and reduces transition period from gavage to full oral feeding, and improves the sucking pattern. OMS and nonnutritive sucking (NNS) also increase the probability of more preterm babies being breastfed at discharge.

Beckman Oral Motor Intervention (BOMI) is a 15-minute oral intervention for infants and children with developmental delays and feeding difficulties but is not suitable in preterm infants due to smaller oral cavity and longer administration time .The Premature Infant Oral Motor Intervention (PIOMI) is a new intervention that is adapted from the BOMI to enhance the premature infant's ability to accept oral feeds.[2] ThePremature Infant Oral Motor Intervention (PIOMI) is a 5-minute oral motor intervention that provides assisted movement to activate muscle contraction and provides movement against resistance to build strength. The focus of the intervention is to increase functional response to pressure and movement and control of movements for the lips, cheeks, jaw, and tongue. The cheeks (internal and external), lips, gums, tongue, and palate were stimulated as per specific protocol with finger stroking.3 Studies were done to test Premature Infant Oral Motor Intervention (PIOMI) beginning at 29 weeks postmenstrual age (PMA), before oral feedings were introduced, to determine whether the prefeeding intervention would result in a shorter transition from gavage to total oral feedings and a shorter length of hospital stay (LOS).[3]These studies have shown positive results in terms of early transition from gavage to partial or full spoon feed and also in terms of feeding efficacy. Aim of this study is to test the hypothesis that Oromotor stimulation in addition to routine care including Non Nutritive Sucking (NNS) and Kangaroo mother care (KMC) was more effective in reaching early oral feeding and direct breast feeding when compared to routine care alone.

MATERIAL AND METHODS:

Source of Data: Preterm neonates <34weeeks admitted in Neonatal Intensive Care Unit of Jhalawar Medical College during the study period of 3 months.

Duration of study: 3 Months

Type of the study: Randomized controlled trial

Sample size: 50

INCLUSION CRITERIA

All neonates admitted to the Neonatal Intensive Care unit during the study period who are born between 28 to 34 weeks gestational age and who are medically stable within 48hr of life .

EXCLUSION CRITERIA

Infants having respiratory distress, hemodynamic instability, those with chronic medical complications like Brocho Pulmonary Dysplasia, Intra Ventricular Hemorrhage, Periventricular Leucomalacia, NecrotisingEnteroColitis, chromosomal anomalies or craniofacial malformation were excluded from the study.

METHOD OF STUDY

Baseline demographic characteristics and previous morbidities of all preterm neonates was recorded at enrolment. After applying Exclusion criteria, eligible babies was randomized. Infants meeting eligibility criteria were randomized to receive oro-motor stimulation using either Premature Infant Oro-Motor Intervention (PIOMI) or routine care alone. Randomization was done using a computer generated randomization sequence placed in sealed, opaque, sequentially numbered envelopes. The **primary outcome** is to compare transition time from full gavage feed to partial and full spoon feed. **Secondary outcomes** are to assess total volume of milk by spoon at each feed and time required to complete full spoon feed and partial direct breast feed at discharge.

Methods of data analysis and interpretation:

Data was analysed according to the objectives of the study using descriptive and inferential statistics and was presented in the form of tables, graphs, and diagram. Statistical analysis was done by help of software and appropriate statistical test was used for finding the final result.

RESULTS

Table 1. Baseline characterstics

Variable	Intervention (n=25)	Control (n=25)	p-value
Gestational age in weeks	31.20±1.21	30.25±1.18	>0.05
Birth weight in gm	1121.32±124.30	1163.12±130.26	>0.05
Male : female	14:11	13:12	>0.05
Age at enrolment in days	11.12±1.02	11.32±1.06	>0.05
Weight in enrolment gm	1102.12±118.32	1170.42±136.42	>0.05
Oro-gastric partial feed start in days	2.51±0.65	2.78±0.69	>0.05
Oro-gastric full feed start in days	9.42±1.23	10.23±1.45	>0.05

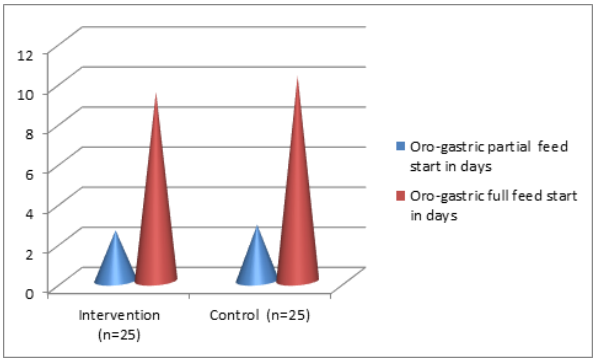
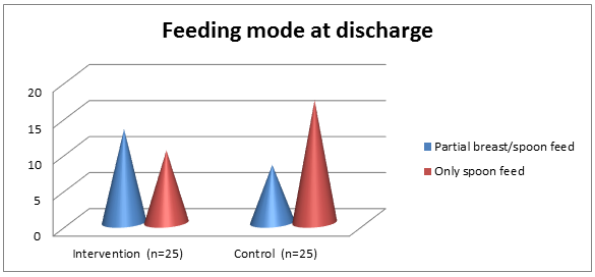


Table 2. Transition time from gavage feeding and feeding mode at discharge

Variable	Intervention (n=25)	Control (n=25)	p-value
Partial spoon feed in days	4.63±2.46	9.12±2.56	<0.05
Full spoon feed in days	7.12±2.36	12.36±3.21	<0.05
Partial breast feed in days	13.26±4.69	10.12±4.16	>0.05
Feeding mode at discharge			
Partial breast/spoon feed n(%)	13(52.00%)	8(32.00%)	<0.05
Only spoon feed	10(40.00%)	17(68.00%)	<0.05



DISCUSSION

This randomized controlled trial showed that when additional OMS is combined with routine existing practices of KMC and NNS, it further improves feeding abilities in preterm babies.

Spoon-feeding was achieved earlier in the intervention group as well as significantly higher number of babies were on partial breast feed at discharge. The effect of intervention on attaining full breast feed could not be elicited as we discharged babies early due to infrastructure constraints.

Non-nutritive sucking alone positively benefits the feeding pattern of neonates by achieving earlier oral feeds and shorter hospital stay.[4] The statistically non-significant improvement in volume and time for spoon feeding could be due to the fact that our control group was also receiving NNS which also improves oral feeding performance. Oro-motor stimulation program increases the overall daily milk intake and milk transfer rate in addition to early transition from gavage to spoon feed and also improve sucking pattern of preterm babies.[5] Pre-feeding oral stimulation group attains independent oral feeding faster and has consistently greater overall intake and rate of milk transfer when compared with only routine care group. When non-nutritive sucking is added to oral stimulation it contributes to the improvement of breastfeeding rates among preterm infants.[6]

The major limitation of our study was it being a single center study with a small sample size.

CONCLUSION

This study concluded that it can be practiced in all stable preterm neonates even in moderate preterm with positive effects.

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