

From Feeding Efficiency to the Feeding Experience: External Validity of Neonatal Oral Motor Research

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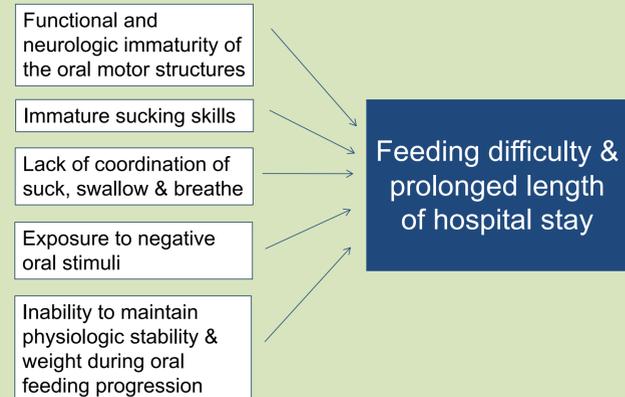
Premature Infant Oral Motor Intervention



- Provides assisted movement to activate muscle contraction
- Provides movement against resistance to build strength
- Focus is to increase functional response to pressure and to movement, and control of movement for the lips, cheeks, jaw, and tongue
- Cheeks, lips, gums, tongue and palate are targeted per specific techniques for **3 minutes**
- Ends with non-nutritive sucking for **2 minutes** > 5 mins



Feeding Difficulties in Preterm Infants



Preterm Oral Musculature

- Preterm infants have poor oral-motor control related to:**
- Weaker muscle tone around mouth
 - Less sensation
 - Decreased lip strength and lip seal
 - Less tongue strength
 - Decreased sucking strength & endurance



PIOMI Study In Thailand

T. Daramus & B. Lessen Knoll (2017... In progress) Effect of a 7 day oral motor intervention on feeding efficiency and length of stay in Thailand.

Research Question

Does the Premature Infant Oral Motor Intervention (PIOMI) improve feeding efficiency and/or length of stay?

DV: PIOMI

IV's:

1. **Feeding Efficiency:** Mean volume consumed in first 5 minutes
2. **Length of Stay:** Measured from 34 weeks to discharge

Methods

- Data collection in Ramathibodi Hospital NICU in Thailand
- 31-34 week PMA infants enrolled
- Randomly assigned to PIOMI vs no oral motor
- Sample of 30 (15 per group)
- PIOMI done at a mean of 33 weeks PMA
- PIOMI done 1 x day for 7 consecutive days
- Bottle feedings began at a mean of 34 weeks PMA.
- Volume consumed measured over first 5 minutes of 2 feedings (averaged) on the first, third and fifth day of the feeding progression

Results

	Amount of Formula Intake in First 5 Minutes				t	p-Value
	PIOMI group (n=15)		Control group (n=15)			
	Mean	SD	Mean	SD		
Day 1	44.91	7.33	29.66	9.55	4.91	< 0.001
Day 3	53.86	8.01	30.36	11.07	6.66	< 0.001
Day 5	61.66	34.83	34.83	8.76	9.05	< 0.001

Comparison of the means of amount of formula intake within five minutes on the first, third, and fifth days between the experimental subjects and the control subjects using the independent t-test resulted in statistically significant differences (p < 0.001) between control group and PIOMI group.

The PIOMI group consumed more formula than the control group at all three measurement points in feeding progression.

A Neuroprotective Feeding EXPERIENCE is the New Paradigm

What is Neuroprotection?

- Interventions used to support the developing brain and allow it to heal through developing new connections and pathways for functionality (Altimier & Phillips, 2013).
- Addresses sensory exposures preterm infants experience which are not present during normal development inside the womb.
- External experiences that stimulate sensory organs can alter/influence expression or effects of genes.
- Neuroprotective Care includes 7 distinct Core Measures
 - Healing Environment
 - Minimizing Stress and Pain
 - Protecting Skin
 - Safeguarding Sleep
 - Positioning and Handling
 - Optimizing Nutrition
 - Partnering with Families



Comparing Oral Motor Studies with/without the New Neuroprotective Environment

- Expected Outcomes of Neuroprotective Care Models
 - Decreased LOS
 - Decreased hospital costs
 - Better health outcomes

External Validity

- Assesses if study results can be generalized to different populations, conditions, and/or locations (Polit, & Beck, 2014).
- External validity is the degree to which the conclusions in your oral motor study would hold for other infants in other places and at other times.



We can only generalize oral motor study outcomes to the same level of Neuroprotective NICU environment that the study sample encountered.

WHY? Because this new neuroprotective environment is showing dramatic effects on health outcomes that impact feeding:

- Mortality
- Severe ROP
- Severe IVH
- Cystic PVL
- Extreme LOS
- NEC
- CLD
- Late Onset Infection

What to Look For? Neuroprotective Strategies

- Nesting/Positioning
- Cue Based Care/Oral Motor Care
- Infant Driven Feeding
- Two Person Care
- Decreased Lights and Noise
- Skin to Skin Kangaroo
- Family Participation
- Oral Motor done >32 weeks?



Primary References

- Altimier, L., & Phillips, R. (2016). The neonatal integrative developmental care model: Advanced clinical applications of the seven core measures for neuroprotective family-centered developmental care. *Newborn and Infant Nursing Reviews*, 16, 230-244. doi:10.1053/j.nainr.2016.09.030
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- Polit, D. F., & Beck, C. T. (2014). *Essentials of nursing research: Appraising evidence for nursing practice* (4th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
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