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Effectiveness of oral motor stimulation administered by mothers of preterm infants- A pilot study

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ABSTRACT

Objective: The study evaluated the effectiveness of teaching mothers of very preterm infants, an oral motor stimulation protocol.
Design: Single blinded randomized controlled trial.
Participants: Twenty one mothers of very premature infants (≤32 weeks) were randomly allocated to the intervention (n = 10) and control groups (n = 11).
Methods: Mothers in the intervention group were trained to administer an oral motor stimulation program for their infant. In the control group the intervention was administered by the therapist. The outcome measures and neonatal breastfeeding behaviors were recorded and assessed by a blinded observer.
Results: The behavioral state at the start of breastfeeding, the quiet alert state, was significantly better in the intervention group. Outcomes such as length of hospitalization, average weight gain per day and time to transition to complete oral feeds were not significantly different between the groups.
Conclusion: As a measure of family centered care, teaching mothers to administer oral motor stimulation for their infants, improves feeding behavior.

Introduction

Oral feeding difficulties in premature infants are caused by underdeveloped oral motor skills and in-coordination between sucking, swallowing and breathing (Bingham et al., 2010). Safe and successful feeding, implies that the infant is at minimal risk of aspiration and demonstrates coordination of sucking, swallowing and breathing (Barlow, 2009). Difficulties in early sucking and swallowing skills have been found associated with abnormal neuro-developmental outcomes (Slattery et al., 2012; Wolthuis-Stigter et al., 2015). Oral motor stimulation consists of stroking of oral structures followed by nonnutritive sucking (Fucile et al., 2002). It is an intervention used in preterm infants to improve feeding performance. It reduced the transition time to oral feeds, duration of hospital stay and parenteral care in infants who received the intervention when compared to infants who received standard care (Greene et al, 2016).

One of the aims of developmentally supportive care (DSC), is to maintain the intimate connection between the parent and the infant (Als & B McAnulty, 2011). Higher levels of DSC are associated with better neurobehaviour in very preterm infants (Montirosso et al., 2012). Family centered care (FCC), a component of DSC, is associated with a reduction of parental stress, enhancement of parental bonding and better infant outcomes (Medoff-Cooper et al., 2009). Family involvement and helping parents become competent in understanding their infant's capabilities and behaviors in the NICU is important to the infants' optimal developmental outcomes (Goldstein, 2013). High quality of care by mothers, may partially reverse the adverse effects of stress exposure the infants experience in the NICU (Provenzi and Barello, 2015). Attempts have been made to involve parents in infant comfort care (Skene et al., 2012), infants' pain care using facilitative tucking (Axelin et al., 2010) and infant massage (Afand et al., 2017).

The reliability of implementing an oral motor intervention performed by a wide range of persons including parents has not been studied (Lessen et al., 2015). To our knowledge, there is no study which has looked at the feasibility and effectiveness of teaching mothers of premature infants a pre-feeding stimulation program.

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The aims of the study were to evaluate the feasibility of teaching mothers of premature infants a pre-feeding oral stimulation protocol and to compare the effectiveness of the intervention when administered by the mother to that when administered by a therapist. Outcomes studied included length of hospital stay, weight gain, head circumference, time for transition to oral feeds and neonatal breastfeeding behaviors.

Methods

Design and participants

This study is a randomized single blinded trial. An experimental group of infants who received an oral motor intervention by their mothers were compared to a group of infants who received the same intervention from a therapist.

Criteria for inclusion were (1) infants of gestational age of 32 weeks or below at birth and (2) mothers who had a working knowledge of English or Tamil for ease of communication and training. The exclusion criteria were (1) any known congenital and/or chromosomal diseases in the infant and (2) mothers diagnosed with postpartum psychosis or depression. From February 2013 to April 2013, 24 mothers who met the inclusion criteria and consented were recruited for the study. Ten mothers in the intervention group and eleven mothers in the control group completed the intervention and were included in analysis (Fig. 1). If a mother had a twin gestation, the first twin was recruited as the participant. Once randomization was done, the second twin received the same allocated intervention. The demographic characteristics of infants and mothers in both groups are presented in Table 1.

Approval was obtained by the Institutional Review Board. Written informed consent was obtained by the neonatal occupational therapist (HJ).

Measures

Outcomes such as average weight gain per day, length of hospital stay, total number of days for transition to full breastfeeds were noted. Once breastfeeding was initiated, neonatal breastfeeding behaviors were assessed using the Infant Breastfeeding Assessment Tool (IBFAT) twice a week.

Table 1
Demographic characteristics of mothers and infants in the intervention and comparison groups.

		Intervention group (n = 10)	Comparison group (n = 11)
		M (SD)	M (SD)
Birth weight of infant (kg)		1.21 (0.19)	1.36 (0.22)
Weight at discharge (kg)		1.84 (0.03)	1.84 (0.05)
Gestational age at birth (weeks)		30.5 (1.43)	30.0 (2.70)
Gestational age at discharge (weeks)		35.9 (2.18)	36.3 (2.20)
Twin gestation n (%)		1 (10)	2 (18)
Mother's age (years)		25 (4.96)	26 (5.21)
Mother's Educational qualification n (%)	Illiterate	1 (10)	1 (9.1)
	High School	8 (80)	6 (54.5)
	Graduate	1 (10)	2 (18.2)
	Post-graduate	0	2 (18.2)

The IBFAT was originally developed for full term infants, but has been found to correlate with objective measures of feeding observation in very low birth weight infants (Furman and Minich, 2006). Positive and significant correlations between 0.90 and 0.95 were found for the total IBFAT score, and it was found compatible for the assessment of breastfeeding efficiency (Altuntas et al., 2014). Scores significantly correlated with rate and volume of milk intake (Furman and Minich, 2006). Spearman rank coefficients of pairwise interrater correlations were .57, .27 and .69, and test retest correlation was .88 (Riordan and Koehn, 1997). The categories assessed by IBFAT include: state at the beginning of the feed, stimulation to feed, rooting behavior, time to latch on, infant sucking pattern and maternal satisfaction with the feed (Matthews, 1993). In this study the items of the IBFAT were scored by observation for 10 min by an occupational therapist who recorded the time duration for which each behavior was observed.

Procedure

The mothers of babies admitted in the NICU, stayed in a room adjoining the unit and hence had unrestricted access to the infant. Feeding

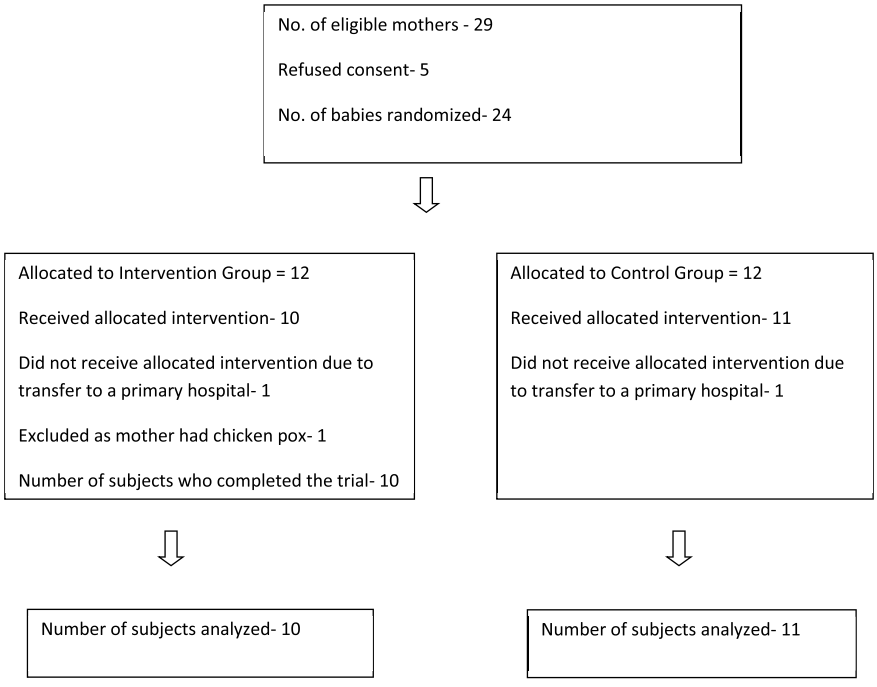

Fig. 1. Flow chart of study patients.