Administration of Fortifier by Finger Feeder During Breastfeeding in Preterm Infants

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ABSTRACT

Objective: To evaluate the acceptance, adherence, and feasibility of fortifier administration by finger feeder during breastfeeding and to determine weight, length, and head circumference gains after discharge for preterm infants.

Design: Observational pilot study.

Setting: A Level III NICU and its outpatient clinic in Vienna, Austria.

Participants: Infants born at younger than 34 weeks gestation were included.

Methods: Mothers were screened in a tertiary NICU and trained by certified lactation consultants to administer fortifier with a finger feeder during breastfeeding. Data on finger feeder use at home were collected by self-reported feeding diaries and questionnaires.

Results: In total, data from 24 mother–infant dyads were analyzed. The acceptance rate was 67%. In 41.7%, more than 50% of meals were fortified. Mothers did not report problems in preparation, but 33% of the infants stopped latching on or drooled milk during finger feeder use.

Conclusion: Use of a finger feeder to administer fortifier to preterm infants enabled mothers to exclusively breastfeed their infants and meet their nutritional needs. The development of further methods to augment preterm infant nutrition that do not interfere with breastfeeding is of great interest.

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Breast milk is the recommended source of nutrition for preterm infants (American Academy of Pediatrics, 2012). Many positive short-term health effects such as prevention of necrotizing enterocolitis, improved gut development, and strengthening of the immune system are associated with breastfeeding (Castellote et al., 2011; Gartner et al., 2005; Sisk, Lovelady, Dillard, Gruber, & O’Shea, 2007). Furthermore, positive effects on neurodevelopmental outcomes are reported (Koo, Tank, Martin, & Shi, 2014; Vohr et al., 2007).

The composition of breast milk meets the nutritional demands of term infants. Because preterm infants have enhanced nutritional requirements, multicomponent fortifiers are added to breast milk to support adequate growth and neurodevelopment (Young, Embleton, McCormick, & McGuire, 2013). These fortifiers are based on a bovine or human milk protein source and contain additional calories, vitamins, and electrolytes. However, it is still unclear how long breast milk fortification should be continued to be beneficial for preterm infants.

The European Society for Pediatric Gastroenterology, Hepatology and Nutrition (ESPGHAN) recommends fortification of breast milk in accordance with the postnatal growth pattern of the preterm infant. If weight gain continues to be above the 10th percentile, breast milk should be fortified until term gestational age. In the case of growth restriction, which is defined as weight gain below the 10th percentile, breast milk should be fortified up to 52 weeks postconceptional age (Aggett et al., 2006).

Data from the Vermont Oxford Network and our department indicated that most very-low-birthweight infants are discharged at approximately 36 weeks gestational age. According to the...
We tested a new method to administer fortifier with a finger feeder during breastfeeding to optimize fortification management in preterm infants after hospital discharge.

ESPGHAN recommendations, breast milk should be fortified after the infant has been discharged from the hospital. Usually, fortifiers are mixed with expressed breast milk and fed via bottle. This significantly interferes with breastfeeding and may have a negative effect on overall duration of breastfeeding (Howard et al., 2003). Breastfeeding has been shown to be beneficial for the infant; for example, some researchers reported that infants had more stable oxygen saturation and heart rate during breastfeeding compared with bottle-feeding (Chen, Wang, Chang, & Chi, 2000; Lucas & Smith, 2015).

To optimize fortification management after discharge, we tested a new method of feeding fortifier with a finger feeder during breastfeeding. We investigated the effect of this new method on acceptance and adherence. Further aims of this study were to evaluate the feasibility of preparation and the weight, length, and head circumference gains of infants after discharge.

Methods

Study Design and Participant Eligibility

This was an observational pilot study to investigate a new method for fortifier administration during breastfeeding. The finger feeder device used in our study was already in use in infants with feeding problems such as sucking weakness or poor latch and for administration of medication, so this was not an off-label use. All mothers of exclusively breastfed preterm infants born at our hospital between January 2013 and May 2014 with gestational ages less than 34 weeks were approached before discharge from the hospital. Every participating mother gave informed consent after a detailed explanation of the procedures. The study was approved by the local ethical committee (EK-Nr: 1866/2012).

Infants with impairment of sucking–swallowing coordination due to esophageal or other anatomic anomalies and infants with neurologic impairments were excluded from the study. Furthermore, mothers with anatomic anomalies of the breast and mothers with psychiatric disorders were excluded.

Fortification via Finger Feeder

Participating mothers were trained to administer fortifier by international board-certified lactation consultants during the hospital stays of their infants. The procedure is explained in Figure 1. Training was especially helpful for non-native German–speaking mothers. Participants were advised to fortify all meals except the night meals, feeding, and cleaning of syringes and finger feeders using an investigator-created questionnaire completed by the mothers. In addition, weight, length, and head circumference gains of infants after discharge were documented.

Fortifier Feeding Diary

To survey acceptance of and adherence to the finger feeder method, a self-report feeding diary was developed: the fortifier feeding diary (FFD). The FFD included information on the number of breastfeeding meals during 24 hours, the number of fortified meals administered with the finger feeder, and the amount of fortifier administered to the infant each time the finger feeder was used. Mothers received the FFD at time of discharge.
در اجرای
درخواست شما
مشکلی رخ داده است

با سلام، متأسفانه مشکلی در فراپند اجرای درخواست شما رخ داده است.

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