Effect of pre- and postdischarge interventions on breastfeeding outcomes and weight gain among premature infants
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CRD summary
This review concluded that kangaroo care, early discharge with daily lactation support and peer counselling were effective for promoting breastfeeding outcomes in healthy preterm infants. Mothers were satisfied with the continuation of lactation support. Due to a lack of detail about review methods and brief reporting of study results, these conclusions need to be reviewed with caution.

Authors' objectives
To investigate the effect of pre- and post-discharge interventions on breastfeeding outcomes and weight gain among preterm infants.

Searching
PubMed and CINAHL were searched from 1999 to 2008. MeSH terms were reported. Only studies published in English were included.

Study selection
Randomised controlled trials (RCTs) of preterm infants (up to 37 weeks gestation) conducted in developed countries and that reported outcomes that related to breast feeding and weight gain were eligible for inclusion.

The included studies were published between 1999 and 2008 and were conducted in USA, Canada, New Zealand and Australia. Interventions were: nasogastric tube supplementation; daily visits by nurse specialists for seven to 10 days after discharge; support from a community nurse who was a certified lactation consultant; peer counselling with weekly telephone calls for six weeks; measurement of milk at home with digital scales; cup feeding; kangaroo care (skin to skin contact); and feeding orally on cues after stopping gavage feeding. Control interventions were mostly standard hospital care or bottle feeding. Gestational ages ranged from 26 to 37 weeks. Outcome measurements were breastfeeding rates, maternal satisfaction, infant weight gain, feeding patterns and duration of hospital stay.

The authors did not state how many reviewers performed the study selection.

Assessment of study quality
Risk of bias was assessed using Cochrane Collaboration criteria of randomisation sequence generation, allocation concealment, blinding, incomplete outcome data, selective outcome reporting and other sources of bias.

The authors did not state how many reviewers performed the assessment.

Data extraction
Results were extracted as they were reported in the primary studies, using various effect measures such as percentages, odds ratios (OR) and means.

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Results were reported in a narrative synthesis grouped by outcome.

Results of the review
Eight RCTs (n=1,125, range 14 to 308) were included. All studies described the methods of sequence generation and
allocation concealment. Only one study reported blinding the care provider; the others were unclear. All studies addressed selective outcome reporting. There were no other sources of bias.

**Exclusivity of breastfeeding**
Nasogastric tube supplementation resulted in babies being 4.5 times more likely to breastfeed at discharge and 9.4 times more likely to fully breastfeed compared with bottle-fed babies; this persisted at up to three months post discharge. Cup feeding increased the odds of full breastfeeding compared with bottle feeding (OR 1.73, 1.04 to 2.88, p=0.03). Another study found that kangaroo care had a higher rate of exclusive breastfeeding at discharge and up to 18 months post discharge compared with standard nursery care (p=0.047). Other studies found no statistically significant differences between: early discharge with daily visits from a nurse specialist and routine discharge; support from a lactation consultant at home compared with support in hospital; and weighing milk at home using digital scales compared with a feeding routine.

**Breastfeeding duration**
Four studies reported on the duration of breastfeeding. Kangaroo care had a longer duration than routine care (5.08 versus 2.05 months, p=0.003). Peer counselling had 181% greater odds of providing any amount of breast milk at 12 weeks compared with no peer counselling. There were no statistically significant differences between groups for cup feeding compared with bottle feeding or milk weighing compared with a feeding routine.

**Maternal satisfaction**
Three studies measured maternal satisfaction with the breastfeeding interventions. All women who weighed their milk with digital scales reported that it had been very helpful and did not make them nervous. Most of the mothers who received early discharge supported by home visits from a nurse specialist were pleased with their care. Another study of early discharge with home visits from a lactation consultant reported that 93% of women were satisfied with their postpartum care.

**Weight gain**
Four studies reported on infant weight gain. These investigated cue-based feeding, feeding via a nasogastric tube, home visits from nurse specialists and weighing milk at home; no studies reported any statistically significant differences between the groups.

**Authors’ conclusions**
Kangaroo care, early discharge with 24/7 lactation support and peer counselling were effective for promoting breastfeeding outcomes in healthy preterm infants. Mothers were satisfied with the continuation of lactation support and follow-up. Weight monitoring after discharge and home milk intake measurement should be encouraged.

**CRD commentary**
This review clearly stated a number of research questions and specified inclusion criteria for settings, participants and outcomes. The literature search only covered two databases and was restricted to studies conducted in developed countries that were published in English. No attempts were made to locate unpublished studies. These restrictions meant there was a risk of language and publication biases. It was not reported whether review methods such as study selection, validity assessment and data extraction were performed by more than one person to reduce errors or bias. Results were reported on a study-by-study basis, which seemed appropriate given the different interventions and outcomes. Due to the lack of detail about the review methods and the brief reporting of the study results, the authors’ conclusions need to be reviewed with caution.

**Implications of the review for practice and research**
**Practice:** The authors stated that weight monitoring after discharge and measuring milk intake at home should be encouraged as they appeared to ensure feeding adequacy and enhance maternal satisfaction.

**Research:** The authors stated that more research was needed to examine the effect of these interventions on long-term or a longer duration of breastfeeding.

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