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[Intervention Review]

Early additional food and fluids for healthy breastfed full-term infants

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ABSTRACT

Background

Health organisations recommend exclusive breastfeeding for six months. However, the addition of other fluids or foods before six months is common in many countries. Recently, research has suggested that introducing solid food at around four months of age while the baby continues to breastfeed is more protective against developing food allergies compared to exclusive breastfeeding for six months. Other studies have shown that the risks associated with non-exclusive breastfeeding are dependent on the type of additional food or fluid given. Given this background we felt it was important to update the previous version of this review to incorporate the latest findings from studies examining exclusive compared to non-exclusive breastfeeding.

Objectives

To assess the benefits and harms of additional food or fluid for full-term healthy breastfeeding infants and to examine the timing and type of additional food or fluid.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (1 March 2016) and reference lists of all relevant retrieved papers.

Selection criteria

Randomised or quasi-randomised controlled trials in infants under six months of age comparing exclusive breastfeeding versus breastfeeding with any additional food or fluids.

Data collection and analysis

Two review authors independently assessed trials for inclusion and risk of bias, extracted data and checked them for accuracy. Two review authors assessed the quality of the evidence using the GRADE approach.

Main results

We included 11 trials (2542 randomised infants/mothers). Nine trials (2226 analysed) provided data on outcomes of interest to this review. The variation in outcome measures and time points made it difficult to pool results from trials. Data could only be combined in a meta-analysis for one primary (breastfeeding duration) and one secondary (weight change) outcome. None of the trials reported on physiological jaundice. Infant mortality was only reported in one trial.

For the majority of older trials, the description of study methods was inadequate to assess the risk of bias. Most studies that we could assess showed a high risk of other biases and over half were at high risk of selection bias.

Providing breastfeeding infants with artificial milk, compared to exclusive breastfeeding, did not affect rates of breastfeeding at hospital discharge (risk ratio (RR) 1.02, 95% confidence interval (CI) 0.97 to 1.08; one trial, 100 infants; *low-quality evidence*). At three months, breastfeeding infants who were provided with artificial milk had higher rates of any breastfeeding compared to exclusively breastfeeding infants (RR 1.21, 95% CI 1.05 to 1.41; two trials, 137 infants; *low-quality evidence*). Infants who were given artificial milk in the first few days after birth before breastfeeding, had less "obvious or probable symptoms" of allergy compared to exclusively breastfeeding infants (RR 0.56, 95% CI 0.35 to 0.91; one trial, 207 infants; *very low-quality evidence*). No difference was found in maternal confidence when comparing non-exclusive breastfeeding infants who were provided with artificial milk with exclusive breastfeeding infants (mean difference (MD) 0.10, 95% CI -0.34 to 0.54; one study, 39 infants; *low-quality evidence*). Rates of breastfeeding were lower in the non-exclusive breastfeeding group compared to the exclusive breastfeeding group at four, eight, 12 (RR 0.68, 95% CI 0.53 to 0.87; one trial, 170 infants; *low-quality evidence*), 16 and 20 weeks.

The addition of glucose water resulted in fewer episodes of hypoglycaemia (below 2.2 mmol/L) compared to the exclusive breastfeeding group, reported at 12 hours (RR 0.07, 95% CI 0.00 to 1.20; one trial, 170 infants; *very low-quality evidence*), but no significant difference at 24 hours (RR 1.57, 95% CI 0.27 to 9.17; one trial, 170 infants; *very low-quality evidence*). Weight loss was lower for infants who received additional glucose water (one trial, 170 infants) at six, 12, 24 and 48 hours of life (MD -32.50 g, 95% CI -52.09 to -12.91; *low-quality evidence*) compared to the exclusively breastfeeding infants but no difference between groups was observed at 72 hours of life (MD 3.00 g, 95% CI -20.83 to 26.83; *very low-quality evidence*). In another trial with the water and glucose water arms combined (one trial, 47 infants), we found no significant difference in weight loss between the additional fluid group and the exclusively breastfeeding group on either day three or day five (MD -1.03%, 95% CI -2.24 to 0.18; *very low-quality evidence*) and (MD -0.20%, 95% CI -0.86 to 0.46; *very low-quality evidence*).

Infant mortality was reported in one trial with no deaths occurring in either group (1162 infants). The early introduction of potentially allergenic foods, compared to exclusively breastfeeding, did not reduce the risk of "food allergy" to one or more of these foods between one to three years of age (RR 0.80, 95% CI 0.51 to 1.25; 1162 children), visible eczema at 12 months stratified by visible eczema at enrolment (RR 0.86, 95% CI 0.51 to 1.44; 284 children), or food protein-induced enterocolitis syndrome reactions (RR 2.00, 95% CI 0.18 to 22.04; 1303 children) (*all moderate-quality evidence*). Breastfeeding infants receiving additional foods from four months showed no difference in infant weight gain (g) from 16 to 26 weeks compared to exclusive breastfeeding to six months (MD -39.48, 95% CI -128.43 to 49.48; two trials, 260 children; *low-quality evidence*) or weight z-scores (MD -0.01, 95% CI -0.15 to 0.13; one trial, 100 children; *moderate-quality evidence*).

Authors' conclusions

We found no evidence of benefit to newborn infants on the duration of breastfeeding from the brief use of additional water or glucose water. The quality of the evidence on formula supplementation was insufficient to suggest a change in practice away from exclusive breastfeeding. For infants at four to six months, we found no evidence of benefit from additional foods nor any risks related to morbidity or weight change. The majority of studies showed high risk of other bias and most outcomes were based on low-quality evidence which meant that we were unable to fully assess the benefits or harms of supplementation or to determine the impact from timing and type of supplementation.

We found no evidence to disagree with the current international recommendation that healthy infants exclusively breastfeed for the first six months.

PLAIN LANGUAGE SUMMARY

Early additional food and fluids for healthy breastfed full-term infants

What is the issue?

Internationally, exclusive breastfeeding for the first six months of life is recommended but the practice of giving breastfeeding infants other fluids and/or foods before six months is common in many countries and communities.

Why is this important?

Given that many infants are not exclusively breastfeeding for six months it is important to examine the possible benefits or risks associated with giving breastfeeding infants liquids other than breastmilk or complementary food in the first six months after birth.

What evidence did we find?

This review includes 11 randomised controlled trials involving 2542 infants.

Giving babies small amounts of artificial milk for a few days after birth in addition to breastfeeding did not effect the number of infants with any breastfeeding at hospital discharge though did slightly increase the likelihood of any breastfeeding at three months of age. There was no difference in the level of maternal confidence between the groups. The use of artificial milk before breastfeeding had a slight protective effect against allergy symptoms at 18 months of age compared to exclusive breastfeeding, however the trial did not perform diagnostic challenges or other tests to confirm the allergy symptoms noticed and thus requires caution in interpretation.

The likelihood of infants continuing to breastfeed was higher in the exclusive breastfeeding group than the group provided with additional water or glucose water in the first few days after birth. There was no evidence of benefit related to glucose levels, temperature, weight loss to breastfeeding newborn infants who were given additional water or glucose water.

Breastfeeding infants receiving complementary foods at four to six months did not show reduced risk of food allergy, eczema, or food protein-induced enterocolitis syndrome reactions. There was no difference between the early complementary foods and the exclusive breastfeeding groups for the percentage of days of cough, congestion, nasal discharge and hoarseness, fever, iron deficiency or weight gain.

What does this mean?

This review did not find sufficient evidence for disagreement with the recommendation of the World Health Organization and other international health organisations that as a general policy exclusive breastfeeding, without additional foods or fluids, should be recommended for the first six months after birth.