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[Intervention Review]

Non-nutritive sucking for promoting physiologic stability and nutrition in preterm infants

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ABSTRACT

Background

Non-nutritive sucking is used during gavage feeding and in the transition from gavage to breast/bottle feeding in preterm infants to promote the development of sucking behaviour and improve digestion of enteral feedings.

Objectives

To determine whether non-nutritive sucking (NNS) in preterm infants influences: a) weight gain, b) energy intake, c) heart rate, d) oxygen saturation, e) length of hospital stay, f) intestinal transit time, g) age at full oral feeds, or h) any other clinically relevant outcomes.

Search methods

MEDLINE and CINAHL databases back to 1976 and the Cochrane Central Register of Controlled Trials (CENTRAL, The Cochrane Library, Issue 1, 2005) were searched.

Updated search in March 2010 included MEDLINE (search via PubMed), CINAHL, EMBASE and CENTRAL (*The Cochrane Library*).

Selection criteria

All trials utilizing experimental or quasi-experimental designs in which non-nutritive sucking in preterm infants was compared to no provision of non-nutritive sucking were eligible for the review.

Data collection and analysis

Data were extracted independently by the two authors. No subgroup analyses were performed because of the small number of studies related to the relevant outcomes.

Main results

This review consisted of 21 studies, 15 of which were randomized controlled trials. NNS was found to decrease significantly the length of hospital stay in preterm infants. The review did not reveal a consistent benefit of NNS with respect to other major clinical variables (weight gain, energy intake, heart rate, oxygen saturation, intestinal transit time, age at full oral feeds and behavioral state). The review identified other positive clinical outcomes of NNS: transition from tube to bottle feeds and better bottle feeding performance. No negative outcomes were reported in any of the studies.

Authors' conclusions

This review found a significant decrease in length of stay in preterm infants receiving a NNS intervention. The review did not reveal a consistent benefit of NNS with respect to other major clinical variables (weight gain, energy intake, heart rate, oxygen saturation, intestinal transit time, age at full oral feeds and behavioral state).

The review identified other positive clinical outcomes of NNS: transition from tube to bottle feeds and better bottle feeding performance. No negative outcomes were reported in any of the studies. There were also a number of limitations of the presently available evidence related to the design of the studies, outcome variability, and lack of long-term data. Based on the available evidence, NNS in preterm infants would appear to have some clinical benefit. It does not appear to have any short-term negative effects.

PLAIN LANGUAGE SUMMARY

Non-nutritive sucking for promoting physiologic stability and nutrition in preterm infants

An infant born prematurely may be fed through a tube into the stomach, so is often given a pacifier to suck on to improve nutrition. An infant needs coordinated sucking, swallowing and breathing to feed. The ability to suck and to swallow is present by 28 weeks gestation, but infants are not fully coordinated until 32 to 34 weeks. This means that preterm infants less than 32 weeks gestation are usually not able to feed effectively from the breast or a bottle. They are fed by a small tube that is placed up the nose into the stomach (gavage feeding). Sucking on a pacifier (non-nutritive sucking) during gavage feeding may encourage the development of sucking behaviour and improve digestion of the feeding. Non-nutritive sucking may also have a calming effect on infants, although it does have the potential to interfere with breastfeeding. The authors searched the medical literature and found 21 studies, 15 were randomized controlled trials and six were non-randomized. The total number of infants in each study ranged from 10 to 59. Weight gain was similar with and without use of a pacifier. Preterm infants with pacifiers did not stay in hospital as long as those without and hospital costs were less (two studies). These infants showed less defensive behaviors during tube feedings, spent less time in fussy and active states during and after tube feedings, and settled more quickly into sleep. Their transition to full enteral (by tube or mouth) or bottle feeds (three studies) and bottle feeding performance, in general, (one study) were easier. No negative outcomes were reported.