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[Intervention Review]

Methods of milk expression for lactating women

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ABSTRACT

Background

This is an update of a 2008 Cochrane review. Breastfeeding is important. However, not all infants can feed at the breast and methods of expressing milk need evaluation.

Objectives

To assess acceptability, effectiveness, safety, effect on composition, contamination and cost implications of methods of milk expression.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (20 January 2011), CINAHL (1982 to January 2011), conference proceedings, secondary references and contacted researchers.

Selection criteria

Randomised and quasi-randomised trials comparing methods at any time after birth, and crossover trials commencing at least 28 days after birth.

Data collection and analysis

Three authors independently assessed trials, extracted data and assessed risk of bias. Data were checked for accuracy.

Main results

We included 23 studies with 10 studies (632 mothers) providing data for analysis.

Mothers provided with a relaxation tape produced more milk than mothers who were not (mean difference (MD) 34.70 ml/single expression, 95% confidence interval (CI) 9.51 to 59.89, $P = 0.007$). A lower milk volume over six days was reported when comparing hand expression to the electric pump (standardised mean difference (SMD) -1.00 ml, 95% CI -1.64 to -0.36, $P = 0.002$); other studies of the same pump using different measures did not find a significant difference (12 to 36 hours postpartum SMD -0.38 cc, 95% CI -0.86 to 0.10, $P = 0.12$); day five postpartum SMD -0.62 ml/day, 95% CI -1.43 to 0.19, $P = 0.13$). No evidence of difference in volume was found with simultaneous or sequential pumping, or between manual and electric pumps studied. One study reported a higher sodium concentration in hand expressed milk compared to a manual pump (SMD 0.59 mmol/L, 95% CI 0.22 to 0.96, $P = 0.002$) and to an electric pump (SMD 0.70 mmol/L, 95% CI 0.32 to 1.09, $P = 0.0003$), and lower potassium concentration compared to a manual pump (MD -0.37 mmol/L, 95% CI 0.00 to 0.73, $P = 0.05$) or to an electric pump (SMD -0.32 mmol/L, 95% CI -0.69 to 0.06, $P = 0.10$). No evidence of difference was found for energy content, milk contamination or adverse effects. Reports of maternal views were not comparable. Economic aspects were not reported.

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Authors' conclusions

The most suitable method for milk expression may depend on the time since birth, purpose of expression and the individual mother and infant. Low cost interventions including early initiation when not feeding at the breast, relaxation, hand expression and lower cost pumps may be as effective, or more effective, than large electric pumps for some outcomes. Small sample sizes, large standard deviations, small number of studies reviewed, and the diversity of the interventions argue caution in applying these results beyond the specific method tested in the specific settings.

PLAIN LANGUAGE SUMMARY

Methods of milk expression for lactating women

Babies who do not receive human milk are more likely to suffer health problems as newborns and later. Not all babies are able to feed at the breast because they are premature, ill or separated from their mothers; thus expressed milk is needed. Mothers may express milk for their own comfort, to increase supply, or to leave milk for their baby. This updated review includes 23 randomised controlled studies with 10 (632 mothers) providing data for analysis. It includes mothers of infants in neonatal units in the USA, UK, Malaysia, Brazil, Egypt, Kenya and Nigeria, as well as term infants in the USA and UK. A greater milk volume was associated with providing a relaxation tape (one study), and when the mothers made an earlier start after birth of expressing milk for an infant unable to breastfeed. In another study, a large electric pump provided a greater mean volume of milk than hand expression over six days in the first two weeks after birth, though a greater volume was not found in two other studies of the same pump looking at 12 to 36 hours postpartum or on day five. No difference in volume was evident between the manual and electric pumps studied or with single versus double pumping. Sodium concentration was found to be higher in hand expressed milk, which may be important for preterm infants. Any milk contamination was similar comparing hand-expressed and pumped milk, and the level of maternal breast or nipple pain was no different between methods. All studies were small and results may not apply to pumps other than those tested or in different situations. No study asked mothers if they had achieved their own goals for expressing. None of the studies examined costs involved with methods. Twelve of the 18 studies that evaluated pumps or products had support from the manufacturers. The available evidence indicates that low-cost measures such as early initiation of expressing for an infant unable to breastfeed, relaxation, hand expression, and lower cost pumps may be as effective, or more effective, than large electric pumps for some outcomes. Not all the studies mentioned whether basic supports were provided, particularly for mothers with hospitalised children, including access to food and fluid, a place to rest near their baby, and the availability of knowledgeable health workers. These supports could affect milk expression.