

Effectiveness of breast massage in the treatment of women with breastfeeding problems: a systematic review protocol

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Review question/objective: The aim is to identify the effectiveness of breast massage in the treatment of women with breastfeeding problems. The objectives are to identify if breast massage has been shown to:

1. Improve pain associated with engorgement and mastitis
2. Increase milk supply
3. Resolve blocked ducts that are restricting milk flow.

Keywords Breastfeeding; breastfeeding problems; lactation; nursing; postpartum women

Background

The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life.¹ The epidemiologic evidence is now clear that, even in developed countries, breastfeeding protects babies against gastroenteritis, respiratory and ear infections, urinary tract infections, allergies, diabetes mellitus, sudden infant death syndrome, necrotizing enterocolitis in premature babies, obesity and increases intelligence quotient.^{1–4} The health benefits of breastfeeding for women are also well documented and include lactation amenorrhea, faster return to pre-pregnancy body weight, possible protection against osteoporosis, and protection against ovarian, breast and uterine cancer.^{5,6} Human milk represents the gold standard for providing protective nutrients for a newborn adjusting to an extra-uterine existence.⁷

In Australia, according to the 2010 Australian National Infant Feeding Survey,⁸ 96% of infants began breastfeeding, yet by one month of age only 61% were exclusively breastfeeding and the rate steadily declined to 15% at six months of age. The United States has a comparable rate of exclusive breastfeeding at 6 months of age of just over 18%.⁹

Exclusive breastfeeding is defined as no other food or drink, except breast milk for 6 months of life, but allows the infant to receive oral rehydration salts, drops and syrups (vitamins, minerals and medicines).¹

A report on the inquiry into the health benefits of breastfeeding states that early weaning has been estimated to cost the Australian healthcare system a staggering \$60–\$120 million a year in hospitalization and ongoing healthcare costs for babies.¹⁰ Research into why women wean has been conducted in many studies and breastfeeding problems, such as sore nipples, poor sucking technique, perceived insufficient milk supply, breast engorgement and mastitis are reported to contribute to early weaning.^{11–13} Treatment methods to support women through these problems are imperative for the health of our society.

Evidence by Bergmann *et al.*¹⁴ found, in a cohort of 556 mothers who birthed in Perth, Western Australia, that 80% declared they had experienced one or more problems related to breastfeeding, as described above. In the first month, Bergmann *et al.*¹⁴ found the most frequently self-reported reasons for weaning were trouble sucking and latching on, sore, cracked nipples, painful breasts and overfull or engorged breasts. Common breastfeeding problems as defined in the literature are nipple/breast pain, low milk supply (perceived or actual), blocked ducts, engorgement, mastitis, breast abscess, and anatomy problems (mother/baby).^{12,14–16}

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Breast massage is widely used throughout the world as a treatment of breastfeeding problems.¹⁷ For example, the Oketani breast massage technique used a pre-test/post-test design for postpartum mothers complaining of breast pain, which resulted in a significant decrease in breast pain and increase in breast milk supply.¹⁸ Breast massage has been used with success in both the support of breastfeeding women and the treatment of common breastfeeding difficulties.¹⁷

There are many techniques used for breast massage that are documented, including the Oketani Lactation Management, the Gua Sha Therapy, the Marmet Technique and general massage of breast tissue to relieve blocked ducts by massaging toward the nipple.^{17–20} However, these techniques have not been systematically reviewed and their benefit is not widely recognized worldwide. Some individual studies of breast massage discuss results on resolving blocked ducts, increasing milk supply, reducing breast pain, reducing breast engorgement and increasing the pH of breast milk to aid in the growth and development of the infant.^{17,19–21}

Individual studies investigating interventions for the management of breast engorgement found insufficient or inconclusive results. Furthermore, in most studies, the women in both groups received advice on multiple interventions, including massage, that may each affect the outcomes.²² Interventions for preventing mastitis after childbirth showed insufficient evidence to recommend treatment and found studies were small and poor in methodological quality; therefore they were unable to address the question of effectiveness.¹³

An initial search of Cochrane, *JBI Database of Systematic Reviews and Implementation Reports*, CINAHL and MEDLINE databases found no completed systematic review evaluating the effectiveness of breast massage in the treatment of women with breastfeeding problems. This systematic review will look at randomized controlled trials, non-randomized controlled trials, before and after studies, case-control studies and cohort studies. These studies will be considered for inclusion to enable the identification of the current best evidence in assessing breast massage as an intervention for improving pain associated with engorgement and mastitis, increasing milk supply and treating blocked ducts that restrict milk flow.

Inclusion criteria

Types of participants

The review will consider breastfeeding women of any age and parity regardless of previous breastfeeding problems and treatments. The women included will be from any geographical location.

Types of intervention(s)/phenomena of interest

This review will consider studies that evaluate breast massage as an intervention for women with breastfeeding problems related to milk supply, mastitis, engorgement and blocked ducts. Breast massage encompasses, but is not limited to, gentle tactile stimulation of mammary and nipple tissue before, during and after feeds, and may include massaging toward the nipple, axillae and incorporate localized massage over areas of need.^{19,23–25} Comparators will include, but are not limited to, the usual care provided to women with breastfeeding problems as defined by the study. For example, feeding more frequently, reverse pressure softening, hand expressing, pumping and cool or warm compresses.

Outcomes

Primary outcomes

This review will consider studies that include the following outcomes:

- Breast milk supply
- Pain
- Blocked ducts
- Engorgement
- Mastitis

Measurement of primary outcomes

Only studies that used a validated tool/measure to measure outcomes will be included in the review. For example, tools for measuring breast milk supply outcomes may include: breastmilk quantity using test weighing of baby before and after a feed and measured expressed milk volumes from an electric breast pump.²⁶ For pain outcome measures may include: unidimensional pain scales such as the Numerical Rating Scale, Verbal Rating Scale or Visual Analogue Scale, which are recommended for assessment of pain intensity.²⁷

Clearing of blocked ducts has been measured in an observational study of 3497 lactating women with plugged ducts. The response to the treatment was graded as I (complete resolution), II (marked

improvement), III (improvement) or IV (no response).²⁸ This systematic review will look at resolution of plugged ducts in the same way. Furthermore, blocked ducts, breast engorgement and mastitis systematic reviews use ratings of pain, hardness and swelling as a measure of effectiveness of interventions.^{13,14,28}

Secondary outcome

Secondary outcome of interest will include the duration of breastfeeding.

Types of studies

This review will consider both experimental and epidemiological study designs, including randomized controlled trials, non-randomized controlled trials, quasi-experimental, before and after studies, prospective and retrospective cohort studies and analytical cross-sectional studies.

Search strategy

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by analysis of the text words contained in the title and abstract and the index terms used to describe the article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Third, the reference list of all identified reports and articles will be searched for additional studies.

Studies published in English and Japanese will be considered for inclusion in this review. Studies published in Japanese will be included to capture the Oketani Lactation Management breast massage, which originated in Japan.^{18,21} Mater Health Services interpreter service will be employed to translate Japanese articles into English. Studies published from 1980 to December 2015 will be considered for inclusion in this review. This time period was chosen as breast massage research began to be published in the early 1980s following the inception of the Oketani Lactation Management breast massage in Japan.

The databases to be searched include:

PubMed
CINAHL
Web of Science

EMBASE

MIDIRS

SCOPUS

AMED – Allied and Complimentary Medicine Database

Cochrane Central Trials Register

The search for unpublished studies will include:
Cochrane Pregnancy and Childbirth Group's Trials Register

Clinical trials.gov

NHS Research Register

ProQuest Dissertations and Theses Database

Google Scholar

Initial keywords to be used will be: breastfeeding or breastfed or breastfeed or breast-fed or breastfeeding or breast-feed or “breast feed” or “breast fed” or nursing or lactation or lactat*. Other initial keywords may include, but are not limited to; postpartum women, women or mothers or mum or mom, breast massage, breastfeeding problems, breastfeeding complications, lactation disorders, mastitis or abscess or breast infection or sepsis, engorgement or inflammation, blocked ducts or lumps, low supply or poor supply, human milk, relief, treatment, therapy, duration of breastfeeding, nipple pain or trauma.

Assessment of methodological quality

Articles selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Meta-Analysis of Statistics Assessment and Review Instrument (JBI-MASARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion or with a third reviewer.

Data extraction

Data will be extracted from articles included in the review using the standardized data extraction tool from JBI-MASARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives.

Data synthesis

Quantitative data will, wherever possible, be pooled in statistical meta-analysis using RevMan (v5.3). All results will be subject to double data entry. Effect sizes

expressed as odds ratio (for categorical data) and weighted mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be statistically assessed using the standard χ^2 and I^2 and also explored using subgroup analyses based on the different study designs included in this review. Where statistical pooling is not possible the findings will be presented in narrative form, including tables and figures to aid in data presentation, wherever appropriate.

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Appendix I: Appraisal instruments
MAStARI appraisal instrument

JBI Critical Appraisal Checklist for Randomised Control / Pseudo-randomised Trial

Reviewer Date

Author Year Record Number

	Yes	No	Unclear	Not Applicable
1. Was the assignment to treatment groups truly random?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Were participants blinded to treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Was allocation to treatment groups concealed from the allocator?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Were the outcomes of people who withdrew described and included in the analysis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Were those assessing outcomes blind to the treatment allocation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Were the control and treatment groups comparable at entry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Were groups treated identically other than for the named interventions?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Were outcomes measured in the same way for all groups?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Were outcomes measured in a reliable way?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Was appropriate statistical analysis used?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overall appraisal: Include Exclude Seek further info.

Comments (Including reason for exclusion)

Appendix II: Data extraction instruments
MAStARI data extraction instrument

**JBI Data Extraction Form for
Experimental / Observational Studies**

Reviewer Date

Author Year

Journal Record Number

Study Method

RCT Quasi-RCT Longitudinal
Retrospective Observational Other

Participants

Setting _____

Population _____

Sample size

Group A _____ Group B _____

Interventions

Intervention A _____

Intervention B _____

Authors Conclusions:

Reviewers Conclusions:

Study results

Dichotomous data

Outcome	Intervention () number / total number	Intervention () number / total number

Continuous data

Outcome	Intervention () number / total number	Intervention () number / total number