

Systematic Review of the Literature on Postpartum Care: Methodology and Literature Search Results

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ABSTRACT: Background: *The postpartum period is a time for multiple clinical interventions. To date, no critical review of these interventions exists. This systematic review examined evidence for the effectiveness of postpartum interventions that have been reported in the literature. Methods:* MEDLINE, Cinahl, PsycINFO, and the Cochrane Library were searched for randomized controlled trials of interventions initiated from immediately after birth to 1 year in postnatal women that were conducted in North America, Europe, Australia, or New Zealand. The initial literature search was done in 1999, using postpartum content search terms, and was enhanced in 2003. In both years, bibliographic databases were searched from their inception. Studies were categorized into key topic areas. Data extraction forms were developed and completed for each study, and the quality of each study was systematically reviewed. Groups of studies in a topic area were reviewed together, and clinically relevant questions emanating from the studies were identified to determine whether the studies, alone or together, provided evidence to support the clinical intervention. **Results:** *In the 1999 search, of 671 studies identified, 140 studies were randomized controlled trials that met the selection criteria: 41 studies related to breastfeeding, 33 to postpartum perineal pain management, and 63 to 11 other key topic areas (Papanicolaou test, rubella immunization, contraception, postpartum support, early discharge, postpartum depression and anxiety, postpartum medical disorders, smoking cessation, nutrition supplements other than breastfeeding, effects of pelvic floor exercise, and effects of early newborn contact). The results of the systematic review of each topic will be summarized in separate papers as they are completed. Conclusions:* *This systematic search has identified key topic areas in postpartum care for which randomized controlled trials have been conducted. Our ultimate goal is to provide evidence-based guidelines on the use of routine postpartum interventions. (BIRTH 31:3 September 2004)*

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The postpartum period is a time of tremendous emotional and physical change for most women as they adapt to new roles and alteration in their physiology. It thus provides the opportunity for multiple health promotion strategies and interventions in areas such as postpartum depression, breastfeeding, smoking cessation, sexuality, and bladder dysfunction (1,2). During the postpartum period, health care providers routinely see women at 6 weeks postpartum, although no evidence exists to support the timing or content of such practice. Recently, authors have called this tradition into question (3,4). Our group is currently conducting a systematic review of the randomized controlled trials literature on postpartum care, with the goal of developing evidence-based guidelines. Although guides on postpartum care have been written (2,5), they are not based on a systematic review of randomized controlled trials. The present paper focuses on the methodology and process of the review, and results of the literature searches for 1999.

Methods

The global review question for the study was as follows: From a review of the published randomized controlled trial literature, what is the evidence for recommending routine postpartum interventions in women beginning immediately after birth for up to 1 year? The literature was searched initially in 1999 and then enhanced in January 2003.

1999 Literature Searches

In 1999 the following databases were searched: MEDLINE (1966 to June 1999), *Cumulative Index to Nursing and Allied Health* (CINAHL) (1982 to July 1999), PsycINFO (1967 to September 1999), and the Cochrane Register of Randomized Controlled Trials (Issue 3, 1999). Search terms, which were selected from the literature and expert opinion, included methodologic terms, broad postpartum terms, and some specific well-defined key terms related to postpartum clinical areas. The broad postpartum terms included puerperium, puerperal disorders, postnatal care, postpartum or postnatal period, and maternal care. All search strategies are summarized in Tables 1, 2, and 3. Additional studies were identified by updating our electronic searches, and by hand searching bibliographies of published papers. Grey literature, such as unpublished studies or those listed on the worldwide web, and ongoing trials were not identified.

Three clinicians and one methodologist reviewed the identified studies and systematically assessed the

Table 1. Search Strategy Used for MEDLINE Database (1966 to June 1999)

Search Terms	Number of Retrievals
1 exp puerperium/	25368
2 maternal welfare/	1362
3 maternal health services/	4666
4 exp puerperal disorders/dh, dt, pc, px, rh, su, th	5250
5 postnatal care/	1511
6 breastfeeding/	11509
7 exp lactation disorders/dt, pc, px, th	1098
8 or/1-7	46979
9 limit 8 to human	30685
10 random:tw, sh, pt.	225985
11 (double\$ adj25 blind\$.tw.	49260
12 (singl\$ adj25 blind\$.tw.	7526
13 placebo:tw, sh.	66210
14 or/10-13	264512
15 9 and 14	1210
16 (postnatal or postpartum).tw.	41103
17 th.fs.	596349
18 dt.fs.	739277
19 pc.fs.	376232
20 px.fs.	243638
21 su.fs.	754666
22 dh.fs.	18502
23 or/17-22	2435228
24 16 and 23	5674
25 8 or 24	50520
26 25 and 14	2216
27 limit 26 to human	1498

Table 2. Search Strategy Used for CINAHL Database (1982 to July 1999)

Search Terms	Number of Retrievals
1 exp postnatal period/	927
2 maternal welfare/	64
3 maternal health services/	506
4 exp postnatal care/	722
5 exp breastfeeding/	2355
6 exp lactation disorders/dt, nu, pc	20
7 exp puerperal disorders/dt, nu, pc, rh, th	206
8 or/1-7	4283
9 limit 8 to English	4244
10 random:tw, sh, pt.	11669
11 (double\$ adj25 blind\$.tw.	859
12 (singl\$ adj25 blind\$.tw.	167
13 (doubl\$ adj25 blind\$.tw.	860
14 placebo:tw, sh.	1774
15 or/11-14	2158
16 9 and 15	32
17 16	32

studies based on the selection criteria. In cases where inadequate information was provided in the abstract, the full paper was reviewed to determine inclusion. Two clinicians independently assessed the clinical relevance of each study. Disagreements were resolved by discussion among the clinicians and, where necessary, by group consensus.

2003 Literature Search

In 2003 we enhanced our previous searches by using the same methodologic and broad postpartum content terms, and added the key topic-specific search terms. In 1999 we found much overlap among the studies retrieved by MEDLINE, CINAHL, and PsycINFO. Therefore, in 2003 we limited our search to MEDLINE (1966 to 2003) and the Cochrane Register of Randomized Controlled Trials (Issue 1, 2003). As a result, the search combined the best terms for optimal sensitivity results (6) for each topic area. Additional studies were also identified by using the "Related Articles" feature of Entrez-Pubmed (a powerful searching tool that retrieves studies from as far back as 1966 in MEDLINE). Abstracts of identified studies were assessed against the selection criteria by one of three clinician-methodologist pairs. In cases where inadequate information was provided in the abstract, the full paper was reviewed to determine inclusion.

Selection Criteria

To be selected for the current review, studies had to meet all of the following inclusion criteria: randomized controlled trial; intervention pertaining directly to therapy or prevention in postnatal women, and initiated within the first year after birth following the third stage of labor; measured at least one outcome in postnatal women; fully published in the English language; and conducted in Canada, the

United States, Europe, Australia, or New Zealand. We excluded studies of lactation suppression, endometritis, hypertensive disorders, postoperative analgesia after cesarean section, intrapartum interventions (interventions conducted between onset and third stage of labor), or prenatal interventions that might impact on postpartum outcomes. To focus the scope of the review, only interventions conducted in the postpartum period were included. The review was therefore limited because it was restricted to only those studies with interventions initiated after birth. It is acknowledged that in various areas of postpartum intervention, such as breastfeeding support/education and smoking cessation, intervening in the prenatal periods may have significant effectiveness.

Classification into Key Topic Areas and Data Extraction

The retrieved articles were classified into key topic areas. Our research group identified these areas to aid in the analysis and summary process. For each study within a key topic area, data were systematically extracted by one of three clinician-methodologist teams from the research group. Each team member first independently extracted data using structured forms developed by the group. Team members were trained on how to extract data and complete the forms; supplemental information sheets were prepared to provide guidance on the data extraction process. In brief, data were extracted on participant characteristics, study design and methodologic quality, intervention details, outcome measures, and results. Each team met to discuss the data extraction findings and achieve consensus for each study. Issues that were unresolved were brought to the research group for discussion and consensus.

Appraisal of Studies

Studies selected for review were appraised using the quality scale developed by Jadad et al (7). This is a validated scale that measures the likelihood of bias in clinical trials by assessing the quality of randomization, double-blinding, and inclusion of data for dropouts and withdrawals. Scores range from 0 to 5, with a score of 5 indicating superior quality of reporting. The quality score assigned for each study was confirmed by consensus between the two team members. Studies were not excluded based on their quality score. Additional quality indicators assessed included analysis done by the intention-to-treat principle, allocation concealment, and a priori power calculations.

Table 3. Search Strategy Used for PsycINFO Database (1967 to September 1999)

Search Strategy	Number of Records Retrieved
#3, #1, and #2	46
#2 (random* or double-blind* or single-blind*) and (DT = journal-article) and (LA = English)	30709
#1 (postnatal period or postpartum depression or lactation or breastfeeding) in DE, SU	3158

Clinical Relevance

Two clinician members of the research team reviewed all studies that met the selection criteria for “clinical relevance.” Some studies were designed to address obscure questions that had no clinical relevance; others tested medication that was no longer available in North America. The members discussed their concerns and reached agreement on which studies should not be included. If no agreement was reached, the studies were brought to the research group for discussion and consensus.

Identification of Clinical Questions

After reviewing the initial literature search results, the clinicians in our group identified what clinical questions the research addressed for each key topic area to guide the summary of the literature and place the study results into a clinical context. Clinical questions fell within the broader scope of our global review question. Clinically important questions that were missed in the studies or not addressed in the literature pertaining to that topic were noted for their absence.

Data Synthesis

Heterogeneity of studies retrieved in the 1999 search was apparent (e.g., varying patient populations, different interventions, and diverse outcomes, even within topic areas). This finding precluded the calculation of the Q statistic. Therefore, data were not synthesized by the method of meta-analysis.

Results

A schematic diagram of the 1999 literature search results is displayed in Fig. 1. This search identified 671 studies, of which 103 were duplicates or triplicates, leaving 568 unique studies: 237 studies were identified from Medline, 32 were identified from CINAHL, 46 were identified from PsycINFO, and 356 were identified from the Cochrane Register of Randomized Controlled Trials. The research group excluded 430 studies, leaving 138 studies that met the selection criteria.

The 138 identified papers consisted of 41 studies related to breastfeeding, 31 related to the management of postpartum perineal and uterine pain, and 66 pertaining to other areas. Of the 41 breastfeeding studies, subtopics included the nutritional content of breast milk ($n = 5$), interventions affecting breastfeeding initiation or duration ($n = 13$), maneuvers to enhance milk production ($n = 12$), management

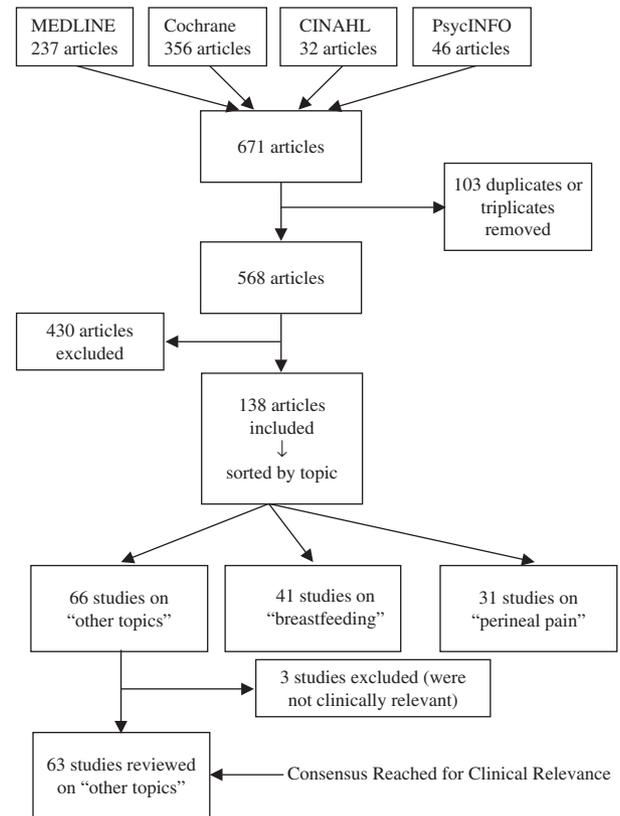


Fig. 1. Schematic diagram of literature results from the 1999 search.

of breastfeeding difficulty ($n = 7$), and the effect of exercise on breastfeeding ($n = 4$). Of the 31 perineal pain studies, subtopics included medication use for perineal pain ($n = 17$), ultrasound ($n = 2$), postpartum uterine pain management ($n = 10$), use of local spray ($n = 2$), and other topics ($n = 2$; use of cold and warm sitz baths, and use of lavender oil, respectively). For 1 study assessing medication use for perineal pain, it was unclear whether the pain was from the perineum or uterus. Three studies on postpartum perineal pain were classified as both medication use for perineal pain and postpartum uterine pain management. Of the 66 “other” studies, 3 were excluded after consensus was reached for clinical relevance. The remaining 63 studies (8–69) were grouped into 11 key topic areas as follows: Papanicolaou test, rubella immunization, contraception, postpartum support, early discharge, postpartum depression and anxiety, postpartum medical disorders, smoking cessation, nutrition supplements other than breastfeeding, effects of pelvic floor exercise, and effects of early newborn contact (Table 4). The results of the 2003 search will be presented on a topic-by-topic basis in subsequent papers.

Table 4. Topics for 63 Studies of "Other Topics" from the 1999 Search

<i>Topics</i>	<i>Number of Studies</i>	<i>References</i>
Papanicolaou test	1	8
Rubella immunization	2	35, 36
Contraception	5	30–34
Postpartum support	13	29, 58–69
Early discharge	4	54–57
Postpartum depression and anxiety	11	19–29
Postpartum medical disorders (urinary tract infections, hemorrhoids, constipation, weight loss, anemia)	10	9–18
Smoking cessation	2	41, 42
Nutrition supplements (other than breastfeeding)	4	43–46
Effects of pelvic floor exercise	4	37–40
Effect of early newborn contact	7	47–53

Discussion and Conclusions

The review included only studies with a randomized controlled trials design because of the widely accepted strengths of this methodologically rigorous approach. Although both nonrandomized and randomized prospective controlled studies have the potential to determine cause-and-effect relationships, where possible, data from randomized trials should form the basis for robust, evidence-based practice guidelines (70,71).

To increase the generalizability of the results to a Canadian primary care setting, only studies conducted in Canada, the United States, Europe, Australia, or New Zealand were eligible for inclusion. These countries were chosen because they were considered to be post-industrial with established market economies and perceived similarities in health care systems.

Strengths of the current review include the comprehensive search strategy, based on four separate databases, especially the focused, topic-oriented searches conducted when the literature search was enhanced in 2003. However, conducting such a comprehensive search made for a time- and labor-intensive process. Despite this, future reviews should still include a mechanism for conducting regular updates of the literature. Although we made every attempt to identify all relevant studies, it is acknowledged that the possibility of missing studies exists when searching in large electronic databases (72).

The current review was strengthened by the duplicate and independent assessment of studies during the literature search, study selection, and data extraction. Independent duplicate assessment of studies potentially reduces errors in applying the selection criteria, in extracting data, or in the process of summarizing the results, all of which are highly detailed and possibly subjective processes (73,74).

The Jadad scale has a number of strengths (7). It has been well developed and validated, and it is simple to use. However, it neither addresses the

clinical relevance of the questions examined in each study nor comprehensively includes important quality indicators, such as a priori power calculations, use of intention-to-treat protocols, and allocation concealment. Therefore, we collected this additional information on methodologic quality, and summarized these data in tabular format for each topic area.

The current review included only English-language studies, which was thought to increase the feasibility of the review process. This criterion was a limitation because it is possible that well-conducted studies published in another language might have been missed. In addition, we focused on interventions conducted in the postpartum period, that is, studies were restricted only to those with interventions initiated after birth. In various areas of postpartum intervention, such as breastfeeding support/education and smoking cessation, intervening in the prenatal periods may have clinical effectiveness.

In primary care settings, evidence-based practice should not be based solely on studies using the randomized controlled trials study design. For some clinically important primary care interventions, this design may not be appropriate (e.g., costs, sample size, resources required, types of interventions). Guidelines for postpartum care could take into consideration evidence generated from a broader range of study designs, including cohort studies and qualitative studies, the inclusion of which would provide a richer picture of the evidence on postpartum primary care.

The findings of this review are thought to be relevant to health care professionals involved in postpartum care in a North American primary care or similar setting. The summary of the evidence on postpartum interventions is seen to be an important and necessary step for further development of evidence-based postpartum guidelines. Separate papers on key topic areas will focus on reporting results of the clinical evidence.

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