Nonpharmacologic relief of pain during labor: systematic reviews of five methods
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Authors' objectives
To examine non-pharmacologic methods of pain relief during labour that require accommodations by hospitals and professional staff, and which have been scientifically evaluated for their effectiveness in reducing pain.

Searching
PsycINFO, CINAHL, PubMed, the Cochrane Controlled Trials Register, AMED and MIDIRS were searched for relevant studies published in the English language between 1950 and 2001. The search terms were reported in the paper. Books, personal files and the references of retrieved articles were also searched. Personal communications, abstracts and unpublished theses were also included if there was sufficient information about the study design to judge the quality of it.

Study selection
Study designs of evaluations included in the review
Prospective controlled studies were eligible for inclusion. The review included randomised controlled trials (RCTs) with concealed allocation, quasi-experimental studies (without randomisation and/or concealed allocation) and prospective controlled observational studies (single-case design using patients as their own controls, before-and-after, and cohort studies). Published and unpublished studies were eligible for inclusion.

Specific interventions included in the review
Any studies that evaluated pain relief methods that required accommodations by the birth setting were eligible for inclusion in the review. The specific interventions evaluated were labour support in North America (9 studies), baths (9 studies), movement and positioning (14 studies), touch and massage (2 studies) and intradermal water blocks (4 studies). The control was usual care. In the studies which evaluated labour support, support was provided by trained lay people (5 studies), staff nurses or retired nurses (2 studies), or the source of support was not specified (2 studies).

Participants included in the review
Studies that assessed women in any or all of the stages of labour were eligible for inclusion.

Outcomes assessed in the review
Studies that reported pain-related outcomes were eligible for inclusion.

The primary pain-related outcomes reported in the review were maternal assessments of pain and use of analgesic medications. The review also secondarily evaluated other pain-related outcomes such as obstetric interventions (oxytocin use, instrumental delivery, perineal condition and Caesarean delivery), duration of labour and maternal satisfaction.

How were decisions on the relevance of primary studies made?
One reviewer assessed each of the retrieved articles to determine whether it met the basic criterion of being a prospective controlled study.

Assessment of study quality
The quality of the studies was evaluated according to the criteria specified in the Centre for Reviews and Dissemination guidelines and the Cochrane Reviewers Handbook (see Other Publications of Related Interest nos.1-2). Two reviewers evaluated the quality of each study. The authors did not state whether this was undertaken independently, or how any discrepancies were resolved.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. The data extracted included study setting, groups and interventions, entry criteria, outcome measures and results.

Methods of synthesis
How were the studies combined?
The studies were combined narratively, grouped by intervention type and the outcome measures assessed. Publication bias was not assessed.

How were differences between studies investigated?
Differences between the studies were discussed in relation to the sample size, methodological quality of the study, and differences in the populations studied (e.g. social class, parity) and interventions (e.g. timing).

Results of the review
Thirty-eight studies (total n=10,344) were included: 36 RCTs and 2 prospective cohort studies. Nine RCTs assessed labour support (n=3,396), 7 RCTs and 2 prospective cohort studies assessed baths (n=3,506), 14 RCTs assessed positioning and movement (n=2,873), 2 RCTS assessed touch and massage (n=118), and 4 RCTs assessed sterile water injections in the lumbosacral area (n=451).

Labour support: continuous labour support by a trained layperson, but not nurses, provides relief of pain and improves other outcomes (epidural rates, postpartum assessment of birth experience). The results suggested that early labour support (beginning with active labour or before) may be more effective than later support. The effects were greater for low-income women who are not accompanied by a loved one than among middle-class women who are accompanied by a loved one.

Baths: bathing during active labour temporarily reduces labour pain, but the results for the effects of bathing on the use of systemic and epidural analgesia were mixed. Bathing is safe and most effective if the water temperature does not exceed body temperature, and if the bath is withheld until after 5 cm cervical dilation. Movement and positioning: no trials have compared a policy of freedom to move spontaneously with restriction to a labour bed. However, the predominant use of upright positions in stage I and squatting during stage II may speed labour and increase maternal comfort, at least for low-risk women in spontaneous labour.

Touch and massage: these interventions have not undergone sufficient scientific study to provide clear conclusions about the benefits and risks. It appears that a reassuring touch by a nurse and massage during labour may relieve pain, reduce anxiety and enhance labour progress with no identified risks. Intradermal water blocks: well-designed RCTs consistently demonstrated a significant reduction in back pain during labour from injections into the skin overlying the sacrum, but most studies were not designed with sufficient power to assess other outcomes. Maternal satisfaction with the method varied.

Authors' conclusions
Despite the need for further research, enough is known about the five simple methods reviewed to recognise that labouring women should have both the opportunity and the encouragement from staff to use them. They are safe, effective and satisfying for many women, but are generally unavailable or underutilised because of almost total reliance on a limited variety of pharmacologic methods for pain relief.

CRD commentary
This was a reasonably well-conducted review in which the authors addressed a clear review question. The eligible study designs, interventions and outcome measures were clearly stated. The literature search was thorough, but was restricted to English language studies. This means that a language bias may have influenced the results of the review. The authors only assessed labour support in North America, thus the results for that particular intervention may not be applicable to
countries where maternity support services differ. The authors independently assessed the studies for validity and discussed how differences in the results between studies may be influenced by the study design. The authors did not state a method for data extraction, therefore the potential for errors and bias cannot be assessed.

There was adequate information of the included primary studies to allow the reader to fully assess the review's results. A narrative synthesis was appropriate and possible reasons for differences between the studies were explored. The authors' conclusions follow from the evidence reviewed. Information about the setting, intervention, control and population in the included studies was provided, which should enable readers to assess how applicable the findings are to their own circumstances.

Implications of the review for practice and research
Practice: The authors stated that to effectively incorporate these methods into maternity care, hospitals and caregivers will need to make allowances and alterations in their usual care. In particular:

- appropriate equipment should be made available, such as bathtubs, equipment for sterile water injections, areas where women can walk, side rails along the walls to lean on, rocking and straight chairs, birth balls, stools, and other positioning aids, telemetry units and rolling IV poles;
- policies should be developed that allow women to be out of bed, utilise intermittent instead of continuous foetal monitoring, welcome trained doulas to provide continuous labour support, and ensure safe and appropriate use of the bath;
- maternity staff should be trained to ensure that they are skilled, knowledgeable, and open-minded to the safe and appropriate use of these techniques by women.

Research: The authors stated that further well-designed randomised controlled studies are needed to evaluate all of the interventions and to evaluate the cost-effectiveness of such provisions.

Bibliographic details

PubMedID
12011879

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Analgesia, Obstetrical /methods; Back Pain /therapy; Female; Humans; Movement; Posture; Pregnancy; Randomized Controlled Trials as Topic

AccessionNumber
12002008323
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.