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Continuous support for women during childbirth (Review)

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[Intervention Review]

Continuous support for women during childbirth

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ABSTRACT

Background

Historically, women have been attended and supported by other women during labour. However, in hospitals worldwide, continuous support during labour has become the exception rather than the routine.

Objectives

Primary: to assess the effects of continuous, one-to-one intrapartum support compared with usual care. Secondary: to determine whether the effects of continuous support are influenced by: (1) routine practices and policies; (2) the provider's relationship to the hospital and to the woman; and (3) timing of onset.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (31 May 2013).

Selection criteria

All published and unpublished randomised controlled trials comparing continuous support during labour with usual care.

Data collection and analysis

We used standard methods of The Cochrane Collaboration Pregnancy and Childbirth Group. Two review authors independently evaluated methodological quality and extracted the data. We sought additional information from the trial authors. We used random-effects analyses for comparisons in which high heterogeneity was present, and we reported results using the average risk ratio (RR) for categorical data and mean difference (MD) for continuous data.

Main results

Twenty-two trials involving 15,288 women met inclusion criteria and provided usable outcome data. Results are of random-effects analyses, unless otherwise noted. Women allocated to continuous support were more likely to have a spontaneous vaginal birth (RR 1.08, 95% confidence interval (CI) 1.04 to 1.12) and less likely to have intrapartum analgesia (RR 0.90, 95% CI 0.84 to 0.96) or to report dissatisfaction (RR 0.69, 95% CI 0.59 to 0.79). In addition, their labours were shorter (MD -0.58 hours, 95% CI -0.85 to -0.31), they were less likely to have a caesarean (RR 0.78, 95% CI 0.67 to 0.91) or instrumental vaginal birth (fixed-effect, RR 0.90, 95%

CI 0.85 to 0.96), regional analgesia (RR 0.93, 95% CI 0.88 to 0.99), or a baby with a low five-minute Apgar score (fixed-effect, RR 0.69, 95% CI 0.50 to 0.95). There was no apparent impact on other intrapartum interventions, maternal or neonatal complications, or breastfeeding. Subgroup analyses suggested that continuous support was most effective when the provider was neither part of the hospital staff nor the woman's social network, and in settings in which epidural analgesia was not routinely available. No conclusions could be drawn about the timing of onset of continuous support.

Authors' conclusions

Continuous support during labour has clinically meaningful benefits for women and infants and no known harm. All women should have support throughout labour and birth.

PLAIN LANGUAGE SUMMARY

Continuous support for women during childbirth

Continuous support in labour increased the chance of a spontaneous vaginal birth, had no harm, and women were more satisfied.

Historically women have been attended and supported by other women during labour and birth. However in many countries, as more women are giving birth in hospital rather than at home, continuous support during labour has become the exception rather than the norm. This may contribute to the dehumanisation of women's childbirth experiences. Modern obstetric care frequently subjects women to institutional routines, which may have adverse effects on the progress of labour. Supportive care during labour may involve emotional support, comfort measures, information and advocacy. These may enhance physiologic labour processes as well as women's feelings of control and competence, and thus reduce the need for obstetric intervention. The review of studies included 23 trials (22 providing data), from 16 countries, involving more than 15,000 women in a wide range of settings and circumstances. The continuous support was provided either by hospital staff (such as nurses or midwives), women who were not hospital employees and had no personal relationship to the labouring woman (such as doulas or women who were provided with a modest amount of guidance), or by companions of the woman's choice from her social network (such as her husband, partner, mother, or friend). Women who received continuous labour support were more likely to give birth 'spontaneously', i.e. give birth with neither caesarean nor vacuum nor forceps. In addition, women were less likely to use pain medications, were more likely to be satisfied, and had slightly shorter labours. Their babies were less likely to have low five-minute Apgar scores. No adverse effects were identified. We conclude that all women should have continuous support during labour. Continuous support from a person who is present solely to provide support, is not a member of the woman's social network, is experienced in providing labour support, and has at least a modest amount of training, appears to be most beneficial. In comparison with having no companion during labour, support from a chosen family member or friend appears to increase women's satisfaction with their childbearing experience.

BACKGROUND

The first version of this Cochrane review was published in 1995 (Hodnett 2003), when the first systematic reviews in The Cochrane Collaboration Pregnancy and Childbirth Group Module were converted to the Cochrane review format. Thus, a formal Cochrane protocol was not initially published. Subsequently, the review author, Ellen Hodnett, completed a trial of labour support (Hodnett 2002) with a sample size larger than the entire sample in the prior version of the original review. As a protection against bias, she sought co-authors who were blind to the results of the new trial and who had special expertise that would enhance the quality of the review. Discussions among the authors led to decisions to modify the background and methods. The authors decided that the best approach would be to write a new protocol for the review. The new protocol was submitted through the peer review process of the Cochrane Pregnancy and Childbirth Group and has subsequently evolved into a review that has been updated.

Historically and cross-culturally, women have been attended and supported by other women during labour and birth. However, since the middle of the 20th century, in many countries as the majority of women gave birth in hospital rather than at home, continuous support during labour has become the exception rather than the routine. Concerns about dehumanisation of women's birth ex-

periences (in high-, middle-, and low-income countries) have led to calls for a return to continuous, one-to-one support by women for women during labour (Klaus 2002). Common elements of this care include emotional support (continuous presence, reassurance and praise), information about labour progress and advice regarding coping techniques, comfort measures (such as comforting touch, massage, warm baths/showers, promoting adequate fluid intake and output) and advocacy (helping the woman articulate her wishes to others).

Two complementary theoretical explanations have been offered for the effects of labour support on childbirth outcomes. Both explanations hypothesise that labour support enhances labour physiology and mothers' feelings of control and competence, reducing reliance on medical interventions. The first theoretical explanation considers possible mechanisms when companionship during labour is used in stressful, threatening and disempowering clinical birth environments (Hofmeyr 1991). During labour, women may be uniquely vulnerable to environmental influences; modern obstetric care frequently subjects women to institutional routines, high rates of intervention, unfamiliar personnel, lack of privacy and other conditions that may be experienced as harsh. These conditions may have an adverse effect on the progress of labour and on the development of feelings of competence and confidence; this may in turn impair adjustment to parenthood and establishment of breastfeeding, and increase the risk of depression. The provision of support and companionship during labour may to some extent buffer such stressors.

The second theoretical explanation does not focus on a particular type of birth environment. Rather, it describes two pathways - enhanced passage of the fetus through the pelvis and soft tissues, as well as decreased stress response - by which labour support may reduce the likelihood of operative birth and subsequent complications, and enhance women's feelings of control and satisfaction with their childbirth experiences (Hodnett 2002a). Enhanced fetopelvic relationships may be accomplished by encouraging mobility and effective use of gravity, supporting women to assume their preferred positions and recommending specific positions for specific situations. Studies of the relationships among fear and anxiety, the stress response and pregnancy complications have shown that anxiety during labour is associated with high levels of the stress hormone epinephrine in the blood, which may in turn lead to abnormal fetal heart rate patterns in labour, decreased uterine contractility, a longer active labour phase with regular well-established contractions and low Apgar scores (Lederman 1978; Lederman 1981). Emotional support, information and advice, comfort measures and advocacy may reduce anxiety and fear and associated adverse effects during labour.

Continuous support has been viewed by some as a form of pain relief, specifically, as an alternative to epidural analgesia (Dickinson 2002), because of concerns about the deleterious effects of epidural analgesia, including on labour progress (Anim-Somuah 2011). Many labour and birth interventions routinely involve, or increase the likelihood of, co-interventions to monitor, prevent or treat adverse effects, in a "cascade of interventions". Continuous, one-to-one support has the potential to limit this cascade and therefore, to have a broad range of different effects, in comparison to usual care. For example, if continuous support leads to reduced use of epidural analgesia, it may in turn involve less use of electronic fetal monitoring, intravenous drips, synthetic oxytocin, drugs to combat hypotension, bladder catheterisation, vacuum extraction or forceps, episiotomy and less morbidity associated with these, and may increase mobility during labour and spontaneous birth (Caton 2002).

A systematic review examining factors associated with women's satisfaction with the childbirth experience suggests that continuous support can make a substantial contribution to this satisfaction. When women evaluate their experience, four factors predominate: the amount of support from caregivers, the quality of relationships with caregivers, being involved with decision-making and having high expectations or having experiences that exceed expectations (Hodnett 2002a).

Clarification of the effects of continuous support during labour, overall and within specific circumstances, is important in light of public and social policies and programs that encourage this type of care. For example, the Congress in Uruguay passed a law in 2001 decreeing that all women have the right to companionship during labour. In several low- and middle-income countries (including China, South Africa, Tanzania and Zimbabwe); the Better Births Initiative promotes labour companionship as a core element of care for improving maternal and infant health (WHO 2010). In many low-income countries, women are not permitted to have anyone with them during labour and birth. Efforts to change policies in these settings have led to questions about the effectiveness of support from husbands/partners or other support people of the woman's own choosing, particularly in settings where the cost of paid companions would be prohibitive.

In North America, the services of women with special training in labour support have become available. Most commonly known as doula (a Greek word for 'handmaiden'), this new member of the caregiver team may also be called a labour companion, birth companion, labour support specialist, labour assistant or birth assistant. A number of North American organisations offer doula training, certification and professional support; according to one estimate more than 50,000 people have received this training to date (P Simkin, personal communication). Some North American hospitals have begun to sponsor doula services. In recent national surveys of childbearing women in the United States, 3% to 5% of respondents indicated that they had used doula services during their most recent labours (Declercq 2002; Declercq 2006). An association for doulas has been established in the UK (McGinnis 2001). Maternal healthcare systems in dozens of high- and low- to middle-income countries throughout the world are develop-

ing new traditions for supportive female companionship during labour (Pascali-Bonaro 2010).

Questions have arisen about the ability of employees (such as nurses or midwives) to provide effective labour support, in the context of modern institutional birth environments (Hodnett 1997). For example, nurses and midwives often have simultaneous responsibility for more than one labouring woman, spend a large proportion of time managing technology and keeping records, and begin or end work shifts in the middle of women's labours. They may lack labour support skills or may work in short-staffed environments.

Companions from a woman's social network, such as husbands/partners and female relatives, usually have little experience in providing labour support and are themselves in need of support when with a loved one during labour and birth. As they are frequently available to assume the role, often without extra cost to families or health systems, it is important to understand their effectiveness as providers of continuous labour support.

In addition to questions about the impact of the type of provider of labour support, there are other questions about the effectiveness of support, including its impact under a variety of environmental conditions, and whether its effects are mediated by when continuous support begins (early versus active labour).

Childbearing women, policy-makers, payers of health services, health professionals and facilities and those who provide labour support all need evidence about the effects of continuous support, overall and under specific conditions.

OBJECTIVES

The primary objective was to assess the effects, on mothers and their babies, of continuous, one-to-one intrapartum support compared with usual care, in any setting. Secondary objectives were to determine whether the effects of continuous support are influenced by the following.

1. Routine practices and policies in the birth environment that may affect a woman's autonomy, freedom of movement and ability to cope with labour, including:

   i) policies about the presence of support people of the woman's own choosing;

   ii) epidural analgesia; and

   iii) continuous electronic fetal monitoring.

2. Whether the provider is:

   i) a member of the staff of the institution (and thus has additional loyalties or responsibilities);

   ii) not a staff member but not part of the woman's social network and present solely for the purpose of providing continuous support; or

   iii) a person chosen by the woman from family members and friends.

3. Whether the continuous support begins early or later in labour.

METHODS

Criteria for considering studies for this review

Types of studies

All controlled trials comparing continuous labour support by either a familiar or unfamiliar person (with or without healthcare professional qualifications) with usual care, in which there was random allocation to treatment and control groups, were considered for inclusion in the review.

Types of participants

Pregnant women, in labour.

Types of interventions

The form of care that was evaluated was continuous presence and support during labour and birth. The person providing the support could have qualifications as a healthcare professional (nurse, midwife) or training as a doula or childbirth educator, or be a family member, spouse/partner, friend or stranger with little or no special training in labour support. The control group received usual care, as defined by the trialists. In all cases, 'usual care' did not involve continuous intrapartum support, but it could involve other measures, such as routine epidural analgesia, to help women to cope with labour.

Types of outcome measures

Theoretically, continuous support can have many diverse physiological and psychosocial effects (both short- and long-term), and therefore, a larger than usual number of outcomes were considered.

Primary outcomes

Mother

1. Any analgesia/anaesthesia (pain medication).
2. Synthetic oxytocin during labour.
3. Spontaneous vaginal birth.
4. Postpartum depression (defined using a pre-specified cutoff score on a validated instrument).
5. Negative rating of/negative feelings about the birth experience.

Baby

1. Admission to special care nursery.
2. Breastfeeding at one to two months postpartum.

Secondary outcomes

Labour events

1. Regional analgesia/anaesthesia.
2. Labour length
3. Severe labour pain (postpartum report).

Birth

1. Caesarean birth.
2. Instrumental vaginal birth.
3. Perineal trauma (defined as episiotomy or laceration requiring suturing).

Newborn

1. Low five-minute Apgar score (as defined by trial authors).
2. Prolonged newborn hospital stay.

Longer-term maternal outcomes

1. Difficulty mothering.
2. Low self-esteem in the postpartum period.

Search methods for identification of studies

Electronic searches

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register by contacting the Trials Search Co-ordinator (31 May 2013).

The Cochrane Pregnancy and Childbirth Group's Trials Register is maintained by the Trials Search Co-ordinator and contains trials identified from:

1. monthly searches of the Cochrane Central Register of Controlled Trials (CENTRAL);
2. weekly searches of MEDLINE;
3. weekly searches of Embase;
4. handsearches of 30 journals and the proceedings of major conferences;
5. weekly current awareness alerts for a further 44 journals plus monthly BioMed Central email alerts.

Details of the search strategies for CENTRAL, MEDLINE and Embase, the list of handsearched journals and conference proceedings, and the list of journals reviewed via the current awareness service can be found in the 'Specialized Register' section within the editorial information about the Cochrane Pregnancy and Childbirth Group.

Trials identified through the searching activities described above are each assigned to a review topic (or topics). The Trials Search Co-ordinator searches the register for each review using the topic list rather than keywords.

We did not apply any language restrictions.

Data collection and analysis

For this update we assessed one new trial (Yuenyong 2012) and added 'postpartum depression' outcome data from one existing trial report (Hofmeyr 1991), using the following methods.

Selection of studies

For the current update, three review authors (E Hodnett, J Hofmeyr, C Sakala) independently assessed for inclusion all potentially eligible studies. Had any disagreement occurred, we would have resolved it through discussion or, if required, we would have consulted a third member of the review team.

Data extraction and management

We designed a form to extract data. For eligible studies, data were independently extracted by two people (either two review authors or an author and an assistant), using the agreed form. We resolved discrepancies through discussion. We entered data into Review Manager software (RevMan 2011) and checked for accuracy.

When information regarding any of the above was unclear, we attempted to contact authors of the original reports to provide further details.

Assessment of risk of bias in included studies

For each study, at least two review authors independently assessed risk of bias, using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011). We would have resolved any disagreement by discussion or by involving a third assessor.

(1) Sequence generation (checking for possible selection bias)

We described for each included study the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.
We assessed the method as:

- low risk of bias (any truly random process, e.g. random number table; computer random number generator);
- high risk of bias (any non-random process, e.g. odd or even date of birth; hospital or clinic record number);
- unclear risk of bias.

(2) Allocation concealment (checking for possible selection bias)

We described for each included study the method used to conceal the allocation sequence, and determined whether intervention allocation could have been foreseen in advance of, or during recruitment, or changed after assignment.
We assessed the methods as:

- low risk of bias (e.g. telephone or central randomisation; consecutively numbered sealed opaque envelopes);
- high risk of bias (open random allocation; unsealed or non-opaque envelopes, alternation; date of birth);
- unclear risk of bias.

(3) Blinding (checking for possible performance and detection bias)

We described for each included study the methods used, if any, to blind personnel from knowledge of which intervention a participant received. Since women and care providers cannot be blinded as to whether continuous support was given, we considered blinding adequate if outcomes were recorded by outcome assessors who had no knowledge of the woman's group assignment. We judged studies at low risk of bias if they were blinded, or if we judged that the lack of blinding could not have affected the results. We assessed blinding separately for different outcomes or classes of outcomes.

(4) Incomplete outcome data (checking for possible attrition bias through withdrawals, dropouts, protocol deviations)

We described for each included study, and for each outcome or class of outcomes, the completeness of data including attrition and exclusions from the analysis. We stated whether attrition and exclusions were reported, the numbers included in the analysis at each stage (compared with the total randomised participants), reasons for attrition or exclusion where reported, and whether missing data were balanced across groups or were related to outcomes. To be included in the review, data on a given outcome had to be available for at least 80% of those who were originally randomised.

For outcomes collected post-hospital discharge, we recognise that follow-up, particularly in low-income countries, can be very difficult. Therefore, we included data if the response rate was higher than 75% and there was no obvious imbalance in groups. Where sufficient information was reported, or could be supplied by the trial authors, we planned to include missing data in the analyses.
We assessed methods as:

- low risk of bias;
- high risk of bias;
- unclear risk of bias.

(5) Selective reporting bias

We described for each included study how we investigated the possibility of selective outcome reporting bias and what we found.
We assessed the methods as:

- low risk of bias (where it is clear that all of the study's pre-specified outcomes and all expected outcomes of interest to the review have been reported);
- high risk of bias (where not all the study's pre-specified outcomes have been reported; one or more reported primary outcomes were not pre-specified; outcomes of interest are reported incompletely and so cannot be used; study fails to include results of a key outcome that would have been expected to have been reported);
- unclear risk of bias.

(6) Other sources of bias

We planned to describe for each included study any important concerns we had about other possible sources of bias, including, for example, whether the trial was stopped early due to a data-dependent process, there was evidence of extreme baseline imbalance, or there had been claims of fraud.
We assessed whether each study was free of other problems that could put it at risk of bias:

- low risk of other bias;
- high risk of other bias;
- unclear whether there is risk of other bias.

(7) Overall risk of bias

We made explicit judgements about whether studies are at high risk of bias, according to the criteria given in the *Handbook* (Higgins 2011). With reference to (1) to (6) above, we assessed the likely magnitude and direction of the bias and whether we considered it is likely to impact on the findings. We explored the impact of the level of bias through undertaking sensitivity analyses - *see* Sensitivity analysis.

Measures of treatment effect

Dichotomous data

For dichotomous data, we presented results as summary risk ratio with 95% confidence intervals.

Continuous data

All but one pre-specified outcome involved dichotomous data. For labour length, we used the mean difference because it was measured in the same way in the trials.

Unit of analysis issues

Cluster-randomised trials

Had we found cluster-randomised trials, we would have included them in the analyses along with individually-randomised trials. Our plan was as follows: we would adjust their sample sizes or standard errors using the methods described in the *Handbook* (Section 16.3.4 or 16.3.6) using an estimate of the intracluster correlation co-efficient (ICC) derived from the trial (if possible), from a similar trial or from a study of a similar population. If we had used ICCs from other sources, we planned to report this and conduct sensitivity analyses to investigate the effect of variation in the ICC. In future updates of this review, if we identify both cluster-randomised trials and individually-randomised trials, we plan to synthesise the relevant information. We will consider it reasonable to combine the results from both if there is little heterogeneity between the study designs and the interaction between the effect of intervention and the choice of randomisation unit is considered to be unlikely. We will also acknowledge heterogeneity in the randomisation unit and perform a separate meta-analysis.

Dealing with missing data

For included studies, we noted levels of attrition. We included data for a given outcome which occurred prior to hospital discharge only if the data were available for at least 80% of those originally randomised. For outcomes collected post-hospital discharge we included data if the response rate was higher than 75% and there was no obvious imbalance in groups.

For all outcomes we have carried out analyses, as far as possible, on an intention-to-treat basis, i.e. we attempted to include all participants randomised to each group in the analyses. The denominator for each outcome in each trial was the number randomised minus any participants whose outcomes were known to be missing.

Assessment of heterogeneity

We assessed statistical heterogeneity in each meta-analysis using the T^2, I^2 and Chi^2 statistics. We regarded heterogeneity as substantial if the T^2 was greater than zero and either the I^2 was greater than 30% or there was a low P value (less than 0.10) in the Chi^2 test for heterogeneity. In such cases we took the following steps:

1. a sensitivity analysis, in which methodological weak trials were removed from the analyses and results compared for the primary outcomes;
2. visual inspection of the forest plots for evidence of inconsistency in results; and
3. comparison of the results of fixed-effect and random-effects analyses.

Assessment of reporting biases

Had we suspected reporting bias, we would have attempted to contact study authors asking them to provide missing outcome data. If this were not possible, and the missing data were thought to introduce serious bias, we would not have included the outcome data from that trial**.**

Data synthesis

We carried out statistical analysis using the Review Manager software (RevMan 2011). We used fixed-effect Mantel-Haenszel meta-analysis for combining data in the absence of heterogeneity, and random-effects analysis if substantial heterogeneity was detected and we considered that combining trials was meaningful. We defined heterogeneity as substantial if a given meta-analysis resulted in an I^2 value greater than 30%, and there was inconsistency among trials in the direction or magnitude of effects (judged visually in the forest plot), or a low (less than 0.10) P value in the Chi^2 test for heterogeneity.

Subgroup analysis and investigation of heterogeneity

We planned the following subgroup analyses.

A) Three subgroup analyses that concern characteristics of the childbirth environment

- Trials in settings in which women were permitted to be accompanied by one or more support persons of their own choosing compared with trials in which accompaniment was not permitted.
- Trials conducted in settings in which epidural analgesia was available compared with trials in settings in which it was unavailable.
- Trials in which there was a policy of routine electronic fetal heart rate monitoring compared with trials in settings in which continuous electronic fetal monitoring was not routine.

(B) One subgroup analysis that concerns characteristics of the providers of labour support

- Trials in which the caregivers were employees of the institution, compared with trials in which the caregivers were not employees and were not members of the woman's social network, compared with trials in which the providers were not employees and were lay people chosen by the participants (e.g. husband/partner, friend, close relative).

(C) One subgroup analysis that concerns differences in the timing of onset of continuous support

- Trials in which continuous labour support began prior to or during early labour (as defined by trial authors), compared with trials in which continuous support began in active labour.

Because few of the trial reports contained all of the information needed for the above subgroup analyses, we contacted the trial authors in an attempt to verify the presence/absence of routine electronic fetal monitoring (EFM), the presence/absence of epidural analgesia and timing of onset of continuous support. We excluded some studies included in the primary comparisons from the subgroup analyses concerning the use of EFM because their status regarding EFM use was unknown. For tests of differences between these subgroups, we recalculated the overall analysis by including only the studies in which EFM use was known.

The seven primary outcomes and one secondary outcome were used in the subgroup analyses. While normally, subgroup analyses are restricted to primary outcomes, we also included the outcome of caesarean delivery, because there is widespread concern about escalating caesarean rates worldwide, and subgroup analyses could be helpful to policy makers in decisions about the provision of continuous labour support. Thus the outcomes in the subgroup analyses were: any analgesia/anaesthesia, synthetic oxytocin during labour, spontaneous vaginal birth, caesarean birth, postpartum depression, negative ratings of the birth experience, admission to special care nursery, and breastfeeding at one to two months postpartum.

When I^2 levels were high but the amount of heterogeneity in treatment effects was low (as happens when there are a large number of big trials and thus the amount of variation due to sampling error is extremely low), we compared the results of random-effects and fixed-effect analyses. In instances in which the conclusions were not materially different in both methods of analysis, we reported the results of fixed-effect, inverse variance meta-analysis, in order to be able to calculate a Chi^2 for the purpose of exploring differences based on pre-specified subgroups. As a consequence the totals in the subgroup analysis tables are sometimes slightly different from those in the main comparison, since the main comparisons used the Mantel-Haenszel rather than the inverse variance method.

Sensitivity analysis

We performed sensitivity analyses, for the primary outcomes, in instances in which there was a high risk of bias associated with the quality of included trials.

RESULTS

Description of studies

Included studies

Please *see* Characteristics of included studies table. While 23 trials met the inclusion criteria, one trial (Thomassen 2003) provided no usable outcome data. We do not describe it here, but provide details in the Characteristics of included studies table.

All 22 trials (n = 15,288) that provided usable outcome data were conducted in hospitals. The trials were conducted in Australia, Belgium, Botswana, Brazil, Canada, Chile, Finland, France, Greece, Guatemala, Mexico, Nigeria, South Africa, Sweden, Thailand, and the United States, under widely disparate hospital conditions, regulations and routines. There was remarkable consistency in the descriptions of continuous support across all trials. In all instances the intervention included continuous or nearly continuous presence, at least during active labour. Twenty of the 22 trials that provided usable outcome data (all except Cogan 1988 and Dickinson 2002) also included specific mention of comforting touch and words of praise and encouragement.

In 11 trials (Breart - Belgium 1992; Breart - France 1992; Campbell 2006; Cogan 1988; Dickinson 2002; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hodnett 1989; Hodnett 2002; McGrath 2008), hospital policy permitted women to be accompanied by their husbands/partners or other family members during labour, while in the other 11 trials, no additional support people were allowed. Epidural analgesia was not routinely available in seven trials (Breart - Greece 1992; Hofmeyr 1991; Kashanian 2010; Klaus 1986; Madi 1999; Morhason-Bello 2009; Yuenyong 2012). We were unsuccessful in obtaining information about the availability of epidural analgesia in one trial (Cogan 1988). Epidural analgesia was routinely available in the other 14 trials. Electronic fetal heart rate monitoring was not routine in eight trials (Bruggemann 2007; Hofmeyr 1991; Kashanian 2010; Klaus 1986; Langer 1998; Madi 1999; Morhason-Bello 2009; Yuenyong 2012). In nine trials (Campbell 2006; Dickinson 2002; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hodnett 1989; Hodnett 2002; Kennell 1991; McGrath 2008) electronic fetal monitoring was used routinely. We were unsuccessful in obtaining information about the use of electronic fetal monitoring in five trials (Breart - Greece 1992; Breart - Belgium 1992; Breart - France 1992; Cogan 1988; Torres 1999).

It was not possible to categorise most of the trials according to the pre-specified subgroups of early versus active labour. In four trials (Cogan 1988; Hodnett 1989; Klaus 1986; Madi 1999), the support began in early labour. In the other 17 trials, the timing of onset of support was much more heterogenous, as were definitions of early and active labour, in instances in which these were defined. Women were in varying phases of labour, from elective induction to active labour.

In addition, the persons providing the support intervention varied in their experience, qualifications and relationship to the labouring women. In nine trials (Breart - Belgium 1992; Breart - France 1992; Breart - Greece 1992; Dickinson 2002; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hodnett 2002; Kashanian 2010), the support was provided by a member of the hospital staff, for example, a midwife, student midwife or nurse. In seven trials the providers were not members of the hospital staff and were not part of the woman's social network; they were women with or without special training, such as doulas or women who had given birth before (Hodnett 1989; Hofmeyr 1991; Kennell 1991; Klaus 1986; McGrath 1999): a childbirth educator (Cogan 1988), or retired nurses (Langer 1998). In six trials they were companions of the woman's choice from her social network, with or without brief training -- a female relative or friend or the woman's husband/partner (Bruggemann 2007; Campbell 2006; Madi 1999; Morhason-Bello 2009; Torres 1999; Yuenyong 2012).

Excluded studies

Sixteen trials were excluded altogether (Bender 1968; Bochain 2000; Brown 2007; Dalal 2006; Gordon 1999; Hemminki 1990c; Lindow 1998; McGrath 1999; Orenstein 1998; Pinheiro 1996; Ran 2005; Scott 1999; Sosa 1980; Trueba 2000; Tryon 1966; Zhang 1996). Seven trials were excluded as they were not randomised trials (Bender 1968; Dalal 2006; Ran 2005; Scott 1999; Sosa 1980; Trueba 2000; Tryon 1966). Five trials were excluded because the intervention was not continuous support (Bochain 2000; Brown 2007; Lindow 1998; Orenstein 1998; Zhang 1996). Two trials reported as abstracts provided insufficient information in order to assess eligibility (McGrath 1999; Pinheiro 1996). Two further trials were excluded because they did not provide any usable data (Gordon 1999; Hemminki 1990c). Please refer to table Characteristics of excluded studies for details.

Risk of bias in included studies

The trials were of generally good quality (Figure 1; Figure 2).

Figure 1. Methodological quality summary: review authors' judgements about each methodological quality item for each included study.

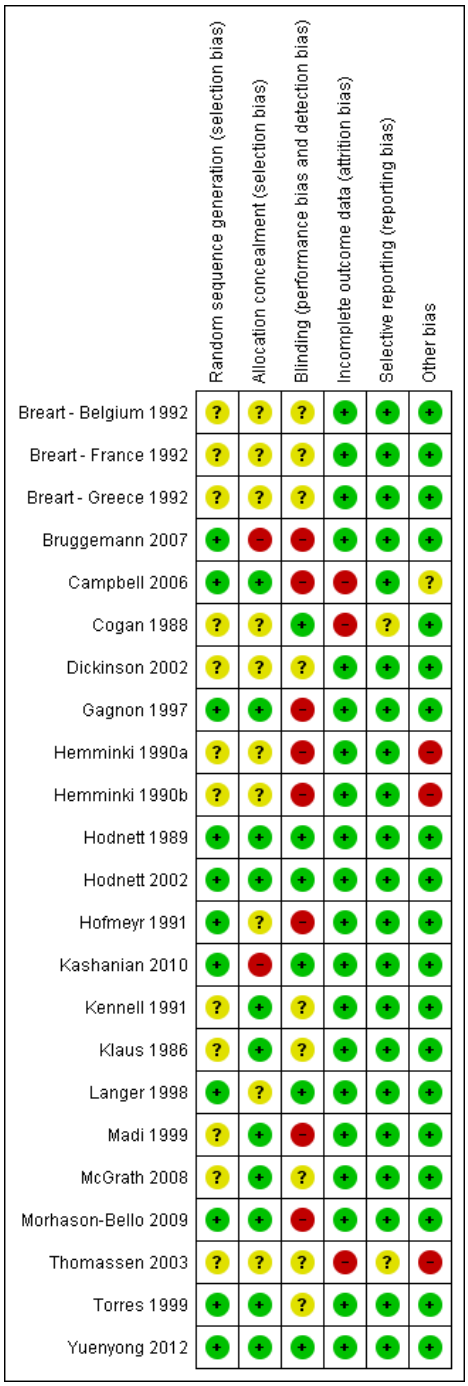
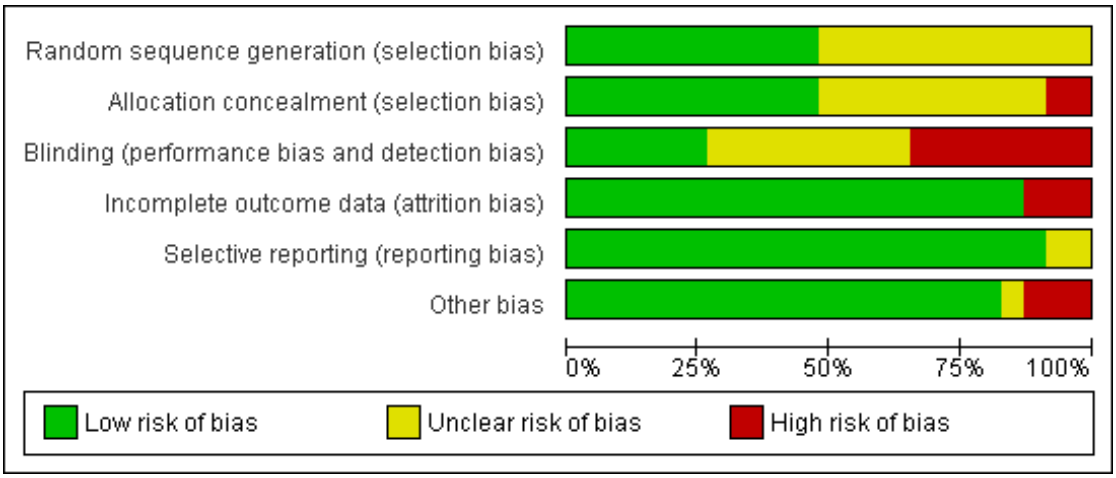


Figure 2. Methodological quality graph: review authors' judgements about each methodological quality item presented as percentages across all included studies



Allocation

Random sequence generation: Twelve trials were at unclear risk of bias (Breart - Belgium 1992; Breart - France 1992; Breart - Greece 1992; Cogan 1988; Dickinson 2002; Hemminki 1990a; Hemminki 1990b; Kennell 1991; Klaus 1986; Madi 1999; McGrath 2008; Thomassen 2003) because they did not describe the method of random assignment. Eleven trials described using a computer random number generator or referred to a random number table (Bruggemann 2007; Campbell 2006; Gagnon 1997; Hodnett 1989; Hodnett 2002; Hofmeyr 1991; Kashanian 2010; Langer 1998; Morhason-Bello 2009; Torres 1999; Yuenyong 2012) and were assessed as low risk of bias.

Allocation concealment: The risk of selection bias was high in two small trials (Bruggemann 2007; Kashanian 2010). In Bruggemann 2007, women picked their treatment allocation from an opaque container. In 11 trials (Campbell 2006; Gagnon 1997; Hodnett 1989; Hodnett 2002; Kennell 1991; Klaus 1986; Madi 1999; McGrath 2008; Morhason-Bello 2009; Torres 1999; Yuenyong 2012), risk of selection bias was low with allocation described as either using central allocation, e.g. Hodnett 2002 used a central, computerised randomisation service accessed by telephone or other trials described using sequentially numbered, opaque, sealed envelopes. In the remaining trials (Breart - Belgium 1992; Breart - France 1992; Breart - Greece 1992; Cogan 1988; Dickinson 2002; Hemminki 1990a; Hemminki 1990b; Hofmeyr 1991; Langer 1998; Thomassen 2003), risk of selection bias was unclear, e.g. one trial used methods that were centrally controlled but not concealed (Cogan 1988).

Blinding

Performance bias: neither those providing nor receiving care could be blinded to the presence/absence of a person providing continuous support. Hodnett 2002 provided evidence to discount contamination and co-intervention as serious threats to validity. In eight trials group assignment was known and no attempt to blind outcome assessment was apparent and so these were assessed as being at high risk of bias (Bruggemann 2007; Campbell 2006; Gagnon 1997; Hemminki 1990a; Hemminki 1990b; Hofmeyr 1991; Madi 1999; Morhason-Bello 2009).

Detection bias: in the trials which sought participants' evaluations of their birth experiences, efforts were made to reduce response bias, through use of an interviewer blinded to the woman's group allocation or self-administered questionnaires. Six trials were assessed as being at low risk of bias because some blinding of outcome assessment was performed (Cogan 1988; Hodnett 1989; Hodnett 2002; Kashanian 2010; Langer 1998; Yuenyong 2012). In the remaining trials, risk of bias for blinding (performance and detection bias) was unclear (Breart - Belgium 1992; Breart - France 1992; Breart - Greece 1992; Dickinson 2002; Kennell 1991; Klaus 1986; McGrath 2008; Thomassen 2003; Torres 1999).

Incomplete outcome data

Attrition bias: we did not include data for outcomes assessed in hospital in a comparison if there was more than 20% loss to follow-up; we did not include longer-term outcome data if there was more than 25% loss to follow-up. Based on these criteria, one trial (Thomassen 2003) provided no usable outcome data. Two trials further trials were assessed as being at high risk of bias for attrition bias (Campbell 2006; Cogan 1988).

Selective reporting

All outcomes appear to have been reported upon in the majority of trials. In two trials, it was unclear whether selective reporting had taken place (Cogan 1988; Thomassen 2003).

Other potential sources of bias

Three trials were assessed as being at high risk of other bias: in two trials the mothers had been told the purpose of the study differentially (Hemminki 1990a; Hemminki 1990b) and one trial was stopped early for 'a range of largely organizational issues' when only a quarter of the original sample size had been enrolled (Thomassen 2003). Risk of bias was unclear in one study (Campbell 2006) and no other sources of bias were apparent in the remaining trials.

Effects of interventions

Main comparison: continuous support versus usual care - all trials

We considered 17 outcomes. Between one and 22 trials contributed to the analyses of each outcome. Sensitivity analyses, conducted by removing the trials (all of which were small) with a high likelihood of selection bias (Bruggemann 2007; Hodnett 1989; Kashanian 2010) did not alter the conclusions. According to our pre-specified criteria, there was statistical heterogeneity in all but three outcomes (instrumental vaginal birth, low five-minute Apgar score, and low postpartum self-esteem). Inspection of the forest plots did not suggest sources of heterogeneity. For the two outcomes postpartum depression and difficulty mothering, this statistical heterogeneity confirmed our conclusion that based on clinical heterogeneity a summary statistic would not yield meaningful results (discussed further below). In all instances in which summary statistics are reported, the comparisons of fixed-effect and random-effects analyses did not yield substantive differences, nor alter conclusions. We report the results of fixed-effect analyses for instrumental vaginal birth, low five-minute Apgar score, and low postpartum self-esteem (the latter only contained one trial), and random-effects analyses for all other outcomes in which summary statistics were computed.

Primary outcomes

Women who had continuous, one-to-one support during labour were:

more likely to have

- a spontaneous vaginal birth (19 trials, n = 14,119, average risk ratio (RR) 1.08, 95% confidence interval (CI) 1.04 to 1.12, I^2 45%, τ^2 0.00), Analysis 1.5;

less likely to have

- any intrapartum analgesia/anaesthesia (14 trials, n = 12,283, average RR 0.90, 95% CI 0.84 to 0.96, I^2 75%, τ^2 0.01), Analysis 1.1;
- reported negative rating of/negative feelings about childbirth experience (11 trials, n = 11,133, average RR 0.69, 95% CI 0.59 to 0.79, I^2 63%, τ^2 0.03), Analysis 1.13;

and there was no apparent impact of continuous support on

- use of synthetic oxytocin during labour (15 trials, n = 12,620, average RR 0.97, 95% CI 0.91 to 1.04, I^2 65%, τ^2 0.01), Analysis 1.3;
- admission to the special care nursery (seven trials; n = 8897, average RR 0.97, 95% CI 0.76 to 1.25, I^2 37%, τ^2 0.03), Analysis 1.10;
- breastfeeding at one to two months postpartum (three trials, n = 5363, average RR 1.01, 95% CI 0.94 to 1.09, I^2 52%, τ^2 0.00), Analysis 1.15; and

evidence of postpartum depression was a reported outcome in just two trials (Hodnett 2002; Hofmeyr 1991). Hodnett 2002 used the Edinburgh Postnatal Depression Inventory and reported the frequencies of scores greater than 12. Hofmeyr 1991 used the Pitt Depression Inventory and reported scores indicating mild (less than 20), moderate (20 to 34), and severe (greater than 34) depressive symptomatology. We combined the frequencies of moderate and severe depressive symptomatology, since Pitt scores greater than 19 have been considered indicative of postpartum depression (Avan 2010). The two trials were widely disparate in populations, the hospital conditions within which they were conducted, and the type of support provider. We concluded that combining them would not yield meaningful information. In both trials the direction of effect was the same. In Hofmeyr 1991, eight of 74 women in the group receiving continuous support had depressive symptomatology compared to 44 of 75 women in the control group; RR 0.18, 95% CI 0.09 to 0.36. In Hodnett 2002, 245 out of 2816 in the supported group had depressive symptomatology, compared to 277 out of 2751 in the control group; RR 0.86, 95% CI 0.73 to 1.02.

Secondary outcomes

Women who had continuous, one-to-one support were:
more likely to have

- shorter labours (12 trials, n = 5366, mean difference (MD) -0.58 hours, 95% CI -0.85 to -0.31, I^2 45%, τ^2 0.08), Analysis 1.4;

less likely to have

- regional analgesia/anaesthesia (nine trials, n = 11,444, average RR 0.93, 95% CI 0.88 to 0.99, I^2 81%, τ^2 0.01), Analysis 1.2;
- an instrumental vaginal birth (19 trials, n = 14,118, RR 0.90, 95% CI 0.85 to 0.96, fixed-effect), Analysis 1.6;
- a caesarean birth (22 trials, n = 15,175, average RR 0.78, 95% CI 0.67 to 0.91, I^2 53%, τ^2 0.05), Analysis 1.7;
- a baby with a low five-minute Apgar score (13 trials, n = 12,515, RR 0.69, 95% CI 0.50 to 0.95, fixed-effect), Analysis 1.9;

and there was no apparent impact of continuous labour support on

- the likelihood of serious perineal trauma (four trials, n = 8120, average RR 0.97, 95% CI 0.92 to 1.01, I^2 44%, τ^2 0.00), Analysis 1.8;
- severe labour pain (four trials; n = 2456, average RR 1.00, 95% CI 0.83 to 1.21, I^2 78%, τ^2 0.03), Analysis 1.12;
- low postpartum self-esteem (one trial, n = 652, RR 1.00, 95% CI 0.77 to 1.30, fixed-effect), Analysis 1.17; and
- prolonged neonatal hospital stay (three trials, n = 1098, average RR 0.83, 95% CI 0.42 to 1.65, I^2 62%, τ^2 0.15), Analysis 1.11.

Three trials reported results related to difficulty in mothering (Campbell 2006; Hofmeyr 1991; Hodnett 2002). As was the case with postpartum depression, the trials were widely disparate in populations, the hospital conditions within which they were conducted, and the type of support provider, and the forest plot supported our conclusion that combining them would not yield meaningful information. In Hofmeyr 1991, 41 out of 75 in the continuous support group reported difficulty mothering, compared to 67 out of 75 in the control group; RR 0.61, 95% CI 0.49, 0.76. In Hodnett 2002, 873 out of 2836 in the continuous support group reported difficulty mothering, compared to 853 out of 2765 in the control group; RR 1.00, 95% CI 0.92, 1.08. In Campbell 2006, 11 out of 292 in the continuous support group reported difficulty mothering, compared to 38 out of 265 in the control group; RR 0.26, 95% CI 0.14, 0.50.

Subgroup comparisons

We grouped the trials according to the following provider characteristics: 1) staff members of the hospital; 2) neither hospital employees nor part of the woman's social network; and 3) chosen by the woman from her social network.

We have presented the results of the subgroup analyses below. While we made every effort to obtain the required information from trial authors, none of the subgroup comparisons are based on the total number of included trials for which usable data were available. Thus results must be interpreted with caution. The text below does not present the results for postpartum depression or breastfeeding at one to two months postpartum, because too few trials provided data. Only two trials contributed data about postpartum depression (Hodnett 2002; Hofmeyr 1991) and three about breastfeeding (Hodnett 2002; Hofmeyr 1991; Langer 1998).

We were unable to conduct the planned subgroup comparison based on timing of onset of labour support. It was not possible to categorise most of the trials according to the pre-specified subgroups of early versus active labour. In four trials (Cogan 1988; Hodnett 1989; Klaus 1986; Madi 1999), the support began in early labour. In the other 18 trials, both the definitions of early and active labour and the timing of onset of support were much more heterogenous, in instances in which they were defined. Women were in varying phases of labour, from elective induction to active labour.

As noted in Subgroup analysis and investigation of heterogeneity, totals in the subgroup analysis figures may differ slightly from those in the main comparisons, because a different method of analysis had to be used. All subgroup comparisons used fixed-effect, to allow computation of tests for differences between subgroups.

Outcome: any intrapartum analgesia/anaesthesia

1. Policies about the presence of companions during labour and birth: In seven trials (n = 9752) companions were permitted; RR 0.97, 95% CI 0.96 to 0.99, while in seven trials (n = 2598) companions were not permitted; RR 0.91, 95% CI 0.85 to 0.96. Chi^2 for the subgroup comparison = 5.12, P = 0.02, Analysis 2.1.
2. Availability of epidural analgesia: In nine trials (n = 10,888), epidural analgesia was routinely available; RR 0.97, 95% CI 0.96 to 0.98. In five trials (n = 1462) epidural analgesia was not routinely available; RR 0.83, 95% CI 0.69 to 0.99. Chi^2 for the subgroup comparison = 3.08, P = 0.08, Analysis 3.1.
3. Routine use of electronic fetal monitoring (EFM): in six trials (n = 8580), EFM was routine; RR 0.97, 95% CI 0.96 to 0.99. In six trials (n = 2186), EFM was not routine; RR 0.96, 95% CI 0.90 to 1.02. In two trials (n = 1579), the policy about routine EFM was unknown; RR 0.89, 95% CI 0.80 to 0.99. Chi^2 for the subgroup comparison = 2.32, P = 0.31, Analysis 4.1.
4. Provider characteristics: in six trials (n = 9152) the support was provided by a member of the hospital staff; RR 0.97, 95% CI 0.96 to 0.99. In four trials (n = 1790), the support was provided by a woman who was not a member of the staff and was not part

of the woman's social network; RR 0.91, 95% CI 0.86 to 0.97. In four trials (n = 1408) the support was provided by a member of the woman's social network; RR 0.94, 95% CI 0.88 to 1.00. Chi² for the subgroup comparison = 4.84, P = 0.09, Analysis 5.1. Thus, the effects of continuous support on use of any intrapartum analgesia/anaesthesia appeared to be stronger in settings where companions were not permitted, but did not appear to be influenced by the availability of epidural analgesia, the use of routine EFM, or provider characteristics.

Outcome: synthetic oxytocin during labour

1. Policies about the presence of companions: in five trials (n = 9495) companions were permitted; RR 1.04, 95% CI 0.99 to 1.10. In 10 trials (n = 3125) companions were not permitted; RR 0.99, 95% CI 0.97 to 1.02. Chi² for the subgroup comparison = 3.13, P = 0.08, Analysis 2.2.
2. Availability of epidural analgesia: in eight trials (n = 10,568) epidural analgesia was routinely available; RR 1.00, 95% CI 0.98 to 1.02. In seven trials (n = 2066), epidural analgesia was not routinely available; RR 1.02, 95% CI 0.93 to 1.11. Chi² for the subgroup comparison = 0.24, P = 0.63, Analysis 3.2.
3. Use of routine EFM: in four trials (n = 8340) EFM was routine; RR 1.04, 95% CI 0.98 to 1.11. In seven trials (n = 1726) EFM was not routine; RR 0.99, 95% CI 0.96 to 1.01. In four trials (n = 2568) it is not known whether EFM was routine; RR 1.02, 95% CI 0.97 to 1.08. Chi² for the subgroup comparison = 3.27, P = 0.19, Analysis 4.2.
4. Provider characteristics: in six trials (n = 9561), the support was provided by a member of the hospital staff; RR 1.06, 95% CI 1.01 to 1.11. In three trials (n = 1018), the support was provided by a woman who was not a member of the staff and was not part of the woman's social network; RR 0.69, 95% CI 0.50 to 0.94. In six trials (n = 2041), the support was provided by a member of the woman's social network; RR 0.99, 95% CI 0.96 to 1.01. Chi² for the subgroup comparison = 11.46, P = 0.003, Analysis 5.2.

Thus the effects of continuous support on use of synthetic oxytocin during labour did not appear to be influenced by policies about the presence of companions, use of routine EFM, or availability of epidural analgesia. The effectiveness of continuous support in reducing the likelihood of intrapartum oxytocin seemed to be strongest when the provider was neither a staff member nor part of the woman's social network.

Outcome: spontaneous vaginal birth

1. Policies about companions: In nine trials (n = 10,889) companions were permitted; RR 1.03, 95% CI 1.00 to 1.05. In ten trials (n = 3329) companions were not permitted; RR1.11, 95% CI 1.07 to 1.16. Chi² for the subgroup comparison = 11.82, P < 0.001, Analysis 2.3.
2. Availability of epidural analgesia: In 13 trials (n = 12,672), epidural analgesia was routinely available; RR 1.04, 95% CI 1.01 to 1.06). In six trials (n = 1546) epidural analgesia was not routinely available; RR 1.11, 95% CI 1.06 to 1.17. Chi² for the subgroup comparison = 6.59, P = 0.01, Analysis 3.3.
3. Routine use of EFM: In eight trials (n = 9717) EFM was routine; RR 1.03, 95% CI 1.01 to 1.06. In seven trials (n = 1913) EFM was not routine; RR 1.11, 95% CI 1.06 to 1.17. In four trials (n = 2561), the policy about routine EFM is not known; RR 1.07, 95% CI 1.01 to 1.13. Chi² for the subgroup comparison = 8.56, P = 0.01, Analysis 4.3.
4. Provider characteristics: in nine trials (n = 10,813) the support was provided by a member of the hospital staff; RR 1.03, 95% CI 1.01 to 1.06. In five trials (n = 1935) the support was provided by a woman who was not part of the hospital staff nor part of the woman's social network; RR 1.12, 95% CI 1.07 to 1.17. In five trials (n = 1470), the support was provided by a member of the woman's social network; RR 1.07, 95% CI 0.99 to 1.15. Chi² for the subgroup comparison = 9.97, P = 0.007, Analysis 5.3.

Thus the effectiveness of continuous support in increasing the likelihood of spontaneous vaginal birth appeared to be stronger when hospital policies did not permit companions, when epidural analgesia was not available, when EFM was not routine, and when the support provider was neither a staff member nor part of the woman's social network.

Outcome: caesarean birth

1. Policies about companions: in 11 trials (n = 11,326) companions were permitted; RR 0.94, 95% CI 0.85 to 1.03. In 11 trials (n = 3849) companions were not permitted; RR 0.75, 95% CI 0.65 to 0.86. Chi² for the subgroup comparison = 6.46, P = 0.01, Analysis 2.4.
2. Availability of epidural analgesia: in 14 trials (n = 13,064), epidural analgesia was routinely available; RR 0.93, 95% CI 0.86 to 1.02. In seven trials (n = 2077), epidural analgesia was not routinely available; RR 0.54, 95% CI 0.43 to 0.68. In one very small trial (n = 34), we were unable to determine if epidural analgesia was routinely available; RR 1.40, 95% CI 0.14 to 13.98. Chi² for the subgroup comparison = 19.30, P < 0.0001, Analysis 3.4.
3. Routine use of EFM: in nine trials (n = 10,123), EFM was routine; RR 0.92, 95% CI 0.83 to 1.01. In eight trials (n = 2457) EFM was not routine; RR 0.66, 95% CI 0.55 to 0.79. In five trials (n = 2595), it is not known whether EFM was routine; RR 1.06, 95% CI 0.84 to 1.33. Chi² for the subgroup comparison = 12.78, P = 0.002, Analysis 4.4.
4. Provider characteristics: in nine trials (n = 10,786), the support was provided by a member of the hospital staff; RR 0.95, 95% CI 0.85 to1.05. In seven trials (n = 2330), the support was provided by a woman who was not a member of the

hospital staff and not part of the woman's social network; RR 0.72, 95% CI 0.60 to 0.86. In six trials (n = 2059), the support was provided by a member of the woman's social network; RR 0.83, 95% CI 0.69 to 1.01. Chi² for the subgroup comparison = 6.88, P = 0.03, Analysis 5.4.

Thus the effectiveness of continuous support in reducing the likelihood of caesarean birth appeared to be stronger in settings where companions were not permitted, epidural analgesia was not routinely available and EFM was not routine, and when the provider was neither a staff member nor part of the woman's social network.

Outcome: admission to special care nursery

1. Policies about companions: in two trials (n = 7328), companions were permitted; RR 0.99, 95% CI 0.84 to 1.17. In five trials (n = 1569), companions were not permitted; RR 0.91, 95% CI 0.71 to 1.17. Chi² for the subgroup comparison = 0.28, P = 0.60, Analysis 2.5.
2. Availability of epidural analgesia: in five trials (n = 8380) epidural analgesia was routinely available; RR 0.98, 95% CI 0.85 to 1.13. In two trials (n = 517) epidural analgesia was not routinely available; RR 0.26, 95% CI 0.08 to 0.88. Chi² for the subgroup comparison = 4.51, P = 0.03, Analysis 3.5.
3. Routine use of EFM: in three trials (n = 7740) EFM was routine; RR 0.97, 95% CI 0.84 to 1.11. In three trials (n = 729) EFM was not routine; RR 0.48, 95% CI 0.21 to 1.12. In one trial (n = 428), it is not known whether EFM was routine; RR 1.98, 95% CI 0.76 to 5.18. Chi² for the subgroup comparison = 4.76, P = 0.09, Analysis 4.5.
4. Provider characteristics: in three trials (n = 7428), the support was provided by a member of the hospital staff; RR 0.99, 95% CI 0.84, 1.17. In two trials (n = 829), the support was provided by a woman who was not a member of the hospital staff and not part of the woman's social network; RR 0.86, 95% CI 0.66 to 1.12. In two trials (n = 640) the support was provided by a member of the woman's social network; RR 1.40, 95% CI 0.67 to 2.93. Chi² for the subgroup comparison = 1.74, P = 0.42, Analysis 5.5.

Thus the effectiveness of continuous support in reducing the likelihood of admission of the newborn to a special care nursery appeared to be stronger in settings in which epidural analgesia was not routinely available, but effectiveness did not appear to be influenced by policies about companions or routine EFM, or by provider characteristics.

Outcome: negatives ratings of/negative views about the birth experience

1. Policies about companions: in five trials (n = 8639) companions were permitted; RR 0.70, 95% CI 0.62 to 0.78. In six trials (n = 2539) companions were not permitted; RR 0.62, 95%CI 0.56 to 0.69. Chi² for the subgroup comparison = 2.03, P = 0.15, Analysis 2.7.
2. Availability of epidural analgesia: in nine trials (n = 10,404) epidural analgesia was routinely available; RR 0.70, 95% CI 0.64 to 0.77. In two trials (n = 774) epidural analgesia was not routinely available; RR 0.55, 95% CI 0.48 to 0.63. Chi² for the subgroup comparison = 7.92, P 0.0005, Analysis 3.7.
3. Routine use of EFM: four trials (n = 7467) were conducted in settings with routine EFM; RR 0.67, 95% CI 0.60 to 0.76. Four trials (n = 1710) were conducted in settings in which EFM was not routine; RR 0.60, 95% CI 0.53 to 0.68. Three trials (n = 1977) were in settings in which the use of routine EFM is not known; RR 0.84, 95% CI 0.65 to 1.08. Chi² for the subgroup comparison = 5.55, P = 0.06, Analysis 4.7.
4. Provider characteristics: in four trials (n = 8145) support providers were hospital staff; RR 0.87, 95% CI 0.73 to 1.03. In three trials (n = 1325) the providers were not hospital staff and not part of the woman's social network; RR 0.66, 95% CI 0.57 to 0.77. In four trials (n = 1708), providers were part of the woman's social network; RR 0.57, 95% CI 0.51 to 0.64. Chi² for the subgroup comparison = 16.47, P = 0.0003, Analysis 5.7.

Thus the effectiveness of continuous support in reducing the likelihood of dissatisfaction with or negative views of the childbirth experience appeared to be stronger in settings in which epidural analgesia was not routinely available, and when the provider was neither a staff member nor part of the woman's social network.

DISCUSSION

This review summarises results of 22 trials involving 15,288 women, conducted in 16 countries under a wide variety of circumstances. Continuous one-to-one support was given by providers with a variety of experiences, through having given birth themselves and/or through education and practice as nurses, midwives, doulas or childbirth educators, or by the woman's husband or partner, female relative or close friend. The methodological quality of the trials was generally good to excellent. For all outcomes in which summary statistics were computed, comparisons of fixed-effect and random-effects analyses did not yield material differences in the results. Thus neither the risk of bias nor heterogeneity should be of concern when interpreting results.

In the primary comparison, women who were allocated to continuous one-to-one support were more likely to have a spontaneous vaginal birth (risk ratio (RR) 1.08, 95% confidence interval (CI) 1.04 to 1.12) and less likely to have intrapartum analgesia (RR 0.90, 95% CI 0.84 to 0.96) or to report dissatisfaction (RR 0.69, 95% CI 0.59 to 0.79). In addition their labours were shorter (mean difference (MD) -0.58 hours, 95% CI -0.85 to -0.31), they were less likely to have a caesarean (RR 0.78, 95% CI 0.67 to 0.91) or instrumental vaginal birth (RR 0.90, 95% CI 0.85 to 0.96), regional analgesia (RR 0.93, 95% CI 0.88 to 0.99), or a baby with a low five-minute Apgar score (RR 0.69, 95% CI 0.50 to 0.95).

The trial reports do not list any adverse effects. This form of care appears to confer important benefits without attendant risks. The results of earlier versions of this review prompted organisations in Canada, the UK and the USA to issue practice guidelines, advocating continuous support (AWHONN 2002; MIDIRS 1999; NICE Intrapartum Care 2007; SOGC 1995). The results of the primary comparison in the current review offer continued justification for such practice guidelines.

The subgroup analyses should be interpreted with caution. Individually each should be considered exploratory and hypothesis-generating, particularly when the sample size in one subgroup was much smaller than in another. However, taken in their totality, the consistency of the patterns suggests that the effectiveness of continuous intrapartum support may be enhanced or reduced by policies and practices in the birth setting and by the nature of the relationship between the provider and labouring woman.

We chose three aspects of the birth environment - routine use of electronic fetal monitoring (EFM), availability of epidural analgesia and policies about the presence of additional support people of the woman's own choosing - as proxies for environmental conditions that may mediate the effectiveness of labour support. This review cannot answer questions about the mechanisms whereby settings with epidural analgesia limit the effectiveness of labour support. The impact of epidural analgesia may be direct (Anim-Somuah 2011) or indirect, as part of the 'cascade of interventions' described in the Background. The effects of a policy of routine EFM are less clear, most likely because we were unable to obtain information about EFM policies for several of the trials. However, continuous labour support in settings without routine EFM was associated with greater likelihood of spontaneous vaginal birth and lower likelihood of a caesarean birth. These results raise questions about the ability of labour support to act as a buffer against adverse aspects of routine medical interventions. Labour support appears to be effective in reducing the adverse consequences of the fear and distress associated with labouring alone in an unfamiliar environment. A report of a qualitative component of one of the included trials (Langer 1998), aptly titled "Alone, I wouldn't have known what to do", provides further justification for this argument.

Effects of continuous labour support appear to vary by provider characteristics. Divided loyalties, additional duties besides labour support, self-selection and the constraints of institutional policies and routine practices may all have played a role in the apparently limited effectiveness of members of the hospital staff. Childbirth environments influence the healthcare professionals who work in them as well as labouring women and their support people. Furthermore, while women want and benefit from the presence of selected members of their social network, the support of partners and others with whom they have a longstanding relationship is qualitatively different and more complex than that of a woman who is experienced and often trained to provide labour support and who has no other role other than to provide it. An early trial of labour support with partners present found that women received more support from their partners when a doula was present to guide them, and the partners themselves reported more support (Hodnett 1989). While continuous labour support appears to be more effective when it is provided by caregivers who are not employees of an institution (and thus have no obligation to anyone other than the labouring woman) and who have an exclusive focus on this task, support from a member of the woman's social network is effective in improving women's satisfaction with their birth experiences.

There remains relatively little information about the effects of continuous intrapartum support on mothers' and babies' health and well-being in the postpartum period.

AUTHORS' CONCLUSIONS

Implications for practice

Continuous support during labour should be the norm, rather than the exception. Hospitals should permit and encourage women to have a companion of their choice during labour and birth, and hospitals should implement programs to offer continuous support during labour. Policy makers and hospital administrators in high-income countries who wish to effect clinically important reductions in inappropriately high caesarean rates should be cautioned that continuous support by nurses or midwives may not achieve this goal, in the absence of other changes to policies and routines. In many settings, the labour ward functions according to a risk-oriented, technology-dominated approach to care. Institutional staff are unlikely to be able to offer labouring women benefits comparable to non-staff members, in the absence of fundamental changes in the organisation and delivery of maternity care. Changes to the content of health professionals' education and to the core identity of professionals may also be important. Policy makers and administrators must look at system reform and rigorous attention to evidence-based use of interventions that were originally developed to diagnose or treat problems and are now used routinely during normal labours. Given the clear benefits and absence of adverse effects of continuous labour support, policy makers should consider including it as a covered service for all women.

Every effort should be made to ensure that women's birth environments are empowering, non-stressful, afford privacy, communicate respect and are not characterised by routine interventions that add risk without clear benefit. In most areas of the world, childbearing women have limited or no access to trained doulas. Where available, costs of doula services are frequently borne by childbearing families and may be a barrier to access. In areas where doulas are not available, a comprehensive guidebook for designated companions is available for those with good English liter-

acy (Simkin 2007). The 'Better Births Initiative' is a structured motivational program which promotes humane, evidence-based care during labour. The program focuses on promoting labour companionship and avoiding unproven interventions such as routine starvation, supine position and routine episiotomy. The educational materials for the Better Births Initiative include a video presentation on childbirth companions which is available in the World Health Organization Reproductive Health Library (WHO 2010). It can be accessed free of charge on the Internet in Arabic, Chinese, French, English, Spanish, Russian and Vietnamese and is distributed on CD to health workers in resource-poor countries. The selection of Cochrane reviews in the Reproductive Health Library includes this review of continuous labour support.

Implications for research

There remains relatively little information about the effects of continuous intrapartum support on mothers' and babies' health and well-being in the postpartum period, and thus trials across all types of settings, which include a focus on longer-term outcomes for mother and baby, would be helpful. The trials in resource-constrained countries were relatively small, and additional, large trials may be required in such settings, where the cost of providing continuous support may compete with other resource priorities. Particular attention should be paid to outcomes that have been under-researched in resource-poor settings, but are causes of significant morbidity, including urinary and faecal incontinence, pain during intercourse, prolonged perineal pain and depression. Trials of different models of training providers of labour support would help to inform decision makers about the most effective models in the context of their settings. All trials should include economic analyses of the relative costs and benefits.

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REFERENCES

References to studies included in this review

Breart - Belgium 1992 ***{published data only}***

* Breart G, Garel M, Mlika-Cabanne N. Evaluation of different policies of management of labour for primiparous women. Trial B: Results of the continuous professional support trial. In: Kaminski M editor(s). *Evaluation in Pre-, Peri-, and Post-Natal Care Delivery Systems*. Paris: INSERM, 1992:57–68.

Breart G, Mlika-Cabane N, Kaminski M. The evaluation of different policies for the management of labour. Proceedings of 3rd European Health Services Research Meeting; 1991 Dec 13-14; London, UK. 1991.

Breart G, Mlika-Cabane N, Kaminski M, Alexander S, Herruzo-Nalda A, Mandruzzato P, et al. Evaluation of different policies for the management of labour. *Early Human Development* 1992;**29**:309–12.

Breart G, Mlika-Cabane N, Thornton J, Trakas D, Alexander S, Mandruzzato P, et al. European trials on artificial rupture of membranes and professional support during labour. *Journal of Perinatal Medicine* 1992;**20**(Suppl 1):37.

Breart - France 1992 ***{published data only}***

* Breart G, Garel M, Mlika-Cabanne N. Evaluation of different policies of management of labour for primiparous women. Trial B: Results of the continuous professional support trial. In: Kaminski M editor(s). *Evaluation in Pre-, Peri-, and Post-natal Care Delivery Systems*. Paris: INSERM, 1992:57–68.

Breart G, Mlika-Cabane N, Kaminski M. The evaluation of different policies for the management of labour. Proceedings of 3rd European Health Services Research Meeting; 1991 Dec 13-14; London, UK. 1991.

Breart G, Mlika-Cabane N, Kaminski M, Alexander S, Herruzo-Nalda A, Mandruzzato P, et al. Evaluation of different policies for the management of labour. *Early Human Development* 1992;**29**:309–12.

Breart G, Mlika-Cabane N, Thornton J, Trakas D, Alexander S, et al. European trials on artificial rupture of membranes and professional support during labour. *Journal of Perinatal Medicine* 1992;**20**(Suppl 1):37.

Breart - Greece 1992 ***{published data only}***

* Breart G, Garel M, Mlika-Cabanne N. Evaluation of

different policies of management of labour for primiparous women. Trial B: Results of the continuous professional support trial. In: Kaminski M editor(s). *Evaluation in Pre-, Peri-, and Post-Natal Care Delivery Systems*. Paris: INSERM, 1992:57–68.
Breart G, Mlika-Cabane N, Kaminski M. The evaluation of different policies for the management of labour. Proceedings of 3rd European Health Services Research Meeting; 1991 Dec 13-14; London, UK. 1991.
Breart G, Mlika-Cabane N, Kaminski M, Alexander S, Herruzo-Nalda A, Mandruzzato P, et al. Evaluation of different policies for the management of labour. *Early Human Development* 1992;**29**:309–12.
Breart G, Mlika-Cabane N, Thornton J, Trakas D, Alexander S, et al. European trials on artificial rupture of membranes and professional support during labour. *Journal of Perinatal Medicine* 1992;**20**(Suppl 1):37.

Bruggemann 2007 ***{published and unpublished data}***
Bruggemann OM, Parpinelli MA, Osis MJD, Cecatti JG, Neto ASC. Support to woman by a companion of her choice during childbirth: a randomized controlled trial. *Reproductive Health* 2007;**4**:5.

Campbell 2006 ***{published and unpublished data}***
Campbell D, Scott KD, Klaus MH, Falk M. Female relatives or friends trained as labor doulas: outcomes at 6 to 8 weeks postpartum. *Birth* 2007;**34**(3):220–7.
* Campbell DA, Lake MF, Falk M, Backstrand JR. A randomized control trial of continuous support in labor by a lay doula. *Journal of Obstetric, Gynecologic, and Neonatal Nursing* 2006;**35**(4):456–64.

Cogan 1988 ***{published and unpublished data}***
Cogan R, Spinnato JA. Social support during premature labor: effects on labor and the newborn. *Journal of Psychosomatic Obstetrics and Gynaecology* 1988;**8**:209–16.

Dickinson 2002 ***{published and unpublished data}***
Dickinson JE, Paech MJ, McDonald SJ, Evans SF. Maternal satisfaction with childbirth and intrapartum analgesia in nulliparous labour. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 2003;**43**:463–8.
* Dickinson JE, Paech MJ, McDonald SJ, Evans SF. The impact of intrapartum analgesia on labour and delivery outcomes in nulliparous women. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 2002;**42**(1):59–66.
Henderson JJ, Dickinson JE, Evans SF, McDonald SJ, Paech MJ. Impact of intrapartum epidural analgesia on breast-feeding duration. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 2003;**43**:372–7.

Gagnon 1997 ***{published and unpublished data}***
Gagnon A, Waghorn K. One-to-one nurse labor support of nulliparous women stimulated with oxytocin. *Journal of Obstetric, Gynecologic and Neonatal Nursing* 1999;**28**:371–6.
* Gagnon A, Waghorn K, Covell C. A randomized trial of one-to-one nurse support of women in labor. *Birth* 1997;**24**:71–7.

Hemminki 1990a ***{published data only}***
Hemminki E, Virta AL, Koponen P, Malin M, Kojo-Austin H, Tuimala R. A trial on continuous human support during labor: feasibility, interventions and mothers' satisfaction. (Trial A - Pilot study with volunteered midwifery students). *Journal of Psychosomatic Obstetrics and Gynaecology* 1990;**11**:239–50.

Hemminki 1990b ***{published data only}***
Hemminki E, Virta AL, Koponen P, Malin M, Kojo-Austin H, Tuimala R. A trial on continuous human support during labor: feasibility, interventions and mothers' satisfaction. (Trial A - Pilot study with volunteered midwifery students). *Journal of Psychosomatic Obstetrics and Gynaecology* 1990;**11**:239–50.

Hodnett 1989 ***{published and unpublished data}***
Hodnett ED, Osborn RW. A randomized trial of the effects of monitrice support during labor: mothers' views two to four weeks postpartum. *Birth* 1989;**16**:177–83.
* Hodnett ED, Osborn RW. Effects of continuous intrapartum professional support on childbirth outcomes. *Research in Nursing and Health* 1989;**12**:289–97.

Hodnett 2002 ***{published and unpublished data}***
* Hodnett ED, Lowe NK, Hannah ME, Willan AR, Stevens B, Weston JA, et al. Effectiveness of nurses as providers of birth labor support in North American hospitals. A randomized controlled trial. *JAMA* 2002;**288**(11):1373–81.
Muir HA, Hodnett ED, Hannah ME, Lowe NK, Willan AR, Stevens B, et al. The influence of continuous labor support on the choice of analgesia, ambulation and obstetric outcome [abstract]. *Anesthesiology* 2002;**96**(Suppl 1):P44.

Hofmeyr 1991 ***{published and unpublished data}***
Chalmers B, Wolman WL, Hofmeyr GJ, Nikodem C. Companionship in labour and the mother-infant relationship: preliminary report of a randomised trial. Proceedings of the 9th Conference on Priorities in Perinatal Care; 1990 March; Johannesburg, South Africa. 1990:139–41.
Chalmers B, Wolman WL, Hofmeyr GJ, Nikodem C. Companionship in labour: effect on the mother-infant relationship. Proceedings of the International Conference on Primary Care Obstetrics and Perinatal Health; 1991; Utrecht, The Netherlands. 1991:50.
Gulmezoglu AM, Chalmers BE, Nikodem VC, Wolman WL, Hofmeyr GJ. Companionship in labour: do the personality characteristics of labour supporters influence effectiveness?. Proceedings of the 11th Conference on Priorities in Perinatal Care in South Africa; 1992 March; Caledon, South Africa. 1992:115–6.
Hofmeyr GJ, Nikodem C, Gulmezoglu M, Wolman WL. Companionship to modify the clinical birth environment: long-term effects on mother and child. Proceedings of the 11th Conference on Priorities in Perinatal Care in South Africa; 1992 March; Caledon, South Africa. 1992:113–4.
Hofmeyr GJ, Nikodem C, Gulmezoglu M, Wolman WL. Companionship to modify the clinical birth environment: long-term effects on mother and child. Proceedings of the

26th British Congress of Obstetrics and Gynaecology; 1992 July 7-10; Manchester, UK. 1992:34.
Hofmeyr GJ, Nikodem VC, Chalmers BE, Kramer T. Clinically orientated care during labour reduces the chance of successful breastfeeding. Proceedings of the 10th Conference on Priorities in Perinatal Care in South Africa; 1991 March 12-15; Eastern Transvaal, South Africa. 1991: 107–9.
Hofmeyr GJ, Nikodem VC, Mahomed K, Gulmezoglu AM, Lawson M, Van Der Walt LA, et al. Companionship to modify the clinical birth environment: no measurable effect on stress hormone levels. *Journal of Obstetrics and Gynaecology* 1995;**15**:178–81.
* Hofmeyr GJ, Nikodem VC, Wolman WL, Chalmers BE, Kramer T. Companionship to modify the clinical birth environment: effects on progress and perceptions of labour, and breastfeeding. *British Journal of Obstetrics and Gynaecology* 1991;**98**:756–64.
Nikodem VC, Nolte AG, Wolman W, Gulmezoglu AM, Hofmeyr GJ. Companionship by a lay labour supporter to modify the clinical birth environment: long-term effects on mother and child. *Curationis* 1998;**21**(1):8–12.
Trotter C, Wolman WL, Hofmeyr J, Nikodem C, Turton R. The effect of social support during labour on postpartum depression. *South African Journal of Psychology* 1992;**22**(3): 134–9.
Wolman WL, Chalmers B, Hofmeyr J, Nikodem VC. Postpartum depression and companionship in the clinical birth environment: a randomized, controlled study. *American Journal of Obstetrics and Gynecology* 1993;**168**: 1388–93.

Kashanian 2010 ***{published data only}***
Kashanian M, Javadi F, Haghighi MM. Effect of continuous support during labor on duration of labor and rate of cesarean delivery. *International Journal of Gynecology & Obstetrics* 2010;**109**(3):198–200.

Kennell 1991 ***{published and unpublished data}***
* Kennell J, Klaus M, McGrath S, Robertson S, Hinkley C. Continuous emotional support during labor in a US hospital. *JAMA* 1991;**265**:2197–201.
Kennell J, Klaus M, McGrath S, Robertson S, Hinkley C. Medical intervention: the effect of social support during labour. Proceedings of Annual Meeting of the American Pediatric Society/Society for Pediatric Research; 1988 May; USA. 1988.
Kennell J, McGrath S, Klaus M, Robertson S, Hinkley C. Labor support: what's good for the mother is good for the baby. *Pediatric Research* 1989;**25**:15A.
Martin S, Landry S, Stellman L, Kennell J, McGrath S. The effect of doula support during labor on mother-infant interaction at 2 months. *Infant Behaviour and Development* 1998;**21 Supp1**:556.

Klaus 1986 ***{published and unpublished data}***
Klaus MH, Kennell JH, Robertson SS, Sosa R. Effects of social support during parturition on maternal and infant morbidity. *British Medical Journal* 1986;**293**:585–7.

Langer 1998 ***{published and unpublished data}***
Campero L, Garcia C, Diaz C, Ortiz O, Reynoso S, Langer A. "Alone, I wouldn't have known what to do": a qualitative study on social support during labor and delivery in Mexico. *Social Science and Medicine* 1998;**47**:395–403.
* Langer A, Campero L, Garcia C, Reynoso S. Effects of psychosocial support during labour and childbirth on breastfeeding, medical interventions, and mothers' wellbeing in a Mexican public hospital: a randomised clinical trial. *British Journal of Obstetrics and Gynaecology* 1998;**105**:1056–63.

Madi 1999 ***{published and unpublished data}***
Madi BC, Sandall J, Bennett R, MacLeod C. Effects of female relative support in labor: a randomized controlled trial. *Birth* 1999;**26**:4–8.

McGrath 2008 ***{published data only}***
McGrath SK, Kennell JH. A randomized controlled trial of continuous labor support for middle-class couples: effect on cesarean delivery rates. *Birth* 2008;**35**(2):92–7.

Morhason-Bello 2009 ***{published data only}***
Morhason-Bello IO, Adedokun BO, Ojengbede OA. Social support during childbirth as a catalyst for early breastfeeding initiation for first-time Nigerian mothers. *International Breastfeeding Journal* 2009;**4**:16.
* Morhason-Bello IO, Adedokun BO, Ojengbede OA, Olayemi O, Oladokun A, Fabamwo AO. Assessment of the effect of psychosocial support during childbirth in Ibadan, south-west Nigeria: a randomised controlled trial. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 2009;**49**(2):145–50.
Ojengbede O, Morhason-Bello I, Adedokun B, Becker S, Oni G, Tsui A. Psycho-social support in labour, as a catalyst for contraceptive uptake in Nigeria: preliminary analysis of a randomised controlled trial. *International Journal of Gynecology & Obstetrics* 2009;**107**(Suppl 2):S623–S624.

Thomassen 2003 ***{published data only}***
Thomassen P, Lundwall M, Wiger E, Wollin L, Uvnas-Moberg K. Lakartidningen. Doula--a new concept in obstetrics [Doula—-ett nytt begrepp inom forlossningsvarden]. *Lakartidningen* 2003;**100**(51-52): 4268–71.

Torres 1999 ***{published data only}***
Kopplin E, Torres-Pereyra J, Peña V, Salinas R. Impact of psychosocial supports during childbirth: the decrease of caesarean and bonuses of the process. *Pediatric Research* 2000;**47**:834.
* Torres J, Kopplin E, Pena V, Klaus M, Salinas R, Herrera M. Impact of emotional support during labour in the decrease of caesarean sections and satisfaction with the process [Impacto del apoyo emocional durante el parto en la disminucion de cesareas y gratificacion del proceso]. *Revista Chilena de Obstetricia y Ginecologia* 1999;**64**(5):405–12.

Yuenyong 2012 ***{published and unpublished data}***
Yuenyong S, O'Brien B, Jirapeet V. Effects of labor support from close female relative on labor and maternal satisfaction

in a Thai setting. *Journal of Obstetric, Gynecologic, & Neonatal Nursing* 2012;**41**(1):45–56.

References to studies excluded from this review

Bender 1968 ***{published data only}***
Bender B. A test of the effects of nursing support on mothers in labor. *ANA Regional Clinical Conferences 1967 Philadelphia/Kansas City*. New York: Appleton-Century-Crofts, 1968:171–9.

Bochain 2000 ***{published data only}***
Bochain SS. *Induced labor intervention for self-efficacy: a nursing intervention for women prone to an unpredictable labor pattern [thesis]*. Rhode Island: University of Rhode Island, 2000.

Brown 2007 ***{published data only}***
Brown H, Hofmeyr GJ, Nikodem VC, Smith H, Garner P. Promoting childbirth companions in South Africa: a randomised pilot study. *BMC Medicine* 2007;**5**:7.

Dalal 2006 ***{published data only}***
Dalal R, Rathnakumar, Santamani. Birth companion and mother - a preliminary report [abstract]. 49th All India Congress of Obstetrics and Gynaecology; 2006 Jan 6-9; Kerala State, India. 2006:140. [8E10.0007M]

Gordon 1999 ***{published data only}***
Gordon NP, Walton D, McAdam E, Derman J, Gallitero G, Garrett L. Effects of providing hospital-based doulas in health maintenance organization hospitals. *Obstetrics & Gynecology* 1999;**93**:422–6.

Hemminki 1990c ***{published data only}***
Hemminki E, Virta AL, Koponen P, Malin M, Kojo-Austin H, Tuimala R. A trial on continuous human support during labor: feasibility, interventions and mothers' satisfaction. (Trial C - Pilot study with lay women). *Journal of Psychosomatic Obstetrics and Gynaecology* 1990;**11**:239–50.

Lindow 1998 ***{published data only}***
Lindow SW, Hendricks MW, Thompson JW, van der Spuy ZM. The effect of emotional support on maternal oxytocin levels in labouring women. *European Journal of Obstetrics & Gynecology and Reproductive Biology* 1998;**79**:127–9.

McGrath 1999 ***{published data only}***
McGrath S, Kennell J, Suresh M, Moise K, Hinkley C. Doula support vs epidural analgesia: impact on cesarean rates. Pediatric Research 1999; Vol. 45, issue 4:16A.

Orenstein 1998 ***{published data only}***
Manning Orenstein G. A birth intervention: the therapeutic effects of doula support versus Lamaze preparation on first-time mothers' working models of caregiving. *Alternative Therapies in Medicine* 1998;**4**(4):73–81.

Pinheiro 1996 ***{published data only}***
Pinheiro RT, Sousa PLR, Horta B, de Souza RM, de Sousa MGR, de Sousa FR. Male and female young doulas - effective on labour? [abstract]. Xth World Congress of Psychiatry; 1996 August 23-28; Madrid, Spain. 1996.

Ran 2005 ***{published data only}***
Ran KQ, He AM, Han QR, Tang ZL, Lei FH. Comfortable nursing and the mental state in parturient women. *Chinese Journal of Clinical Rehabilitation* 2005;**9**(32):62–3.

Scott 1999 ***{published data only}***
Scott KD, Klaus PH, Klaus MH. The obstetrical and postpartum benefits of continuous support during childbirth. *Journal of Women's Health & Gender-Based Medicine* 1999;**8**(10):1257–64.

Sosa 1980 ***{published data only}***
Sosa R, Kennell J, Klaus M, Urrutia J. The effect of a supportive woman on mothering behavior and the duration and complications of labor. *Pediatric Research* 1979;**13**:338.
* Sosa R, Kennell JH, Klaus MH, Robertson S, Urrutia J. The effect of a supportive companion on perinatal problems, length of labor, and mother-infant interaction. *New England Journal of Medicine* 1980;**303**:597–600.

Trueba 2000 ***{published and unpublished data}***
Trueba G, Contreras C, Velazco MT, Lara EG, Martinez HB. Alternative strategy to decrease cesarean section: support by doulas during labor. *Journal of Perinatal Education* 2000;**9**(2):8–13.

Tryon 1966 ***{published data only}***
Tryon PA. Use of comfort measures as support during labor. *Nursing Research* 1966;**15**(2):109–18.

Zhang 1996 ***{published data only}***
Zhang CL, Yu ZJ, Feng AH. Study of psychological nursing to ease pain during labour. *Chinese Journal of Nursing* 1996; **31**(6):311–3.

References to studies awaiting assessment

Dong 2009 ***{published data only}***
Dong X, Qi H, Hu L, Luo X, Zhu Y, Cai J. The effects of air sac combined with nitrous oxide and Doula companying delivery in vaginal delivery. *International Journal of Gynecology and Obstetrics* 2009;**107**:S158–S159.

Huang 2003 ***{published data only}***
Huang XH, Xiang XY, Shen RG, Shang Q, Zhu LP, Qian X, et al. Study on intrapartum service model during normal labor. *Chung-Hua Fu Chan Ko Tsa Chih [Chinese Journal of Obstetrics & Gynecology]* 2003;**38**(7):385–7.

Orbach-Zinger 2012 ***{published data only}***
Orbach-Zinger S, Ginosar Y, Sverdlik J, Treitel C, Mackersey K, Bardin R, et al. Partner's presence during initiation of epidural labor analgesia does not decrease maternal stress: a prospective randomized controlled trial. *Anesthesia and Analgesia* 2012;**114**(3):654–60.

Riley 2012 ***{published data only}***
Riley L, Hutchings Y, Lieberman E. The effect of doula support on epidural use among nulliparous women in tertiary care centers. *American Journal of Obstetrics and Gynecology* 2012;**206**(Suppl 1):S70–S71.

Safarzadeh 2013 ***{published data only}***
Safarzadeh A, Beigi M, Salehian T, Khojasteh F, Rigi SN, Buryri T, et al. Effect of doula support on labour pain and

outcomes in primiparous women in Zahedan, southeastern Iran: a randomized controlled trial. Evidence Live; 2013 March 25-26; Oxford, UK 2013.

Sangestani *{published data only}*
Sangestani G. The influence of doula on the parturient anxiety in delivery ward, 2011. http://www.irct.ir/searchresult.php?id=6827&number=2 (accessed 10 March 2012).

Shen *{published data only}*
Shen XF. Doula combined latent phrase epidural analgesia in primiparous women (DCLEAP). http://clinicaltrials.gov/ct2/show/record/NCT00664118 (accessed 7 March 2012).

Wan 2011 *{published data only (unpublished sought but not used)}*
Wan H, Hu S, Thobaben M, Hou Y, Yin T. Continuous primary nursing care increases satisfaction with nursing care and reduces postpartum problems for hospitalized pregnant women. *Contemporary Nurse* 2011;**37**(2):149–59.

References to ongoing studies

Janssen *{published data only}*
Janssen P. Impact of doula support on intrapartum outcomes for women undergoing a vaginal birth after cesarean (vbac). http://clinicaltrials.gov/ct2/show/record/NCT01216098 (accessed 15 February 2012).

Additional references

Anim-Somuah 2011
Anim-Somuah M, Smyth RMD, Jones L. Art. No.: CD000331. Epidural versus non-epidural or no analgesia in labour. *Cochrane Database of Systematic Reviews* 2011, Issue 12. [DOI: 10.1002/14651858.CD000331.pub3]

Avan 2010
Avan B, Richter LM, Ramchandani PG, Norris SA, Stein A. Maternal postnatal depression and children's growth and behaviour during the early years of life: exploring the interaction between physical and mental health. *Archives of Disease in Childhood* 2010;**95**(9):690–5.

AWHONN 2002
Association of Women's Health, Obstetric, Neonatal Nurses. Professional nursing support of laboring women. http://www.awhonn.org (accessed 2002).

Caton 2002
Caton D, Corry MP, Frigoletto FD, Hopkins DP, Lieberman E, Mayberry L, et al. The nature and management of labor pain: executive summary. *American Journal of Obstetrics and Gynecology* 2002;**186**(5):S1–S15.

Declercq 2002
Declercq ER, Sakala C, Corry MP, Applebaum S, Risher P. *Listening to mothers: report of the first national US survey of women's childbearing experiences*. New York: Maternity Center Association, October 2002.

Declercq 2006
Declercq GD, Sakala C, Corry MP, Applebaum S. *Listening to mothers: report of the second national U.S. survey of women's childbearing experiences*. New York: Childbirth Connection, 2006.

Higgins 2011
Higgins JPT, Green S, editors. Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0 [updated March 2011]. The Cochrane Collaboration, 2011. Available from www.cochrane-handbook.org.

Hodnett 1997
Hodnett E. Are nurses effective providers of labor support? Should they be? Can they be?. *Birth* 1997;**24**:78–80.

Hodnett 2002a
Hodnett ED. Pain and women's satisfaction with the experience of childbirth: a systematic review. *American Journal of Obstetrics and Gynecology* 2002;**186**(5): S160–S172.

Klaus 2002
Klaus MH, Kennell JH, Klaus PH. *The doula book: how a trained labor companion can help you have a shorter, easier and healthier birth*. 2nd Edition. Cambridge, MA: Perseus Books, 2002.

Lederman 1978
Lederman RP, Lederman E, Work BA, Jr, McCann DS. The relationship of maternal anxiety, plasma catecholamines, and plasma cortisol to progress in labor. *American Journal of Obstetrics and Gynecology* 1978;**132**(5):495–500.

Lederman 1981
Lederman E, Lederman RP, Work BA Jr, McCann DS. Maternal psychological and physiologic correlates of fetal-newborn health status. *American Journal of Obstetrics and Gynecology* 1981;**139**(8):956–8.

McGinnis 2001
McGinnis S. On being a doula. *MIDIRS Midwifery Digest* 2001;**11**(3):362–4.

MIDIRS 1999
MIDIRS and the NHS Centre for Reviews and Dissemination. Support in labour: informed choice for professionals leaflet. Midwives Information and Resource Service. Bristol, England, 1999.

NICE Intrapartum Care 2007
National Collaborating Centre for Women's and Children's Health. Section 4.3. Support in labour. *Intrapartum Care: Care of Healthy Women and Their Babies During Childbirth*. London: RCOG press, September 2007:73–5.

Pascali-Bonaro 2010
Pascali-Bonaro D. Global labor support trends. Personal communication 5 June 2010.

RevMan 2011 [Computer program]
The Nordic Cochrane Centre, The Cochrane Collaboration. Review Manager (RevMan). Version 5.1. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration, 2011.

Simkin 2007
Simkin P. *The Birth Partner: A Complete Guide to Childbirth for Dads, Doulas, and Other Labor Companions*. 3rd Edition. Boston: Harvard Common Press, 2007.

SOGC 1995

Society of Obstetricians and Gynaecologists of Canada. SOGC policy statement: fetal health surveillance in labour. SOGC News 1995:41–5.

WHO 2010

Labour companionship: every woman's choice. WHO Reproductive Health Library (http://apps.who.int/rhl/videos/en/index.html) [accessed 2010].

References to other published versions of this review

Hodnett 2003

Hodnett ED, Gates S, Hofmeyr G J, Sakala. Continuous support for women during childbirth. *Cochrane Database of Systematic Reviews* 2003, Issue 3. [DOI: 10.1002/14651858.CD003766]

Hodnett 2011

Hodnett ED, Gates S, Hofmeyr GJ, Sakala C, Weston J. Continuous support for women during childbirth. *Cochrane Database of Systematic Reviews* 2011, Issue 2. [DOI: 10.1002/14651858.CD003766.pub3]

Hodnett 2012

Hodnett ED, Gates S, Hofmeyr GJ, Sakala C. Continuous support for women during childbirth. *Cochrane Database of Systematic Reviews* 2012, Issue 10. [DOI: 10.1002/14651858.CD003766.pub4]

* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Breart - Belgium 1992

Methods	RCT.
Participants	3 trials are reported separately, within 1 publication. Participants were nulliparous, healthy, in spontaneous labour, term, with singleton vertex presentations. Trial in Belgium: n = 264 (133 permanent support; 131 control)
Interventions	Permanent presence of a midwife compared to varying degrees of presence. Fathers were allowed to be present
Outcomes	Oxytocin, epidural analgesia, labour length, mode of birth, Apgar scores, mothers' views of their experiences
Notes	Epidural analgesia was available and it is not known whether EFM was used routinely

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	Women were 'randomly assigned'. The envelopes were prepared by the co-ordinating centre. No mention of the process of sequence generation
Allocation concealment (selection bias)	Unclear risk	Sealed envelopes. No mention if they were opaque or consecutively numbered. The process of how the envelopes were opened was not described
Blinding (performance bias and detection bias) All outcomes	Unclear risk	No details given.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Completion rate for medical record data and in-hospital questionnaire were 99.2% and 91.0% respectively
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Breart - France 1992

Methods	See Breart - Belgium.
Participants	See Breart - Belgium. Trial in France: n = 1320 (656 continuous support; 664 control)
Interventions	See Breart - Belgium. Fathers were allowed to be present.
Outcomes	See Breart - Belgium.
Notes	Epidural analgesia was available and it is unknown whether EFM was routine

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Women were 'randomly assigned'. The envelopes were prepared by the co-ordinating centre. No mention of the process of sequence generation
Allocation concealment (selection bias)	Unclear risk	Sealed envelopes. No mention if they were opaque or consecutively numbered. The process of how the envelopes were opened was not described
Blinding (performance bias and detection bias) All outcomes	Unclear risk	No details given.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Completion rate for medical record data and in-hospital questionnaire was > 95%. There were some discrepancies in the total number enrolled. 2 reports show 656 in the permanent support group and 664 in the control group for a total of 1320. The table of results in 1 report shows 654 in the permanent support and 666 in control. The in-hospital questionnaire results are shown for 654 and 664 women (total 1318) but the authors state this is 95% of the sample, meaning the total is 1386. The n reported with each outcome was the one used in the data tables in this review
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Breart - Greece 1992

Methods	See Breart - Belgium.
Participants	See Breart - Belgium. Trial in Greece: n = 569 (295 permanent support; 274 control)
Interventions	See Breart - Belgium. Fathers/family members were not permitted to be present
Outcomes	See Breart - Belgium, except that mothers' views were not reported
Notes	Epidural analgesia was not available. Not stated if EFM was used routinely

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Women were 'randomly assigned'. The envelopes were prepared by the co-ordinating centre. No mention of the process of sequence generation
Allocation concealment (selection bias)	Unclear risk	Sealed envelopes. No mention if they were opaque or consecutively numbered. The process of how the envelopes were opened was not described
Blinding (performance bias and detection bias) All outcomes	Unclear risk	No details given.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Completion rate for medical record data was 97%. No in-hospital questionnaire data were available
Selective reporting (reporting bias)	Low risk	All medical record outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Bruggemann 2007

Methods	RCT.
Participants	212 nulliparous women in active labour at term (105 support group, 107 control group) at a University-affiliated hospital in Sao Paulo, Brazil. To be eligible a companion of the woman's choosing had to be available. 49.5% of the companions were present at enrolment and the others were phoned and asked to come to the hospital (4 failed to make it before delivery)
Interventions	Support was 'presence of a chosen companion during labour and delivery'. 'The companions received verbal and written information on the activities involved in providing support, expected behaviour when confronted with signs of tiredness, anxiety, concern, crying, screaming and/or the woman's feelings of inability to cope, compliance with regulations and the possibility of requesting information from staff'. in 47.6% of the

Bruggemann 2007 (*Continued*)

	sample the woman's companion was her partner, for 29.5% it was her mother The control group received usual care where a companion during labour and delivery was not permitted For both groups labour and delivery care was provided 'according to the routine protocol including active management of labour (early amniotomy, use of oxytocin, intermittent EFM and systematic analgesia)'
Outcomes	Satisfaction with labour and delivery, perinatal and breastfeeding outcome in the 12 hours post delivery
Notes	All women in labour at this hospital received epidural analgesia as a routine practice. Therefore, we did not include epidural analgesia data in the review EFM was not used routinely.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	'Computer generated sequence of random numbers.'
Allocation concealment (selection bias)	High risk	'Individual assignment numbers were all placed in an opaque container to assure the concealment. The eligible women who had agreed to participate selected one of the numbers once, and were therefore allocated to either intervention group or control according to the list.' This process was open to selection bias as women could have re-picked another number from the container. No audit process is possible with this system of randomisation
Blinding (performance bias and detection bias) All outcomes	High risk	Data collection by author, who knew group allocation.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data were collected and in-hospital questionnaires were completed for 100% of sample
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Campbell 2006

Methods	RCT.
Participants	600 nulliparous, low-income, under-insured pregnant women (300 doula group, 300 control group) booked for delivery at a hospital in New Jersey, USA were enrolled between 12 and 38 weeks' gestation. They were considered low risk, with no contraindications

	to labour and had a female friend or relative willing to act as their lay doula. The doula was in addition to support people of their own choosing
Interventions	Intervention: continuous support by a female friend or relative who had had 2, 2-hour sessions about labour support. The training sessions were conducted for nearly all of the lay caregivers when the participants were 34-36 weeks' gestation Control group: support people of their own choosing.
Outcomes	Labour length, epidural analgesia, oxytocin augmentation, cervical dilation at epidural insertion, length of second stage labour, caesarean birth, 1-min Apgar score > 6, 5-min Apgar score > 6
Notes	Epidural analgesia was available and EFM was used routinely.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	'Computer generated randomization scheme.'
Allocation concealment (selection bias)	Low risk	Consecutively-numbered, sealed opaque envelopes contained treatment assignments. After obtaining consent, a research assistant opened the next envelope. It was unclear whether the research assistant enrolling the woman was the same one that opened the envelope
Blinding (performance bias and detection bias) All outcomes	High risk	Medical record abstraction was done by the author who was not blinded. The 6-week questionnaire data collection was not blinded
Incomplete outcome data (attrition bias) All outcomes	High risk	Medical record information was completed for 97.7% of the sample (82.3% in the intervention group and 94.3% in the control group). The differential rates are due to withdrawals from the intervention group for doula related reasons (incomplete training and not being present during labour). The 6-week questionnaire was completed for 82.3% of the sample. Only those women included in the study at delivery had the opportunity to complete the questionnaire and thus the differential completion rate between groups remained (76.3% in the intervention group and 88.3% in the control group). The differential withdrawals could introduce selection bias
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Unclear risk	The training of the doulas giving the intervention was done by the research assistant, who was herself a doula. This same research assistant enrolled all study participants

Cogan 1988

Methods	RCT.
Participants	34 women (primigravidas and multigravidas) at 26-37 weeks' gestation in 2 Texas hospitals (20 to supported group and 14 to usual care). They were in early, uncomplicated preterm labour
Interventions	Intervention: support provided by a Lamaze childbirth preparation instructor. Support included continuous presence, acting as a liaison with hospital staff, providing information, and teaching relaxation and breathing measures Usual care: intermittent nursing care. Family members allowed to be present
Outcomes	Fetal distress, caesarean birth, artificial oxytocin, labour length, Apgar scores, neonatal intensive care
Notes	Not stated if epidural analgesia was available or if EFM was used routinely

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	'Randomly assigned.' No further details provided.
Allocation concealment (selection bias)	Unclear risk	Admitting nurse telephoned research assistant to obtain treatment allocation. No details about whether the research assistant had foreknowledge of the treatment allocation scheme
Blinding (performance bias and detection bias) All outcomes	Low risk	Medical record information collected by 'research assistants who did not know the group membership of the women'
Incomplete outcome data (attrition bias) All outcomes	High risk	Withdrawals occurred before analysis (6 (30%) in support group and 3 (21%) in control). This resulted in a follow-up rate of 73.5%. The withdrawals were done differentially in the support group, i.e. some women were withdrawn because of an event that occurred *before the support person arrived*. Women in the control group with the same event were not withdrawn. We were able to re-create the original study groups for 1 outcome only, caesarean birth, and therefore it is included in the analysis table
Selective reporting (reporting bias)	Unclear risk	No outcomes were stated a priori.
Other bias	Low risk	No other sources of bias noted.

Dickinson 2002

Methods	RCT, stratified by induced or spontaneous labour at trial entry
Participants	992 nulliparous women at term (499 to continuous support and 493 to control), cephalic fetal presentation, cervical dilatation < 5 cm, in a hospital in Perth, Western Australia
Interventions	Group 1: continuous physical and emotional support by midwifery staff, and women were encouraged to use pharmacologic and nonpharmacologic alternatives to epidural analgesia. Group 2: continuous midwifery support was not provided and women were encouraged to have epidural analgesia as their primary method of pain relief in labour
Outcomes	Labour length (expressed as median and interquartile range), epidural analgesia, mode of delivery, 5 min Apgar score < 7, arterial cord pH
Notes	The stated purpose was to compare the effects of intrapartum analgesic techniques on labour outcomes. Continuous midwifery support was conceptualised as an analgesic technique. Both groups had access to opioids and nitrous oxide. No data were presented about the number of women who used no pharmacologic analgesia. Because the type of analgesia used was a measure of compliance rather than an outcome, no data on analgesic outcomes are included in this review It was not stated if other support person was allowed. epidural analgesia was available and EFM was used routinely

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No details about how the blocks of treatment allocations were produced
Allocation concealment (selection bias)	Unclear risk	Randomisation on presentation in the labour and delivery unit, "by selection from a blocked group of eight sealed opaque envelopes, replenished from blocks of 12". No further details about process
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not noted.
Incomplete outcome data (attrition bias) All outcomes	Low risk	There was 100% follow-up for medical record data and in-hospital survey. A 6-month questionnaire was completed by 64.7% of the sample and these data were not used
Selective reporting (reporting bias)	Low risk	All main outcomes were reported. Effects on breastfeeding were not analysed by treatment group and thus the results could not

Dickinson 2002 (*Continued*)

		be included in the review
Other bias	Low risk	No other sources of bias noted.

Gagnon 1997

Methods	RCT.
Participants	413 women admitted to an intrapartum unit at a tertiary care teaching hospital in Montreal, Canada, were randomly allocated to experimental (n = 209) or control (n = 204) groups. All but 3 in the experimental group and 6 in the control group were accompanied by a spouse, relative or friend during labour. All participants were nulliparous, with singleton fetuses, > 37 weeks' gestation, and in labour
Interventions	Experimental: 1-to-1 nursing care from randomisation until 1 hour postbirth. Care was provided by on-call nurses who were hired specifically for the study and had received a 30-hour training program and quarterly refresher workshops. The training program included critical reviews of the literature concerning the effects of intrapartum medical and nursing practices, as well as discussions of stress and pain management techniques. The nurse provided the usual nursing care plus physical comfort, emotional support, and instruction on relaxation and coping techniques. The nurse took meal breaks and brief rest breaks Women in the comparison group received usual nursing care by the regular unit staff, consisting of intermittent support and monitoring
Outcomes	Caesarean birth, caesarean birth for cephalopelvic disproportion or failure to progress, post-randomisation artificial oxytocin augmentation, post-randomisation analgesia/anaesthesia, instrumental vaginal delivery (forceps or vacuum extraction), NICU admission, perineal trauma, mean duration of labour post-randomisation, postpartum urinary catheterisation
Notes	The participants had been admitted to the unit for an average of 5 hours (SD = 4 hours) prior to randomisation. 36 women in the experimental group and 41 in the control group had epidural analgesia prior to randomisation. 55 women in the experimental group and 45 in the control group had intravenous oxytocin augmentation of labour prior to randomisation. Mean duration of labour post-randomisation was 9.2 hours (SD = 4.3) Epidural analgesia was available but it was not stated if EFM was used routinely

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	'Randomized using a list of computer generated random numbers.'
Allocation concealment (selection bias)	Low risk	'Randomized in blocks of eight.' 'Group assignments were placed in sequentially numbered, sealed, opaque envelopes.'

Gagnon 1997 (*Continued*)

Blinding (performance bias and detection bias) All outcomes	High risk	Data collectors were not blinded as they read nurses notes to collect data
Incomplete outcome data (attrition bias) All outcomes	Low risk	100% follow-up.
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Hemminki 1990a

Methods	2 RCTs reported in the same publication. The Zelen method was used: only those participants randomised to the experimental group were told the true purpose of the trial and asked for consent. The participants in the control group were told about the study in the introduction letter for the postpartum questionnaire and they were told it was 'a study on factors influencing birth'
Participants	Healthy nulliparous and parous women in labour at a hospital in Finland. 86 women were enrolled in Trial A. The actual number enrolled to each group was not noted but medical record data were collected for 79 women (41 in the support group and 38 in the control group). These 79 women represented 91.9% of the total sample
Interventions	Trial A: in 1987, the intervention was 1:1 support by midwifery students from enrolment until transfer to the postpartum ward. The midwifery students volunteered, were not specially trained in support and responsible for the other routine intrapartum care The control group 'was cared for according to the normal routine of the midwife and by a medical student, if s(he) was on duty' Over 70% of fathers were present.
Outcomes	Labour length, medical interventions, complications (mother and baby), pharmacologic pain relief, method of birth, mothers' evaluations of their experiences
Notes	Not stated if epidural analgesia was available or if EFM was used routinely

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No mention of how the allocation sequence was produced.
Allocation concealment (selection bias)	Unclear risk	'Randomization coding was done in blocks of 6 and put into non-transparent envelopes. The envelope was opened at the reception ward when it was decided to transfer mother to labour ward.' It was not stated

Hemminki 1990a (*Continued*)

		if the envelopes were consecutively numbered
Blinding (performance bias and detection bias) All outcomes	High risk	Medical record outcome were collected unblinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data were collected on 91.9% of the sample. A questionnaire was administered at 2-3 days postpartum. This was completed by only 70% of the sample and thus the data were not used
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	High risk	Mothers were told the purpose of the study differentially (see methods for Trial A above)

Hemminki 1990b

Methods	See Hemminki 1990a.
Participants	See Hemminki 1990a. 161 women were enrolled in Trial B (81 in the support group and 80 in control)
Interventions	Trial B: in 1988, the intervention was support by a new group of midwifery students. All students were involved in the trial, not just volunteers. The students were permitted to leave their participants to witness other interventions and deliveries The control group 'was cared for according to the normal routine of the midwife' and by a medical student as enrolment was limited to days when medical students were on duty Slightly less than 70% of fathers were present.
Outcomes	See Hemminki 1990a.
Notes	Not stated if epidural analgesia was available or if EFM was used routinely

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No details provided.
Allocation concealment (selection bias)	Unclear risk	The block size was reduced from the first study. 'To lessen the frustration resulting from opening a code for a control mother, randomisation envelopes contained a maximum of two similar codes in sequence (not told in advance)'. 'Put into non-

Hemminki 1990b (*Continued*)

		transparent envelopes'. The envelope was opened in the labour ward. It was not stated if the envelopes were consecutively numbered
Blinding (performance bias and detection bias) All outcomes	High risk	Medical record outcome were collected unblinded.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data were collected on 100% of the sample. A questionnaire was administered at 2-3 days postpartum and completed by 93.7% of the sample
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	High risk	Mothers were told the purpose of the study differentially (see methods for Trial A above)

Hodnett 1989

Methods	RCT, stratified by type of prenatal classes (Lamaze vs general)
Participants	145 nulliparous women (72 to support group and 73 to control) in the last trimester of a healthy pregnancy, booked for delivery at a Toronto, Canada, hospital
Interventions	Support provided by a monitrice (community 'lay' midwife or midwifery apprentice) compared with usual hospital care, defined as the intermittent presence of a nurse. Support described as including physical comfort measures, continuous presence, information, emotional support, and advocacy. The monitrice met with the woman twice in the latter weeks of pregnancy, to discuss her birth plans Comparable prenatal attention was provided to the controls. All but 1 woman also had husbands or partners present during labour. Support began in early labour at home or in hospital and continued through delivery
Outcomes	Intrapartum interventions, perceived control, method of delivery
Notes	Epidural analgesia was available and EFM was used routinely.

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Computer-generated table of random numbers.
Allocation concealment (selection bias)	Low risk	Randomisation done over the phone by a third party who had no knowledge of the participant, but used the open table of random numbers

Hodnett 1989 (*Continued*)

Blinding (performance bias and detection bias) All outcomes	Low risk	All participants blinded to the intervention. Control participants received prenatal and postpartum support (after the end of data collection); experimental participants received prenatal and intrapartum support Initial collection of medical record data was not blinded. 'Duplicate abstraction was done by a second research assistant blind to the subject's study group assignment, on a random sample of 20 records. Interrater agreement of over 95% was obtained for all categories of intervention and physical outcomes.' In-home interview at 2-4 weeks postpartum was blinded
Incomplete outcome data (attrition bias) All outcomes	Low risk	Method of delivery outcome available on 88.3% of sample. Other outcomes collected on only 71% of the sample and thus not used
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Hodnett 2002

Methods	Multi-centre RCT with prognostic stratification for parity and hospital
Participants	6915 nulliparous and parous women in labour at 13 hospitals in the USA and Canada (3454 to continuous labour support and 3461 to usual care). Eligibility criteria: live singleton fetus or twins, no contraindications to labour, in labour. Women were excluded if gestational age was < 34 weeks or if they were so high risk that a 1:1 patient-nurse ratio was medically necessary
Interventions	Experimental: continuous support from staff labour and delivery nurses who had volunteered for and received a 2-day training workshop in labour support. Prior to the trial, the support nurses had opportunities to practice their skills. They also had opportunities to continue learning from each other and the labour support trainer, throughout the trial. The nurses with training were part of the regular staffing complement of the unit and they provided care to the continuous support group but not to the usual care group Usual care: intermittent support from a nurse who had not received labour support training
Outcomes	Intrapartum interventions, method of birth, immediate complications (mother or baby) , complications (mother or baby) in the first 6-8 weeks postpartum, perceived control, postpartum depression, breastfeeding at 6-8 weeks, relationship with partner and with baby, likes and dislikes about birth experience and future preferences for labour support

Hodnett 2002 (*Continued*)

Notes	Other support person(s) were allowed, epidural analgesia was available and EFM was used routinely

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computerised randomisation program.
Allocation concealment (selection bias)	Low risk	'Randomization was centrally controlled with the use of a computerized randomization program at the data co-ordinating centre, accessible by means of a touch-tone telephone.'
Blinding (performance bias and detection bias) All outcomes	Low risk	Data collectors were not blinded as they read nurses' notes to collect data about type of nursing care provided. However random chart audits yielded no errors in reporting study outcomes
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data were collected on 100% of the sample. In-hospital questionnaires were completed by 96.4% and 6-8 week questionnaires by 81% of the sample
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Hofmeyr 1991

Methods	RCT.
Participants	189 nulliparous women (92 to support and 97 to control) in active labour at a community hospital serving low-income women in South Africa
Interventions	Intervention group: support by carefully trained, volunteer lay women, for at least several hours (supporters not expected to remain after dark) Control group: intermittent care on a busy ward. Husbands/family members were not permitted
Outcomes	Intrapartum interventions, method of birth, complications (mother and baby), anxiety, pain, mothers' perceptions of labour, breastfeeding

Hofmeyr 1991 (*Continued*)

Notes	Epidural analgesia was not available and EFM was not used routinely. While scores on an instrument measuring postpartum depression were reported in categories of "low", "moderate," and 'high", the authors stated that categorization was not appropriate as a clinical diagnostic definition of depression. To achieve the latter, the change in score must be reported, and these data were not collected

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random.
Allocation concealment (selection bias)	Unclear risk	"Randomly ordered cards in sealed opaque envelopes". Not stated if consecutively numbered
Blinding (performance bias and detection bias) All outcomes	High risk	Data collectors were not blinded as they asked questions about support received in labour
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data were collected on 100% of the sample and questionnaires within 24 hours postpartum were completed by 99%. The 6-week follow-up interviews were completed by 78. 8% of the sample, no imbalances existed between groups and thus the data were included in the analysis. At 1-year interviews were complete for 46% of the sample and data from these were not used. Nikodem reported on a larger sample of women with 1-year follow-ups but the completion rate was still only 50% of the original number enrolled
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Kashanian 2010

Methods	RCT.
Participants	100 nulliparous women at term (50 to support and 50 to routine care) in active labour at a university hospital in Tehran, Iran from March to September 2003
Interventions	'Women allocated to the intervention group were shown to an isolated room and were supported by an experienced midwife. The women were free to choose their position, and able to eat and walk about freely. During labor, the midwife explained the process of labor and the importance of body relaxation. Midwife-led support included close physical proximity, touch, and eye contact with the labouring women, and teaching, reassurance, and encouragement. The midwife remained with the woman throughout labor and delivery, and applied warm or cold packs to the woman's back, abdomen, or

	other parts of the body, as well as performing massage according to each woman's request. ' 'Women allocated to the routine care group were admitted to the labor ward (where 5-7 women labour in the same room), did not receive continuous support, and followed the routine orders of the ward. They did not have a private room, did not receive one-to-one care,were not permitted food, and did not receive education and explanation about the labor process. The only persons allowed in the delivery room were nurses, midwives, and doctors.'
Outcomes	Duration of labour, caesarean delivery, oxytocin use, Apgar score at 5 mins
Notes	EFM was not used routinely and epidural analgesia was not available

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	From personal communication - equal numbers of envelopes were produced for each letter (see below) and put into a box. No list of treatment allocations was created
Allocation concealment (selection bias)	High risk	'Allocated to one of two groups using 4-part, block randomization'. Used 'sealed envelopes labelled A, B, C, and D: envelopes A and C (intervention group) and B and D (routine care group) . Patients then chose an envelope, which was opened by the investigator' Further details from personal communication - the women picked from all the envelopes produced. Once an envelope was picked it was discarded This process was open to selection bias as women previously in the trial may have shared knowledge of which envelope contained which group with women not yet enrolled in the study
Blinding (performance bias and detection bias) All outcomes	Low risk	From personal communication - 'The co worker of investigator collected the outcome data and she was blind for the study group. '
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record information was collected on 100% of the sample
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Kennell 1991

Methods	RCT of continuous support vs usual care with an 'inconspicuous observer' plus a retrospective non-random control group. This review is restricted to comparisons of the outcomes of the participants who were randomly assigned
Participants	412 nulliparous women (212 in support group and 200 in observed group) were part of the RCT. They were aged 13-34, with singleton, term, healthy pregnancies, many not English-speaking, in active labour at a public hospital in Texas which provides care for low-income patients
Interventions	The description of the setting, the participants, and the type of care echo developing world conditions. All women laboured in a large 12-bed room For the women in the support group a doula stayed by their bedside and gave continuous support For those in the observed group they had the routine intermittent presence of a nurse and continuous presence of an 'inconspicuous observer' who 'kept a record of staff contact, interaction and procedures'. The observer was away from the beside and never spoke to the labouring woman
Outcomes	Analgesia/anaesthesia, labour length, artificial oxytocin use, method of birth, complications (mother and baby), neonatal health, number of women who rated their experience as negative
Notes	In instances in which outcome data (such as analgesia/anaesthesia use) in the published report were only provided for subgroups, the primary author was contacted and he provided complete outcome data for all women who were originally randomised Family members were not allowed to be present. Epidural analgesia was available and EFM was used routinely

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Described as random.
Allocation concealment (selection bias)	Low risk	'Randomly assigned' is stated in the report. In the protocol for the trial it states 'numbered opaque envelopes' would be used. The envelopes 'would contain the random assignments of the women to control or treatment groups and would be numbered sequentially'
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.

Kennell 1991 (*Continued*)

Incomplete outcome data (attrition bias) All outcomes	Low risk	There is some discrepancy in the number of women enrolled in the study. The report states 412 were enrolled and reports outcome data on all 412 women. But it also states that '14 women that agreed to participate were not included in the study.' The reasons for not including them seem to be events that would happen after randomisation - e.g. transferred due to staffing limitations, withdrew, undetected breech, interrupted observations, etc., and thus the sample appears to have numbered 426. Data are reported for 412 women (96.7% of 426)
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Klaus 1986

Methods	RCT. Purposefully enrolled more women to the control group. See 'Risk of bias' table below
Participants	465 healthy nulliparous women (186 to support group and 279 to control) in labour at the Social Security Hospital in Guatemala
Interventions	Support group: continuous emotional and physical support by a doula Control group: usual hospital routines (described as no consistent support)
Outcomes	Labour length, use of artificial oxytocin, method of birth, problems during labour and birth, fetal distress, Apgar scores, transfer to neonatal intensive care nursery
Notes	No family members permitted to be present. epidural analgesia was not available and EFM was not used routinely

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	'Enrolled using randomised design'. 'Pool of envelopes contained more control group to ensure similar sized groups with uncomplicated labours and deliveries.' They anticipated more complications in control group based on an earlier study (Sosa 1980). No information on how allocation sequence was generated.

Klaus 1986 (*Continued*)

Allocation concealment (selection bias)	Low risk	'Randomly assigned according to contents of a sealed opaque envelope. Each envelope was numbered sequentially.'
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not noted.
Incomplete outcome data (attrition bias) All outcomes	Low risk	'Mother-infant pairs were excluded when the mother developed a complication during labour, delivery, or post partum that required special care, if the baby's weight was below 5.5 lbs or above 8 lbs, if there were twins or congenital malformations.' This occurred for about 10% of cases in both groups resulting in reported outcomes for 89.6% of those randomised. Unpublished data on the excluded women were provided by the author Labour length data were only available for 48.4% of the sample (225 of 465) and thus not included
Selective reporting (reporting bias)	Low risk	All outcomes were reported on.
Other bias	Low risk	No other sources of bias noted.

Langer 1998

Methods	RCT.
Participants	724 women (361 to support and 363 to control) admitted for delivery at a large social security hospital in Mexico City, who met the following criteria: singleton fetus, no previous vaginal delivery, < 6 cm cervical dilatation, and no indications for an elective caesarean delivery
Interventions	Support group: continuous support from 1 of 10 women who had received doula training (6 were retired nurses), throughout labour, birth, and the immediate postpartum period. Support included: emotional support, information, physical comfort measures, social communication, ensuring immediate contact between mother and baby after birth, and offering advice about breastfeeding during a single brief session postnatally Control group: women received 'routine care'.
Outcomes	The main outcomes were exclusive and full breastfeeding at 1 month postpartum. Other outcomes included labour length, epidural anaesthesia, forceps birth, caesarean birth, meconium staining, and Apgar scores, as well as mothers' perceived control during childbirth, anxiety, pain, satisfaction, and self-esteem

Langer 1998 (*Continued*)

Notes	Partners and family members were not permitted. Epidural analgesia was available but it was not stated if EFM was used routinely

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	'Computer generated random number list'. 'The treatment sequence was kept at a central level.'
Allocation concealment (selection bias)	Unclear risk	'Opaque envelopes with the assignment were locked in a cabinet to which only a social worker exclusively in charge of randomisation and the principal investigator had access. An envelope with a paper inside showing to which group each woman was assigned was opened by the social worker immediately after recruitment in the labour and delivery unit. Not stated if envelopes were sequentially numbered
Blinding (performance bias and detection bias) All outcomes	Low risk	Data were collected by 2 'blinded social workers'.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data and in-hospital interview data were collected for 100% of the sample. A in-home interview was completed at 1 month postpartum for 92.2% of the sample
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Madi 1999

Methods	RCT.
Participants	109 Black women from Botswana (53 in support group and 56 in usual care group) , mean age 19 years, 80% unmarried, mostly students, who had met the following criteria: nulliparous, in labour, pregnancy at term, no history of pregnancy complications, cephalic presentation, normal spontaneous labour with cervical dilation 1-6 cm, female relative present who was willing to remain with the woman for the duration of labour
Interventions	Support group: continuous presence of female relative (usually her mother) in addition to usual hospital care Congrol group: usual hospital care, which involved staff:patient ratios of 1:4, and no companions permitted during labour
Outcomes	Spontaneous vaginal birth, vacuum extraction, caesarean birth, analgesia, amniotomy, artificial oxytocin during labour, Apgar scores (1- and 5-min)

Madi 1999 (*Continued*)

Notes	Epidural analgesia was not available and it was not stated whether EFM was used routinely

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	'Randomly allocated.' No other details provided.
Allocation concealment (selection bias)	Low risk	'Selection of an opaque, numbered, sealed envelope from a box of envelopes that were shuffled in the woman's presence. When opened the envelope revealed a code indicating her group.' An assistant that was not involved in the recruitment process shuffled the envelopes
Blinding (performance bias and detection bias) All outcomes	High risk	The researcher, who was involved in the recruitment of participants, collected the medical record data
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data were collected on 100% of the sample.
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

McGrath 2008

Methods	RCT. Enrollment occurred at childbirth education classes and randomisation occurred when the woman arrived at hospital in labour
Participants	420 nulliparous middle and upper class women (224 on doula group and 196 in control group) were enrolled in the third trimester of an uncomplicated pregnancy in Cleveland, Ohio. All women expected to be accompanied during labour by their male partner
Interventions	Experimental group: a doula met the couple at the hospital as soon as possible after random assignment (typically within an hour of their arrival at the hospital) and remained with them throughout labour and delivery. The central component of doula support was the doula's continuous bedside presence during labour and delivery, although her specific activities were individualised to the needs of the labouring woman. Doula support included close physical proximity, touch, and eye contact with the labouring woman, and teaching, reassurance, and encouragement of the woman and her male partner. All doulas completed training requirements that were equivalent to the DONA International doula certification Control group: routine obstetric and nursing care which included the presence of a male partner or other support person

Outcomes	Caesarean delivery, epidural anaesthesia, oxytocin use, labour length, mode of delivery, fever during labour, satisfaction at 6 weeks postpartum
Notes	Epidural analgesia was available and EFM was used routinely. The author has been contacted for data split by study group and questionnaire data for the control group

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No details stated.
Allocation concealment (selection bias)	Low risk	'When the research co-ordinator was informed that an enrolled woman had arrived at the hospital in early active labor, she opened the next sequentially numbered opaque envelope to determine random assignment to the doula or control group'. The research co-ordinator was off-site and called by the staff or the study participant
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medical record data were collected on 100% of the sample. The in-hospital and 6-week questionnaires were completed by 87.9% and 87.5% of the doula group. No information was provided for the control group
Selective reporting (reporting bias)	Low risk	The primary outcomes of caesarean birth and epidural anaesthesia were reported for each study group. Other labour and delivery outcomes were reported for the full sample only (not split by group). The in-hospital and 6-week questionnaire data were only reported for the doula group. The author has been contacted for these missing details
Other bias	Low risk	No other sources of bias noted.

Morhason-Bello 2009

Methods	RCT.
Participants	603 women from Ibadan, Nigeria with anticipated vaginal delivery were enrolled between 30 and 32 weeks' gestation at an antenatal clinic (305 to intervention and 298 to control) from November 2006 to March 2007
Interventions	Those in the experimental group were informed to bring someone of their choice to act as a companion during labour. On arrival in labour the accompanying companions were provided with an information leaflet that explained their responsibilities. These included: gentle massage of the woman's back during contraction, reassuring words, spiritual support inform of prayers and also acting as intermediary between the woman and healthcare team. After studying the leaflets, they were allowed to seek clarifications. The information leaflet was also interpreted for those that are not literate. The attending midwife allowed and ensured companions performed their expected duties throughout. The companions were told to offer continuous support - they were to be by the patient's side except for feeding and use of toilet until two hours after childbirth. Husbands were the most common support person (65.4%) The women in the control group had only routine care where relatives of patients are usually barred from the labour ward
Outcomes	Caesarean section rate, active phase of labour duration, pain score, need for analgesia, need for oxytocin augmentation, time from delivery to initiation of breastfeeding and the emotional experience during labour
Notes	Epidural analgesia was not available and it was not stated whether EFM was used routinely. We have requested further details from the authors The randomisation process was well done, but resulted in an imbalance in socioeconomic status between the groups. Women in the experimental group tended to be more educated (82% vs 48% with tertiary level) and skilled workers (78% vs 39%). This imbalance was noted and discussed by the authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	'The randomisation sequence was generated using a table of random numbers'
Allocation concealment (selection bias)	Low risk	'Random permuted blocks of size four were used to ensure a balanced design.' 'Based on the sequence of treatments generated using this method, treatment groups (A and B) were written on pieces of cardboard paper and put into sealed opaque envelopes. Each of the opaque envelopes had a serial number on it.' 'Two trained research assistants (RAs) non-medical staff, supervised the randomisation procedure at every clinic. On each clinic day, consented women that met the inclusion criteria were given serial numbers with allotted treatment group based on their arrival time. Only the statistician and RAs had access to the list of numbers used to prevent clinicians' influence on the randomisation.

		Each participant opened the opaque envelope in the presence of an RA, and the assigned treatment group was recorded on the woman's medical record file.'
Blinding (performance bias and detection bias) All outcomes	High risk	How data collection was done was not noted. The treatment group was noted in the chart so it is likely that the data collectors were unblinded
Incomplete outcome data (attrition bias) All outcomes	Low risk	Follow-up was completed for 97% of the sample.
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Thomassen 2003

Methods	RCT, no details regarding method of random assignment.
Participants	144 'healthy' women having their first baby booked for delivery at a Swedish hospital (72 to doula group and 72 to usual care). Participants were enrolled at 36 weeks' gestation
Interventions	Continuous presence by a doula who had met the woman during pregnancy, compared to usual care
Outcomes	Emergency caesarean birth and epidural analgesia.
Notes	The trial author reported that the information about randomisation method and outcomes of those lost to follow-up are no longer available Epidural analgesia was available. It was not stated if other support person(s) were allowed or if EFM was used routinely

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	"Randomized' - no further details provided or available.
Allocation concealment (selection bias)	Unclear risk	No details provided or obtained.
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not noted.
Incomplete outcome data (attrition bias) All outcomes	High risk	Medical record data collected on 70.1% of sample. No usable outcome data, due to serious risk of attrition bias. Outcomes are

		reported for 55/72 (76%) of the intervention group and 46/72 (64%) of the control group. Reason for the 41 "dropouts" were preterm birth, induction, or caesarean section "for medical reasons", and participant withdrawal. No numbers are given for individual reasons, or by group, but it is clear that some "dropouts" were prior to labour and others were during labour. Numbers in the report show the number of dropouts was actually 43
Selective reporting (reporting bias)	Unclear risk	Sample size was based on caesarean section rate. The only outcome reported was emergency caesarean
Other bias	High risk	Trial was stopped early for 'a range of largely organizational issues' when only 1/4 of the original sample size had been enrolled

Torres 1999

Methods	RCT.	
Participants	435 women (217 in companion group, 218 in control group) with a singleton pregnancy and considered to be low-risk at University Hospital in Santiago, Chile. Enrolled at 34-36 weeks' gestation	
Interventions	Intervention group: psychosocial support during labour from a companion chosen by the pregnant woman. The companions were trained by trial staff to provide emotional support, promote physical comfort and encourage progress of labour, without interfering with the activities of the obstetricians or midwives. They were with the labouring woman continuously from admission to delivery. Women were encouraged to pick a companion who had experienced a vaginal birth Control group did not have companion. Both groups laboured in a room with other women where curtains were pulled for privacy	
Outcomes	Caesarean section, exclusive breastfeeding, duration of labour, mode of delivery, use of oxytocics, presence of meconium, regional anaesthesia, birth asphyxia, Apgar scores, level of neonatal care, maternal satisfaction	
Notes	Epidural analgesia was available. It was not stated if EFM was used routinely. Authors have been contacted for further details	
Risk of bias		
Bias	**Authors' judgement**	**Support for judgement**

Torres 1999 (*Continued*)

Random sequence generation (selection bias)	Low risk	Computer-generated list of random numbers.
Allocation concealment (selection bias)	Low risk	Used blocks of 6. Group assignment used sealed opaque envelopes numbered consecutively. A member of the trial team enrolled women and did not know in advance the content of each envelope
Blinding (performance bias and detection bias) All outcomes	Unclear risk	Not stated.
Incomplete outcome data (attrition bias) All outcomes	Low risk	Medcial record data were collected for 100% of the sample and in-hospital surveys were completed by 95.8%. A 6-week phone interview was completed for 71.2% of the sample and thus these data were not used
Selective reporting (reporting bias)	Low risk	All outcomes were reported.
Other bias	Low risk	No other sources of bias noted.

Yuenyong 2012

Methods	RCT
Participants	120 nulliparous women, ages 18-30, at least 36 weeks' gestation, singleton fetus with cephalic presentation, able and willing to have a close female relative with them during labour and birth, booked to give birth at a regional teaching hospital in Thailand
Interventions	Experimental group: close female relative who attended a 2-hour preparation class on labour routines and supportive actions, and provided continuous support during the active portion of hospital labour. The institution required that the researcher remain in order to monitor the relative's activities. Control group: usual care by health professionals, which included intermittent support. Family members were not permitted to stay with the woman
Outcomes	Oxytocin during labour, analgesia, labour length, spontaneous birth, assisted vaginal birth, caesarean birth, Apgar Scores, perceived control
Notes	Epidural analgesia was not available and continuous EFM was not used

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random number sequence generated by a software program.

Yuenyong 2012 (*Continued*)

Allocation concealment (selection bias)	Low risk	Sealed opaque envelopes were used. Envelopes were consecutively-numbered on the outside
Blinding (performance bias and detection bias) All outcomes	Low risk	Women, investigator, and providers could not be blinded to the presence of the female relative. Research assistant blinded to group assignment collected satisfaction data
Incomplete outcome data (attrition bias) All outcomes	Low risk	5% lost to follow-up: 2 in the experimental group and 4 in the control group
Selective reporting (reporting bias)	Low risk	Appears complete.
Other bias	Low risk	6 women (10%) in experimental group did not receive continuous support

EFM: electronic fetal monitoring
min: minutes
NICU: neonatal intensive care unit
RCT: randomised controlled trial
SD: standard deviation
vs: versus

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Bender 1968	2 studies are reported, n = 12 in the first study and n = 30 in the second. Neither one was an RCT. Both employed alternate allocation that was neither centrally controlled nor concealed. The researcher delivered the intervention and collected outcome data. In the first study the researcher also enrolled participants. No usable outcome data are reported
Bochain 2000	The intervention was not continuous labour support. It was a short nursing intervention (taking approximately 1 hour) administered in early labour for women undergoing Misoprostol induction
Brown 2007	The intervention was not continuous labour support. It was an educational intervention to promote childbirth companions in hospital deliveries. A cluster-RCT was undertaken at 10 South African state maternity hospitals
Dalal 2006	Not an RCT. 100 randomly-selected mothers who had a birth companion were compared with 50 randomly-selected mothers who did not have one. Mothers were matched for age and socioeconomic status
Gordon 1999	30% of those enrolled were excluded post-randomisation, 73/232 in the doula group and 69/246 in the control group. A letter was sent to the first author, asking for data on the excluded participants that would permit an intent-to-treat analysis. If and when a response is received, we will evaluate the trial report again

(*Continued*)

Hemminki 1990c	Third study in the same report as Hemminki 1990aand Hemminki 1990b. This was a small pilot RCT of support by laywomen that was 'stopped for economic and other practical reasons'. 31 women were enrolled but 7 dropped out (all from the intervention group). Very little data were reported and it was not separated by treatment group and thus unusable
Lindow 1998	Support was not continuous, and was quite brief in duration. 16 women in active labour were randomised to either 1 hour with a supportive companion or 1 hour without. The only outcome was maternal oxytocin level for 16 minutes post-support or control period
McGrath 1999	An abstract outlining a study of 531 women in Houston, Texas. Insufficient details to permit evaluation of the quality of the trial, and insufficient details regarding results. Thus far, attempts to locate a full report of the trial have been unsuccessful
Orenstein 1998	Not a randomised trial. Women chose to either have a doula or have Lamaze preparation for childbirth
Pinheiro 1996	An abstract of a paper presented at the Xth World Congress of Psychiatry in Madrid, 1996. Preliminary results were reported. Efforts to locate a published report of the full trial have been unsuccessful. The abstract provides insufficient details regarding methods, to permit evaluation of the quality of the trial. The purpose was to compare the effectiveness of female vs male doulas vs routine care without doulas. The doulas were medical and psychology students
Ran 2005	Not an RCT. Translated personal communication from the author stated "I randomly sampling allocated the patient, did not use any random tool"
Scott 1999	Not a trial. A review of selected studies of intrapartum support
Sosa 1980	Strong evidence of selection bias. "A woman was removed from the study if labor was false or prolonged; if fetal distress necessitated an intervention such as oxytocin, caesarean delivery, or forceps"; or if the infant was asphyxiated or ill at birth, etc. "If a woman was removed, her group assignment was inserted at random into the pool of unused assignments. Women were enrolled in the study until there were 20 in the control group and 20 in the experimental group." The total study sample of 127 mothers includes 95 in the control group and 32 in the experimental group. Thus assignment was not random
Trueba 2000	Direct contact with investigator revealed that randomisation was not used. On arrival at the hospital, women were asked if they wanted to have a doula. If they accepted, a doula was assigned to them. Also support was not continuous throughout active labour for most women, since admission to the labour ward (and assignment of a doula) did not usually occur until 8 cm
Tryon 1966	Not an RCT. "After a random start, the matched groups were alternately assigned to experimental and control groups." Women who developed severe complications in labour (number not specified), such as fetal distress, were dropped from the study
Zhang 1996	Not a trial of continuous 1-to-1 support. On admission to the labour ward, women received instruction about normal labour, non-pharmacological methods to ease pain, and how to push in second stage, from a team of physicians and nurses. Support was continuous, depending on the women's needs, but not 1-to-1

EFM: electronic fetal monitoring

RCT: randomised controlled trial
vs: versus

Characteristics of studies awaiting assessment *[ordered by study ID]*

Dong 2009

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Notes	Abstract - insufficient details to permit classification.

Huang 2003

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Unclear.
Outcomes	Insufficient details.
Notes	Communication sent to author regarding details of randomisation process, the nature of the intervention, and information to allow classification for analysis subgroups

Orbach-Zinger 2012

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Notes	Abstract - insufficient details to permit classification.

Riley 2012

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Notes	Abstract - insufficient details to permit classification.

Safarzadeh 2013

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Notes	Abstract - insufficient details to permit classification.

Sangestani

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Notes	Abstract - insufficient details to permit classification.

Shen

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Notes	Abstract - insufficient details to permit classification.

Wan 2011

Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Notes	Abstract - insufficient details to permit classification.

Characteristics of ongoing studies *[ordered by study ID]*

Janssen

Trial name or title	Janssen.
Methods	Insufficient details.
Participants	Insufficient details.
Interventions	Insufficient details.
Outcomes	Insufficient details.
Starting date	Insufficient details.
Contact information	Insufficient details.
Notes	

DATA AND ANALYSES

Comparison 1. Continuous support versus usual care - all trials

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Any analgesia/anaesthesia	14	12283	Risk Ratio (M-H, Random, 95% CI)	0.90 [0.84, 0.96]
2 Regional analgesia/anaesthesia	9	11444	Risk Ratio (M-H, Random, 95% CI)	0.93 [0.88, 0.99]
3 Synthetic oxytocin during labour	15	12620	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.91, 1.04]
4 Labour length	12	5366	Mean Difference (IV, Random, 95% CI)	-0.58 [-0.85, -0.31]
5 Spontaneous vaginal birth	19	14119	Risk Ratio (M-H, Random, 95% CI)	1.08 [1.04, 1.12]
6 Instrumental vaginal birth	19	14118	Risk Ratio (M-H, Fixed, 95% CI)	0.90 [0.85, 0.96]
7 Caesarean birth	22	15175	Risk Ratio (M-H, Random, 95% CI)	0.78 [0.67, 0.91]
8 Perineal trauma	4	8120	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.92, 1.01]
9 Low 5-minute Apgar score	13	12515	Risk Ratio (M-H, Fixed, 95% CI)	0.69 [0.50, 0.95]
10 Admission to special care nursery	7	8897	Risk Ratio (M-H, Random, 95% CI)	0.97 [0.76, 1.25]
11 Prolonged neonatal hospital stay	3	1098	Risk Ratio (M-H, Random, 95% CI)	0.83 [0.42, 1.65]
12 Postpartum report of severe labour pain	4	2456	Risk Ratio (M-H, Random, 95% CI)	1.00 [0.83, 1.21]
13 Negative rating of/negative feelings about birth experience	11	11133	Risk Ratio (M-H, Random, 95% CI)	0.69 [0.59, 0.79]
14 Difficulty mothering	3		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
15 Breastfeeding at 1-2 months postpartum	3	5363	Risk Ratio (M-H, Random, 95% CI)	1.01 [0.94, 1.09]
16 Postpartum depression	2		Risk Ratio (M-H, Fixed, 95% CI)	Totals not selected
17 Low postpartum self-esteem	1	652	Risk Ratio (M-H, Fixed, 95% CI)	1.00 [0.77, 1.30]

Comparison 2. Continuous support versus usual care - policy regarding presence of companion

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Any analgesia/anaesthesia	14		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
1.1 Other support permitted	7	9752	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.96, 0.99]
1.2 Other support not permitted	7	2598	Risk Ratio (IV, Fixed, 95% CI)	0.91 [0.85, 0.96]
2 Synthetic oxytocin during labour	15		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
2.1 Other support permitted	5	9495	Risk Ratio (IV, Fixed, 95% CI)	1.04 [0.99, 1.10]
2.2 Other support not permitted	10	3125	Risk Ratio (IV, Fixed, 95% CI)	0.99 [0.97, 1.02]
3 Spontaneous vaginal birth	19		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
3.1 Other support permitted	9	10889	Risk Ratio (IV, Fixed, 95% CI)	1.03 [1.00, 1.05]
3.2 Other support not permitted	10	3329	Risk Ratio (IV, Fixed, 95% CI)	1.11 [1.07, 1.16]

4 Caesarean birth	22		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
4.1 Other support permitted	11	11326	Risk Ratio (IV, Fixed, 95% CI)	0.94 [0.85, 1.03]
4.2 Other support not permitted	11	3849	Risk Ratio (IV, Fixed, 95% CI)	0.75 [0.65, 0.86]
5 Admission to special care nursery	7		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
5.1 Other support permitted	2	7328	Risk Ratio (IV, Fixed, 95% CI)	0.99 [0.84, 1.17]
5.2 Other support not permitted	5	1569	Risk Ratio (IV, Fixed, 95% CI)	0.91 [0.71, 1.17]
6 Postpartum depression	2		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
6.1 Other support permitted	1	5567	Risk Ratio (IV, Fixed, 95% CI)	0.86 [0.73, 1.02]
6.2 Other support not permitted	1	149	Risk Ratio (IV, Fixed, 95% CI)	0.18 [0.09, 0.36]
7 Negative rating of/negative feelings about birth experience	11		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
7.1 Other support permitted	5	8639	Risk Ratio (IV, Fixed, 95% CI)	0.70 [0.62, 0.78]
7.2 Other support not permitted	6	2539	Risk Ratio (IV, Fixed, 95% CI)	0.62 [0.56, 0.69]
8 Breastfeeding at 1-2 months postpartum	3		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
8.1 Other support permitted	1	4559	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.92, 1.02]
8.2 Other support not permitted	2	804	Risk Ratio (IV, Fixed, 95% CI)	1.05 [0.98, 1.13]

Comparison 3. Continuous support versus usual care - availability of epidural analgesia

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Any analgesia/anaesthesia	14		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
1.1 Epidural analgesia routinely available	9	10888	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.96, 0.98]
1.2 Epidural analgesia not routinely available	5	1462	Risk Ratio (IV, Fixed, 95% CI)	0.83 [0.69, 0.99]
2 Synthetic oxytocin during labour	15		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
2.1 Epidural analgesia routinely available	8	10568	Risk Ratio (IV, Fixed, 95% CI)	1.00 [0.98, 1.02]
2.2 Epidural analgesia not routinely available	7	2066	Risk Ratio (IV, Fixed, 95% CI)	1.02 [0.93, 1.11]
3 Spontaneous vaginal birth	19		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
3.1 Epidural analgesia routinely available	13	12672	Risk Ratio (IV, Fixed, 95% CI)	1.04 [1.01, 1.06]
3.2 Epidural analgesia not routinely available	6	1546	Risk Ratio (IV, Fixed, 95% CI)	1.11 [1.06, 1.17]
4 Caesarean birth	22		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
4.1 Epidural analgesia routinely available	14	13064	Risk Ratio (IV, Fixed, 95% CI)	0.93 [0.86, 1.02]
4.2 Epidural analgesia not routinely available	7	2077	Risk Ratio (IV, Fixed, 95% CI)	0.54 [0.43, 0.68]

4.3 Unknown availability of epidural analgesia	1	34	Risk Ratio (IV, Fixed, 95% CI)	1.4 [0.14, 13.98]
5 Admission to special care nursery	7		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
5.1 Epidural analgesia routinely available	5	8380	Risk Ratio (IV, Fixed, 95% CI)	0.98 [0.85, 1.13]
5.2 Epidural analgesia not routinely available	2	517	Risk Ratio (IV, Fixed, 95% CI)	0.26 [0.08, 0.88]
6 Postpartum depression	2		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
6.1 Epidural analgesia routinely available	1	6915	Risk Ratio (IV, Fixed, 95% CI)	0.89 [0.75, 1.05]
6.2 Epidural analgesia not routinely available	1	149	Risk Ratio (IV, Fixed, 95% CI)	0.18 [0.09, 0.36]
7 Negative rating of/negative feelings about birth experience	11		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
7.1 Epidural analgesia routinely available	9	10404	Risk Ratio (IV, Fixed, 95% CI)	0.70 [0.64, 0.77]
7.2 Epidural analgesia not routinely available	2	774	Risk Ratio (IV, Fixed, 95% CI)	0.55 [0.48, 0.63]
8 Breastfeeding at 1-2 months postpartum	3		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
8.1 Epidural analgesia routinely available	2	5214	Risk Ratio (IV, Fixed, 95% CI)	0.99 [0.95, 1.03]
8.2 Epidural analgesia not routinely available	1	149	Risk Ratio (IV, Fixed, 95% CI)	1.15 [0.95, 1.40]

Comparison 4. Continuous support versus usual care - policy about routine EFM

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Any analgesia/anaesthesia	14		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
1.1 Setting had routine EFM	6	8580	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.96, 0.99]
1.2 Setting did not have routine EFM	6	2186	Risk Ratio (IV, Fixed, 95% CI)	0.96 [0.90, 1.02]
1.3 Policy about routine EFM not known	2	1579	Risk Ratio (IV, Fixed, 95% CI)	0.89 [0.80, 0.99]
2 Synthetic oxytocin during labour	15		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
2.1 Setting had routine EFM	4	8340	Risk Ratio (IV, Fixed, 95% CI)	1.04 [0.98, 1.11]
2.2 Setting did not have routine EFM	7	1726	Risk Ratio (IV, Fixed, 95% CI)	0.99 [0.96, 1.01]
2.3 Policy about routine EFM not known	4	2568	Risk Ratio (IV, Fixed, 95% CI)	1.02 [0.97, 1.08]
3 Spontaneous vaginal birth	19		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
3.1 Setting had routine EFM	8	9717	Risk Ratio (IV, Fixed, 95% CI)	1.03 [1.01, 1.06]
3.2 Setting did not have routine EFM	7	1913	Risk Ratio (IV, Fixed, 95% CI)	1.11 [1.06, 1.17]
3.3 Policy about routine EFM not known	4	2561	Risk Ratio (IV, Fixed, 95% CI)	1.07 [1.01, 1.13]
4 Caesarean birth	22		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only

4.1 Setting had routine EFM	9	10123	Risk Ratio (IV, Fixed, 95% CI)	0.92 [0.83, 1.01]
4.2 Setting did not have routine EFM	8	2457	Risk Ratio (IV, Fixed, 95% CI)	0.66 [0.55, 0.79]
4.3 Policy about routine EFM not known	5	2595	Risk Ratio (IV, Fixed, 95% CI)	1.06 [0.84, 1.33]
5 Admission to special care nursery	7		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
5.1 Setting had routine EFM	3	7740	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.84, 1.11]
5.2 Setting did not have routine EFM	3	729	Risk Ratio (IV, Fixed, 95% CI)	0.48 [0.21, 1.12]
5.3 Policy about routine EFM not known	1	428	Risk Ratio (IV, Fixed, 95% CI)	1.98 [0.76, 5.18]
6 Postpartum depression	2		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
6.1 Setting had routine EFM	1	6915	Risk Ratio (IV, Fixed, 95% CI)	0.89 [0.75, 1.05]
6.2 Setting did not have routine EFM	1	149	Risk Ratio (IV, Fixed, 95% CI)	0.18 [0.09, 0.36]
7 Negative rating of/negative views about birth experience	11		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
7.1 Setting had routine EFM	4	7467	Risk Ratio (IV, Fixed, 95% CI)	0.67 [0.60, 0.76]
7.2 Setting did not have routine EFM	4	1710	Risk Ratio (IV, Fixed, 95% CI)	0.60 [0.53, 0.68]
7.3 Policy about routine EFM not known	3	1977	Risk Ratio (IV, Fixed, 95% CI)	0.84 [0.65, 1.08]
8 Breastfeeding at 1-2 months postpartum	3		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
8.1 Setting had routine EFM	1	4559	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.92, 1.02]
8.2 Setting did not have routine EFM	2	804	Risk Ratio (IV, Fixed, 95% CI)	1.05 [0.98, 1.13]

Comparison 5. Continuous support versus usual care - variations in provider characteristics

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Any analgesia/anaesthesia	14		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
1.1 Support people were hospital staff	6	9152	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.96, 0.99]
1.2 Support people were not hospital staff and not chosen by woman	4	1790	Risk Ratio (IV, Fixed, 95% CI)	0.91 [0.86, 0.97]
1.3 Support people were not hospital staff and were chosen by woman	4	1408	Risk Ratio (IV, Fixed, 95% CI)	0.94 [0.88, 1.00]
2 Synthetic oxytocin during labour	15		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
2.1 Support people were hospital staff	6	9561	Risk Ratio (IV, Fixed, 95% CI)	1.06 [1.01, 1.11]
2.2 Support people were not hospital staff and not chosen by woman	3	1018	Risk Ratio (IV, Fixed, 95% CI)	0.69 [0.50, 0.94]

2.3 Support people were not hospital staff and were chosen by woman	6	2041	Risk Ratio (IV, Fixed, 95% CI)	0.99 [0.96, 1.01]
3 Spontaneous vaginal birth	19		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
3.1 Support people were hospital staff	9	10813	Risk Ratio (IV, Fixed, 95% CI)	1.03 [1.01, 1.06]
3.2 Support people were not hospital staff and were chosen by woman	5	1470	Risk Ratio (IV, Fixed, 95% CI)	1.07 [0.99, 1.15]
3.3 Support people were not hospital staff and not chosen by woman	5	1935	Risk Ratio (IV, Fixed, 95% CI)	1.12 [1.07, 1.17]
4 Caesarean birth	22		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
4.1 Support people were hospital staff	9	10786	Risk Ratio (IV, Fixed, 95% CI)	0.95 [0.85, 1.05]
4.2 Support people were not hospital staff and not chosen by woman	7	2330	Risk Ratio (IV, Fixed, 95% CI)	0.72 [0.60, 0.86]
4.3 Support people were not hospital staff and were chosen by woman	6	2059	Risk Ratio (IV, Fixed, 95% CI)	0.83 [0.69, 1.01]
5 Admission to special care nursery	7		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
5.1 Support people were hospital staff	3	7428	Risk Ratio (IV, Fixed, 95% CI)	0.99 [0.84, 1.17]
5.2 Support people were not hospital staff and not chosen by woman	2	829	Risk Ratio (IV, Fixed, 95% CI)	0.86 [0.66, 1.12]
5.3 Support people were not hospital staff and were chosen by woman	2	640	Risk Ratio (IV, Fixed, 95% CI)	1.40 [0.67, 2.93]
6 Postpartum depression	2		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
6.1 Support people were hospital staff	1	5567	Risk Ratio (IV, Fixed, 95% CI)	0.86 [0.73, 1.02]
6.2 Support people were not hospital staff and not chosen by woman	1	149	Risk Ratio (IV, Fixed, 95% CI)	0.17 [0.09, 0.33]
6.3 Support people were not hospital staff and were chosen by woman	0	0	Risk Ratio (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]
7 Negative rating of/negative feelings about birth experience	11		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only
7.1 Support people were hospital staff	4	8145	Risk Ratio (IV, Fixed, 95% CI)	0.87 [0.73, 1.03]
7.2 Support people were not hospital staff and not chosen by woman	3	1325	Risk Ratio (IV, Fixed, 95% CI)	0.66 [0.57, 0.77]
7.3 Support people were not hospital staff and were chosen by woman	4	1708	Risk Ratio (IV, Fixed, 95% CI)	0.57 [0.51, 0.64]
8 Breastfeeding at 1-2 months postpartum	3		Risk Ratio (IV, Fixed, 95% CI)	Subtotals only

8.1 Support people were hospital staff	1	4559	Risk Ratio (IV, Fixed, 95% CI)	0.97 [0.92, 1.02]
8.2 Support people were not hospital staff and not chosen by woman	2	804	Risk Ratio (IV, Fixed, 95% CI)	1.05 [0.98, 1.13]
8.3 Support people were not hospital staff and were chosen by woman	0	0	Risk Ratio (IV, Fixed, 95% CI)	0.0 [0.0, 0.0]

Analysis 1.1. Comparison 1 Continuous support versus usual care - all trials, Outcome 1 Any analgesia/anaesthesia.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 1 Any analgesia/anaesthesia

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Morhason-Bello 2009	84/293	89/292		5.1 %	0.94 [0.73, 1.21]
Campbell 2006	247/291	260/295		13.9 %	0.96 [0.90, 1.03]
Hodnett 2002	3077/3454	3159/3461		15.7 %	0.98 [0.96, 0.99]
Madi 1999	28/53	41/56		3.9 %	0.72 [0.53, 0.97]
Langer 1998	295/361	302/363		13.7 %	0.98 [0.92, 1.05]
Gagnon 1997	141/209	142/204		10.0 %	0.97 [0.85, 1.10]
Breart - Belgium 1992	55/133	62/128		4.6 %	0.85 [0.65, 1.12]
Breart - France 1992	281/652	319/666		10.7 %	0.90 [0.80, 1.01]
Hofmeyr 1991	52/92	56/97		5.2 %	0.98 [0.76, 1.25]
Kennell 1991	93/212	150/200		7.9 %	0.58 [0.49, 0.69]
Hemminki 1990a	25/41	23/38		3.0 %	1.01 [0.71, 1.44]
Hemminki 1990b	45/81	52/80		5.0 %	0.85 [0.66, 1.10]
Yuenyong 2012	13/58	15/56		1.0 %	0.84 [0.44, 1.60]
Klaus 1986	2/168	10/249		0.2 %	0.30 [0.07, 1.34]
Total (95% CI)	**6098**	**6185**		**100.0 %**	**0.90 [0.84, 0.96]**

Total events: 4438 (Continuous support), 4680 (Usual care)

Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 51.14$, df = 13 ($P<0.00001$); $I^2 = 75\%$

Test for overall effect: Z = 3.00 (P = 0.0027)

Test for subgroup differences: Not applicable

Analysis 1.2. Comparison 1 Continuous support versus usual care - all trials, Outcome 2 Regional analgesia/anaesthesia.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 2 Regional analgesia/anaesthesia

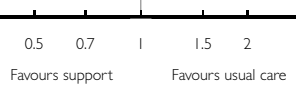
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
McGrath 2008	145/224	149/196		10.3 %	0.85 [0.75, 0.96]
Campbell 2006	247/291	260/295		14.6 %	0.96 [0.90, 1.03]
Hodnett 2002	2349/3454	2436/3461		16.6 %	0.97 [0.94, 1.00]
Torres 1999	202/217	195/218		15.0 %	1.04 [0.98, 1.10]
Langer 1998	295/335	302/346		15.2 %	1.01 [0.95, 1.07]
Gagnon 1997	139/209	142/204		9.8 %	0.96 [0.84, 1.09]
Breart - Belgium 1992	55/133	62/131		4.1 %	0.87 [0.67, 1.15]
Breart - France 1992	281/652	319/666		10.7 %	0.90 [0.80, 1.01]
Kennell 1991	47/212	94/200		3.7 %	0.47 [0.35, 0.63]
Total (95% CI)	**5727**	**5717**		**100.0 %**	**0.93 [0.88, 0.99]**

Total events: 3760 (Continuous support), 3959 (Usual care)

Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 41.66$, df = 8 (P<0.00001); $I^2 = 81\%$

Test for overall effect: Z = 2.16 (P = 0.031)

Test for subgroup differences: Not applicable



Analysis 1.3. Comparison 1 Continuous support versus usual care - all trials, Outcome 3 Synthetic oxytocin during labour.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 3 Synthetic oxytocin during labour

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Breart - Belgium 1992	55/132	64/129		4.7 %	0.84 [0.64, 1.10]
Breart - France 1992	383/654	371/666		13.1 %	1.05 [0.96, 1.15]
Breart - Greece 1992	224/287	193/265		13.0 %	1.07 [0.97, 1.18]
Bruggemann 2007	104/105	107/107		17.1 %	0.99 [0.96, 1.02]
Campbell 2006	133/291	144/295		8.3 %	0.94 [0.79, 1.11]
Gagnon 1997	82/209	96/204		6.1 %	0.83 [0.67, 1.04]
Hodnett 2002	1040/3454	942/3461		14.4 %	1.11 [1.03, 1.19]
Hofmeyr 1991	16/92	17/97		1.1 %	0.99 [0.53, 1.85]
Kashanian 2010	11/50	19/50		1.1 %	0.58 [0.31, 1.09]
Kennell 1991	36/212	46/200		2.6 %	0.74 [0.50, 1.09]
Klaus 1986	4/168	37/249		0.4 %	0.16 [0.06, 0.44]
Madi 1999	7/53	17/56		0.7 %	0.44 [0.20, 0.96]
Morhason-Bello 2009	51/293	56/292		3.2 %	0.91 [0.64, 1.28]
Torres 1999	167/217	172/218		12.7 %	0.98 [0.88, 1.08]
Yuenyong 2012	21/58	18/56		1.6 %	1.13 [0.68, 1.88]
Total (95% CI)	**6275**	**6345**		**100.0 %**	**0.97 [0.91, 1.04]**

Total events: 2334 (Continuous support), 2299 (Usual care)

Heterogeneity: $Tau^2 = 0.01$; $Chi^2 = 39.96$, df = 14 (P = 0.00026); $I^2 = 65\%$

Test for overall effect: Z = 0.81 (P = 0.42)

Test for subgroup differences: Not applicable

Analysis 1.4. Comparison 1 Continuous support versus usual care - all trials, Outcome 4 Labour length.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 4 Labour length

Study or subgroup	Continuous support N	Mean(SD)	Usual care N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
Morhason-Bello 2009	293	4.7 (1.7)	292	5.3 (1.7)		19.4 %	-0.60 [-0.88, -0.32]
Campbell 2006	291	10.4 (4.3)	295	11.7 (4.8)		8.6 %	-1.30 [-2.04, -0.56]
Gagnon 1997	209	9.1 (4.1)	204	9.4 (4.7)		7.1 %	-0.30 [-1.15, 0.55]
Breart - Belgium 1992	133	6.27 (5.37)	129	6.8 (4.07)		4.5 %	-0.53 [-1.68, 0.62]
Breart - France 1992	654	6.77 (2.57)	666	7.07 (2.68)		19.2 %	-0.30 [-0.58, -0.02]
Breart - Greece 1992	287	6.67 (3.75)	265	6.33 (3.92)		10.2 %	0.34 [-0.30, 0.98]
Kennell 1991	212	7.4 (3.8)	200	8.4 (4.2)		8.1 %	-1.00 [-1.77, -0.23]
Hofmeyr 1991	92	9.6 (3.93)	97	10.2 (4.92)		3.8 %	-0.60 [-1.87, 0.67]
Langer 1998	361	4.56 (3.47)	363	5.58 (3.47)		13.1 %	-1.02 [-1.53, -0.51]
Hemminki 1990a	34	8.3 (6.2)	31	10 (6.8)		0.7 %	-1.70 [-4.87, 1.47]
Yuenyong 2012	52	11.82 (5.6)	45	12.48 (7.8)		0.9 %	-0.66 [-3.40, 2.08]
Hemminki 1990b	81	5.1 (3.8)	80	5.7 (3.7)		4.4 %	-0.60 [-1.76, 0.56]
Total (95% CI)	**2699**		**2667**			**100.0 %**	**-0.58 [-0.85, -0.31]**

Heterogeneity: $Tau^2 = 0.08$; $Chi^2 = 19.90$, df = 11 (P = 0.05); $I^2 = 45\%$

Test for overall effect: Z = 4.21 (P = 0.000025)

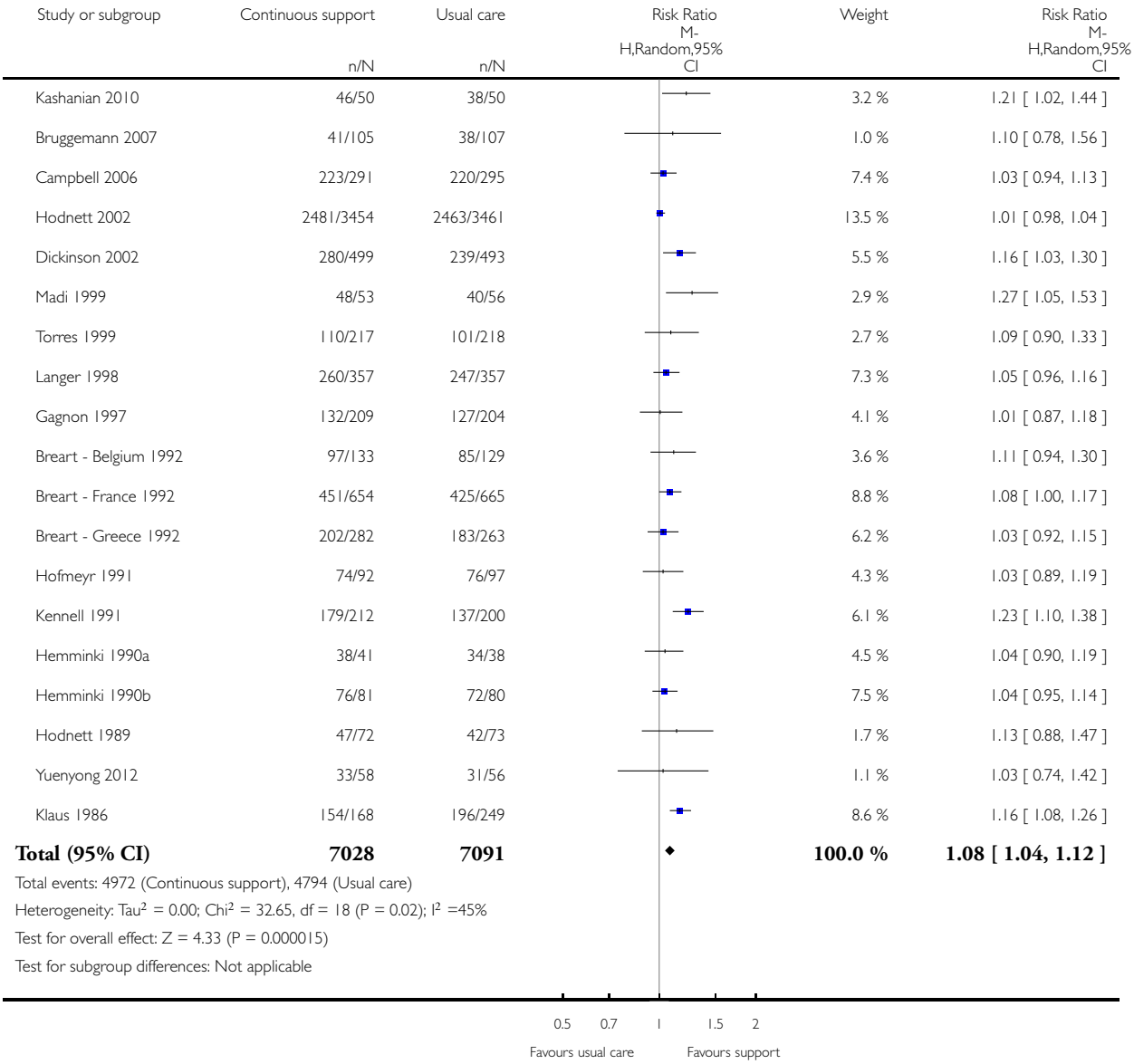
Test for subgroup differences: Not applicable

Analysis 1.5. Comparison 1 Continuous support versus usual care - all trials, Outcome 5 Spontaneous vaginal birth.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 5 Spontaneous vaginal birth



Analysis 1.6. Comparison 1 Continuous support versus usual care - all trials, Outcome 6 Instrumental vaginal birth.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 6 Instrumental vaginal birth

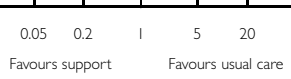
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Kashanian 2010	0/50	0/50			Not estimable
Bruggemann 2007	53/105	57/107		4.0 %	0.95 [0.73, 1.23]
Campbell 2006	13/291	22/295		1.5 %	0.60 [0.31, 1.17]
Hodnett 2002	541/3454	561/3461		39.5 %	0.97 [0.87, 1.08]
Dickinson 2002	148/499	169/493		12.0 %	0.87 [0.72, 1.04]
Madi 1999	2/53	9/56		0.6 %	0.23 [0.05, 1.04]
Torres 1999	163/217	171/218		12.0 %	0.96 [0.86, 1.06]
Langer 1998	12/357	12/356		0.8 %	1.00 [0.45, 2.19]
Gagnon 1997	48/209	44/204		3.1 %	1.06 [0.74, 1.53]
Breart - Belgium 1992	31/133	39/129		2.8 %	0.77 [0.51, 1.16]
Breart - France 1992	163/654	204/665		14.2 %	0.81 [0.68, 0.97]
Breart - Greece 1992	50/282	46/263		3.4 %	1.01 [0.70, 1.46]
Hofmeyr 1991	7/92	7/97		0.5 %	1.05 [0.38, 2.89]
Kennell 1991	16/212	37/200		2.7 %	0.41 [0.23, 0.71]
Hemminki 1990a	3/41	1/38		0.1 %	2.78 [0.30, 25.59]
Hemminki 1990b	3/81	5/80		0.4 %	0.59 [0.15, 2.40]
Yuenyong 2012	15/58	11/56		0.8 %	1.32 [0.66, 2.61]
Hodnett 1989	13/72	18/73		1.3 %	0.73 [0.39, 1.38]
Klaus 1986	2/168	7/249		0.4 %	0.42 [0.09, 2.01]
Total (95% CI)	**7028**	**7090**		**100.0 %**	**0.90 [0.85, 0.96]**

Total events: 1283 (Continuous support), 1420 (Usual care)

Heterogeneity: Chi^2 = 22.76, df = 17 (P = 0.16); I^2 =25%

Test for overall effect: Z = 3.13 (P = 0.0017)

Test for subgroup differences: Not applicable

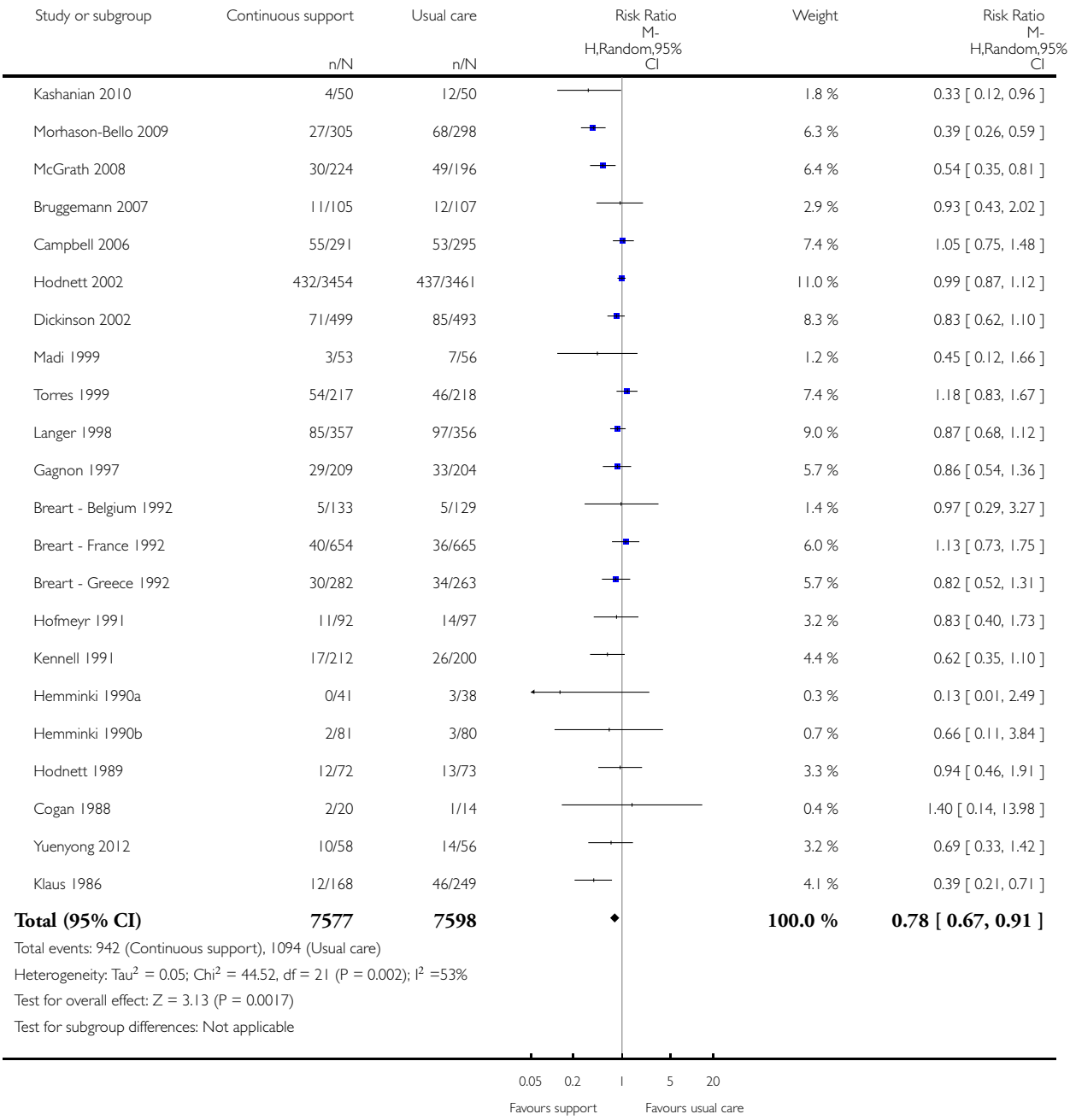


Analysis 1.7. Comparison 1 Continuous support versus usual care - all trials, Outcome 7 Caesarean birth.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 7 Caesarean birth

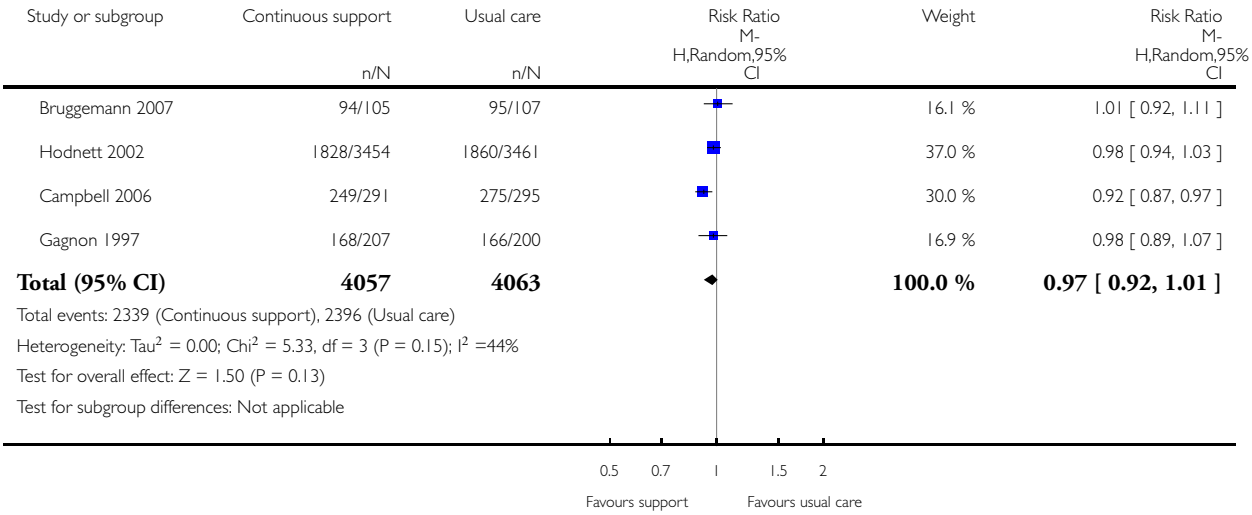


Analysis 1.8. Comparison 1 Continuous support versus usual care - all trials, Outcome 8 Perineal trauma.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 8 Perineal trauma



Analysis 1.9. Comparison 1 Continuous support versus usual care - all trials, Outcome 9 Low 5-minute Apgar score.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 9 Low 5-minute Apgar score

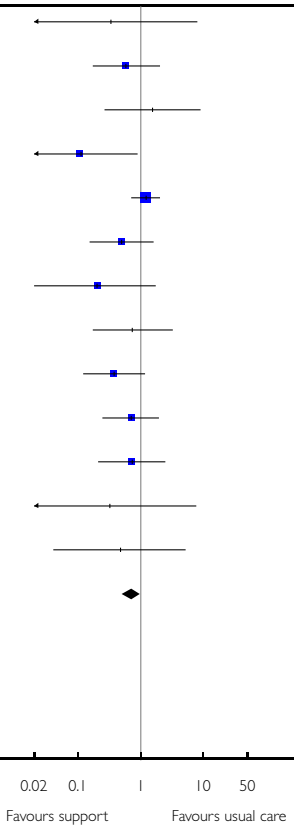
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Kashanian 2010	0/50	1/50		1.7 %	0.33 [0.01, 7.99]
McGrath 2008	4/224	6/196		7.2 %	0.58 [0.17, 2.04]
Bruggemann 2007	3/105	2/107		2.2 %	1.53 [0.26, 8.96]
Campbell 2006	1/291	9/295		10.0 %	0.11 [0.01, 0.88]
Hodnett 2002	30/3454	25/3461		27.9 %	1.20 [0.71, 2.04]
Dickinson 2002	4/499	8/493		9.0 %	0.49 [0.15, 1.63]
Torres 1999	1/217	5/218		5.6 %	0.20 [0.02, 1.71]
Breart - Belgium 1992	3/132	4/128		4.5 %	0.73 [0.17, 3.19]
Breart - France 1992	4/651	11/664		12.2 %	0.37 [0.12, 1.16]
Breart - Greece 1992	6/295	8/274		9.3 %	0.70 [0.24, 1.98]
Hofmeyr 1991	4/89	6/96		6.5 %	0.72 [0.21, 2.46]
Yuenyong 2012	0/58	1/56		1.7 %	0.32 [0.01, 7.74]
Kennell 1991	1/212	2/200		2.3 %	0.47 [0.04, 5.16]
Total (95% CI)	**6277**	**6238**		**100.0 %**	**0.69 [0.50, 0.95]**

Total events: 61 (Continuous support), 88 (Usual care)

Heterogeneity: Chi^2 = 11.31, df = 12 (P = 0.50); I^2 =0.0%

Test for overall effect: Z = 2.26 (P = 0.024)

Test for subgroup differences: Not applicable



Analysis 1.10. Comparison 1 Continuous support versus usual care - all trials, Outcome 10 Admission to special care nursery.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 10 Admission to special care nursery

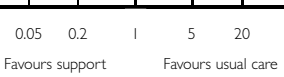
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Kashanian 2010	0/50	0/50			Not estimable
Bruggemann 2007	5/105	6/107		4.2 %	0.85 [0.27, 2.70]
Hodnett 2002	246/3454	254/3461		43.9 %	0.97 [0.82, 1.15]
Torres 1999	12/215	6/213		5.9 %	1.98 [0.76, 5.18]
Gagnon 1997	15/209	10/204		8.6 %	1.46 [0.67, 3.18]
Kennell 1991	69/212	71/200		33.4 %	0.92 [0.70, 1.20]
Klaus 1986	3/168	17/249		3.9 %	0.26 [0.08, 0.88]
Total (95% CI)	**4413**	**4484**		**100.0 %**	**0.97 [0.76, 1.25]**

Total events: 350 (Continuous support), 364 (Usual care)

Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 7.91$, df = 5 (P = 0.16); $I^2 = 37\%$

Test for overall effect: Z = 0.22 (P = 0.82)

Test for subgroup differences: Not applicable



Analysis 1.11. Comparison 1 Continuous support versus usual care - all trials, Outcome 11 Prolonged neonatal hospital stay.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 11 Prolonged neonatal hospital stay

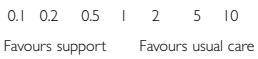
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Kashanian 2010	0/50	0/50			Not estimable
Campbell 2006	17/291	14/295		44.1 %	1.23 [0.62, 2.45]
Kennell 1991	22/212	34/200		55.9 %	0.61 [0.37, 1.01]
Total (95% CI)	**553**	**545**		**100.0 %**	**0.83 [0.42, 1.65]**

Total events: 39 (Continuous support), 48 (Usual care)

Heterogeneity: $Tau^2 = 0.15$; $Chi^2 = 2.61$, df = 1 (P = 0.11); $I^2 = 62\%$

Test for overall effect: Z = 0.53 (P = 0.60)

Test for subgroup differences: Not applicable



Analysis 1.12. Comparison 1 Continuous support versus usual care - all trials, Outcome 12 Postpartum report of severe labour pain.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 12 Postpartum report of severe labour pain

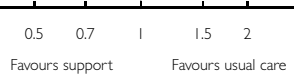
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Langer 1998	261/356	248/352		31.1 %	1.04 [0.95, 1.14]
Breart - Belgium 1992	61/119	53/121		20.2 %	1.17 [0.90, 1.53]
Breart - France 1992	157/656	139/664		24.4 %	1.14 [0.93, 1.40]
Hofmeyr 1991	53/92	76/96		24.3 %	0.73 [0.59, 0.89]
Total (95% CI)	**1223**	**1233**		**100.0 %**	**1.00 [0.83, 1.21]**

Total events: 532 (Continuous support), 516 (Usual care)

Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 13.35$, df = 3 (P = 0.004); $I^2 = 78\%$

Test for overall effect: Z = 0.00 (P = 1.0)

Test for subgroup differences: Not applicable



Analysis 1.13. Comparison 1 Continuous support versus usual care - all trials, Outcome 13 Negative rating of/negative feelings about birth experience.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 13 Negative rating of/negative feelings about birth experience

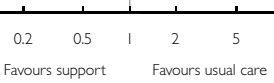
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Morhason-Bello 2009	108/293	196/292		13.4 %	0.55 [0.46, 0.65]
Bruggemann 2007	7/105	17/107		2.5 %	0.42 [0.18, 0.97]
Campbell 2006	95/229	197/265		13.4 %	0.56 [0.47, 0.66]
Hodnett 2002	96/2818	117/2751		10.5 %	0.80 [0.61, 1.04]
Dickinson 2002	75/499	74/493		9.7 %	1.00 [0.74, 1.35]
Torres 1999	35/206	43/211		7.2 %	0.83 [0.56, 1.25]
Langer 1998	98/357	129/353		11.9 %	0.75 [0.60, 0.93]
Breart - Belgium 1992	24/119	30/121		5.9 %	0.81 [0.51, 1.31]
Breart - France 1992	30/656	35/664		5.9 %	0.87 [0.54, 1.40]
Hofmeyr 1991	38/92	73/96		10.4 %	0.54 [0.42, 0.71]
Kennell 1991	47/209	71/197		9.2 %	0.62 [0.46, 0.85]
Total (95% CI)	**5583**	**5550**		**100.0 %**	**0.69 [0.59, 0.79]**

Total events: 653 (Continuous support), 982 (Usual care)

Heterogeneity: $Tau^2 = 0.03$; $Chi^2 = 26.81$, df = 10 (P = 0.003); $I^2 = 63\%$

Test for overall effect: Z = 5.16 (P < 0.00001)

Test for subgroup differences: Not applicable



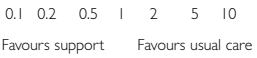
Analysis 1.14. Comparison 1 Continuous support versus usual care - all trials, Outcome 14 Difficulty mothering.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 14 Difficulty mothering

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
Campbell 2006	11/292	38/265		0.26 [0.14, 0.50]
Hodnett 2002	873/2836	853/2765		1.00 [0.92, 1.08]
Hofmeyr 1991	41/75	67/75		0.61 [0.49, 0.76]



Analysis 1.15. Comparison 1 Continuous support versus usual care - all trials, Outcome 15 Breastfeeding at 1-2 months postpartum.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 15 Breastfeeding at 1-2 months postpartum

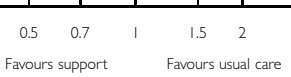
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Hodnett 2002	1312/2339	1283/2220		50.8 %	0.97 [0.92, 1.02]
Hofmeyr 1991	58/74	51/75		11.9 %	1.15 [0.95, 1.40]
Langer 1998	266/334	247/321		37.3 %	1.04 [0.95, 1.12]
Total (95% CI)	**2747**	**2616**		**100.0 %**	**1.01 [0.94, 1.09]**

Total events: 1636 (Continuous support), 1581 (Usual care)

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 4.18$, df = 2 (P = 0.12); $I^2 = 52\%$

Test for overall effect: Z = 0.38 (P = 0.70)

Test for subgroup differences: Not applicable



Analysis 1.16. Comparison 1 Continuous support versus usual care - all trials, Outcome 16 Postpartum depression.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 16 Postpartum depression

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Fixed,95% CI	Risk Ratio M-H,Fixed,95% CI
Hodnett 2002	245/2816	277/2751		0.86 [0.73, 1.02]
Hofmeyr 1991	8/74	44/75		0.18 [0.09, 0.36]

Analysis 1.17. Comparison 1 Continuous support versus usual care - all trials, Outcome 17 Low postpartum self-esteem.

Review: Continuous support for women during childbirth

Comparison: 1 Continuous support versus usual care - all trials

Outcome: 17 Low postpartum self-esteem

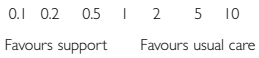
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio M-H,Fixed,95% CI	Weight	Risk Ratio M-H,Fixed,95% CI
Langer 1998	85/336	80/316		100.0 %	1.00 [0.77, 1.30]
Total (95% CI)	**336**	**316**		**100.0 %**	**1.00 [0.77, 1.30]**

Total events: 85 (Continuous support), 80 (Usual care)

Heterogeneity: not applicable

Test for overall effect: Z = 0.01 (P = 1.0)

Test for subgroup differences: Not applicable

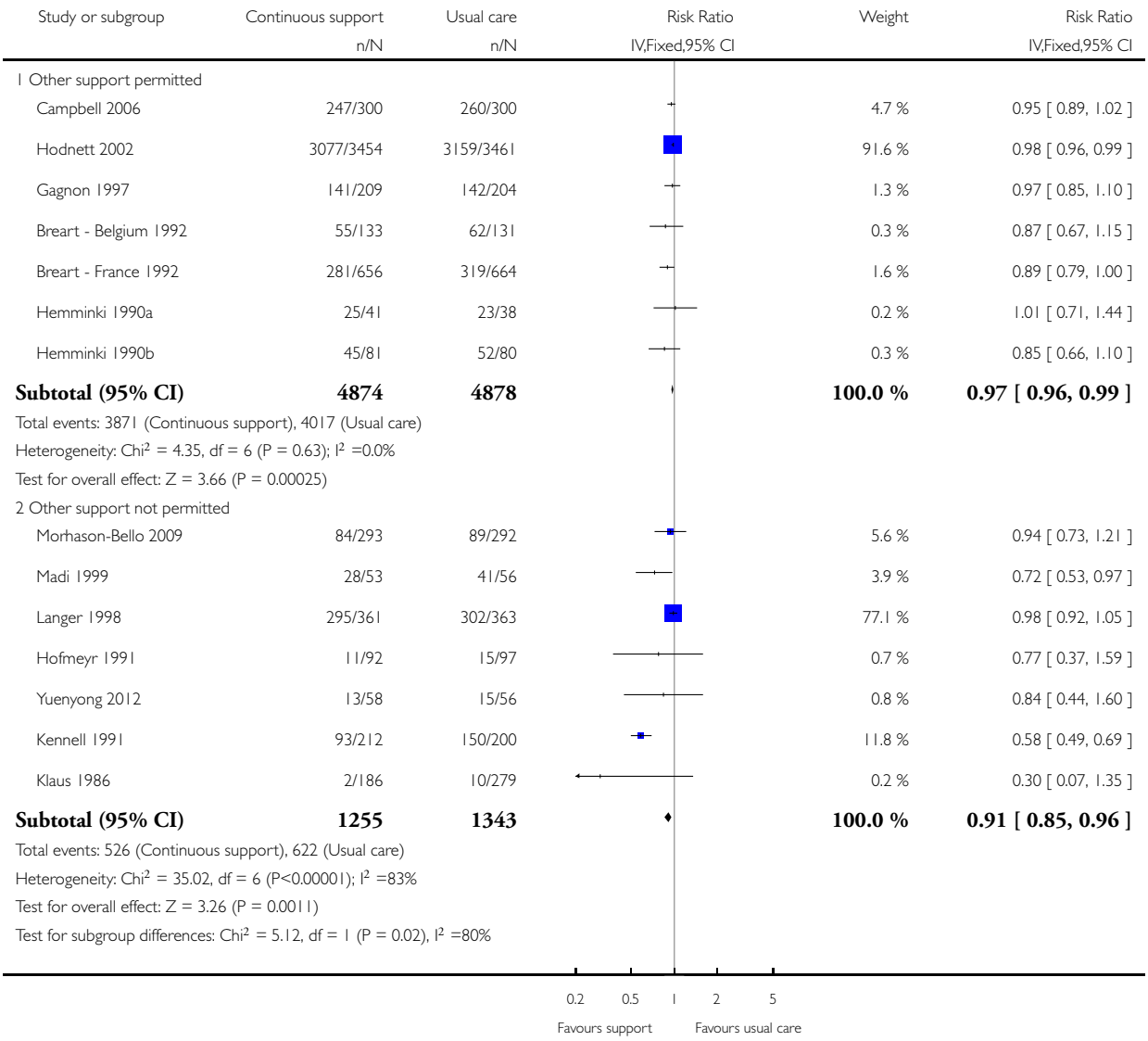


Analysis 2.1. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 1 Any analgesia/anaesthesia.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 1 Any analgesia/anaesthesia



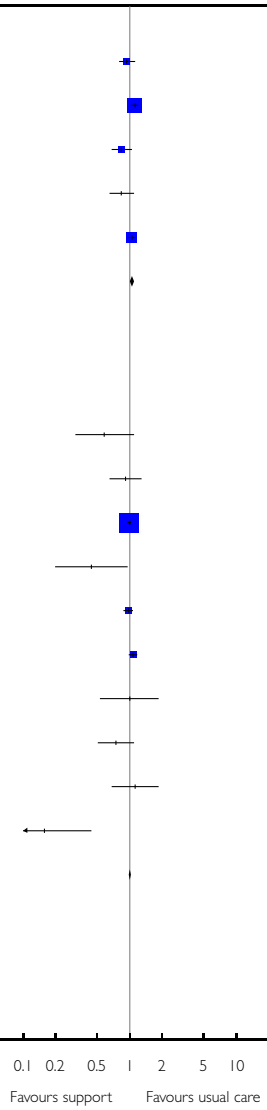
Analysis 2.2. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 2 Synthetic oxytocin during labour.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 2 Synthetic oxytocin during labour

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Other support permitted					
Campbell 2006	133/291	144/295		9.4 %	0.94 [0.79, 1.11]
Hodnett 2002	1040/3454	942/3461		49.7 %	1.11 [1.03, 1.19]
Gagnon 1997	82/209	96/204		5.5 %	0.83 [0.67, 1.04]
Breart - Belgium 1992	55/132	64/129		3.9 %	0.84 [0.64, 1.10]
Breart - France 1992	383/654	371/666		31.5 %	1.05 [0.96, 1.15]
Subtotal (95% CI)	**4740**	**4755**		**100.0 %**	**1.04 [0.99, 1.10]**
Total events: 1693 (Continuous support), 1617 (Usual care)					
Heterogeneity: Chi^2 = 10.37, df = 4 (P = 0.03); I^2 =61%					
Test for overall effect: Z = 1.60 (P = 0.11)					
2 Other support not permitted					
Kashanian 2010	11/50	19/50		0.1 %	0.58 [0.31, 1.09]
Morhason-Bello 2009	51/293	56/292		0.5 %	0.91 [0.64, 1.28]
Bruggemann 2007	104/105	107/107		86.1 %	0.99 [0.96, 1.02]
Madi 1999	7/53	17/56		0.1 %	0.44 [0.20, 0.96]
Torres 1999	167/217	172/218		5.9 %	0.98 [0.88, 1.08]
Breart - Greece 1992	224/287	193/265		6.4 %	1.07 [0.97, 1.18]
Hofmeyr 1991	16/92	17/97		0.2 %	0.99 [0.53, 1.85]
Kennell 1991	36/212	46/200		0.4 %	0.74 [0.50, 1.09]
Yuenyong 2012	21/58	18/56		0.2 %	1.13 [0.68, 1.88]
Klaus 1986	4/168	37/249		0.1 %	0.16 [0.06, 0.44]
Subtotal (95% CI)	**1535**	**1590**		**100.0 %**	**0.99 [0.97, 1.02]**
Total events: 641 (Continuous support), 682 (Usual care)					
Heterogeneity: Chi^2 = 24.66, df = 9 (P = 0.003); I^2 =64%					
Test for overall effect: Z = 0.75 (P = 0.45)					
Test for subgroup differences: Chi^2 = 3.13, df = 1 (P = 0.08), I^2 =68%					

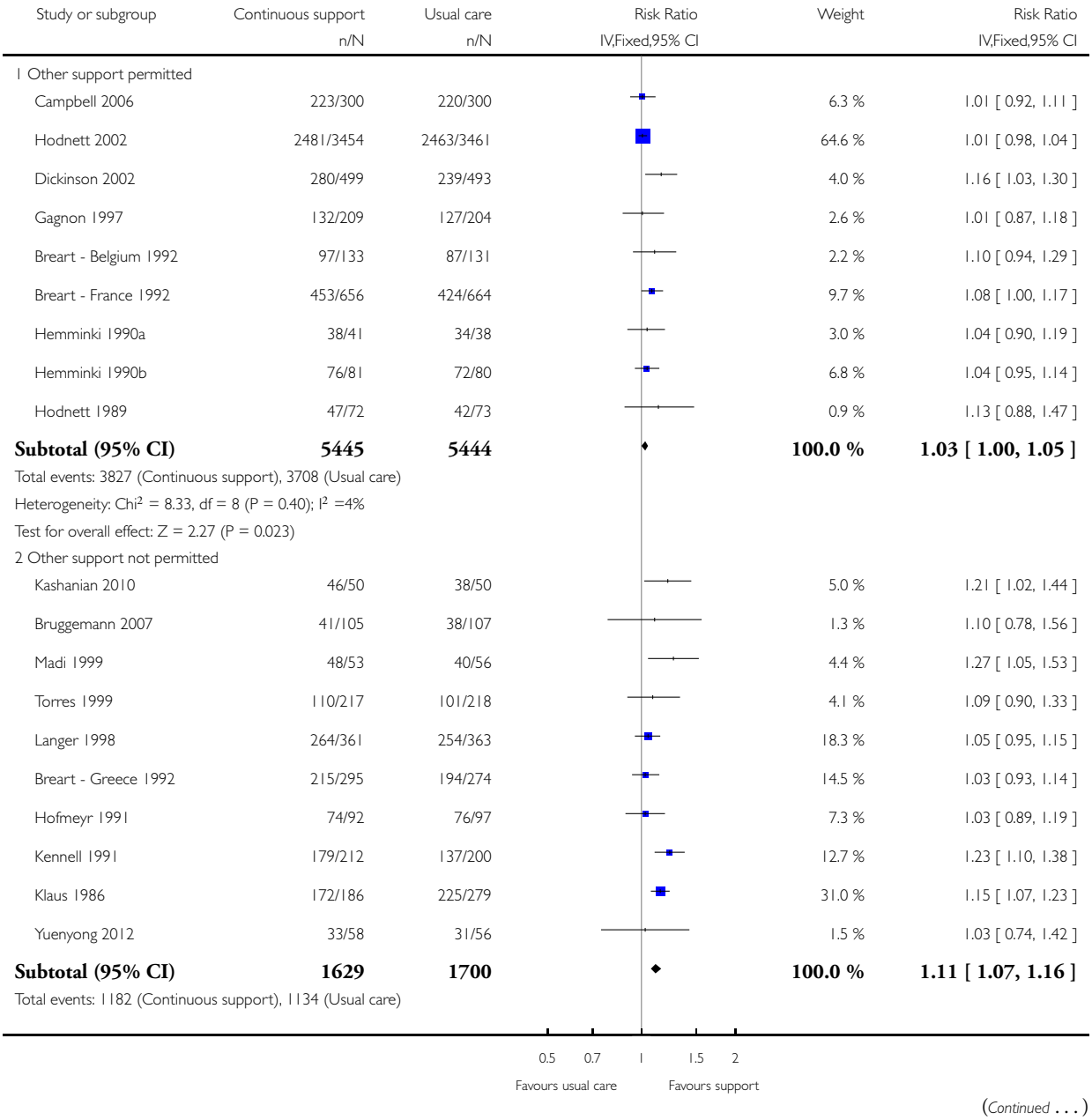


Analysis 2.3. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 3 Spontaneous vaginal birth.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 3 Spontaneous vaginal birth



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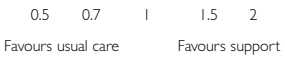
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Heterogeneity: Chi^2 = 12.17, df = 9 (P = 0.20); I^2 =26%					
Test for overall effect: Z = 5.41 (P < 0.00001)					
Test for subgroup differences: Chi^2 = 11.82, df = 1 (P = 0.00), I^2 =92%					



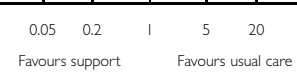
Analysis 2.4. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 4 Caesarean birth.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 4 Caesarean birth

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Other support permitted					
McGrath 2008	30/224	49/196		5.6 %	0.54 [0.35, 0.81]
Campbell 2006	55/291	53/295		8.3 %	1.05 [0.75, 1.48]
Hodnett 2002	432/3454	437/3461		62.0 %	0.99 [0.87, 1.12]
Dickinson 2002	71/499	85/493		11.4 %	0.83 [0.62, 1.10]
Gagnon 1997	29/209	33/204		4.5 %	0.86 [0.54, 1.36]
Breart - Belgium 1992	5/133	5/129		0.6 %	0.97 [0.29, 3.27]
Breart - France 1992	40/654	36/665		5.0 %	1.13 [0.73, 1.75]
Hemminki 1990b	2/81	3/80		0.3 %	0.66 [0.11, 3.84]
Hemminki 1990a	0/41	3/38		0.1 %	0.13 [0.01, 2.49]
Hodnett 1989	12/72	13/73		1.9 %	0.94 [0.46, 1.91]
Cogan 1988	2/20	1/14		0.2 %	1.40 [0.14, 13.98]
Subtotal (95% CI)	**5678**	**5648**		**100.0 %**	**0.94 [0.85, 1.03]**
Total events: 678 (Continuous support), 718 (Usual care)					



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Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Heterogeneity: Chi² = 11.85, df = 10 (P = 0.29); I² =16%					
Test for overall effect: Z = 1.28 (P = 0.20)					
2 Other support not permitted					
Kashanian 2010	4/50	12/50		1.9 %	0.33 [0.12, 0.96]
Morhason-Bello 2009	27/305	68/298		12.2 %	0.39 [0.26, 0.59]
Bruggemann 2007	11/105	12/107		3.5 %	0.93 [0.43, 2.02]
Madi 1999	3/53	7/56		1.3 %	0.45 [0.12, 1.66]
Torres 1999	54/217	46/218		17.7 %	1.18 [0.83, 1.67]
Langer 1998	85/357	97/356		33.4 %	0.87 [0.68, 1.12]
Breart - Greece 1992	30/282	34/263		9.9 %	0.82 [0.52, 1.31]
Hofmeyr 1991	11/92	14/97		3.9 %	0.83 [0.40, 1.73]
Kennell 1991	17/212	26/200		6.3 %	0.62 [0.35, 1.10]
Klaus 1986	12/168	46/249		5.8 %	0.39 [0.21, 0.71]
Yuenyong 2012	10/58	14/56		4.0 %	0.69 [0.33, 1.42]
Subtotal (95% CI)	**1899**	**1950**	◆	**100.0 %**	**0.75 [0.65, 0.86]**
Total events: 264 (Continuous support), 376 (Usual care)					
Heterogeneity: Chi² = 26.11, df = 10 (P = 0.004); I² =62%					
Test for overall effect: Z = 3.93 (P = 0.000085)					
Test for subgroup differences: Chi² = 6.46, df = 1 (P = 0.01), I² =85%					

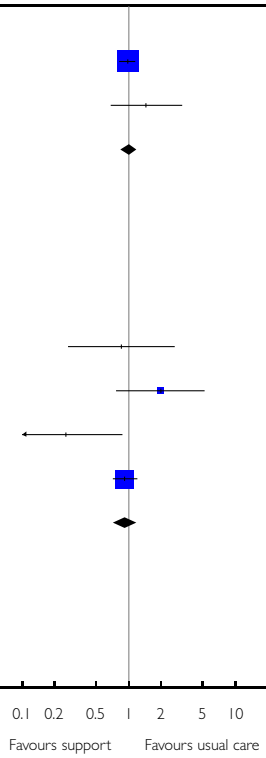
Analysis 2.5. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 5 Admission to special care nursery.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 5 Admission to special care nursery

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Other support permitted					
Hodnett 2002	246/3454	254/3461		95.5 %	0.97 [0.82, 1.15]
Gagnon 1997	15/209	10/204		4.5 %	1.46 [0.67, 3.18]
Subtotal (95% CI)	**3663**	**3665**		**100.0 %**	**0.99 [0.84, 1.17]**
Total events: 261 (Continuous support), 264 (Usual care)					
Heterogeneity: Chi^2 = 1.03, df = 1 (P = 0.31); I^2 =3%					
Test for overall effect: Z = 0.14 (P = 0.89)					
2 Other support not permitted					
Kashanian 2010	0/50	0/50			Not estimable
Bruggemann 2007	5/105	6/107		4.6 %	0.85 [0.27, 2.70]
Torres 1999	12/215	6/213		6.6 %	1.98 [0.76, 5.18]
Klaus 1986	3/168	17/249		4.2 %	0.26 [0.08, 0.88]
Kennell 1991	69/212	71/200		84.6 %	0.92 [0.70, 1.20]
Subtotal (95% CI)	**750**	**819**		**100.0 %**	**0.91 [0.71, 1.17]**
Total events: 89 (Continuous support), 100 (Usual care)					
Heterogeneity: Chi^2 = 6.60, df = 3 (P = 0.09); I^2 =55%					
Test for overall effect: Z = 0.73 (P = 0.47)					
Test for subgroup differences: Chi^2 = 0.28, df = 1 (P = 0.60), I^2 =0.0%					



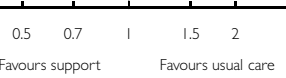
Analysis 2.6. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 6 Postpartum depression.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 6 Postpartum depression

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Other support permitted					
Hodnett 2002	245/2816	277/2751		100.0 %	0.86 [0.73, 1.02]
Subtotal (95% CI)	**2816**	**2751**		**100.0 %**	**0.86 [0.73, 1.02]**
Total events: 245 (Continuous support), 277 (Usual care)					
Heterogeneity: not applicable					
Test for overall effect: Z = 1.75 (P = 0.080)					
2 Other support not permitted					
Hofmeyr 1991	8/74	44/75		100.0 %	0.18 [0.09, 0.36]
Subtotal (95% CI)	**74**	**75**		**100.0 %**	**0.18 [0.09, 0.36]**
Total events: 8 (Continuous support), 44 (Usual care)					
Heterogeneity: not applicable					
Test for overall effect: Z = 4.86 (P < 0.00001)					
Test for subgroup differences: Chi^2 = 18.68, df = 1 (P = 0.00), I^2 =95%					

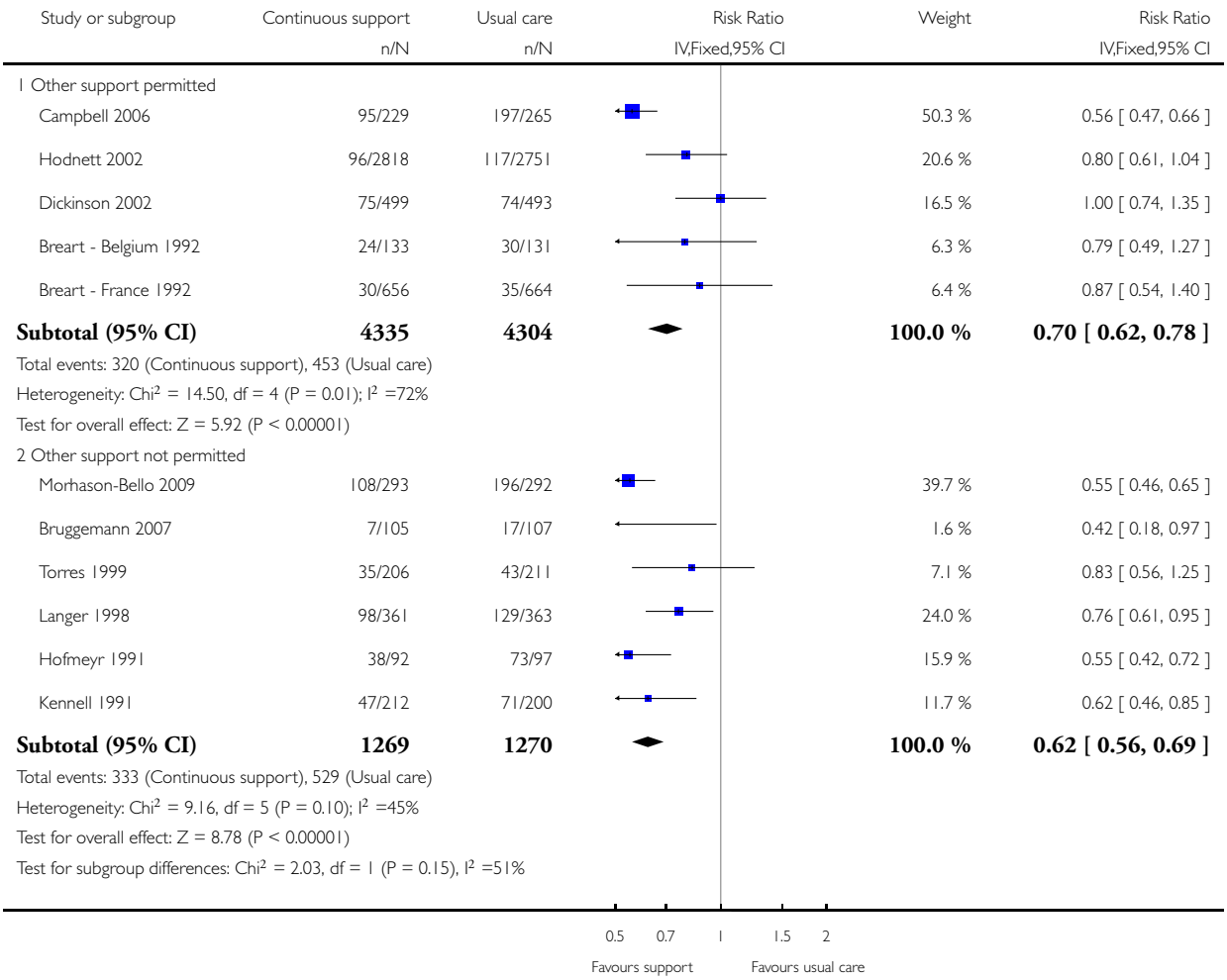


Analysis 2.7. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 7 Negative rating of/negative feelings about birth experience.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 7 Negative rating of/negative feelings about birth experience

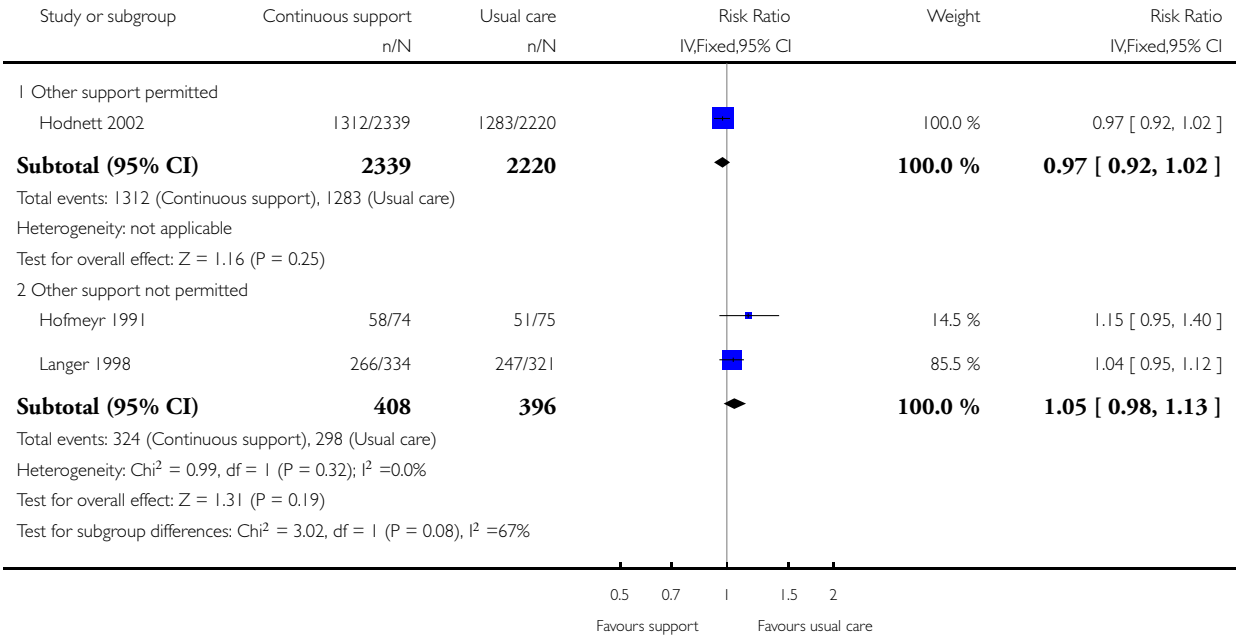


Analysis 2.8. Comparison 2 Continuous support versus usual care - policy regarding presence of companion, Outcome 8 Breastfeeding at 1-2 months postpartum.

Review: Continuous support for women during childbirth

Comparison: 2 Continuous support versus usual care - policy regarding presence of companion

Outcome: 8 Breastfeeding at 1-2 months postpartum

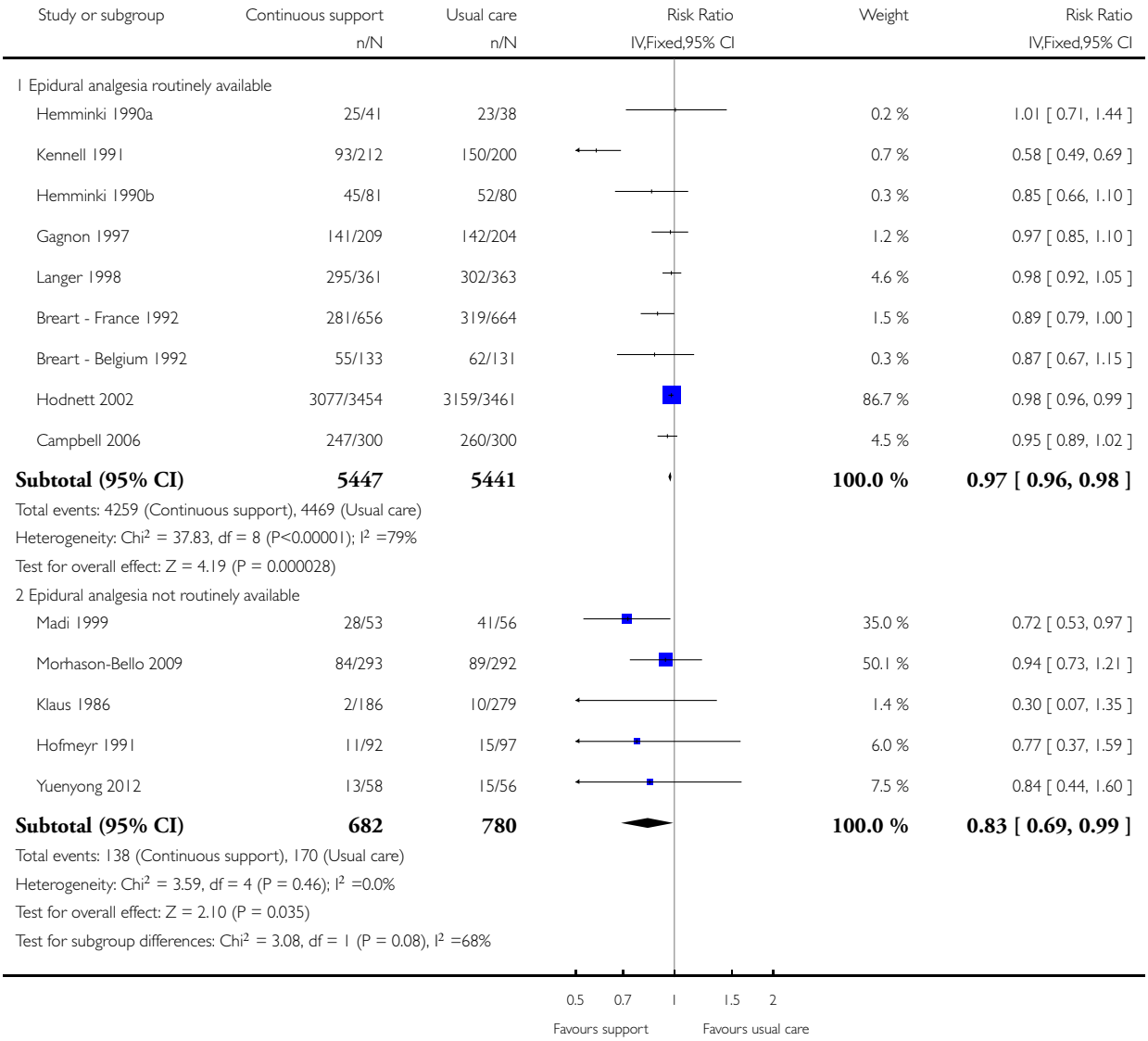


Analysis 3.1. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 1 Any analgesia/anaesthesia.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 1 Any analgesia/anaesthesia

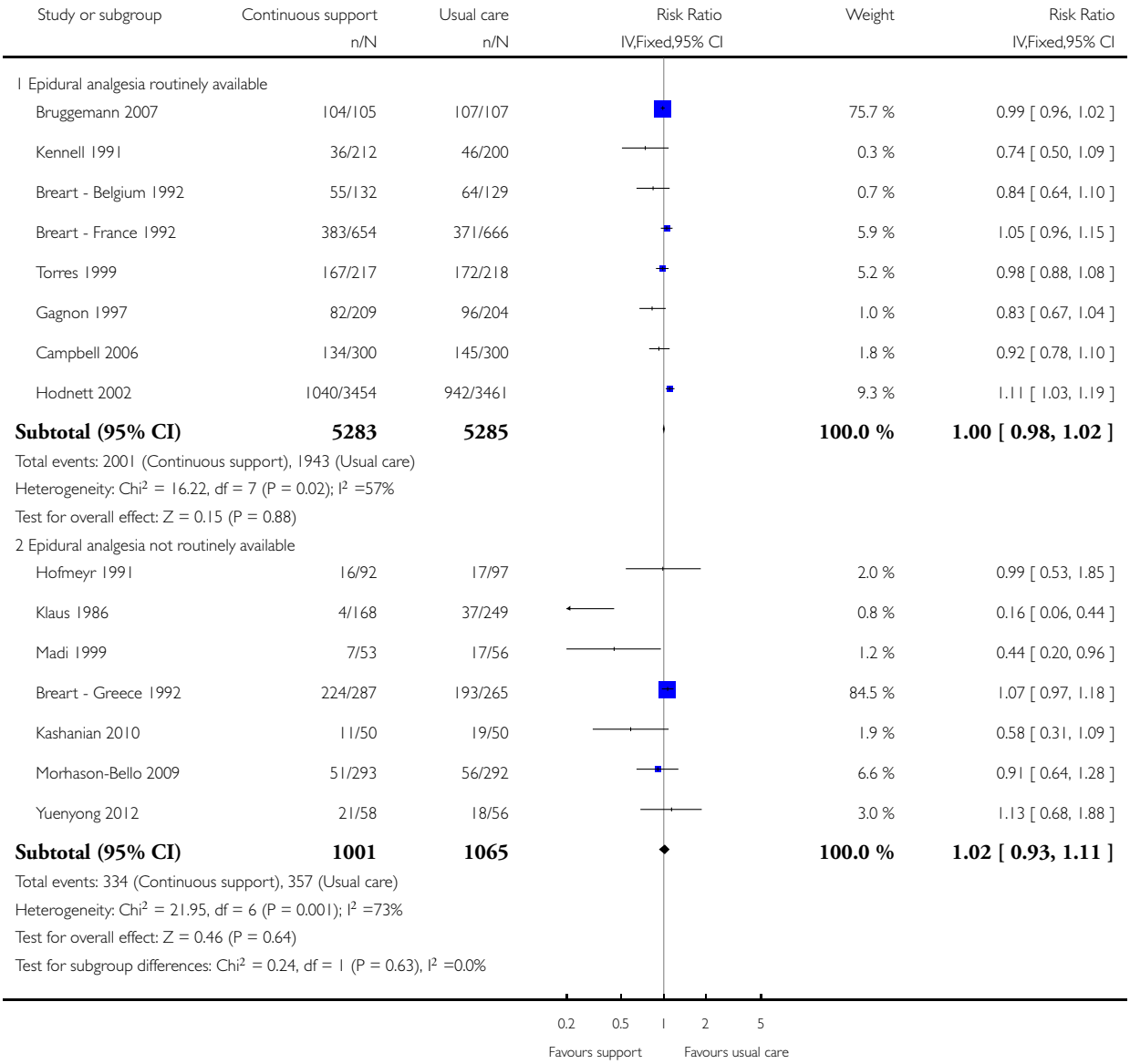


Analysis 3.2. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 2 Synthetic oxytocin during labour.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 2 Synthetic oxytocin during labour

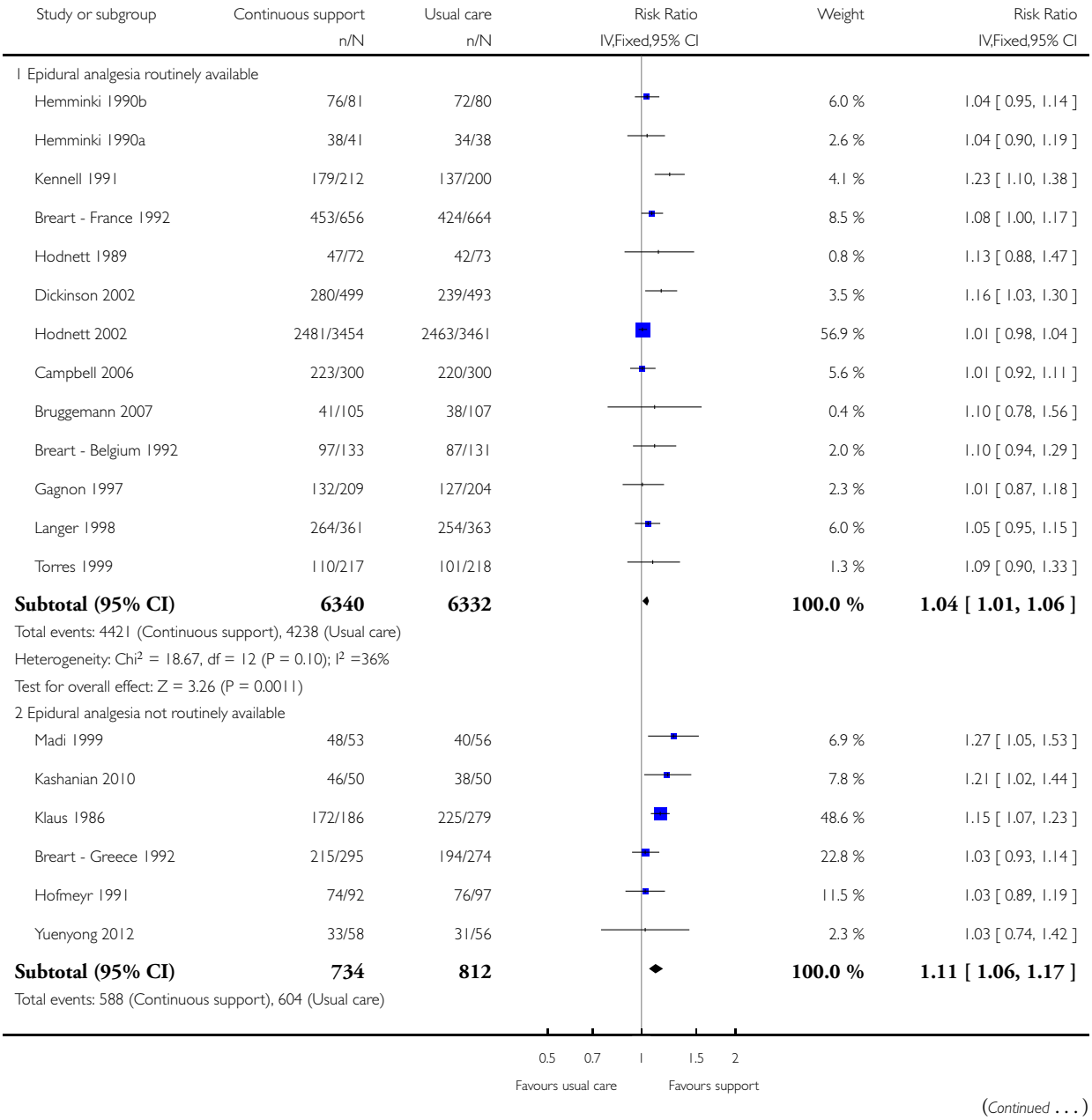


Analysis 3.3. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 3 Spontaneous vaginal birth.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 3 Spontaneous vaginal birth



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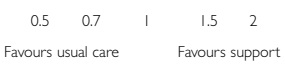
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Heterogeneity: Chi^2 = 7.05, df = 5 (P = 0.22); I^2 =29%					
Test for overall effect: Z = 4.31 (P = 0.000016)					
Test for subgroup differences: Chi^2 = 6.59, df = 1 (P = 0.01), I^2 =85%					



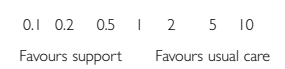
Analysis 3.4. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 4 Caesarean birth.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 4 Caesarean birth

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Epidural analgesia routinely available					
Hodnett 2002	432/3454	437/3461		48.6 %	0.99 [0.87, 1.12]
Campbell 2006	55/291	53/295		6.5 %	1.05 [0.75, 1.48]
Bruggemann 2007	11/105	12/107		1.3 %	0.93 [0.43, 2.02]
McGrath 2008	30/224	49/196		4.4 %	0.54 [0.35, 0.81]
Breart - Belgium 1992	5/133	5/129		0.5 %	0.97 [0.29, 3.27]
Breart - France 1992	40/654	36/665		3.9 %	1.13 [0.73, 1.75]
Kennell 1991	17/212	26/200		2.2 %	0.62 [0.35, 1.10]
Hemminki 1990b	2/81	3/80		0.2 %	0.66 [0.11, 3.84]
Dickinson 2002	71/499	85/493		9.0 %	0.83 [0.62, 1.10]
Torres 1999	54/217	46/218		6.3 %	1.18 [0.83, 1.67]
Langer 1998	85/357	97/356		11.9 %	0.87 [0.68, 1.12]
Gagnon 1997	29/209	33/204		3.6 %	0.86 [0.54, 1.36]
Hemminki 1990a	0/41	3/38		0.1 %	0.13 [0.01, 2.49]



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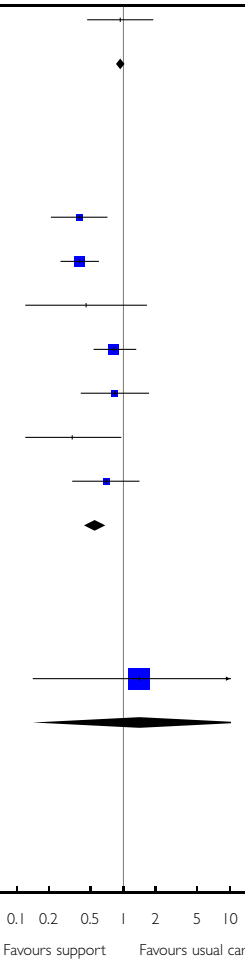
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Hodnett 1989	12/72	13/73		1.5 %	0.94 [0.46, 1.91]
Subtotal (95% CI)	**6549**	**6515**		**100.0 %**	**0.93 [0.86, 1.02]**
Total events: 843 (Continuous support), 898 (Usual care)					
Heterogeneity: Chi^2 = 15.73, df = 13 (P = 0.26); I^2 =17%					
Test for overall effect: Z = 1.54 (P = 0.12)					
2 Epidural analgesia not routinely available					
Klaus 1986	12/168	46/249		14.8 %	0.39 [0.21, 0.71]
Morhason-Bello 2009	27/305	68/298		31.3 %	0.39 [0.26, 0.59]
Madi 1999	3/53	7/56		3.2 %	0.45 [0.12, 1.66]
Breart - Greece 1992	30/282	34/263		25.5 %	0.82 [0.52, 1.31]
Hofmeyr 1991	11/92	14/97		10.0 %	0.83 [0.40, 1.73]
Kashanian 2010	4/50	12/50		4.8 %	0.33 [0.12, 0.96]
Yuenyong 2012	10/58	14/56		10.4 %	0.69 [0.33, 1.42]
Subtotal (95% CI)	**1008**	**1069**		**100.0 %**	**0.54 [0.43, 0.68]**
Total events: 97 (Continuous support), 195 (Usual care)					
Heterogeneity: Chi^2 = 9.40, df = 6 (P = 0.15); I^2 =36%					
Test for overall effect: Z = 5.24 (P < 0.00001)					
3 Unknown availability of epidural analgesia					
Cogan 1988	2/20	1/14		100.0 %	1.40 [0.14, 13.98]
Subtotal (95% CI)	**20**	**14**		**100.0 %**	**1.40 [0.14, 13.98]**
Total events: 2 (Continuous support), 1 (Usual care)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.29 (P = 0.77)					
Test for subgroup differences: Chi^2 = 19.30, df = 2 (P = 0.00), I^2 =90%					

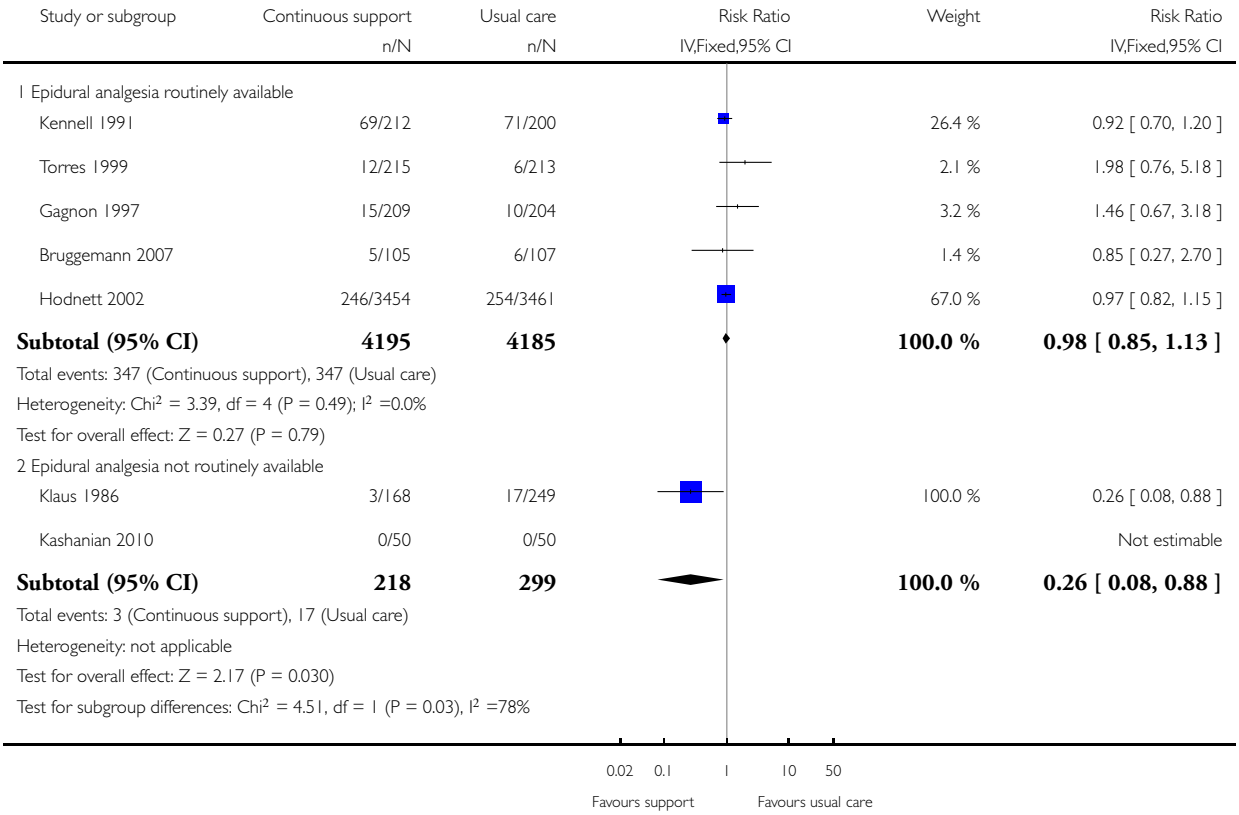


Analysis 3.5. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 5 Admission to special care nursery.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 5 Admission to special care nursery

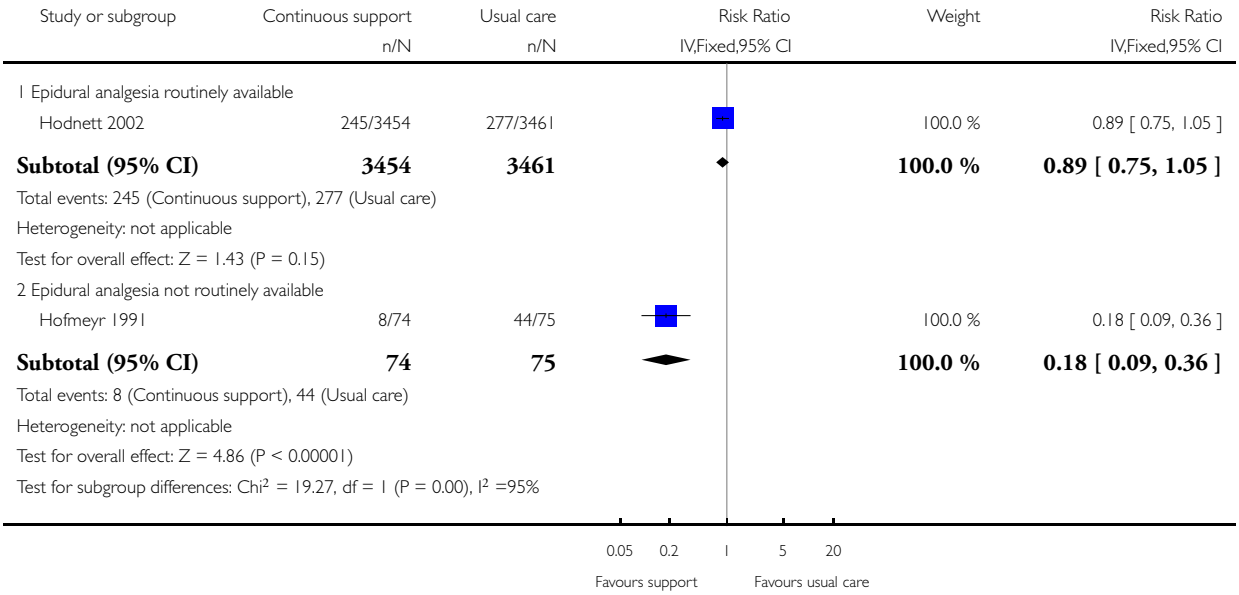


Analysis 3.6. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 6 Postpartum depression.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 6 Postpartum depression

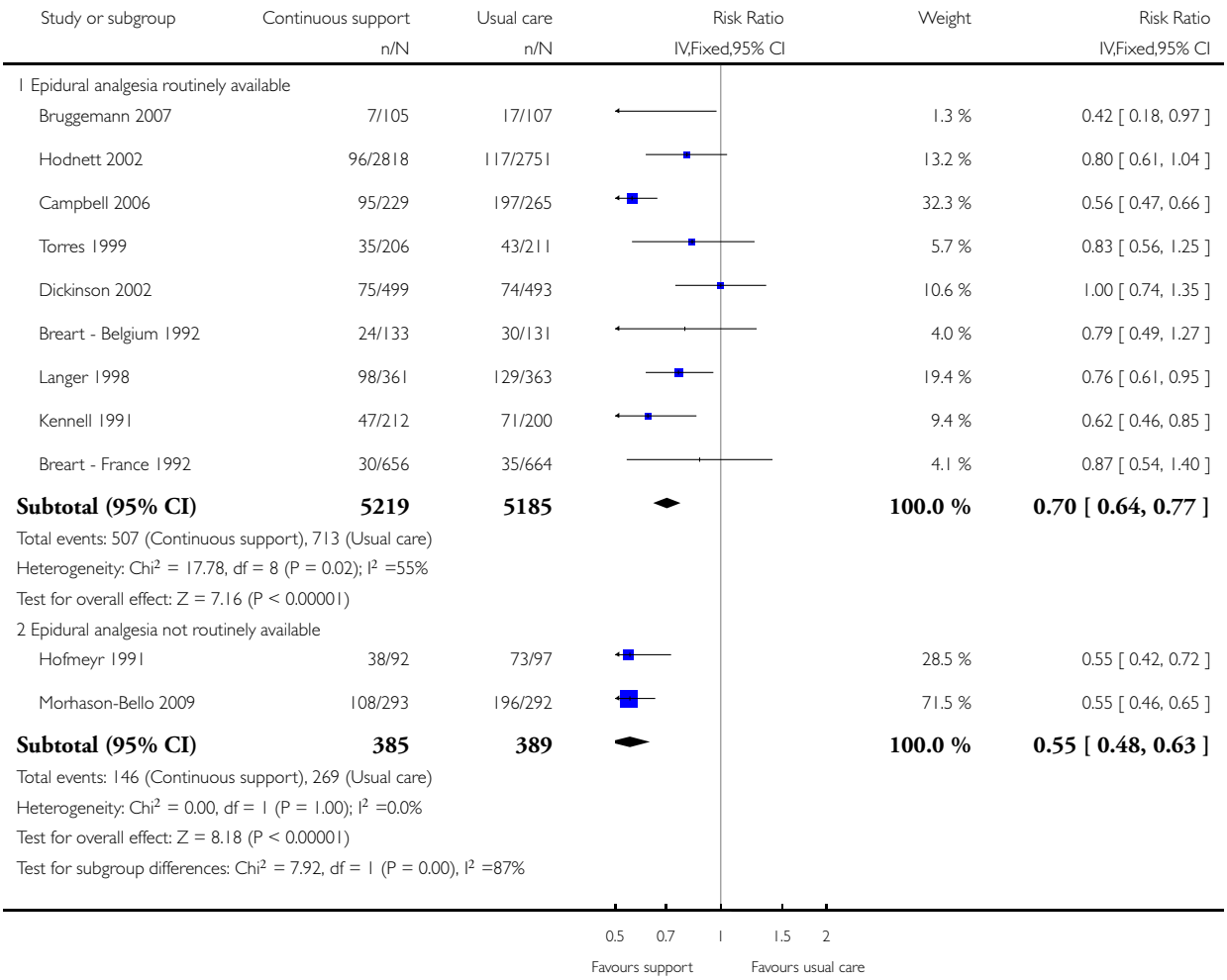


Analysis 3.7. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 7 Negative rating of/negative feelings about birth experience.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 7 Negative rating of/negative feelings about birth experience

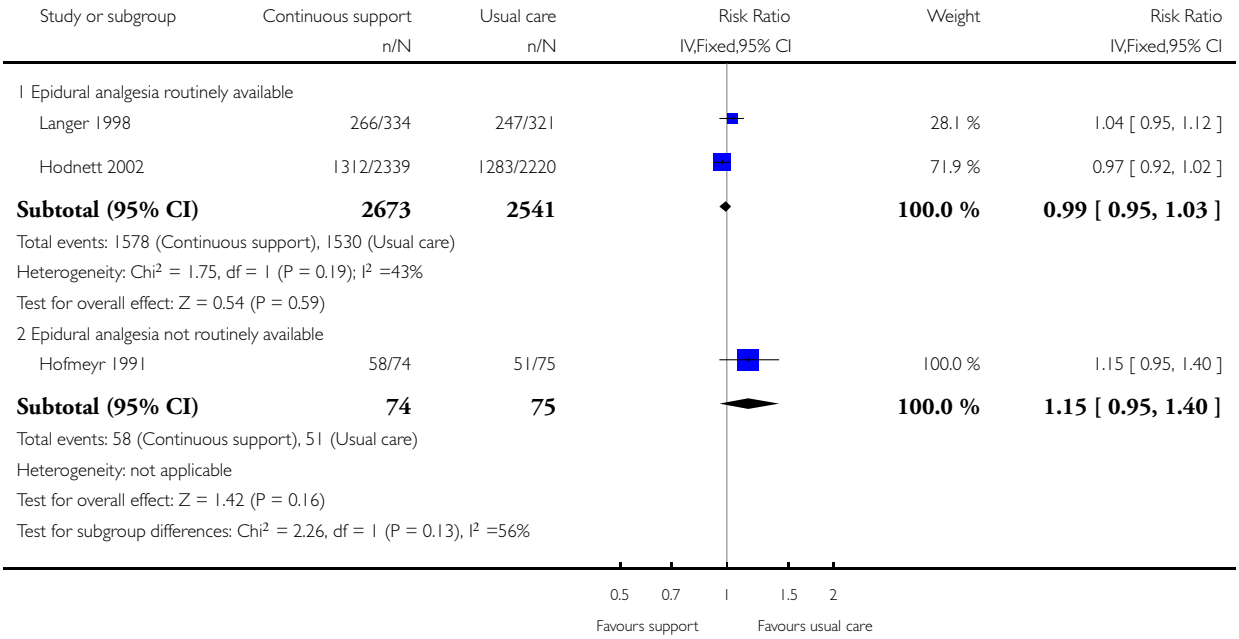


Analysis 3.8. Comparison 3 Continuous support versus usual care - availability of epidural analgesia, Outcome 8 Breastfeeding at 1-2 months postpartum.

Review: Continuous support for women during childbirth

Comparison: 3 Continuous support versus usual care - availability of epidural analgesia

Outcome: 8 Breastfeeding at 1-2 months postpartum

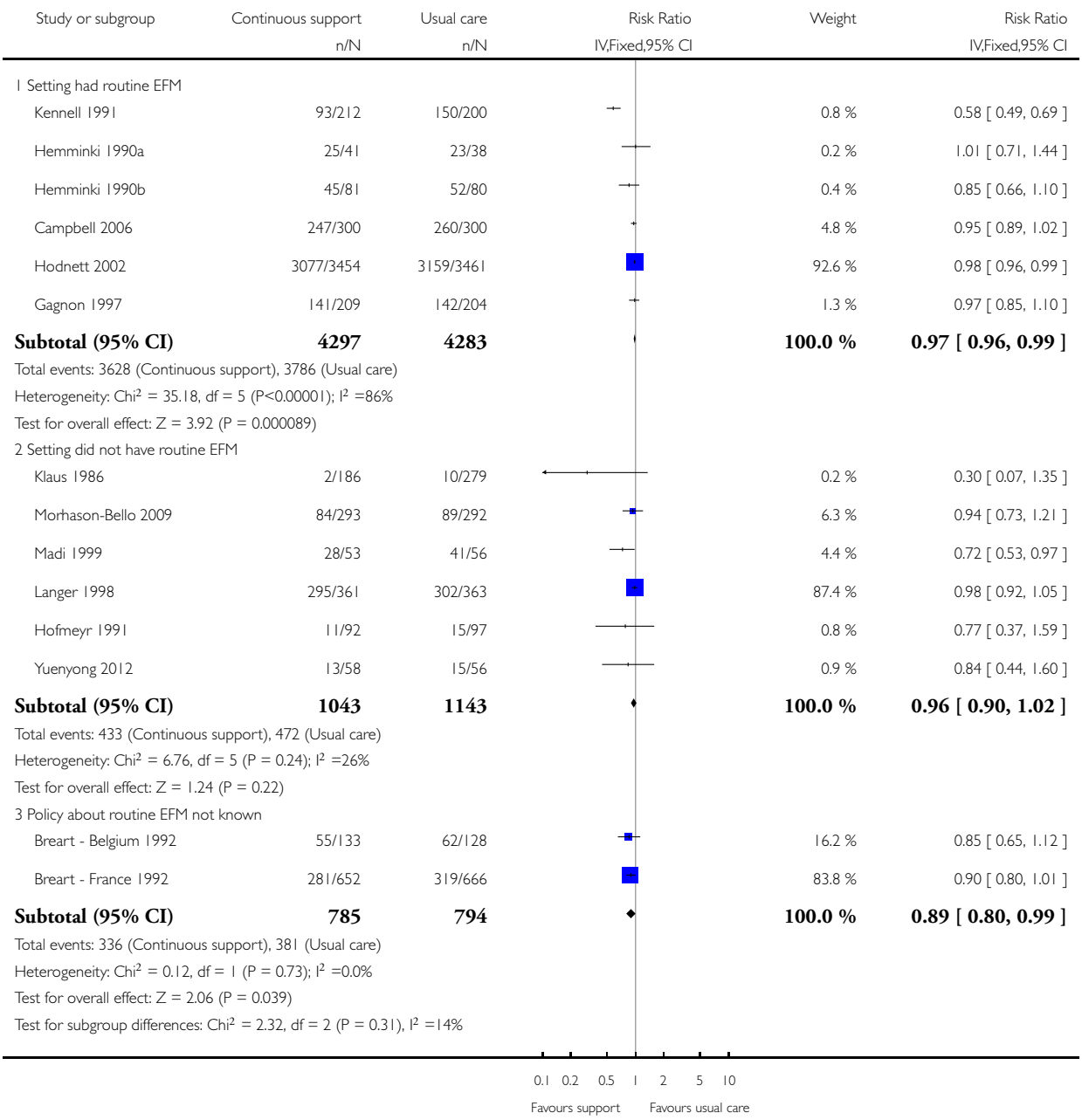


Analysis 4.1. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 1 Any analgesia/anaesthesia.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 1 Any analgesia/anaesthesia



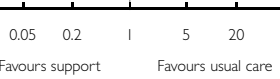
Analysis 4.2. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 2 Synthetic oxytocin during labour.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 2 Synthetic oxytocin during labour

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Setting had routine EFM					
Campbell 2006	134/300	145/300		14.1 %	0.92 [0.78, 1.10]
Gagnon 1997	82/209	96/204		8.4 %	0.83 [0.67, 1.04]
Hodnett 2002	1040/3454	942/3461		74.9 %	1.11 [1.03, 1.19]
Kennell 1991	36/212	46/200		2.7 %	0.74 [0.50, 1.09]
Subtotal (95% CI)	**4175**	**4165**		**100.0 %**	**1.04 [0.98, 1.11]**
Total events: 1292 (Continuous support), 1229 (Usual care)					
Heterogeneity: Chi^2 = 11.18, df = 3 (P = 0.01); I^2 =73%					
Test for overall effect: Z = 1.25 (P = 0.21)					
2 Setting did not have routine EFM					
Klaus 1986	4/168	37/249		0.1 %	0.16 [0.06, 0.44]
Hofmeyr 1991	16/92	17/97		0.2 %	0.99 [0.53, 1.85]
Morhason-Bello 2009	51/293	56/292		0.6 %	0.91 [0.64, 1.28]
Kashanian 2010	11/50	19/50		0.2 %	0.58 [0.31, 1.09]
Madi 1999	7/53	17/56		0.1 %	0.44 [0.20, 0.96]
Bruggemann 2007	104/105	107/107		98.6 %	0.99 [0.96, 1.02]
Yuenyong 2012	21/58	18/56		0.3 %	1.13 [0.68, 1.88]
Subtotal (95% CI)	**819**	**907**		**100.0 %**	**0.99 [0.96, 1.01]**
Total events: 214 (Continuous support), 271 (Usual care)					
Heterogeneity: Chi^2 = 19.75, df = 6 (P = 0.003); I^2 =70%					
Test for overall effect: Z = 0.96 (P = 0.34)					
3 Policy about routine EFM not known					
Torres 1999	167/217	172/218		29.6 %	0.98 [0.88, 1.08]
Breart - Greece 1992	224/287	193/265		32.3 %	1.07 [0.97, 1.18]
Breart - Belgium 1992	55/132	64/129		4.2 %	0.84 [0.64, 1.10]



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Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Breart - France 1992	383/654	371/666		33.9 %	1.05 [0.96, 1.15]
Subtotal (95% CI)	**1290**	**1278**		**100.0 %**	**1.02 [0.97, 1.08]**
Total events: 829 (Continuous support), 800 (Usual care)					
Heterogeneity: Chi^2 = 4.20, df = 3 (P = 0.24); I^2 =29%					
Test for overall effect: Z = 0.89 (P = 0.37)					
Test for subgroup differences: Chi^2 = 3.27, df = 2 (P = 0.19), I^2 =39%					

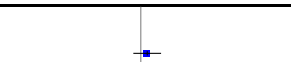
Analysis 4.3. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 3 Spontaneous vaginal birth.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 3 Spontaneous vaginal birth

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Setting had routine EFM					
Hemminki 1990b	76/81	72/80		7.3 %	1.04 [0.95, 1.14]
Hodnett 1989	47/72	42/73		0.9 %	1.13 [0.88, 1.47]
Kennell 1991	179/212	137/200		5.1 %	1.23 [1.10, 1.38]
Hemminki 1990a	38/41	34/38		3.2 %	1.04 [0.90, 1.19]
Dickinson 2002	280/499	239/493		4.3 %	1.16 [1.03, 1.30]
Gagnon 1997	132/209	127/204		2.8 %	1.01 [0.87, 1.18]
Campbell 2006	223/300	220/300		6.8 %	1.01 [0.92, 1.11]
Hodnett 2002	2481/3454	2463/3461		69.6 %	1.01 [0.98, 1.04]
Subtotal (95% CI)	**4868**	**4849**		**100.0 %**	**1.03 [1.01, 1.06]**
Total events: 3456 (Continuous support), 3334 (Usual care)					
Heterogeneity: Chi^2 = 16.37, df = 7 (P = 0.02); I^2 =57%					



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Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Test for overall effect: Z = 2.37 (P = 0.018)					
2 Setting did not have routine EFM					
Klaus 1986	172/186	225/279		45.1 %	1.15 [1.07, 1.23]
Bruggemann 2007	41/105	38/107		1.8 %	1.10 [0.78, 1.56]
Madi 1999	48/53	40/56		6.4 %	1.27 [1.05, 1.53]
Langer 1998	264/361	254/363		26.6 %	1.05 [0.95, 1.15]
Hofmeyr 1991	74/92	76/97		10.7 %	1.03 [0.89, 1.19]
Kashanian 2010	46/50	38/50		7.3 %	1.21 [1.02, 1.44]
Yuenyong 2012	33/58	31/56		2.1 %	1.03 [0.74, 1.42]
Subtotal (95% CI)	**905**	**1008**		**100.0 %**	**1.11 [1.06, 1.17]**
Total events: 678 (Continuous support), 702 (Usual care)					
Heterogeneity: Chi^2 = 6.65, df = 6 (P = 0.35); I^2 =10%					
Test for overall effect: Z = 4.45 (P < 0.00001)					
3 Policy about routine EFM not known					
Breart - Greece 1992	202/282	183/263		26.6 %	1.03 [0.92, 1.15]
Torres 1999	110/217	101/218		8.3 %	1.09 [0.90, 1.33]
Breart - Belgium 1992	97/133	85/129		12.0 %	1.11 [0.94, 1.30]
Breart - France 1992	451/654	425/665		53.1 %	1.08 [1.00, 1.17]
Subtotal (95% CI)	**1286**	**1275**		**100.0 %**	**1.07 [1.01, 1.13]**
Total events: 860 (Continuous support), 794 (Usual care)					
Heterogeneity: Chi^2 = 0.75, df = 3 (P = 0.86); I^2 =0.0%					
Test for overall effect: Z = 2.37 (P = 0.018)					
Test for subgroup differences: Chi^2 = 8.56, df = 2 (P = 0.01), I^2 =77%					

Analysis 4.4. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 4 Caesarean birth.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 4 Caesarean birth

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Setting had routine EFM					
Dickinson 2002	71/499	85/493		11.8 %	0.83 [0.62, 1.10]
Hodnett 2002	432/3454	437/3461		63.9 %	0.99 [0.87, 1.12]
Kennell 1991	17/212	26/200		2.9 %	0.62 [0.35, 1.10]
Gagnon 1997	29/209	33/204		4.7 %	0.86 [0.54, 1.36]
Campbell 2006	55/291	53/295		8.5 %	1.05 [0.75, 1.48]
Hemminki 1990a	0/41	3/38		0.1 %	0.13 [0.01, 2.49]
Hemminki 1990b	2/81	3/80		0.3 %	0.66 [0.11, 3.84]
Hodnett 1989	12/72	13/73		1.9 %	0.94 [0.46, 1.91]
McGrath 2008	30/224	49/196		5.8 %	0.54 [0.35, 0.81]
Subtotal (95% CI)	**5083**	**5040**		**100.0 %**	**0.92 [0.83, 1.01]**
Total events: 648 (Continuous support), 702 (Usual care)					
Heterogeneity: Chi^2 = 12.84, df = 8 (P = 0.12); I^2 =38%					
Test for overall effect: Z = 1.72 (P = 0.086)					
2 Setting did not have routine EFM					
Klaus 1986	12/168	46/249		8.8 %	0.39 [0.21, 0.71]
Langer 1998	85/357	97/356		50.6 %	0.87 [0.68, 1.12]
Hofmeyr 1991	11/92	14/97		5.9 %	0.83 [0.40, 1.73]
Morhason-Bello 2009	27/305	68/298		18.5 %	0.39 [0.26, 0.59]
Kashanian 2010	4/50	12/50		2.8 %	0.33 [0.12, 0.96]
Madi 1999	3/53	7/56		1.9 %	0.45 [0.12, 1.66]
Bruggemann 2007	11/105	12/107		5.4 %	0.93 [0.43, 2.02]
Yuenyong 2012	10/58	14/56		6.1 %	0.69 [0.33, 1.42]
Subtotal (95% CI)	**1188**	**1269**		**100.0 %**	**0.66 [0.55, 0.79]**
Total events: 163 (Continuous support), 270 (Usual care)					
Heterogeneity: Chi^2 = 17.12, df = 7 (P = 0.02); I^2 =59%					
Test for overall effect: Z = 4.49 (P < 0.00001)					
3 Policy about routine EFM not known					

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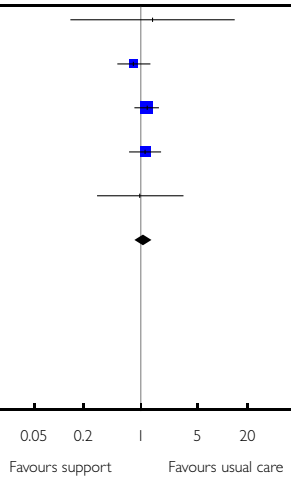
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Cogan 1988	2/20	1/14		1.0 %	1.40 [0.14, 13.98]
Breart - Greece 1992	30/282	34/263		24.5 %	0.82 [0.52, 1.31]
Torres 1999	54/217	46/218		43.7 %	1.18 [0.83, 1.67]
Breart - France 1992	40/654	36/665		27.3 %	1.13 [0.73, 1.75]
Breart - Belgium 1992	5/133	5/129		3.5 %	0.97 [0.29, 3.27]
Subtotal (95% CI)	**1306**	**1289**		**100.0 %**	**1.06 [0.84, 1.33]**
Total events: 131 (Continuous support), 122 (Usual care)					
Heterogeneity: Chi^2 = 1.68, df = 4 (P = 0.79); I^2 =0.0%					
Test for overall effect: Z = 0.51 (P = 0.61)					
Test for subgroup differences: Chi^2 = 12.78, df = 2 (P = 0.00), I^2 =84%					

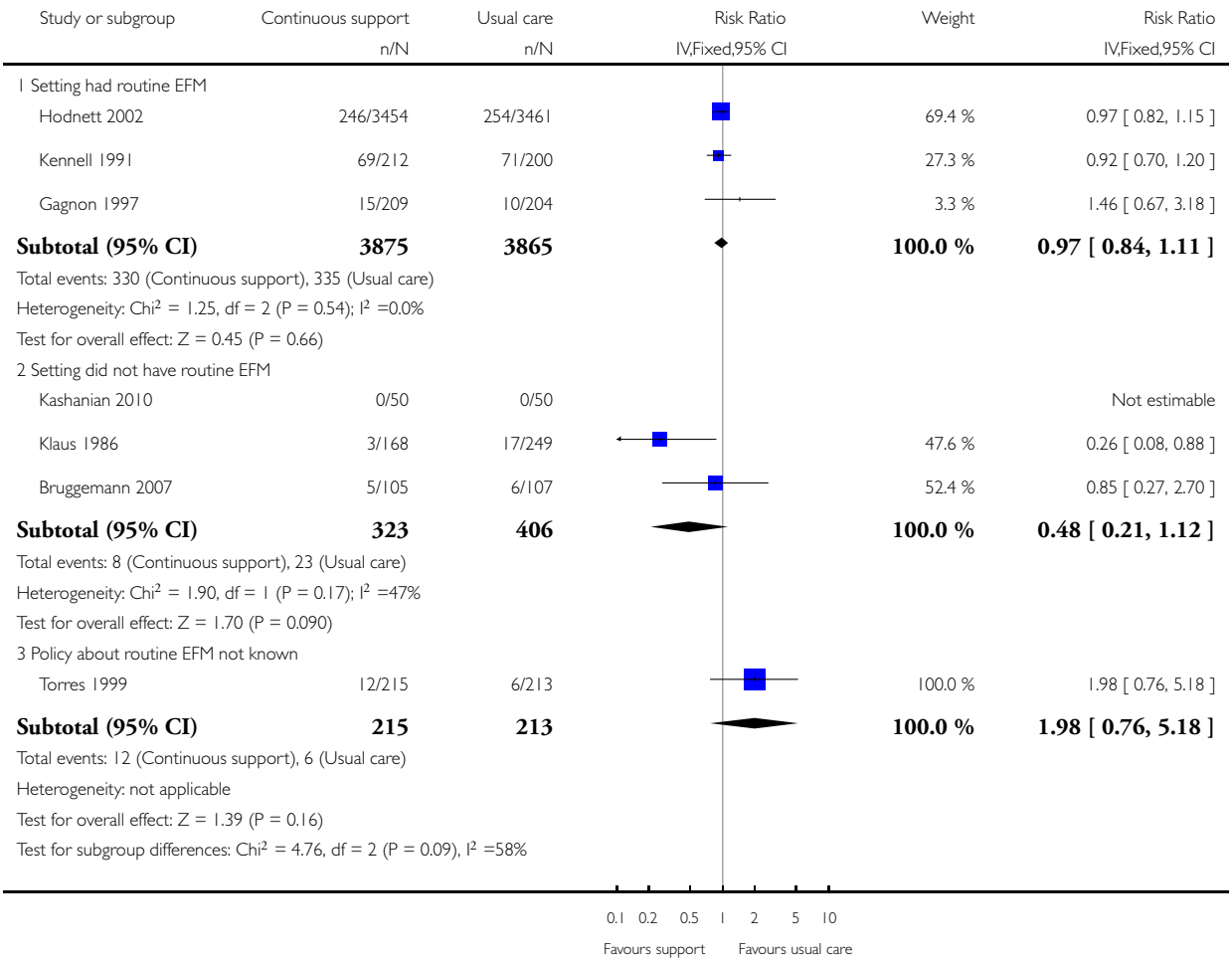


Analysis 4.5. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 5 Admission to special care nursery.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 5 Admission to special care nursery

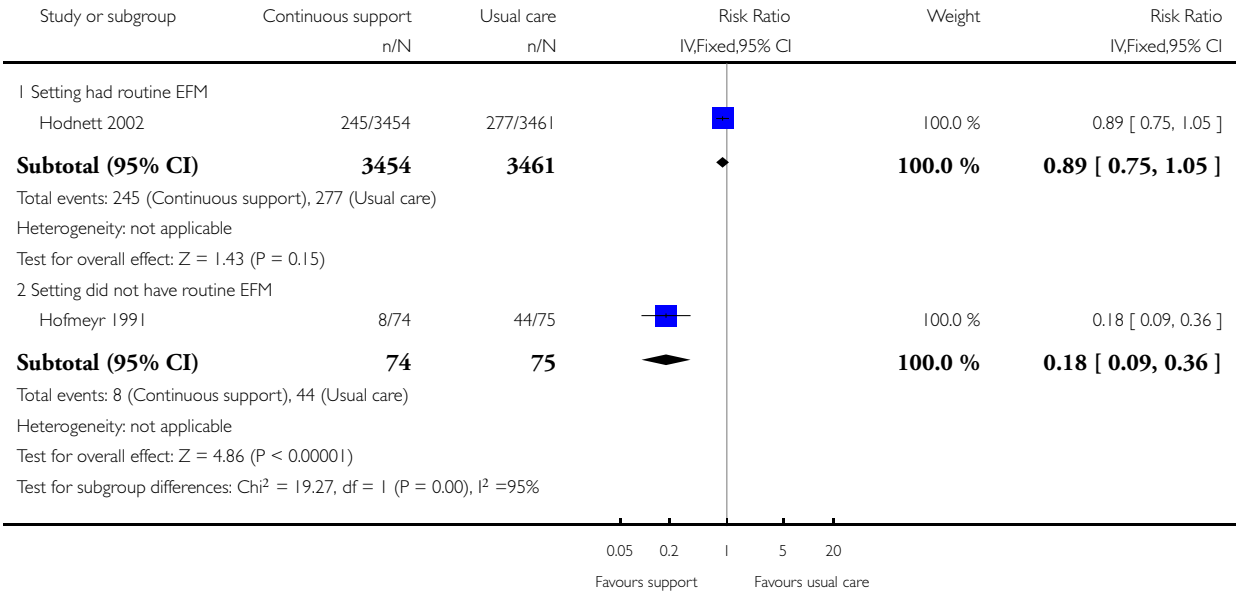


Analysis 4.6. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 6 Postpartum depression.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 6 Postpartum depression

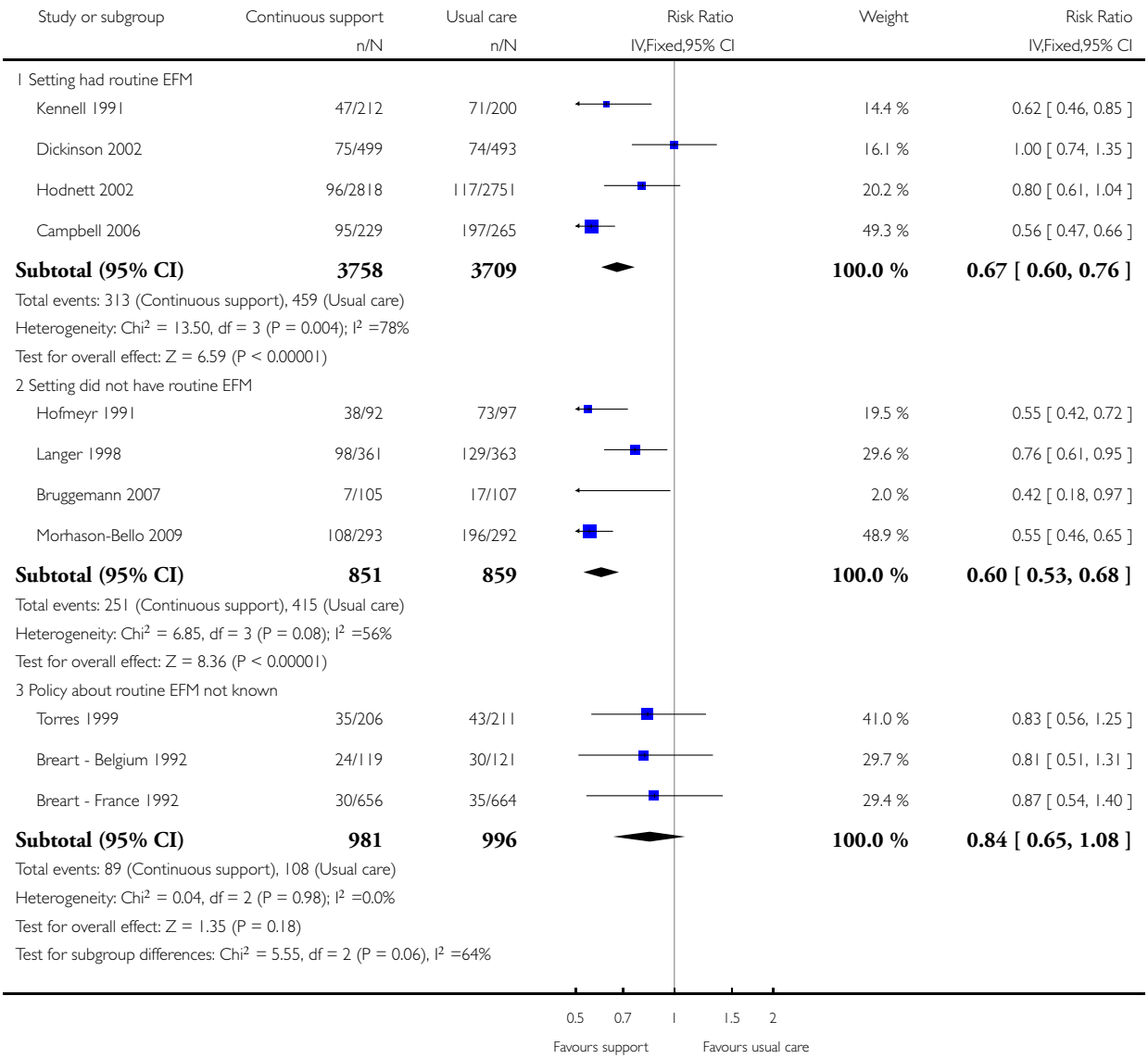


Analysis 4.7. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 7 Negative rating of/negative views about birth experience.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 7 Negative rating of/negative views about birth experience

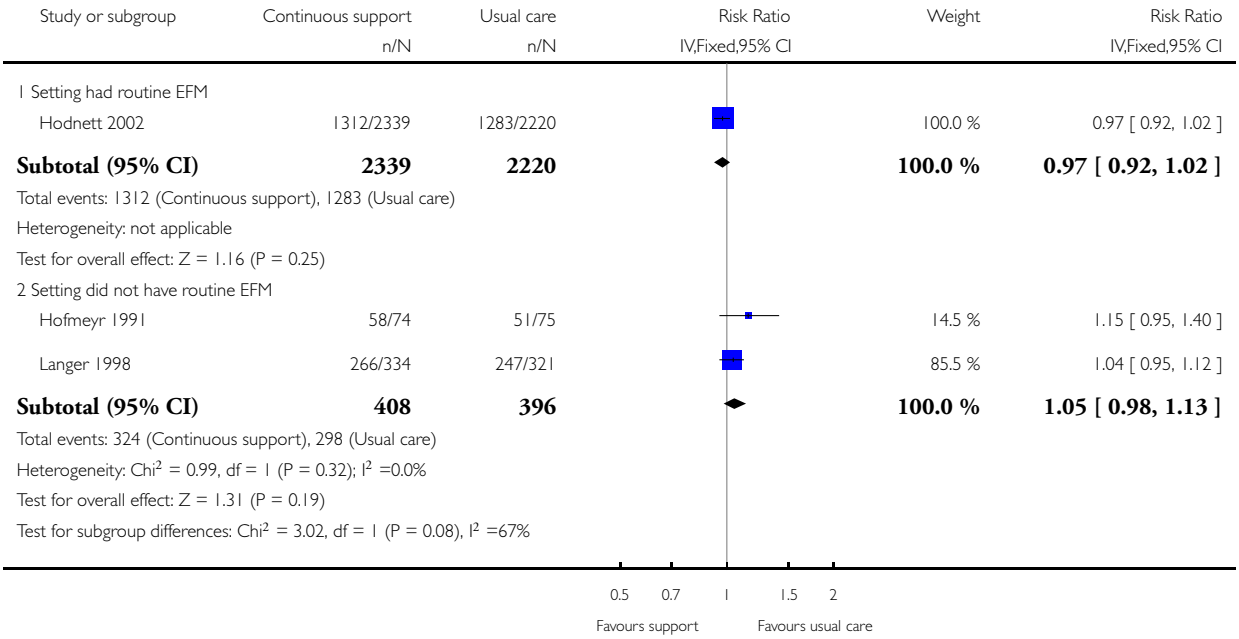


Analysis 4.8. Comparison 4 Continuous support versus usual care - policy about routine EFM, Outcome 8 Breastfeeding at 1-2 months postpartum.

Review: Continuous support for women during childbirth

Comparison: 4 Continuous support versus usual care - policy about routine EFM

Outcome: 8 Breastfeeding at 1-2 months postpartum

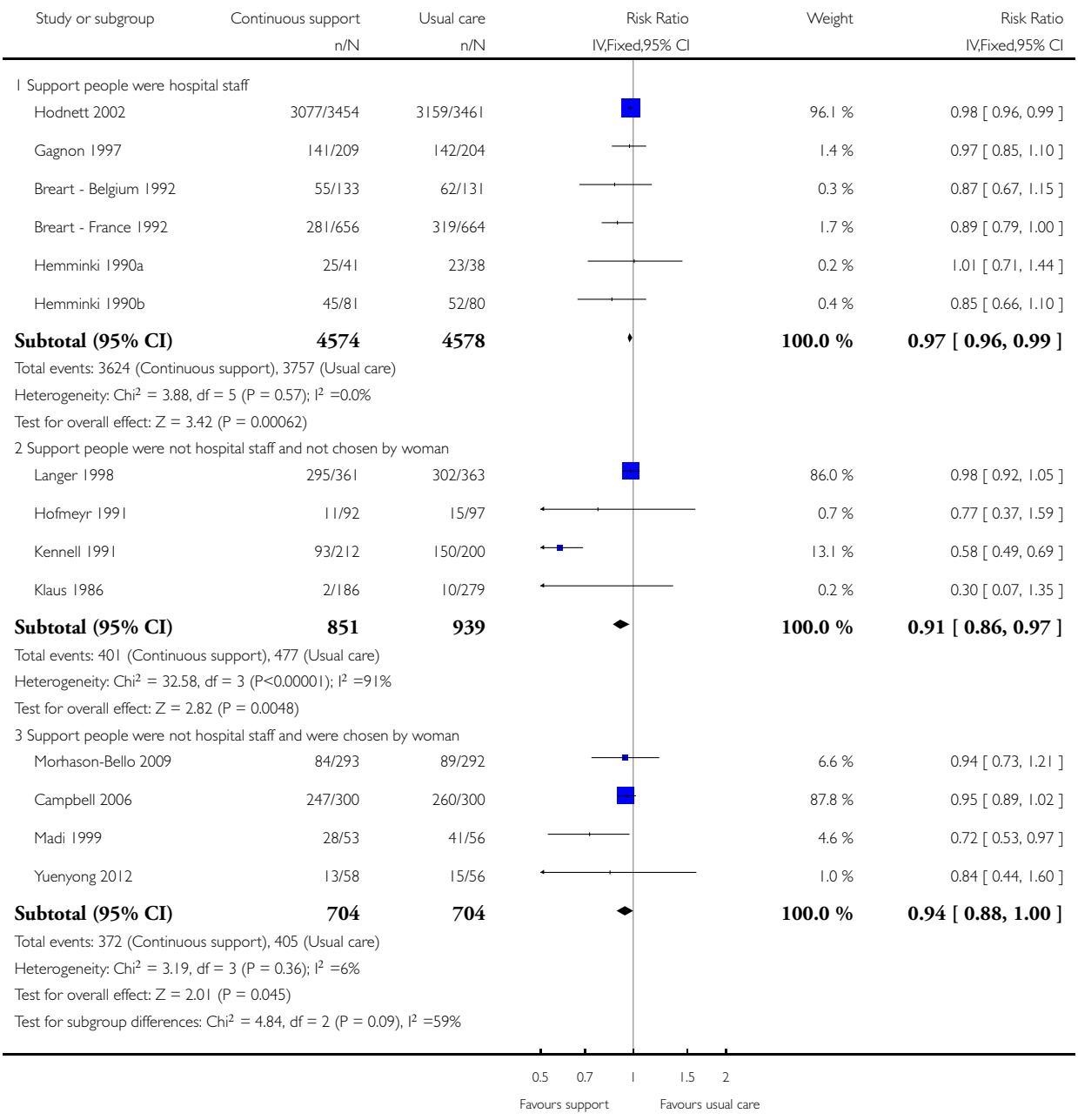


Analysis 5.1. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 1 Any analgesia/anaesthesia.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 1 Any analgesia/anaesthesia



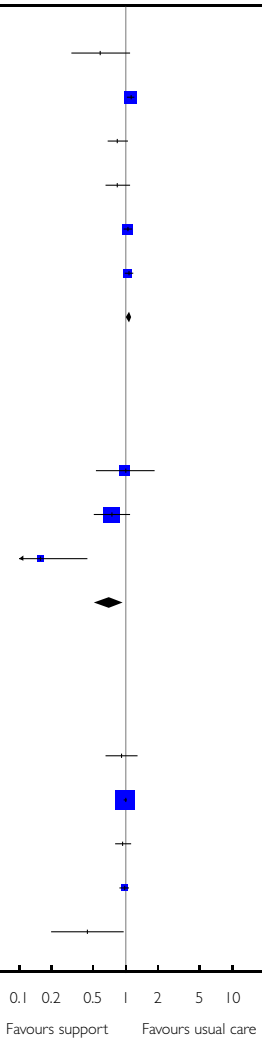
Analysis 5.2. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 2 Synthetic oxytocin during labour.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 2 Synthetic oxytocin during labour

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Support people were hospital staff					
Kashanian 2010	11/50	19/50		0.6 %	0.58 [0.31, 1.09]
Hodnett 2002	1040/3454	942/3461		40.9 %	1.11 [1.03, 1.19]
Gagnon 1997	82/209	96/204		4.6 %	0.83 [0.67, 1.04]
Breart - Belgium 1992	55/132	64/129		3.2 %	0.84 [0.64, 1.10]
Breart - France 1992	383/654	371/666		26.0 %	1.05 [0.96, 1.15]
Breart - Greece 1992	224/287	193/265		24.8 %	1.07 [0.97, 1.18]
Subtotal (95% CI)	**4786**	**4775**		**100.0 %**	**1.06 [1.01, 1.11]**
Total events: 1795 (Continuous support), 1685 (Usual care)					
Heterogeneity: Chi^2 = 12.25, df = 5 (P = 0.03); I^2 =59%					
Test for overall effect: Z = 2.24 (P = 0.025)					
2 Support people were not hospital staff and not chosen by woman					
Hofmeyr 1991	16/92	17/97		25.7 %	0.99 [0.53, 1.85]
Kennell 1991	36/212	46/200		64.7 %	0.74 [0.50, 1.09]
Klaus 1986	4/168	37/249		9.6 %	0.16 [0.06, 0.44]
Subtotal (95% CI)	**472**	**546**		**100.0 %**	**0.69 [0.50, 0.94]**
Total events: 56 (Continuous support), 100 (Usual care)					
Heterogeneity: Chi^2 = 9.42, df = 2 (P = 0.01); I^2 =79%					
Test for overall effect: Z = 2.34 (P = 0.020)					
3 Support people were not hospital staff and were chosen by woman					
Morhason-Bello 2009	51/293	56/292		0.5 %	0.91 [0.64, 1.28]
Bruggemann 2007	104/105	107/107		90.8 %	0.99 [0.96, 1.02]
Campbell 2006	133/291	144/295		2.1 %	0.94 [0.79, 1.11]
Torres 1999	167/217	172/218		6.2 %	0.98 [0.88, 1.08]
Madi 1999	7/53	17/56		0.1 %	0.44 [0.20, 0.96]



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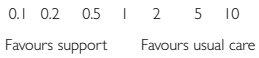
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Yuenyong 2012	21/58	18/56		0.2 %	1.13 [0.68, 1.88]
Subtotal (95% CI)	**1017**	**1024**		**100.0 %**	**0.99 [0.96, 1.01]**
Total events: 483 (Continuous support), 514 (Usual care)					
Heterogeneity: Chi^2 = 5.04, df = 5 (P = 0.41); I^2 =1%					
Test for overall effect: Z = 1.00 (P = 0.32)					
Test for subgroup differences: Chi^2 = 11.46, df = 2 (P = 0.00), I^2 =83%					



Analysis 5.3. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 3 Spontaneous vaginal birth.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 3 Spontaneous vaginal birth

Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
1 Support people were hospital staff					
Kashanian 2010	46/50	38/50		1.8 %	1.21 [1.02, 1.44]
Hodnett 2002	2481/3454	2463/3461		64.5 %	1.01 [0.98, 1.04]
Dickinson 2002	280/499	239/493		4.0 %	1.16 [1.03, 1.30]
Gagnon 1997	132/209	127/204		2.6 %	1.01 [0.87, 1.18]
Breart - Belgium 1992	97/133	87/131		2.2 %	1.10 [0.94, 1.29]
Breart - France 1992	453/656	424/664		9.7 %	1.08 [1.00, 1.17]
Breart - Greece 1992	215/295	194/274		5.4 %	1.03 [0.93, 1.14]
Hemminki 1990a	38/41	34/38		3.0 %	1.04 [0.90, 1.19]
Hemminki 1990b	76/81	72/80		6.8 %	1.04 [0.95, 1.14]
Subtotal (95% CI)	**5418**	**5395**		**100.0 %**	**1.03 [1.01, 1.06]**

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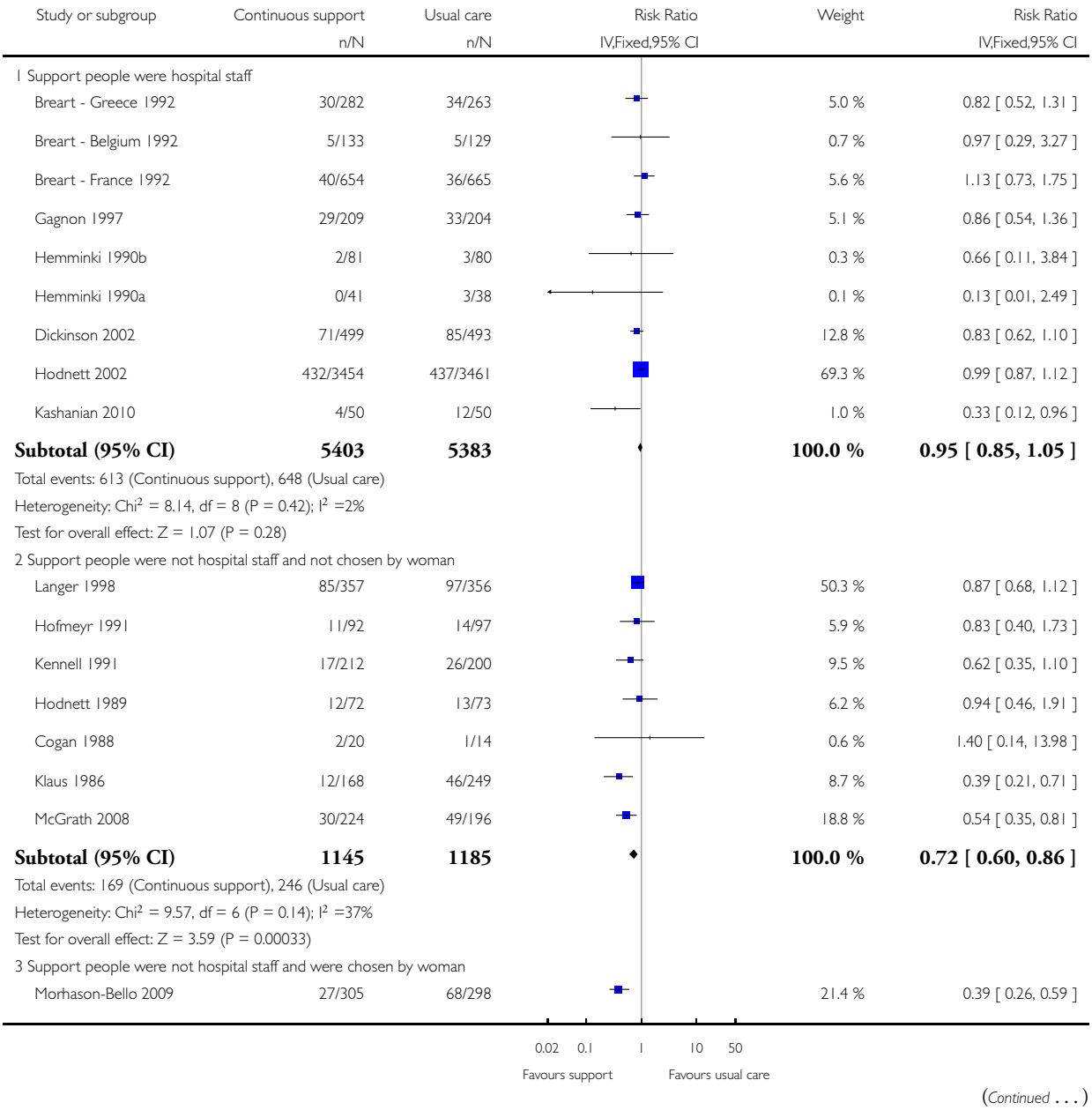
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Total events: 3818 (Continuous support), 3678 (Usual care)					
Heterogeneity: Chi^2 = 10.94, df = 8 (P = 0.21); I^2 =27%					
Test for overall effect: Z = 2.53 (P = 0.011)					
2 Support people were not hospital staff and were chosen by woman					
Bruggemann 2007	41/105	38/107		4.5 %	1.10 [0.78, 1.56]
Campbell 2006	223/300	220/300		60.2 %	1.01 [0.92, 1.11]
Madi 1999	48/53	40/56		15.6 %	1.27 [1.05, 1.53]
Torres 1999	110/217	101/218		14.5 %	1.09 [0.90, 1.33]
Yuenyong 2012	33/58	31/56		5.2 %	1.03 [0.74, 1.42]
Subtotal (95% CI)	**733**	**737**		**100.0 %**	**1.07 [0.99, 1.15]**
Total events: 455 (Continuous support), 430 (Usual care)					
Heterogeneity: Chi^2 = 4.53, df = 4 (P = 0.34); I^2 =12%					
Test for overall effect: Z = 1.70 (P = 0.090)					
3 Support people were not hospital staff and not chosen by woman					
Langer 1998	264/361	254/363		25.5 %	1.05 [0.95, 1.15]
Hofmeyr 1991	74/92	76/97		10.2 %	1.03 [0.89, 1.19]
Kennell 1991	179/212	137/200		17.7 %	1.23 [1.10, 1.38]
Hodnett 1989	47/72	42/73		3.2 %	1.13 [0.88, 1.47]
Klaus 1986	172/186	225/279		43.3 %	1.15 [1.07, 1.23]
Subtotal (95% CI)	**923**	**1012**		**100.0 %**	**1.12 [1.07, 1.17]**
Total events: 736 (Continuous support), 734 (Usual care)					
Heterogeneity: Chi^2 = 6.89, df = 4 (P = 0.14); I^2 =42%					
Test for overall effect: Z = 4.82 (P < 0.00001)					
Test for subgroup differences: Chi^2 = 9.97, df = 2 (P = 0.01), I^2 =80%					

Analysis 5.4. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 4 Caesarean birth.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 4 Caesarean birth



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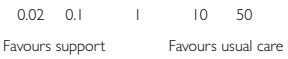
Study or subgroup	Continuous support n/N	Usual care n/N	Risk Ratio IV,Fixed,95% CI	Weight	Risk Ratio IV,Fixed,95% CI
Bruggemann 2007	11/105	12/107		6.2 %	0.93 [0.43, 2.02]
Campbell 2006	55/291	53/295		32.0 %	1.05 [0.75, 1.48]
Madi 1999	3/53	7/56		2.2 %	0.45 [0.12, 1.66]
Torres 1999	54/217	46/218		31.1 %	1.18 [0.83, 1.67]
Yuenyong 2012	10/58	14/56		7.1 %	0.69 [0.33, 1.42]
Subtotal (95% CI)	**1029**	**1030**		**100.0 %**	**0.83 [0.69, 1.01]**
Total events: 160 (Continuous support), 200 (Usual care)					
Heterogeneity: Chi^2 = 19.83, df = 5 (P = 0.001); I^2 =75%					
Test for overall effect: Z = 1.86 (P = 0.062)					
Test for subgroup differences: Chi^2 = 6.88, df = 2 (P = 0.03), I^2 =71%					

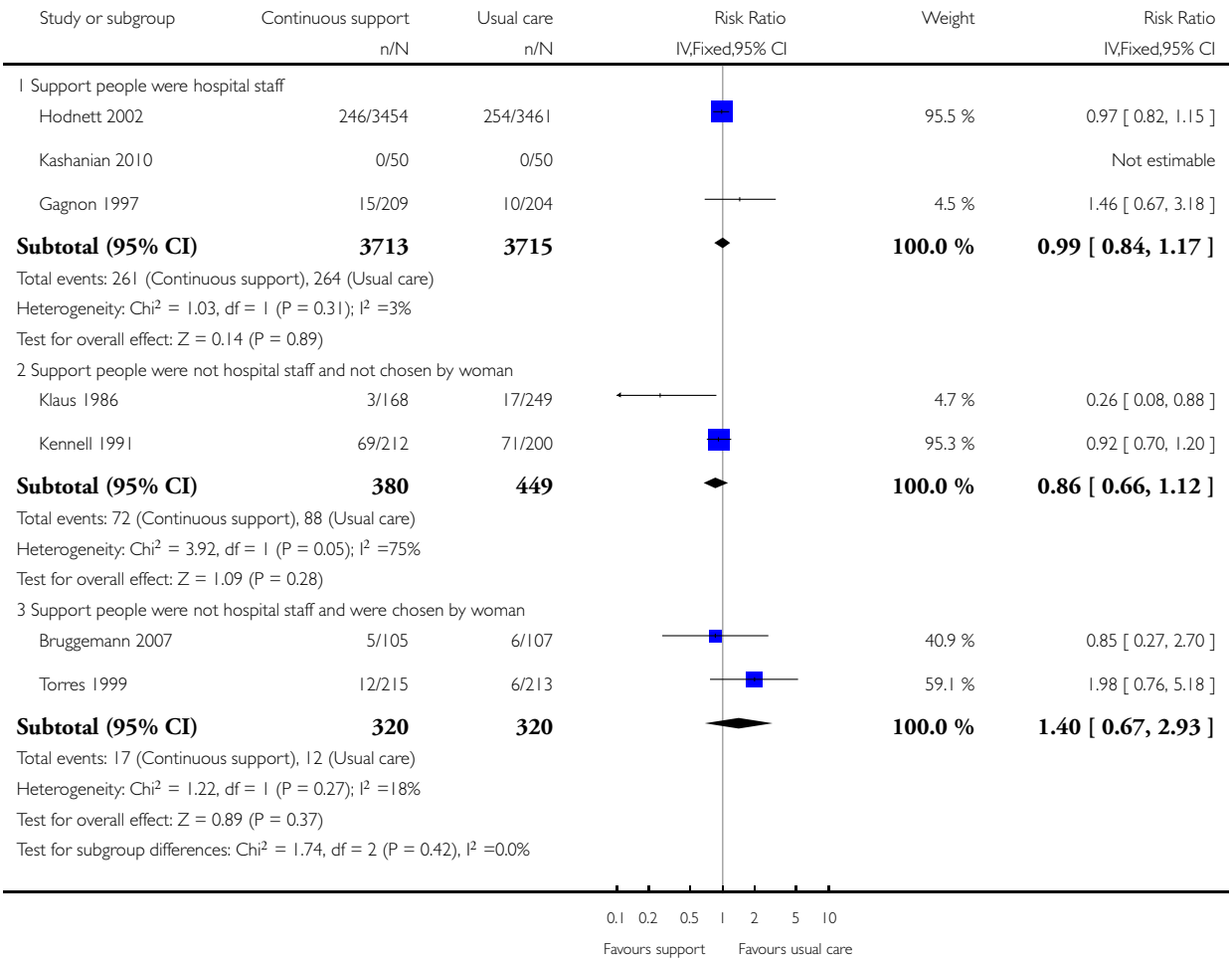


Analysis 5.5. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 5 Admission to special care nursery.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 5 Admission to special care nursery

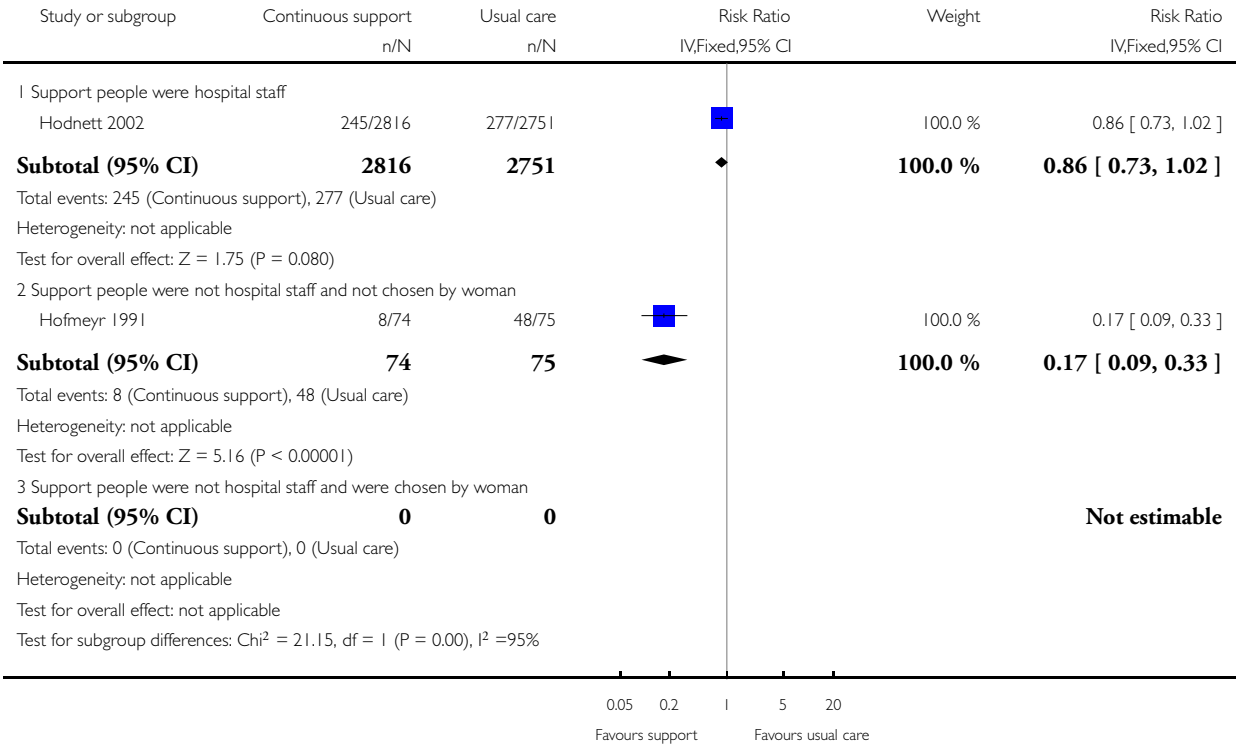


Analysis 5.6. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 6 Postpartum depression.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 6 Postpartum depression

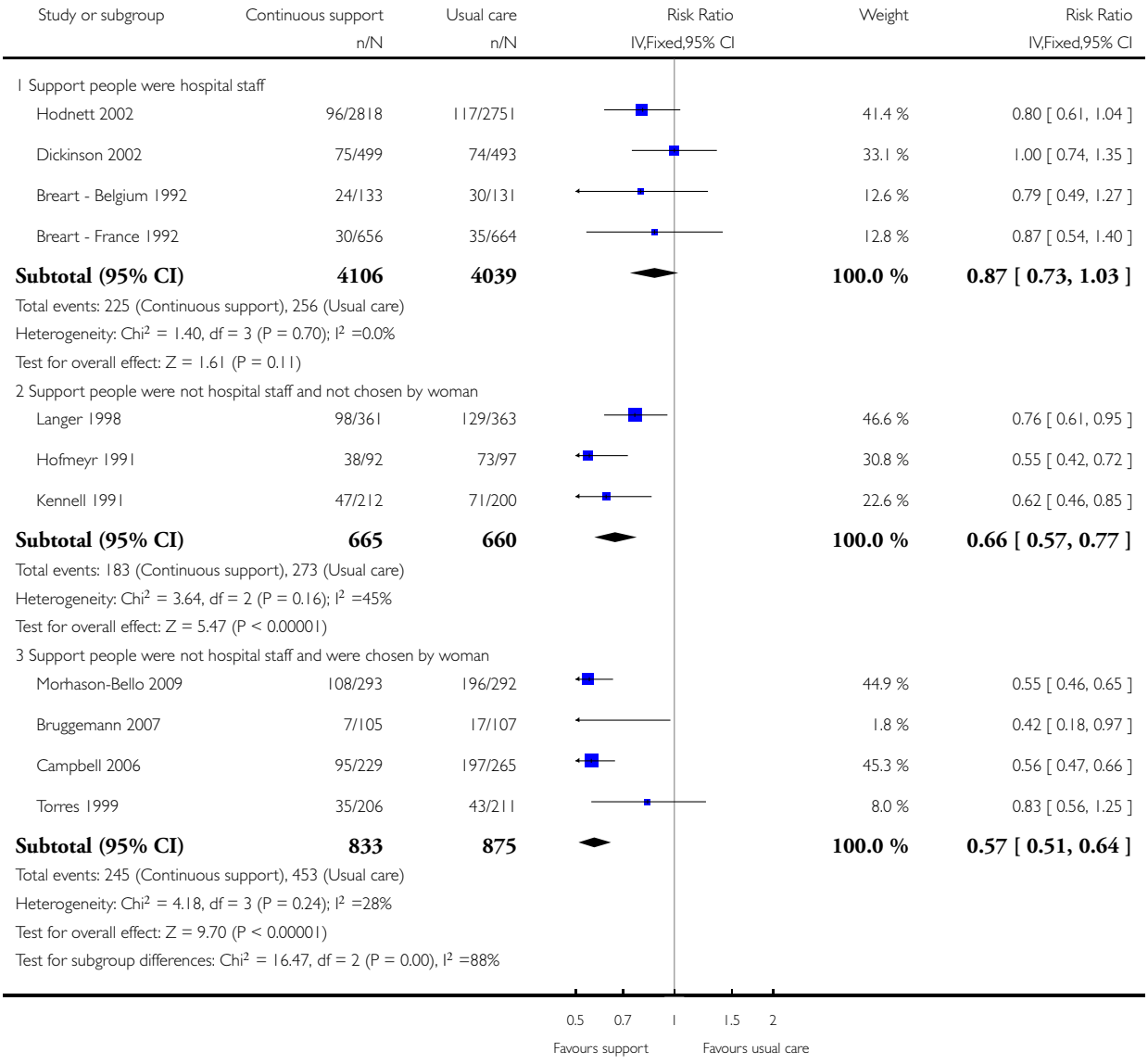


Analysis 5.7. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 7 Negative rating of/negative feelings about birth experience.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 7 Negative rating of/negative feelings about birth experience

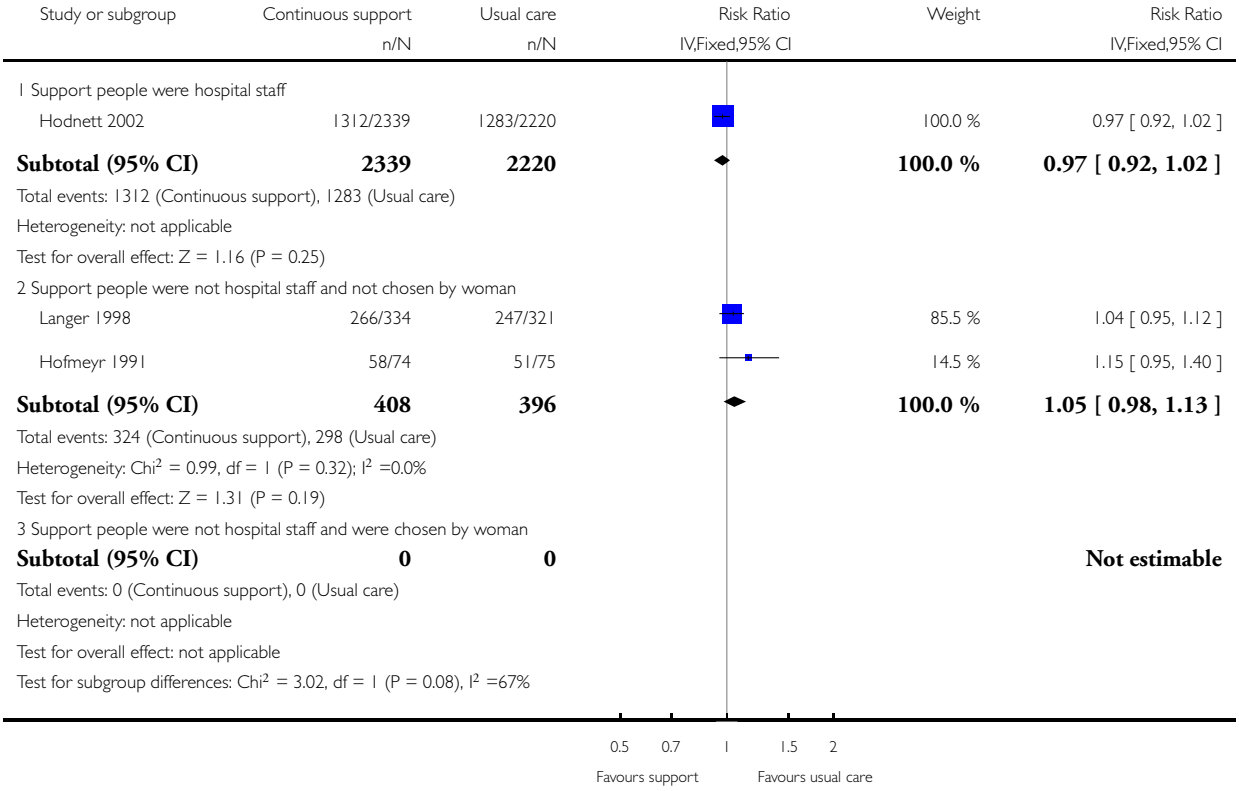


Analysis 5.8. Comparison 5 Continuous support versus usual care - variations in provider characteristics, Outcome 8 Breastfeeding at 1-2 months postpartum.

Review: Continuous support for women during childbirth

Comparison: 5 Continuous support versus usual care - variations in provider characteristics

Outcome: 8 Breastfeeding at 1-2 months postpartum



WHAT'S NEW

Last assessed as up-to-date: 29 June 2013.

Date	Event	Description
29 June 2013	New search has been performed	Search updated. One new abstract identified and added to Characteristics of studies awaiting classification because it does not contain sufficient details to permit classification (Safarzadeh 2013).

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29 June 2013	New citation required but conclusions have not changed	Review updated. No new trials or data included.

HISTORY

Protocol first published: Issue 3, 2002

Review first published: Issue 3, 2003

Date	Event	Description
12 July 2012	New citation required but conclusions have not changed	One new trial added (Yuenyong 2012). Data inadvertently omitted for one outcome (postpartum depression) from a prior trial (Hofmeyr 1991) have now been included. Minor clarifications to the text and changes to Results which did not substantively alter Conclusions
14 June 2012	New search has been performed	Search updated and one new trial met inclusion criteria. One other trial report and seven new abstracts were found, one of which describes an ongoing study, and none of which contain sufficient details to permit classification
31 December 2010	New search has been performed	Search updated. We evaluated and added new trials. We obtained additional information from trial authors. Other revisions included numerous changes to bring the entire Review up-to-date in terms of current methodological guidelines. We altered the acceptable follow-up rate for long term outcomes, and we expanded the number of outcomes to be included in the planned subgroup analyses
25 October 2010	New citation required but conclusions have not changed	New author joined the review team to update the review.
12 May 2008	Amended	Converted to new review format.
18 April 2007	New search has been performed	Search updated in February 2007. Two new trials identified. We excluded one (Dalal 2006) and included the other (Campbell 2006). The Results section was updated accordingly. With the exception of the outcome of labour length, there were no substantive changes in results or conclusions of the Review. Minor edits were made throughout. Additional text was added to the Discussion

(*Continued*)

30 October 2006	New search has been performed	Search updated. One 'awaiting assessment' trial was assessed and included (Thomassen 2003).

CONTRIBUTIONS OF AUTHORS

Ellen Hodnett wrote the initial draft of the protocol. Carol Sakala wrote the initial draft of the Discussion in the previous version of the review. Simon Gates wrote the initial draft of the statistical methods and provided statistical advice for the protocol and each update of the review. All review authors participated in all aspects of the preparation of the protocol and in writing the text of the review. All authors participated in the updates of the review.

DECLARATIONS OF INTEREST

Ellen Hodnett was the principal investigator for two labour support trials. Justus Hofmeyr was the principal investigator for one labour support trial.

SOURCES OF SUPPORT

Internal sources

- University of Toronto, Canada.
- University of the Witwatersrand, South Africa.
- Fort Hare University, South Africa.
- East London Hospital Complex, South Africa.
- National Perinatal Epidemiology Unit, Oxford, UK.
- Childbirth Connection (formerly Maternity Center Association), USA.
- Warwick Clinical Trials Unit, University of Warwick, UK.

External sources

- National Institute for Health Research, UK.

NIHR Programme of centrally-managed pregnancy and childbirth systematic reviews of priority to the NHS and users of the NHS: 10/4001/02

INDEX TERMS

Medical Subject Headings (MeSH)

*Labor, Obstetric; Delivery, Obstetric [*methods; *nursing]; Midwifery; Obstetric Nursing; Perinatal Care [*methods; standards]; Randomized Controlled Trials as Topic

MeSH check words

Female; Humans; Pregnancy